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Doctoral Research in Public Health and Social Sciences

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The ERASMUS+ CBHE “Doctoral Programs in Public Health and Social Services” (DPPHSS) Project funded by the European Union, is coming to an end. Nevertheless, I am sure, this is not the end of successful cooperation.

The Project would have to last 3 years, but it lasted 4 years because of COVID-19 pandemic.

The main objective of DPPHSS Project is the development of PhD program in Public Health and Social Services in EU partner countries based on the

interdisciplinary approaches and complex.

For Armenia, as an EU partner country, and for Yerevan State Medical University, in particular, the Project is of great importance. I would like to express my gratitude to our European and international partner universities for the readiness to cooperate and share their experience, knowledge and skills. We value a lot and support all such kind of international projects aimed at the enhancement of collaboration among the leading universities of the world.

It’s a great honor for us, Yerevan State Medical University, to be the Coordinator of the Project. Seven other universities – Slovak Medical University, Slovakia; Babes-Bolyayi University, Romania; University of Gothenburg, Sweden; University of Applied Sciences in Upper Austria; Yerevan State University; IvaneJavakhashvilli Tbilisi State University; University of Georgia; as well as Ministries of Education and Science of the Republic of Armenia and the Republic of Georgia are Consortium Members of the Project.

The final International conference and Digest of proceedings of our young researchers and PhD students is an important outcome of DPPHSS Project as well.

Lastly, I am proud to welcome the organization of the final International conference of ERASMUS+ “Doctoral Programs of Public Health and Social Science” to be held on September 12-13 at Yerevan State Medical University after Mkhitar Heratsi. The young researchers and PhD students will have the opportunity to discuss main issues and modern tendencies in the fields of Public Health, Epidemiology, Environmental Health and Social Sciences.

Wish you good luck!

ANALYSIS OF THE APPLICATION OF IMPROPER METHODS TO THE ARTIFICIAL ABORTION IN GEORGIA

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Abstract

Abortion (Lat. Abortus) is the premature termination of pregnancy and expulsion from the uterus. Expulsion of the fetus before 22 weeks of gestation. There are two types of abortion: Spontaneous abortion develops on a woman's body or fetus without direct impact and artificial abortion – is a medical intervention that is held for termination of pregnancy. Voluntary termination of pregnancy up to 12 weeks (included) is allowed by the legislation of Georgia, and from 12 to 22 weeks this procedure requires social or medical testimony. There are three methods of performing an artificial abortion: a surgical vacuum aspiration (the recommended period is up to 6 weeks) and curettage (recommended period is 10 weeks or more), medical abortion (the recommended period is from 6 to 10 weeks). The aim of the research was the use of methods incompatible with gestation of abortion and the study of post-abortion complications In Georgia. To carry out the survey we had to use the quantitative research method, the study of secondary data of retrospective type, according to the following characteristics: age; gestational age; method of abortion; number of pregnancies; living region; education; synchronization with the Hospital register; geographic location of performed abortion; post complications of abortion. Therefore, interview specialists in the field through a pre-compiled questionnaire. In 2018, a total of 22,733 abortions were performed, with the highest number of abortions 6199 cases were registered in the 25-29 age group, which is 27.3%, and in 2019 -21596, abortion of which the

highest rate was observed in the age group of 30-34 years 5781 cases in the group, which is 26.8%.

The analysis of the results of the research revealed that internationally both in 2018 and 2019 the use of artificial abortion methods, does not fully comply with the recommendations, and in addition to post-abortion clinics referrals for complications have not decreased over two years. This subject requires in-depth study. It is important to pay attention to educational activities because doctors' survey found that pregnant women either do not own or don't have little information about abortion, as well as its methods of abortion and its further complications. Owning the right information in adolescent girls reduces the risk of unwanted pregnancies. Support of the psychologist is important both before the abortion and in the post-abortion period. In clinics where abortions are performed, it is important that there is a psychologist's office for the women to have an access to proper help. It is important to review the existing legislation in Georgia and more strictly control each case of abortion to prevent it and avoid further complications of abortion.

Introduction

Abortion (Lat. Abortus) is the premature termination of pregnancy and expulsion from the uterus. Expulsion of the fetus before 22 weeks of gestation. There are two types of abortion: Spontaneous abortion develops on a woman's body or fetus without direct impact and artificial abortion – is a medical intervention that is held for termination of pregnancy. Voluntary termination of pregnancy up to 12 weeks (Included) is allowed by the legislation of Georgia, and from 12 to 22 weeks this procedure requires social or medical testimony [1-3].

There are three methods of performing an artificial abortion: a surgical vacuum aspiration (the recommended period is up to 6 weeks) and curettage (recommended period is 10 weeks or more), medical abortion (the recommended period is from 6 to 10 weeks). [4].

Caused of the use of artificial abortion methods inappropriate for gestational age because of complications, approximately 7 million

women in developing countries appeal to hospitals each year. The method of artificial abortion is inappropriate for gestational age, almost all deaths and disabilities can be prevented by appropriate sex education, effective contraception, safe through timely care for legally induced abortions and complications. [5].

Approximately 19 to 20 million abortions are performed annually violating the recommendations, 97% of them are in developing countries. Despite the frequency, abortion to this day remains on the global public health list of challenges. Approximately 68,000 women die each year from abortion because of the procedure and millions of women are disabled. [6].

Aim

Study of the use of methods incompatible with gestation of abortion and the study of post-abortion complications In Georgia.

Material and Methods

The quantitative research method, the study of secondary data of retrospective type, according to the following characteristics: age; gestational age; method of abortion; number of pregnancies; living region; education; synchronization with the Hospital register; geographic location of performed abortion; post complications of abortion. Therefore, interview specialists in the field through a pre-compiled questionnaire.

Results

1. In 2018, a total of 22,733 abortions were performed, with the highest number of abortions 6199 cases were registered in the 25-29 age group, which is 27.3%, and in 2019 -21596, abortion of which the highest rate was observed in the age group of 30-34 years 5781 cases in the group, which is 26.8%.

2. Research has shown that the most common type of abortion is performed Further women visit the clinic within 10 days:

- O03.1 - Spontaneous abortion Incomplete, complicated by delayed or excessive hemorrhage complicated by prolonged or massive bleeding - 20.95%;
- N84.0 - Uterine polyp - 19.80%;
- O03.4 - Incomplete spontaneous abortion without complication - 18.71%;
- N39.0 - Urinary tract infection, unspecified Localization - 13.53%;
- N93.9 - Abnormal bleeding from the uterus and vagina, Unspecified - 10.53%;
- O02.1 - Missed abortion - 5.33%.

3. Pregnancy and Newborn Surveillance Module and Hospital Registry as a result of synchronization, it was found that in some cases medicated within 10 days after the abortion, patients were referred to the clinic; who underwent curettage.

Results of interviews with medical professionals

1. Great importance is attached to terms of selecting the method of artificial abortion during the week of pregnancy.

2. Depending on the practice of each physician and the health of the patient the method of artificial abortion is selected individually;

3. Pregnant women who have decided to have an abortion partially possess information on methods, their pros, and cons about the parties.

4. According to doctors, an abortion method is used that is not compatible with gestation, which due to a complete lack of information from the doctor.

5. The order of pregnancy and the age of the pregnant woman have given importance to whether or not a woman is young and if it is the first pregnancy because at this time it is recommended less Invasive (vacuum aspiration) or non-invasive (medical abortion) to not cause any complications during future pregnancies.

6. In the practice of doctors, it is quite common for a woman to conceive spontaneously with incomplete abortion caused as a result of medical abortion apply to clinics.

Conclusion/Discussion

1. The analysis of the results of the research revealed that internationally both in 2018 and 2019 the use of artificial abortion methods, does not fully comply with the recommendations, and in addition to post-abortion clinics referrals for complications have not decreased over two years. This subject requires in-depth study.

2. It is important to pay attention to educational activities because doctors' survey found that pregnant women either do not own or don't have little information about abortion, as well as its methods of abortion and its further complications. Owning the right information in adolescent girls reduces the risk of unwanted pregnancies.

3. Support of the psychologist is important both before the abortion and in the post-abortion period. In clinics where abortions are performed, it is important that there is a psychologist's office for the women to have an access to proper help.

4. It is important to review the existing legislation in Georgia and more strictly control each case of abortion to prevent it and avoid further complications of abortion.

5. It is advisable to periodically provide updated medical staff information on examples from different parts of the world to avoid further complications of abortion.

6. Because the electronic module for monitoring pregnant women and newborns (so-called "Birth Registry") presents issues related to mothers and newborns the main source for making related decisions, it is advisable periodic qualitative evaluation of data.

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ASSESSMENT OF OCCUPATIONAL VIOLENCE AGAINST PHARMACEUTICAL WORKERS

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Abstract

Pharmacists are among the main factors in the health system. New roles and challenges for pharmacists in primary care can improve patient's access to quality pharmaceutical care. The leading role of pharmacists is to expose them to aggressive, abusive, and violent cases, as they are in regular and frequent contact with the public, when patients and clients are under certain stress. This study aims to estimate the prevalence and nature of occupational violence towards pharmacists and to propose measures to curtail this menace.

A cross-sectional descriptive study in the form of an online survey was designed with the target population being pharmacists who are practicing in the Republic of Moldova in the period from February 2022 to May 2022. The on-line questionnaire was structured in 3 sections (sociodemographic information, the worst event in your experience and occupational risk factors, prevention strategies). The sample volume was calculated using the standard formula from the Epi Info™ program and consisted of 140 pharmacists. The mean age was 35.23±10.13(M±SD) years, female persons – 90.5%, male persons – 9.5%. According to the distribution by age groups, most people were included in the age groups 30-34 years (29.9%) and 35-39 years (20.4%). Most of the people working in the pharmaceutical field are specialized – pharmacist (47.4%) and pharmacist-manager (38.0%). During the COVID-19 pandemic, respondents experienced an attack or physical aggression during their

professional tasks in a higher percentage (21.4%), compared to the pre-pandemic period (7.3%). However, threats or verbal aggression were recorded in 78.9% in the pandemic period, compared to 65.0% in the pre-pandemic period. Sexual assault was not reported during the pandemic, but 7.2% of respondents testified about cases of sexual harassment. In the pre-pandemic period, cases of sexual assault and sexual harassment were more common – 6.8% and 21.3%, respectively. Respondents also faced the phenomenon of theft of goods – 26.1% in the pre-pandemic period and 34.8% in the pandemic period. More than half of those interviewed said they had not taken any training on violence and there is no system for reporting violence at work (58.8%). The study highlights the problem of violence at work in both the pre-pandemic and pandemic periods. Verbal violence remains the most significant problem in the workplace among pharmacists in both periods of the study.

Introduction

Pharmacists are among the main factors in the health system. Due to their unique position in the field of healthcare, pharmacists are classified as reliable and accessible professionals in the health system. New roles and challenges for pharmacists in primary care and other evolving platforms can improve patient's access to quality pharmaceutical care [1,2]. The professional activity of the pharmaceutical staff is carried out in a wide multidisciplinary area, including academia, regulation, administration, the pharmaceutical industry, the practice of community pharmacy and hospital or clinical pharmacy.

Along with the chemical and physical occupational factors characteristic of the pharmaceutical field, the specialists also face psycho-emotional factors, which have a negative effect on the physical and mental state. Health workers around the world, including pharmacists, are at high risk of violence. Between 8% and 38% of health care workers are victims of physical violence at some point in their careers [3]. Many are threatened or exposed to verbal aggression. Most violence is committed by patients and visitors.

Violence against health workers is unacceptable. It not only has a negative impact on the psychological and physical well-being of health workers, but also affects their motivation at work. Consequently, this violence compromises the quality of care and jeopardizes the provision of health care. It also leads to huge financial losses in the health sector.

The leading role of pharmacists and their colleagues is to expose them to aggressive, abusive and violent behaviour, as they are in regular and frequent contact with the public, often when patients and clients are under certain stress [4, 5].

With the onset of the Covid-19 pandemic and the new development features of the pharmaceutical industry, it has become necessary to adapt to a new work environment. However, pharmacists continue to face violence caused by a variety of factors: long service expectations, loneliness, poor environmental design, inadequate security, or the provision of services to patients with a history of violence, drug, or alcohol abuse. Violence in community pharmacies is largely unrecognized, underreported, and often not adequately addressed. Internationally, few studies have investigated violence in community pharmacies, and as a result, very little is known about the incidence and consequences of violence experienced by community pharmacists and pharmacy staff.

Aim

This study aims to estimate the prevalence and nature of occupational violence towards pharmacists in the Republic of Moldova, to determine factors associated with the violence, to identify the pharmacists at high risk, and to propose measures to curtail this menace.

Material and Methods

A cross-sectional descriptive study in the form of an online survey (Google FormTM) was designed with the target population being pharmacists who are practicing in the Republic of Moldova in the period from February 2022 to present. Pharmacists who are on internship

training were excluded from the study. The on-line questionnaire "Surveillance of workplace violence among pharmacists" was developed by the project team and was structured in 3 sections (sociodemographic information, the worst event in your experience and occupational risk factors, prevention strategies). The sample volume was calculated using the standard formula from the Epi Info™ program (a public domain software package designed for the global community of public health physicians and researchers). Based on the formula, the sample consisted of 140 pharmacists with a confidence interval of 80%, respecting the following criteria: expected frequency – 30% and error – 5%. To the value of the calculated sample was added 10% – non-response rate.

Eligible participants were invited to participate in the online survey using the Google Form which contained information about the study and consent to participate. It was clearly stated in the first part of the online survey tool that participation is entirely voluntary, and respondents were able to skip any question they felt uncomfortable to answer. Moreover, they were assured of the confidentiality and anonymity of their response.

The following definitions were adopted in this study. Physical aggression was defined as forceful, hostile, or aggressive behaviour which may or may not cause harm. A threat refers to the menace of causing harm. Verbal (non-physical) aggression was defined as any annoying or unpleasant act (words, attitudes, actions) that creates a hostile working environment. Harassment was defined as insistent aggressive pressure or intimidation, requests [1].

Data cleaning, validation and analysis were performed using IBM SPSS Statistics for Windows, Version 27.0. Responses were exported from the Google Form™ in Microsoft Excel format, and then transferred to the SPSS software. Descriptive statistics were conducted to determine the characteristics of the study sample. Data were presented as frequency and percentages.

Results:

A total of 137 pharmaceutical workers were included in the current analysis. Of 140 participants, three did not attempt any question. The sociodemographic characteristics of participants are shown in tab. 1.

Table 1. Distribution of participants characteristics

Variables	Number (abs.)	Frequency (%)
Sex		
Male	13	9.5
Female	124	90.5
Age		
Mean \pm standard deviation	35.23 \pm 10.13	
Age group		
20-24	18	13.1
25-29	17	12.4
30-34	41	29.9
35-39	28	20.4
40-44	7	5.1
45-49	14	10.2
50-54	4	2.9
55-59	4	2.9
60+	4	2.9
Occupation		
Assistant pharmacist /intern help	2	1.5
Cosmetics consultant	2	1.5
Pharmacist	65	47.4
Chief Pharmacist / Head of Branch	52	38.0
Pharmacist Manager	8	5.8
PharmacistTechnologist	4	2.9
Pharmacist Laborant	4	2.9
Work experience		
2-5 years	35	25.5
6-10 years	34	24.8
11 years and more	68	49.6

In the health system, especially in the pharmaceutical field, female persons predominate (90.5%) compared to male persons (9.5%). This distribution is characteristic of the Republic of Moldova. The mean age was 35.23 ± 10.13 (M \pm SD) years. According to the distribution by age groups, most people were included in the age groups 30-34 years (29.9%) and 35-39 years (20.4%). Most of the people working in the pharmaceutical field are specialized – pharmacist (47.4%) and pharmacist-manager – (38.0%). For one week, before the COVID-19 pandemic period, the respondents worked on average 40.17 ± 14.99 hours, and during the pandemic period the average duration increased and was – 42.09 ± 11.16 hours (M \pm SD). 75.6% of pharmacy workers contact patients / customers directly.

Female respondents, who participated in the survey, have a longer work experience compared to men. For both categories of people, the work experience is longer than 11 years (49.6%), 6-10 years – 24.8% and 2-5 years – 25.5% (Table 2).

Table 2. Distribution of respondents according to gender and work experience

			Work experience			
			11 years and more	6-10 years	2-5 years	Total
Sex	Male	Count (abs.)	7	4	2	13
		%	53.8	30.8	15.4	100.0
	Female	Count (abs.)	61	30	33	124
		%	49.2	24.2	26.6	100.0
Total		Count (abs.)	68	34	35	137
		%	49.6	24.8	25.5	100.0

During the COVID-19 pandemic, respondents experienced an attack or physical aggression during their professional tasks in a higher percentage (21.4%), compared to the pre-pandemic period (7.3%). However, threats or verbal aggression were recorded in 78.9% in the pandemic period,

compared to 65.0% in the pre-pandemic period. Another form of violence is sexual assault, which was not reported during the pandemic, but 7.2% of respondents testified about cases of sexual harassment. In the pre-pandemic period, cases of sexual assault and sexual harassment were more common – 6.8% and 21.3%, respectively. Respondents also faced the phenomenon of theft of goods – 26.1% in the pre-pandemic period and 34.8% in the pandemic period.

The most frequent violent actions were verbal attacks (58.5%) and threats (36.6%). Aggression actions were caused by patients / clients in most cases (85.4%), followed by family members of the patient / client (7.3%), and the rest were the cause of professional and collegial interrelationships.

Most aggression events – 91.2% occurred during days and only 8.2% during the night shift. According to the study, 52.9% of the participants consider that the pharmacies in which they work have a general policy for preventing violence, and 76.5% of them mentioned that there is not a special commission that deals with violence. More than half of those interviewed said they had not taken any training on violence. Similarly, there is no system for reporting violence at work (58.8%).

Discussion

The current study showed that pharmacists aged 30 years and below reported more violence when compared with other age categories. In a related study in Turkey, the risk of violence was 2.4 times higher among healthcare workers aged less than 30 years old than among older ones; however, the years of experience did not constitute a significant risk factor for violence [6].

Most pharmacists who experienced violence had 11 years or more of experience, although there is a significant difference compared to respondents with less than 11 years of experience. However, in an Ethiopian study, (Yenealem et al.) showed that health care workers with less than six years of experience were three times more likely to suffer violence than their seniors with more than 16 years of experience [7].

The finding was explained by the fact that young health workers with short-term experience do not have the skills to deal with violent tendencies, which are usually gained through experience. Moreover, two studies in Riyadh, the Kingdom of Saudi Arabia, have shown that less experienced and younger health care workers are more likely to face violent attacks than their counterparts [8].

Health workers have been shown to be responsible for emotional, verbal, and physical abuse against each other [9]. This study found that co-workers also use violence against pharmacists, with doctors being the most reported group. Ideally, medical institutions should be free from violence, especially among colleagues, and medical staff should work in a cooperative manner to provide a safe environment for both patients and them.

Effective management leadership begins by recognizing that workplace violence is a safety and health hazard. Management commitment, including the endorsement and visible involvement of top management, provides the motivation and resources for workers and employers to deal effectively with workplace violence.

Education and training are key elements of a workplace violence protection program and help ensure that all staff members are aware of potential hazards and how to protect themselves and their co-workers through established policies and procedures. Training can: (a) help raise the overall safety and health knowledge across the workforce, (b) provide employees with the tools needed to identify workplace safety and security hazards, and (c) address potential problems before they arise and ultimately reduce the likelihood of workers being assaulted. In general, training should cover the policies and procedures for a facility as well as de-escalation and self-defence techniques. The following provides a list of possible topics: (a) The workplace violence prevention policy; (b) Risk factors that cause or contribute to assaults; (c) Policies and procedures for documenting patients' or clients' change in behaviour; (d) The location, operation, and coverage of safety devices such as alarm systems, along with the required maintenance schedules

and procedures; (e) Early recognition of escalating behaviour or recognition of warning signs or situations that may lead to assaults; (f) Ways to recognize, prevent or diffuse volatile situations or aggressive behaviour, manage anger and appropriately use medications; (g) A standard response action plan for violent situations, including the availability of assistance, response to alarm systems and communication procedures; (h) Policies and procedures for obtaining medical care, trauma informed care, counselling, workers' compensation or legal assistance after a violent episode or injury etc. [10].

Conclusions

1. There has been a lack of studies on violence against pharmaceutical staff. The study highlights the problem of violence at work in both the pre-pandemic and pandemic periods.

2. Verbal violence remains the most significant problem in the workplace among pharmacists in both periods of the study.

3. Training of staff on the assessment and management of the risk of violence and the prevention of increasing incidents of occupational violence against pharmacists are required in the Republic of Moldova.

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ASSESSMENT OF PRE-MEDICAL ACUTE CARE PROVIDED BY EYEWITNESSES TO VICTIMS OF ROAD TRAFFIC ACCIDENTS

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Abstract

According to the World Health Organization (WHO) nearly 1.35 million people die on the world's roads annually in the world. WHO indicated that incorrect pre-medical aid is one of the risk factors of deaths from traffic road injuries. The aim of the study is assessing the frequency and types of adverse events due to pre-medical care in victims of road traffic accidents (RTAs), as well as detection of the number of pre-medical care cases which was provided to victims by bystanders. A mixed design study: prospective quantitative and qualitative, using a semi-structured questionnaire. The method of sampling is universal sampling and all RTA victims that satisfied the inclusion criteria were included in the study. Data entry and statistical analysis is done using the SPSS 16 software. Frequency distributions and percentages are computed for all the variables. As for the data we received from the interviewed ambulance doctors, a greater extent showed that eyewitnesses do not always provide first aid or do not have the necessary skills, despite the fact that in 92% of cases, eyewitnesses were in place when the ambulance workers arrived. Based on the obtained results only in isolated cases the victims were immobilized after being injured in an accident by eyewitnesses. With regard to stopping bleeding, the most commonly used tools were handy and methods of stopping bleeding were not always correct. Based on doctors' words in the most part of investigated cases, there was noted that the eyewitnesses have lack of

information about the provision of first aid and it is necessary to provide the population with theoretical and surely practical knowledge.

Introduction

According to the World Health Organization (WHO), globally almost 1.35 million people die on the world's roads annually and 20 to 50 million people are exposed to non-fatal injuries. The fact that road traffic injuries are the leading reasons of death among children and young adults aged 15-45 years is more than alarming, as this age group encompasses the conventionally healthy, growing, and is a developing part of the population [1]. This age group plays a great role not only as a component of the population indicator, but also influences the economic development of the any country.

The main prerequisites for conducting this study are the worrisome data that a huge number of people die every year in the world and the fact that inadequate post-crash care was shown as a risk factor for deaths from injuries received during road traffic accidents (RTAs) [2].

However, the information related to this risk factor is insufficiently observed. The victim's acute care of injuries after the RTA plays an important role in fast assistance of the survival chances and quality of the recovering from trauma and is extremely time-sensitive: delays of minutes can make the difference between life and death.

Taking into consideration the recommendation of the National Emergency Medical Services guidelines, the trauma scene time should be less than 10 minutes [3,4]. It is obvious that the provision of pre-medical care rendering has colossal significance. Proper quality of the pre-medical care can help doctors and the victims to avoid complications and maintain the quality of life after the trauma. On the other hand, inadequate acute care provided by non-specialists can have disastrous consequences often incurring a disability as a result of incorrect pre-medical care [5].

Based on the statistical data, in 2019, there were 4799 RTAs in Armenia (2172 in Yerevan) that led to 6801 cases of injuries (2801 in Yerevan) and 341 deaths (86 in Yerevan). This is the highest level of RTAs, compared with the time period starting from 2006 (6).

Aim

The aim of this study is to assess the correctness and appropriateness of the pre-medical acute care provided by bystanders including the police officers to the trauma victims due to the RTAs.

Materials and methods

Study design. A mixed-design study: a prospective qualitative and quantitative survey. Within the scope of the study, the pre-medical first aid provided by bystanders have been evaluated by ambulance doctors who have been interviewed using a questionnaire for collecting quantitative data and, as well, the in-depth interview have been conducted within the qualitative part of the study. The study duration, including preparatory work, is designed for 6-7 months.

Inclusion criteria. All cases of the RTA victims reported by doctors during the research period were included in the study after obtaining the doctor's informed consent to provide and use the information.

Exclusion criteria. The information that has been provided by those doctors, who refused to give their informed consent was excluded from the study.

Data collection instrument. A semi-structured questionnaire has been used, for the collection of the quantitative data and guidelines for an in-depth interview guide, giving information about the scope and appropriateness of pre-medical acute care by provided by witnesses – to obtain qualitative data.

Methodology. The information relating to the RTAs has been compiled from the Armenian National Road Administration's regular

annual and weekly reports. For the most effective realization of the study, the Yerevan region was selected. The choice of this region was based on statistical data indicating that the most frequent car accidents occur on the mentioned region roads [3]. For acquiring the needed information all seven ambulance stations have been visited and the doctors interviewed in order to estimate the pre-medical first aid provided by eyewitnesses. The comprehensive questionnaire used in the study has been pre-tested on 10 ambulance doctors and modified further based on the obtained responses.

Ethical considerations. Ethical clearance was obtained from the Institutional Ethics Committee prior to the start of the study. Written informed consent has been obtained from the study participants (doctors) before obtaining any information from them. Utmost care was taken to maintain privacy and confidentiality.

Statistical analysis. Data entry and statistical analysis has been done using SPSS. Frequency distributions and percentages has been computed for all the variables.

Results

Quantitative analysis results. Table 1 shows the health condition of the RTAs victims when ambulance arriving (153 cases evaluated). In majority of cases victims' condition was mild, and only one quarter was in severe and extremely severe condition: those were unconscious.

Table 1 Condition of the RTAs victims
Number of cases (%)

Mild	99 (65%)
Moderate severity	28 (18%)
Severe (unconscious)	18 (12%)
Extremely severe (unconscious)	8 (5%)

Table 2 demonstrates the eyewitnesses' actions before emergency doctors arrive. Eyewitnesses are active in trying to assist victims, more

often pulling them out of cars. Taking into consideration the fact that in most cases eyewitnesses tried to help the RTAs victims, anyway, we note that in 46% of the considered cases, nothing was done in the presence of external bleeding among the victims. Fixation of victims was done only in 5% of cases. Wound care has been done by eyewitnesses in 17% of the total cases, mostly using water for washing the damaged area.

Table 2. Actions of the eyewitnesses to RTAs victims
Number of cases (%)

Provided acute pre-medical care	
Tried to provide assistance	110 (72%)
Eyewitnesses, being nearby, did nothing	29 (19%)
Doctors can not indicate	14 (9%)
Eyewitnesses pulled the victims out of the cars	
Yes	104 (68%)
No	46 (30%)
Not applicable (victims themselves left the car)	3 (2%)
Stop bleeding approach	
Eyewitnesses tried to stop bleeding	57 (37%)
Nothing was done (including cases when no one were near)	70 (46%)
No external bleeding	24 (16%)
The interviewees could not remember	2(1%)
Immobilization and used tools	
The eyewitnesses tried to immobilize the victims (available means)	8(5%)
Nothing was done	137 (90%)
Not applicable	8(5%)
Removal of theforeign bodies from the wounds	
Eyewitnesses tried to pull out a foreign bodies from the wounds of the victims (mainly glass)	5 (3%)

Nothing was done	50 (33%)
There were no foreign bodies in the wounds of victims	86 (56%)
Doctors could not remember	12 (8%)
Wound care	
Eyewitnesses tried to wash the wounds with water	26 (17%)
Nothing was done	95 (62%)
Doctors could not remember	5(3%)
Not applicable (according to a doctor's opinions)	27 (18%)

In 92% of cases, eyewitnesses met ambulance workers, only in 8% of cases, there was none near the victims.

Only one victim from the 57 cases, has been given a special tourniquet, 53 persons with the bleeding from 57 cases has been aided using improvised means and for 3 people a pressure bandage has been applied.

According to doctors in 81% of cases, the reasons that led to a worsening of the patient's condition are lack of basic knowledge of first aid, in 18% emotional stress, and in the rest 1% lack of the necessary items for providing the first aid (for the eyewitnesses and police officers together).

Qualitative analysis results. The obtained data has been examined and processed using a method of keywords analysis and coding for qualitative research.

Most of the interviewed ambulance doctors answered that the main common mistake is when eyewitnesses moved the victims out of vehicles without fixing them.

As for the awareness of possible methods to stop the bleeding, the opinions of doctors were divided into two groups: the overwhelming majority of the interviewed emergency doctors said that, in their opinion, the population (including the police officers) does not have basic

knowledge about the types of bleeding, methods of stopping depending on the type of bleeding. Another part of the doctors noted that the population (including the police officers) does not have sufficient knowledge about the types and methods of stopping bleeding.

In cases in which incorrectly provided first aid by eyewitnesses aggravated the victim's condition, frequently given answer was- pour water on victims even in cold weather.

Some of the interviewed doctors said that it would be better if the eyewitnesses did nothing at all and did not interfere with the doctors' work. On the other hand, some of the respondents noted that before the ambulance arrives, it is important to stop the bleeding and immobilize the victim in case of suspected fractures especially highlighted the police officers.

Discussion

The data received from the interviewed ambulance doctors, to a greater extent showed that eyewitnesses, including the police officers, who appear first in most of cases at the scene of RTAs, usually had not provided first aid or do not have the necessary skills for that. The study findings implemented by Lukumay and et. in 2019 also shown that the police officers have no knowledge or skills and no equipment and supplies to provide care to RTA victims at the scene before pushing them to the medical [7].

Some of the interviewed doctors said that it would be better if the eyewitnesses did nothing at all and did not interfere with the doctors' work. On the other hand, some of the respondents noted that before the ambulance arrives, it is important to stop the bleeding and immobilize the victim in case of suspected fractures, and they find that it is necessary to educate the population.

Anyway, compared with the other studies we can highlight that in a significant part of the investigated cases-110 (72%) from the 153 the eyewitnesses tried to provide assistance to the victims of the RTAs. A similar study, which has been conducted by Oluwadiya et al., shows that

only 172 (8.6%) of the patients were given some form of pre-medical care by bystanders in the 1996 total cases. The wounds of the 17 patients had been irrigated with water, coverage by clothing materials was accomplished in 10 patients, and 5 patients had their fractures splinted with wooden bars while 4 patients apiece were given water to drink or food to eat. The rest were brought to the medical without any form of treatment before arrival at the emergency department of the participating medicals [8].

Conclusion

Obtained results has shown that the eyewitnesses have lack information about the provision of first aid. Based on the results of the study it is recommended to develop and disseminate information about first aid among the population, using posters at bus stops, in the subway, in schools, universities, etc. This project should be implemented in cooperation with professional doctors, as well as involving the Ministry of Education and Science and media representatives in cooperation.

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ASSESSMENT OF TRAUMATIC BRAIN INJURY TREATMENT CAPACITY IN ARMENIA

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Abstract

Traumatic Brain Injury (TBI) is a form of acquired brain injury that occurs when a force transmitted to the head or body results in neuropathological damage and dysfunction. TBI and its consequences, such as headaches, dizziness, fatigue, depression, irritability and memory problems, are serious public health issues. The aim of this study was to show differences between hospitals from Yerevan and regional 0 in terms of pre-hospital care, acute care, general treatment, rehabilitation, resources and trainings. The present study employed a mixed-method approach was used for this study. Eleven in-depth interviews were conducted with the neurosurgeons, nurses and administrators of “Armenia”, “Erebuni” and “St. Grigor Lusavorich” medical centers that operate in Yerevan. When a patient gets injured, the paramedic decides to which hospital to transfer the patient. The patients are taken to the hospital's emergency department, where they are examined by a multidisciplinary team that decides the final place of care based on the predominant pathologies. Research results shows that there is a lack of human resources and equipment in the regions and no established approach to treating TBI patients.

Introduction

Epidemiology of Traumatic Brain Injuries

Traumatic Brain Injury (TBI) is a form of acquired brain injury that occurs when a force transmitted to the head or body results in

neuropathological damage and dysfunction [1]. TBI and its consequences, such as headaches, dizziness, fatigue, depression, irritability and memory problems, are serious public health issues. The high frequency of TBIs in the 20 – 50 age group has important social and economic implications [2]. Although road traffic incidents are one of the most common causes of TBIs, falls, sport injuries, and assault also contribute substantively to TBI incidence. TBIs have different levels of severity ranging from mild disorientation or a temporary loss of consciousness to falling into a coma and even death [3].

Using the Glasgow Coma Scale, there are three severity levels of TBI, classified as mild, moderate or severe [4], although symptom severity varies significantly within each level. The Centers for Disease Control and Prevention USA (CDC) reports that between 2002–2006, adults 65 and over had higher rates of TBI than other adults over the age of 34, and higher rates of TBI-related hospitalization than all other adults [5].

Socio-economic side of Traumatic Brain Injuries

The United States alone spent \$ 76.3 billion on TBI patients in 2010, of which \$ 11.5 billion was for the organization and implementation of the treatment process and \$ 64.8 billion for social security payments and economic recovery [6]. Analysis of cost estimates for the US, Australia and Europe suggests that in broad terms, the overall annual cost of TBI in developed countries is equivalent to about 0.8% of annual GDP [7]. No current data on expenditure related to TBI is available for Armenia.

Screening and treatment of Traumatic Brain Injuries

Screening and treatment for traumatic brain injury should be done simultaneously. Treatment of TBI can be divided into two stages – administering first aid and providing qualified medical care in a hospital. Hospital admission is recommended for unconscious patients, due to the high potential risk of developing severe, life-threatening complications. After admission to the hospital, patients undergo clinical examination. Then a set of diagnostic measures are carried out to check the integrity of the skeleton of the skull and the presence of intracranial hematomas and

other damage to brain tissue. After the type of TBI is established, the neurosurgeon decides on the need for surgical intervention and control of intracranial pressure. The primary stages of treatment aim to prevent secondary brain damage. A study on TBIs in Armenia was conducted in 2016, with 3911 patients from Yerevan and other regions. The study found that if an X-ray or MRI scan is carried out within 24 hours from the time of admission of the patient, treatment efficiency is 77%. However, if the scans take place after the 24-hour window, the probability of a diagnostic error is 58% [8]. Another study was conducted in 2007 on road traffic injuries in Yerevan. The study found that patients over 61 years died the most from trauma (34%), and 58% of those discharged from the hospital died within a year from trauma consequences [9].

Study purpose

The aim of this study was to show differences between hospitals from Yerevan and regional 0 in terms of pre-hospital care, acute care, general treatment, rehabilitation, resources and trainings.

Study design and settings

The present study employed a mixed-method approach was used for this study. Eleven in-depth interviews were conducted with the neurosurgeons, nurses and administrators of “Armenia”, “Erebuni” and “St. Grigor Lusavorich” medical centers that operate in Yerevan. Four in-depth interviews were carried out with neurosurgeons at regional hospitals “Goris”, “Vanadzor”, “Gyumri” and “Artashat” MC. These hospitals were selected, taking into account the high number of patients they admit. “Armenia”, “Erebuni”, “St. Grigor Lusavorich” and “Gyumri” medical centers are tertiary level hospitals and have departments for traumatology.

In 2017, 13.835 total admissions were registered in “Armenia” Medical Center, of which 563 (3.9%) were traumatic brain injuries; in 2018, 13745 cases of general injuries were reported, of which 579

(4.2%) were traumatic brain injuries. The percentage of cases is small, but the severity of the consequences is relatively high.

In 2017, 82,869 total admissions were registered in “Erebuni” Medical Center, of which 1025 were injuries; in 2018, 64,682 general cases were registered, of which 1227 were injuries. Data on TBIs was not available.

In 2017, 4,852 total admissions were registered in regional “Goris” MC, of which 44 were injuries, of which 12 were TBIs; in 2018, 4006 general cases were registered of which 63 were injuries and 13 of those were TBIs.

Data from the other hospitals was not available.

The interviews assessed the procedures of transferring patients to an appropriate medical facility, identified the actions taken from the moment a patient with a TBI is checked into the hospital, and examined whether international standards are maintained and the doctors’ level of awareness of those standards. Moreover, the work schedule of CT/MRI scan and neurological department staff were noted.

Data collection procedure

The interviews were conducted between June and August 2018, and preliminary interview guidelines were prepared following international standards. The interviews lasted an average of 30-40 minutes. The interview guide consisted of 5 parts: pre-hospital care, acute-care, rehabilitation, general treatment and gaps, other TBI recourses.

Data analysis procedure

Transcribed interviews were reviewed to understand the content related to project-specific questions and to identify discussion themes. Using inductive methods, text segments were assigned codes based on emergent themes. The research team coded all the interviews using the codebook to establish consensus reliability, whereby findings were compared and disagreements resolved through discussion.

Quantitative data was aggregated and analyzed using MC Excel.

Results

Results for the hospitals of Yerevan

Pre-Hospital Care:

The ambulance team represents the pre-hospital care. The ambulance team consists of a doctor and a nurse who follow the Glasgow protocol. At “St. Gregory the Illuminator” Medical Center, the staff receives training from different entities such as the Ministry of Emergency Situations and Yerevan State Medical University. In the event of an injury, either the general ambulance team or the resuscitation team will respond to the emergency.

“There is no specially organized pre-hospital care for treatment of injuries in our hospital. Patients reach our hospital by an ambulance. ” Administrator “Erebuni” MC.

“In Armenia, the ambulance usually provides pre-hospital care. Pre-hospital care is very important - if not done correctly, many complications such as asphyxiation or even death may follow. Hospitals cannot have pre-hospital trauma systems, as they are the second (hospital) phase of the trauma care.” Neurologist “Armenia” MC.

“The emergency team/ambulance crew deals with this. In the case of a trauma-related incident, people mostly call an ambulance or they reach the hospital with the help of others, and in some cases - by themselves. When the ambulance crew arrive at the place of the incident, they start the pre-hospital treatment of injuries. Having a professional ambulance crew treat the patient at the site of the incident is the fastest and most efficient approach.” Neurologist “Grigor Lusavorich” MC.

“The ambulance delivers the patients to the hospital. Then doctors in the emergency room carry out special diagnostic procedures and decide the best course of action according to the results.” Nurse “Grigor Lusavorich” MC.

Acute-care:

When a patient gets injured, the paramedic decides to which hospital to transfer the patient. The patients are taken to the hospital's emergency department, where they are examined by a multidisciplinary team that

decides the final place of care based on the predominant pathologies. At the same time, severe injuries are directly admitted to the Intensive Care Unit.

Generally, the patients are transported by ambulance, private car or helicopter. The latter method of transport is used only when transporting soldiers from military zones. However, relatives unaware of the dangers and risks of improper management of patients with TBI/spinal injury may bring patients to the hospital. In January 2019, the Ministry of Health started cooperating with “Armenian Helicopter” private company to transport patients from regions to Yerevan in emergency cases.

“Both ambulance, their private cars or with family/friends` cars.” Administrator “Armenia” MC.

“Very commonly, patients arrive on their own and even more commonly friends and family bring them in.” Neurologist “Armenia” MC

“Mostly patients reach the hospital by ambulance, could be private, or in a case of military conflict- by helicopter.” Neurologist “Erebuni” MC

General Treatment:

The existing frameworks for the treatment and care of TBI patients in hospitals are different, for example, the Glasgow protocol, the Soviet Union protocol, as well as national and international requirements. The administrator of “Armenia” Medical Center stated that a national legal framework had not been developed yet, but a group is working on developing one. However, one of the neurologists from the same hospital stated that the hospital developed its own framework and it was approved by the Ministry of Health.

“We mainly follow the Glasgow protocol. But it is not the only protocol which we use in our practice. There are a lot of others. Generally, we assess patient condition. Depending on the severity of the cases, we make the appropriate decision.” Neurologist “Erebuni” MC

“We used to follow special frameworks instructed in the Soviet Union period. Now it is the “Burdenko” protocol. We follow the Burdenko protocol both in this hospital and, as far as I am aware, in

other hospitals too. This is a well known framework worldwide. We have been using this framework for 3 years already. Neurologist “Grigor Lusavorich” MC.

“Every county should develop its own frameworks. We have developed special frameworks in our department which have been approved by the Ministry of Health of RA, so we follow them in our hospital, however, those are not national requirements.” Neurologist “Armenia” MC

“There are no national frameworks, unfortunately. I know that they are working on that, to develop national-level frameworks. It is very difficult, and I know that it takes a lot of work, so I don’t think that they would be ready tomorrow or in a month.” Administrator “Armenia” MC
Rehabilitation:

Only two clinics provide rehabilitation: the Red Cross clinic and the Soldiers Rehabilitation Center. For mild disabilities, outpatient care is provided by a neurologist, while for severe disabilities, patients are advised to go to specialized centers such as the Red Cross clinic.

“After treatment, if it is needed, patients mostly to the Red Cross for rehabilitation.” Nurse “Grigor Lusavorich” MC

“We have very good staff and equipment for rehabilitation. So only several patients go to another rehabilitation centers such as Red Cross.” Nurse “Erebuni” MC

“The first stage of rehabilitation that patients pass in the hospital is in our physiotherapy department. If it’s not enough, patients go to the Red Cross or local polyclinic - it depends on the case.” Neurologist “Erebuni” MC

“It depends on the rehabilitation degree needed. If patient has massive neurological decline and needs appropriate rehabilitation, then we advise them to go to the Red Cross, or other specialized rehabilitation center. Milder cases are handled by an out-patient neurologist. I think available services are enough.” Neurologist “Armenia” MC

Most interviewees stated that the main problems are that people usually don’t take their injury seriously and seek medical care,

complicating the treatment process. Regional hospitals don't have the equipment required to ensure patients' high quality of care.

"For trauma prevention, it is really crucial for patients to get to a competent specialist as soon as possible. Sometimes, after receiving an injury, people think that their condition is not so severe and visit a doctor only after several days have passed. Also, practitioners in rural areas are not as competent as in the capital city." Nurse "Erebuni" MC

"I think it is people's perception of trauma. They may get pretty serious injuries but not seek medical help. Or they may be advised to undergo an X-ray or CT examinations, but refuse to do so or even refuse hospitalization. Also there are some big regional hospitals in Armenia, like one in Kapan that don't have equipment or even specialists to handle traumas." Neurologist "Armenia" MC.

Other resources:

The lead agency which regulates TBI treatment is the Ministry of Health. The respondents mentioned that the "Association of Neurosurgery", the "Neurologists Association", the "Managers Association" and the "Nurses Association" are also active in TBI management in Armenia: No information was found regarding the functions of those associations or the training they carry out.

"Everything is structured under the supervision of the Ministry of Health." Neurologist "Erebuni" MC

"The Ministry of Health is the main institution." Administrator "Grigor Lusavoruch" MC

"Everything is structured under the supervision of the Ministry of Health. Each regulation, each framework, each deviation from the framework should be approved by the Ministry of Health." Neurologist "Grigor Lusavorich" MC

"Per my knowledge, it is the Ministry of Health." Administrator "Grigor Lusavorich" MC

"I think it is the Ministry of Health, I don't know other organizations." Administrator "Armenia" MC.

Table 1. The number of available personnel in Yerevan

Checklist items	Hospitals in Yerevan					
	“Surb Grigor Lusavorich” MC		“Armenia” MC		“Erebuni” MC	
	Number of personnel	Available hours	Number of personnel	Available hours	Number of personnel	Available hours
Neurologists	5	24/7	11	9am-4pm 24/7 (on call)	6	24/7
Neurosurgeons	5	24/7	8	9am-4pm 24/7 (on call)	2	24/7
Radiologists	5	24/7	5	9am-4pm 24/7 (on call)	3	24/7
CT scans	3	24/7 (on call)	5+4	24/7	2	24/7
MRI devices	1	24/7 (on call)	0	—	0	—

Table 2. The number of available personnel in regions

Checklist items	Hospitals in regions											
	“Gyumri”			“Goris”			“Vanadzor”			“Artashat”		
	Number of personnel	Available hours	Number of personnel	Available hours	Number of personnel	Available hours	Number of personnel	Available hours	Number of personnel	Available hours		
Neurologists	3	9am-4pm (24/7 on call)	2	9am-4pm (24/7 on call)	3	9am-4pm (24/7 on call)	2	9am-4pm (24/7 on call)	0	9am-4pm (24/7 on call)	3	9am-4pm (24/7 on call)
Neurosurgeons	1	9am-4pm (24/7 on call)	0	—	1	9am-4pm (24/7 on call)	0	9am-4pm (24/7 on call)	3	9am-4pm (24/7 on call)	1	24 /7
Radiologists	4	9am-4pm (24/7 on call)	3	9am-4pm (24/7 on call)	3	9am-4pm (24/7 on call)	3	9am-4pm (24/7 on call)	0	9am-4pm (24/7 on call)	1	24 /7
CT scans	1	24/7	1	24 /7	1	24 /7	1	24 /7	0	24 /7	1	24 /7
MRI devices	0	-	0	-	0	-	0	-	0	-	0	-

Results from the hospitals of regions

Pre-Hospital Care

There were different approaches for pre-hospital care. In the villages of Artashat region, they have outpatient clinics for administering first aid. After patients receive first aid, they can be transferred to the hospital by an ambulance. The neurologist of “Goris” MC described these services as “good.” “Gyumri” MC has an outpatient polyclinic, but it has a limited capacity for patients with trauma; however, patients can be transferred to the hospital after receiving first aid in a polyclinic. The neurologist of “Vanadzor” MC stated that pre-hospital care is provided at the hospital since patients go directly there; patients can be transported to Yerevan for severe injuries, but this can be problematic since the trip takes place more than 2 hours.

“In villages we have.... We have outpatient clinics in villages. That’s where patients are first treated. It works from 9am to 5pm.”- Neurologist “Artashat” MC.

“The “Goris” Medical Center has an outpatient polyclinic within its facility. – Neurologist “Goris” MC.

“The “Gyumri” medical system has an outpatient polyclinic; however, this clinic has a limited capacity for dealing with trauma and patients with traumas either elect to go straight to the hospital or are sent there by the clinic.” – Neurologist “Gyumri” MC.

“All patients come directly to the hospital with trauma. If trauma is severe enough, patient is then transported to Yerevan for more acute care.” - Neurologist “Vanadzor” MC.

Acute-Care:

Based on the answers to the questions regarding the ambulance system, we can assume that: the ambulance system works quickly and efficiently with a short response time. In Goris and Vanadzor, the ambulance system operates under the administration of the “Goris” and “Vanadzor” MCs, and in Gyumri, it is coordinated by a regional controller. However, the respondents stated that the ambulance does not

have a specific team for injury care, and no training is provided for the staff. The neurologist of “Artashat” MC didn’t answer this question.

“The ambulance system operates under the administration of the Goris Medical Center. They own 2 ambulances, which are staffed by internists and paramedics who work rotating shifts both inside the hospital and in the ambulances. When the emergency line is called from a number containing the Goris area code, the call is transferred to an operator at the hospital.” – Neurologist “Goris” MC.

“Ambulances are coordinated and dispatched by a regional controller, who is notified of medical emergencies either by a member of the general public who has dialed the emergency number or through contact with the police/other medical personnel. Ambulances are usually staffed with one physician and one paramedic. Occasionally ambulances do not have physicians and will have just 2 paramedics.”- Neurologist “Gyumri” MC.

“The ambulance system works well and is coordinated within this hospital. -No training is provided here but each ambulance has 1 doctor and 1 paramedic.” - Neurologist “Vanadzor” MC.

General Treatment:

When the patient gets injured and transferred to the hospital, a neurologist and traumatologist decide where to continue their care. In the case of severe traumas, patients are transferred to well-equipped hospitals in Yerevan, but this can be problematic as the journey takes time, the road conditions can pose extra risks, and the trip's costs can cause financial problems for the patients.

“A neurologist and traumatologist make the decision.”- Neurologist “Artashat” MC.

“Patients transported by ambulance are always taken first to the Goris Medical Center. There, physicians will decide if the patient needs to be sent to Yerevan”-Neurologist “Goris” MC.

“The Gyumri Medical Center is the only hospital facility in the area. Ambulance personnel will decide whether to take the patient to the Gyumri Medical Center or to Yerevan depending upon the severity of

the injury. Within the Gyumri Medical Center, patients that have multiple severe traumas will usually be sent to Yerevan. Specially equipped ambulances with advanced life-saving equipment transfer these patients for the 2.5 hour journey”- Neurologist “Gyumri” MC.

“A traumatologist decides if it is a general injury and a neurologist steps in if it is a TBI”- Neurologist “Vanadzor” MC.

As in Yerevan, the common ways of patients’ transportation to the hospital are private cars and ambulance. Transport by private vehicles is more common in the regions since people think they can get to the hospital faster than the ambulance will arrive. However, transportation by private cars can increase the risk of further injury or deterioration of the patient’s condition.

“By an ambulance, it works 24 hours and works well, and also with private cars.”- Neurologist “Artashat” MC.

“Private car or ambulances.”- Neurologist “Goris” MC.

“Private cars driven by friends, bystanders/witnesses to injury, family members. Regional ambulance system – this is the most common form of transportation in cases of traffic accidents.”- Neurologist “Gyumri” MC.

“Private cars and ambulance.”- Neurologist “Vanadzor” MC.

Regarding patients’ transportation between hospitals, the neurologist of “Artashat” MC stated “very often”, because they do not have neurosurgeons in the region, and Artashat is near Yerevan with an average travel time of 30-40 minutes.

The interviewee from “Goris” MC stated that this occurs “not often” since the hospital recently acquired a highly skilled trauma specialist who was the head of the trauma department at a Yerevan hospital for 38 years and feels confident treating many patients. The journey from Goris to Yerevan can take approximately 4 hours.

The interviewee from “Gyumri” MC said that when the patient has multiple severe traumas, has a spinal injury, or requires neurosurgery, the neurosurgeon will generally transfer the patient to Yerevan for better care (if the transport is possible given the patient’s current status).

Specially equipped ambulances with advanced life-saving equipment transfer these patients with an average travel time of 2.5 hours.

“So often because neurosurgeons are located in Yerevan.”-

Neurologist “Artashat” MC.

“Not often,” Neurologist “Goris” MC.

“10-50 times a month.”- Neurologist “Gyumri” MC.

“Not very often, approximately once every 2 months.”- Neurologist “Vanadzor” MC.

Regarding the question about frameworks, the interviewee from Artashat stated that a framework is currently not available since it is being translated and adjusted for the Armenian healthcare system by the Ministry of Health. The neurologists of “Gyumri” and “Vanadzor” MC said that there is no existing framework, but “Gyumri” MC follows general guidelines. The neurologist of “Goris” MC did not answer this question.

“Today, the Ministry of Health has something in the works already. The framework is being translated and revised by the Ministry of Health, but as of right now, it is not available. We hope in the future it will be ready. Today, in this hospital, these frameworks are not available.”- Neurologist “Artashat” MC.

“There are no national protocols for the treatment and care of TBI patients; however, the “Gyumri” Medical Center has a general protocol/guideline that typically all physicians will follow.” - Neurologist “Gyumri” MC.

“There are no existing frameworks for treatment and care of TBI.”- Neurologist “Vanadzor” MC.

Rehabilitation:

All respondents stated that there are no rehabilitation centers in the regions. For patients to receive rehabilitative care, they need to be transferred to Yerevan, which is why most patients do not receive rehabilitative care.

“There is a private “Physician Therapeutic Center”, but there are no rehab services available in the Artashat region”- Neurologist “Artashat” MC.

“As the most severely TBI injured patients are taken to Yerevan, the majority of rehabilitative infrastructure is only available there.”- Neurologist “Goris” MC.

“No rehabilitation services are offered at the Gyumri Medical Center. Neurologist “Gyumri” MC.

“No rehabilitation services here in Vanadzor but there are in Yerevan.”- Neurologist “Vanadzor” MC.

Other resources:

Neurologists from “Artashat” and “Vanadzor” MCs stated that there is a problem in communities that people don’t take TBI injuries seriously and medical staff doesn’t receive the necessary training. Training can increase people's awareness of injuries, and emphasis can be placed on school and community training. The neurologist from “Gyumri” MC stated that the lack of a rehabilitation center has a negative impact on the patient’s recovery after receiving treatment. The neurologist from “Goris” MC didn’t answer this question.

“It’s important to have trainings in all the communities of Armenia. Now, it is not available in Armenia.”- Neurologist “Artashat” MC.

“The lack of continuity of care for TBI patients after discharge from the hospital. Hospital physicians and outpatient physicians do not coordinate their care, and as a result, patients do not receive the follow-up and rehabilitation services they require for best outcome.”- Neurologist “Gyumri” MC.

“I believe that parental negligence when it comes to the injuries of their children is one of the primary gaps in Armenia. I also think that a lack of education when it comes to safety habits is also a problem.”- Neurologist “Vanadzor” MC.

The neurologist of “Artashat” MC stated that the lead agency that regulates TBI treatment is the Ministry of Health and some associations that organize yearly meetings. The neurologist of “Gyumri” MC

mentioned the Neurosurgical Association. Interviewees from “Vanadzor” and “Goris” MCs did not answer this question.

“The Ministry of Health and also there is the Medical Association that includes neurosurgeons and organizes yearly meetings.”- Neurologist “Artashat” MC

“Neurosurgical Association.”- Neurologist “Gyumri” MC

Discussion

Pre-Hospital care:

Emergency workers in Yerevan receive regular trainings for TBI treatment; workers in regions do not receive any trainings. This is an issue since the pre-hospital treatment of TBIs has a significant influence on the outcome of a TBI patient. Studies suggest that the awareness of certain risk factors (as well as their correct management) can greatly improve the outcome of a patient that has suffered a TBI [10,11]. This includes quickly diagnosing and treating hypotension, hypothermia and hypoxia as these conditions have been found to increase mortality rates [10], [12]. Vital sign monitoring, IV fluid administration, airway protection and safe transportation are also important, which is why the proper training of emergency workers plays a key role in the successful treatment of TBI patients.

The ambulance crew provides pre-hospital care in Yerevan; in regions, it is provided by outpatient clinics, polyclinics, and hospitals in the region. In both cases, there is no special ambulance staff for TBI. This is another problem as some studies suggest that having specialist staff, for example an anesthetist, treat the patient at the site of injury can lower mortality rates and improve neurological outcome [13].

Acute-Care:

In Yerevan, emergency doctors follow the Glasgow protocol; interviewees did not provide information about protocols in regions. In Yerevan, the patient is taken to the hospital's emergency department, where, after examination, the final location of treatment is determined. In regions, patients are directly transferred to the hospital. In both cases, the

most common ways of patient transportation are an ambulance or a private car. Still, in regions, the practice of transporting oneself by car is predominant, as the journey to the hospital can take a long time and the relatives decide not to wait too long. It's worth mentioning that although the mode of transportation does have an impact on the outcome of TBI patients, studies are inconclusive on whether time-saving should be the main priority when deciding on the mode of transportation. For example, using a helicopter to get to a hospital doesn't improve survival in severely injured patients [14] and can even cause secondary injuries [15].

General treatment:

In Yerevan, the treatment process is organized based on national and international protocols.

In contrast, the interviewees from the regions mentioned that there are no protocols, or they are still under development. Studies have shown that following evidence-based guidelines for the treatment of TBIs reduces mortality rates, but these guidelines have been developed in high-income countries and are often not applicable in low-income countries [16], like Armenia. Not enough research has been conducted for the development of efficient TBI management protocols in low-resource environments and the implementation of preventative measures is often emphasized in this context [17]. Furthermore, even in high-income countries, national guidelines vary greatly depending on resource capacities and organizational differences [18]. This means that guidelines for managing TBI in rural areas in Armenia should be developed by adapting existing international guidelines to the resource capacities currently available in those regions while taking into consideration the specific needs and organizational differences of the healthcare systems in those regions.

Rehabilitation:

The two rehabilitation centers available in Yerevan are The Red Cross Rehabilitation and the Soldiers Rehabilitation Center. On the other hand, the regions do not have rehabilitation centers, so patients have to come to Yerevan. This is why many patients do not receive proper

rehabilitative care. In case of minor injuries in Yerevan and the regions, a neurologist takes care of the patient. Interviewees in Yerevan mentioned that patients do not take injuries seriously and delay their hospital visits, leading to complications. Everyone in the regions mentioned that the biggest problem is the lack of a rehabilitation center. Though this urban-rural disparity is prevalent in high-income countries as well [19], it emphasizes the need to provide financial support aimed at building rehabilitation centers in rural areas, obtaining the necessary equipment that's required for TBI management, and increasing regional-level healthcare capacity.

Trainings:

In Yerevan and in the regions, respondents mentioned that medical care of TBI patients is regulated by the Ministry of Health and a few associations, but no information was found about them.

Other resources:

Judging by the number of TBIs in the hospitals of Yerevan (Table 1) in 2017 and 2018, it can be assumed that the number of neurosurgeons, neurologists and radiologists in all three hospitals is sufficient to ensure patients receive proper treatment. They are available 24/7, and regardless of the patients' time of admission, they will be able to receive proper care, and if necessary, they can receive neurosurgery at any time. The number of CT scans is also sufficient and available 24/7, increasing the efficiency of patients' treatment. This was proven through research that was carried out in Yerevan in 2016 [8].

As shown in Table 2, the number of employees in regions of Armenia is relatively small compared to Yerevan. Since all the doctors are available in 24/7, patients can receive treatment whenever it is required. Although "Gyumri" MC is a tertiary level hospital and has a neurosurgeon, compared to "Vanadzor" MC, which is a secondary level hospital, patients from "Gyumri" MC are more likely to be transported to Yerevan than from Vanadzor.

Conclusions

1. There is a lack of human resources and equipment in the regions.

2. There is no established approach to treating TBI patients.
3. There aren't any specialized paramedic units for treating TBI patients.

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AWARENESS OF DIABETES AMONG ELDERLY PATIENTS WITH TYPE 2 DIABETES MELLITUS ATTENDING OUTPATIENT CLINICS IN ARMENIA

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Abstract

Diabetes mellitus is one of the major public health problems worldwide which can be easily prevented by lifestyle modifications. Because of the limited knowledge, the prevalence of diabetes and its complications is showing a steady increase. Increase of patients' awareness of the disease and self-management behavior changes can help patients achieve better health outcomes and will extend their life span. The study aimed to identify gaps in knowledge related diabetes and access self-management behavior in elderly patients with Type 2 diabetes in the Republic of Armenia. A Cross sectional study was performed among elderly patients with Type 2 diabetes, attending outpatient clinics in the three Armenia provinces (Aragatsotn, Gegharkunik and Ararat) presenting the different geographical areas of the Republic. 245 adults aged 50 years and older who gave written consent were included in the sample. Primary data was collected using pre-tested structured questionnaire through face-to-face interviews. All continuous variables were expressed as mean \pm SE. Categorical variables were compared with the χ^2 test. Fisher's exact test was applied in cases when the expected count was less than five. It was found that, more than half (68.7%) of the participants had adequate knowledge regarding T2DM risk factors and majority of them (83.0%) were informed about the main symptoms of diabetes. The percentage of well-informed patients was significantly higher among patients from

Ararat province (82.1% vs. 64.7% and 64.0%), employed persons (81.8% vs. 64.1%), and in patients who reported above average (81.7%) and average (72.0%) general standard of living. A little more than half (53.8%) of the study participants had intermediate adherence to diabetes medication, followed by 26.7% with high and 19.5% with low level of adherence. The percentage of diabetic patients with high adherence to diabetes medication was higher among patients in Gegharkunik and Ararat provinces compared to Aragatsotn province (34.2% and 27.3% vs. 16.9%) and among patients with higher reported amount of money spent monthly (75.0% vs. 29.7% and 17.8%). Patients with low adherence were more common among women compared with men (25.9% vs. 6.2%) and among employed compared with not employed patients (31.6% vs. 12.9%). The overwhelming majority of the study participants (96.0%) reported satisfactory self-management behavior. The percentage of patients reported satisfactory self-management was significantly higher among patients with adequate knowledge about T2DM (98.8%), married (97.0%) and divorced/widowed (94.1%) patients. The overwhelming majority of the study participants were well informed about all the medical services that should be provided free of charge to diabetic patients in outpatient clinics. Relatively low was the awareness of diabetic patients' eligibility for free of charge annual eye examination. The study findings support the necessity for the development of well-designed health education programs directed to the increase of patients' knowledge regarding T2DM and diabetes self-management for the prevention of the disease complications and mortality. Results can serve as baseline for planning and implementation of further intervention programs.

Introduction

Type 2 diabetes mellitus (T2DM), one of the major non-communicable diseases (NCD) poses a major public health problem throughout the world. About 422 million adult people worldwide have diabetes mellitus that accounts about 8.5% of total world's population [1]. WHO indicates that the number of adults living with diabetes has

increased by nearly fourfold since 1980 [2]. The prevalence of T2DM has been rising more rapidly in middle- and low-income countries [3].

Diabetes is an important public health disorder for many reasons. The disease is not only a problem for the individual but is also considered to have a major social impact on the society as well because of its complications, seriousness and cost. When the disease affects individuals, and if not properly controlled, it may lead to lifelong complications, which are generally associated with increased morbidity and mortality [4,5]. T2DM is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. In 2015, an estimated 1.6 million deaths in the world were directly caused by diabetes mellitus and many of these deaths (43%) occurred under the age of 70 [2]. According to the World Health Organization (WHO) prognosis diabetes will be the seventh leading cause of death in 2030 [1].

The risk of type 2 diabetes is determined by interplay of genetic and metabolic factors. Ethnicity, previous history of gestational diabetes, family history of diabetes combined with older age, overweight, obesity, unhealthy diet, physical inactivity and smoking increases the risk of developing T2DM. Excess body fat, unhealthy diet and sedentary lifestyle are among the strongest risk factors for the development of T2DM both in terms of clearest evidence based and largest relative risk. Overweight and obesity, together with physical inactivity, are estimated to cause a large proportion of the global diabetes burden [6].

Diabetes and its complications bring about substantial economic loss to people with diabetes and their families and to health systems and national economies through direct medical costs and loss of work and wages. While the major drivers of cost are hospital and outpatient care, a contributing factor is the rise in cost of analogue insulin which are increasingly prescribed despite little evidence that they provide significant advantages over cheaper human insulin.

Considering all these facts, in order to reduce the prevalence of non-communicable diseases, the target set by the WHO in SDG 3 was, “by 2030, reduce by one third premature mortality from non-communicable

diseases through prevention and treatment and promote mental health and well-being” [7]. One of the reasons for the poor outcome in diabetic individuals is the lack of involvement in the treatment of the disease which in turn occurs due to lack of awareness about the disease.

Diabetes-related morbidity, disability and mortality are growing public health concerns also in Armenia. According to the World Health Organization (WHO), Armenia ranked 1st in the region in mortality from diabetes and has the highest prevalence of diabetes in the Caucasus. According to the International Diabetes Federation (IDF) every 10th in Armenia will be living with diabetes by 2030.

Concerned with the increasing trends of non-communicable diseases (including diabetes) morbidity and mortality in Armenia, the Ministry of Health (MoH) of Armenia developed national strategies on three of the most prevalent non-communicable diseases in Armenia: cardiovascular diseases (CVDs), malignant neoplasms, and diabetes, which were approved by the Government of Armenia on April 14, 2011 [8]. The main aim of the Diabetes Prevention Strategy is to improve diabetes care in the Republic.

Aim

The study was conducted within the framework of “Prevention of diabetes and diabetes care among elderly in Armenia” program funded by The Armenian Red Cross Society. The study aimed to assess the awareness about diabetes, as well as self-management behavior among elderly patients with Type 2 diabetes in Armenia to determine the main barriers to optimal diabetes control in patients.

Material and Methods

A cross sectional study was conducted in outpatient clinics and households of the three Armenia provinces (Aragatsotn, Gegharkunik and Ararat) presenting the different geographical areas of the Republic, between October and December, 2019. The outpatient clinics were selected randomly from the list of primary care facilities in the provinces. The study population included registered patients with T2DM attached to

the polyclinics. 245 adults aged 50 years and older with at least one-year history of diabetes who gave written consent were included in the sample. The sample size was estimated as 300, actual participation rate – 84.7% (254 interviews). A systematic random sampling was done from the list of the selected primary care settings. The patients who had an appointment, but did not attend the clinics on the day of the appointment were approached to complete questionnaires. Primary data was collected by trained volunteers using pre-tested structured questionnaire through face-to-face interviews. The questionnaire consisted of several parts. Part 1 included patients' socio-demographic characteristics: gender, age, marital status, educational level, employment, general standard of living, monthly spent money. The part 2 of the data collection instrument included questions on the extent of information patients had about diabetes and several health-related issues. The part 3 questions were for the assessment of patients' medication adherence. The part 4 was about patients' awareness of available free of charge medical services at primary care settings and the part 5 included questions about patients' diabetes-related self-management activities.

The Morisky Green Levine Medication Adherence Scale (MGLS) was used to assess patients' adherence to diabetic medication. The MGLS is four-item scale which includes the following questions: “Q1: Do you ever forget to take your diabetic medication?”; “Q2: Do you ever have problems remembering to take your diabetic medication?”; “Q3: When you feel better, do you sometimes stop taking your diabetic medication?”; and “Q4: Sometimes if you feel worse when you take your diabetic medication, do you stop taking it?” [9]. Assessment was based on patients' self-reported recall of using diabetic medications. The MGLS results in a score ranging from 0 to 4, and it was suggested to distinguish three levels of medication adherence based on the score: high, medium and low adherence, with 0, 1–2, and 3–4 points, respectively [10]. A dichotomous definition of adherence based on MGLS is also commonly used with 0 points indicating perfect adherence and 1+ points indicating some level of non-adherence [11].

Data entry and analysis was done using Statistical Package for the Social Sciences (SPSS) program version 16. All continuous variables were expressed as mean \pm SE. Categorical variables were compared with the χ^2 test. Fisher's exact test was applied in cases when the expected count was less than five.

Study limitations: study based on retrospective self reported data, relatively small sample size.

Results

In total, 245 patients aged 50 years and older participated in the cross-sectional study. The mean age was 65.96 (0.46) years. Over two-third of the respondents (68.8%) were female. The majority of the study participants were married (76.8%) and this *was* more evident among men (86.1%) than women (71.8%).

Only 8.8% of patients have had primary education, 49.6% reported secondary, 28.3%- professional technical and 13.3%- higher education. Medical education had only 5.5% of the patients. The majority (61.6%) was not employed and this was more evident in female (64.0%) than in males (52.7%). Greater than half of the patients (55.0%) rated their family's general standing of living as average. At the same time the majority of respondents (84.3%) mentioned that their family spends monthly less than 201,000 AMD. The sociodemographic variables of the participants are summarized in table 1.

Ten questions were asked patients to assess their knowledge and awareness regarding risk factors of T2DM. Those who were able to answer at least 5 questions correctly were regarded as having adequate knowledge about T2DM. It was found that, more than half (68.7%) of the study participants had adequate knowledge regarding T2DM risk factors. The percentage of patients who were informed about the main symptoms of diabetes was much higher (83.0%). Majority of patients (74.7%) were aware that diabetes complications may be prevented if blood glucose level is well controlled and 69.9% were aware about the importance of blood pressure in management of diabetes.

Table 1. Patients' sociodemographic characteristics

Respondents' characteristics	%
Gender	
Male	31.2
Female	68.8
Mean age	66±0.5 years
Marital status	
Married	76.8
Divorced	4.6
Widowed	16.9
Single	1.7
Educational level	
Primary school	8.8
Secondary school	49.6
Professional technical education	28.3
Institute/University or higher	13.3
Employment status	
Employed	38.4
Not employed	61.6
Family's general standard of living	
Substantially below average	9.9
Little below average	16.9
Average	55.0
Little above average	15.3
Substantially above average	2.9
Amount of money spent by family monthly	
Less than 50,000AMD	15.8
From 51,000 to 100,000AMD	37.3
From 101,000 to 200,000 AMD	31.2
From 201,000 to 300,000AMD	6.6
Above 301,000 AMD	2.5
Above 301,000 AMD	6.6
Don't know/Refuse to respond	

The results of analysis on impact of different sociodemographic variables on patients' knowledge and awareness regarding T2DM are presented in table 2. As can be seen in the table the highest was the percentage of well-informed patients in Ararat province (82.1%). In Aragatsotn and Gegharkunik regions it was 64.7% and 64.0% respectively. The difference is statistically significant only between Ararat and other two regions ($p < 0.05$ in both comparisons). The percentage of well-informed patients was statistically significantly higher among employed persons (81.8%) compared to not employed (64.1%), and in patients who reported average (72.0%) and above average (85.7%) general standard of living ($p < 0.005$ in both comparisons). The rest of the variables was not found to be associated with knowledge regarding T2DM.

It was found that the majority of patients (80.8%) were taking medication for diabetes treatment. The main causes of not taking medication were as following: medication was not required as a part of treatment (26.1%), feeling drug is not effective (21.7%), side effects (13.0%), complexity of drug regimen (8.7%), lack of finance (4.4%), other causes (26.1%).

Among the study participants, 64.1% rated their ability to take all the prescribed diabetes-related medication during the last month as fair, 20.5% of patients rated as good, only 10.5% - as excellent, 2.7% - as poor and 2.1% - as very poor.

The majority of respondents (79.3%) reported that they had high blood pressure, but only 27.7% of them were taking antihypertensive medication regularly, more than half were taking it only in case of severe symptoms and the rest 19.5% did not take medication at all.

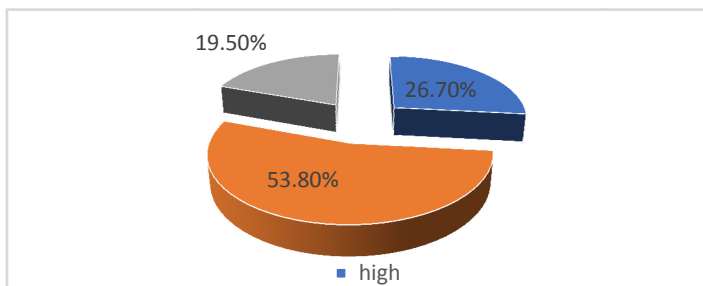
Table 2. Association between patients' characteristics and adherence to diabetes medication

Respondents' characteristics	Knowledge adequacy (%)		χ^2	p-value
	Adequate	Not adequate		
Province				
Aragatsotn	64.7	35.3	11.54	<0.05
Gegharkunik	64.0	36.0		
Ararat	82.1	17.9		
Gender				
Male	71.8	28.2	4.2	>0.05
Female	69.8	30.2		
Marital status				
Married	70.4	29.6	0.82	>0.05
Divorced/Widowed	66.0	34.0		
Single	75.0	25.0		
Educational level				
Primary school	66.7	33.3	2.3	>0.05
Secondary school/Professional technical education	69.6	30.4		
Institute/University or higher	77.4	22.6		
Presence of medical education				
Yes	84.6	15.4	1.35	>0.05
No	69.4	30.6		
Employment status				
Employed	81.8	18.2	10.5	<0.005
Not employed	64.1	35.9		
Family's general standard of living				
Below average	56.9	43.1	16.39	<0.005
Average	72.0	28.0		
Above average	85.7	14.3		
Amount of money spent by family monthly				
Less than 101,000 AMD	68.3	31.7	1.11	>0.05
From 101,000 to 300,000AMD	71.1	28.9		
Above 301,000 AMD	83.3	16.7		

MGL scale was used to assess patients' adherence to diabetic medication. The distribution of patients according to MGLS scores in the studied group is presented in Figure 1. As shown in figure, 53.8% of study participants were considered to have intermediate adherence to

diabetes medication, followed by 26.7% with high level of adherence and 19.5% with low level of adherence.

Figure 2. The percentages of patients by medication adherence level.



The association between patient's characteristics and adherence to diabetes medication according to MGLS scores is presented in Table 3. As seen in the table the percentage of study participants with high medication adherence was statistically significantly higher among diabetic patients in Gegharkunik and Ararat provinces compared to Aragatsotn province (34.2% and 27.3% vs. 16.9%, $p < 0.001$) and among patients with high income and higher reported amount of money spent monthly (75.0% vs. 29.7% and 17.8%, $p < 0.005$). Patients with low adherence were more common among women compared to men (20.7% vs. 15.6%, $p < 0.005$) and among employed compared to not employed patients (23.8% vs. 17.7%, $p < 0.005$).

Table 3. Association between patients' characteristics and adherence level to diabetes medication

Respondents' characteristics	Medication adherence (%)			χ^2	p-value
	High	Intermediate	Low		
Province					
Aragatsotn	16.9	52.3	30.8	30.6	<0.001
Gegharkunik	34.2	55.7	10.1		
Ararat	27.3	53.0	19.7		
Gender					
Male	31.2	53.1	15.6	10.79	<0.005
Female	25.0	54.3	20.7		
Marital status					
Married	28.0	54.0	18.0	4.59	>0.05
Divorced/Widowed	17.9	53.8	28.3		
Single	33.3	66.7	0.0		
Educational level					
Primary school	11.8	70.6	17.6	8.54	>0.05
Secondary school /	29.2	50.9	19.9		
Professional technical education	20.7	62.1	17.2		
Institute/University or higher					
Employment status					
Employed	26.2	50.0	23.8	10.98	<0.005
Not employed	27.4	54.8	17.7		
Family's general standard of living					
Below average	18.4	55.1	26.5	11.56	>0.05
Average	28.1	55.4	16.5		
Above average	30.8	48.7	20.5		
Amount of money spent by family monthly					
Less than 101,000AMD	29.7	56.8	13.5	18.99	<0.005
From 101,000 to 300,000AMD	17.8	50.6	31.6		
Above 301,000 AMD	75.0	25.0	0.0		
Presence of knowledge about diabetes					
Yes	27.0	54.7	18.3	0.30	>0.05
No	26.7	50.0	23.3		

The lifestyle and diabetes self-management characteristics of the study participants are presented in Table 4. As can be seen in the table the majority of the patients (88.1%) were registered in polyclinic’s endocrinology office. Fifty-eight percent of patients checked regularly (every day or every week) blood glucose level at home, and a little more than half of them (52.1%) recorded glucose level regularly. Blood pressure regular checking was reported by 69.5% of the study participants. The one-third of the patients reported (74.6%) diabetes-related food intake. The majority of study subjects were non-smokers (85.5%), and didn’t abuse alcohol (99.6%). More than half of study participants (69.4%) didn’t have physical activities.

Table 4. The study participants’ lifestyle and diabetes self-management characteristics

Participants’ characteristics	%
Registration in endocrinology office	
Yes	88.1
No	11.9
Frequency of checking blood glucose level at home	
Almost every day	12.3
Almost every week	45.7
Every month	34.7
At least four times per year	0.9
At least two times per year	2.7
Never	3.7
Regular blood glucose records	
Yes	52.1
No	47.9
Frequency of checking BP	
Almost every day	30.6
Almost every week	38.9
Every month	26.2
At least four times per year	1.7
At least two times per year	1.7
Never	0.9

Food intake for achievement of optimal blood glucose level	74.6
Yes	25.4
No	
Physical activities	
Regular	4.9
Nor regular	25.7
Not at all	69.4
Smoking	
Daily	11.0
Less than daily	3.5
Not at all	85.5
Alcohol abuse	
Regular	0.4
Not regular	27.1
Not at all	72.5

Eight questions were asked to assess patients' diabetes self-management behavior. Those of them who answered correctly at least 4 questions were regarded as persons with satisfactory self-management. According to the results of the study the overwhelming majority of the study participants (96.0%) reported satisfactory self-management activity.

The results of analysis on impact of the patients' characteristics on their self-management activity are presented in Table 5. As seen in the table, significant differences were registered only for two characteristics: adequacy of knowledge about diabetes and marital status. The percentage of patients reported satisfactory self-management was higher among those with adequate knowledge regarding T2DM (98.8%), as well as married (97.0%) and divorced/widowed (94.1) patients compared to single. The rest of the variables was not found to be associated with diabetes self-management activities.

Table 5. Association between patients' characteristics and their diabetes self-management activity

Respondents' characteristics	Self-management level(%)		χ^2	p-value
	Satisfactory	Unsatisfactory		
Province				
Aragatsotn	95.5	4.5	3.0	>0.05
Gegharkunik	98.8	1.2		
Ararat	93.5	6.5		
Gender				
Male	92.5	7.5	2.83	>0.05
Female	97.4	2.6		
Marital status				
Married	97.0	3.0	7.50	0.05
Divorced/Widowed	94.1	5.9		
Single	66.7	33.3		
Educational level				
Primary school	100.0	0.0	0.96	>0.05
Secondary school/ Professional technical education	95.4	4.6		
Institute/University or higher	96.8	3.2		
Employment status				
Employed	96.4	3.6	0.01	>0.05
Not employed	96.3	3.7		
Family's general standard of living				
Below average	93.5	6.5	2.60	>0.05
Average	96.0	4.0		
Above average	100.0	0.0		
Amount of money spent by family monthly				
Less than 101,000AMD	98.3	1.7	6.64	>0.05
From 101,000 to 300,000AMD	91.7	8.3		
Above 301,000 AMD	100.0	0.0		
Presence of knowledge about diabetes				
Yes	98.8	1.2	11.1	<0.005
No	88.9	11.1		
Adherence to diabetes medications				
High	100.0	0.0	2.85	p>0.05
Intermediate	98.0	2.0		
Low	95.0	5.0		

Table 6 includes information on the study participants' awareness of availability of free of charge medical services for diabetic patients in the Republic of Armenia. The overwhelming majority of the study participants were well informed about all the medical services that should be provided free of charge to diabetic patients at polyclinics within the framework of Basic benefit package. Relatively low was the awareness of diabetic patients' eligibility for free of charge annual eye examination and its necessity.

Table 6. The study participants' awareness of their medical care entitlements

Medical care entitlements	%
Awareness about the opportunity to check free of charge blood glucose every month at the polyclinic	
Yes	97.5
No	2.5
Awareness about the necessity for annual eye examination	
Yes	92.9
No	7.1
Awareness about the opportunity for annual free of charge eye examination at the polyclinic	
Yes	91.1
No	8.9
Awareness about the opportunity for annual free of charge urine testing at the polyclinic	
Yes	94.1
No	5.9
Awareness about the opportunity to get free of charge within the framework of BBP all the prescribed diagnostic procedures	
Yes	94.6
No	5.4
Awareness about the opportunity to get free of charge prescribed diabetes medications at the polyclinic	
Yes	95.8
No	4.2

Almost ninety percent of the study participants (89.9%) agreed with the statement that medical personnel is the main source of information for diabetic patients about all eligible for them free of charge medical services. At the same time, more than half of them underlined also the important role of friends, relatives, neighbors (57.3%) and media (56.9%).

Discussion/Conclusion

According to the results of the study more than half (68.7%) of the study participants had adequate knowledge regarding T2DM risk factors. The percentage of patients who were informed about the main symptoms of diabetes was much higher (83.0%). Majority of patients (74.7%) were aware that diabetes complications may be prevented if blood glucose level is well controlled and 69.9% were aware about the importance of blood pressure control in management of diabetes. The results of analysis on impact of different sociodemographic variables on patients' knowledge and awareness regarding T2DM showed the highest percentage of well-informed patients in Ararat province (82.1%). In Aragatsotn and Gegharkunik regions it was 64.7% and 64.0% respectively. The percentage of well-informed patients was statistically significant higher among employed persons (81.8%) compared to not employed (64.1%), and in patients who reported above average (81.7%) and average (72.0%) general standard of living.

It has been found, that a little more than half (53.8%) of the study participants had intermediate adherence to diabetes medication, followed by only 26.7% with high level of adherence and 19.5% with low level of adherence. The percentage of diabetic patients with high adherence to diabetes medication was higher among patients in Gegharkunik and Ararat provinces compared to Aragatsotn province (34.2% and 27.3% vs. 16.9%) and among patients with higher reported amount of money spent monthly (75.0% vs. 29.7% and 17.8%). Patients with low adherence were more common among women compared with men (25.9% vs.

6.2%) and among employed compared with not employed patients (31.6% vs. 12.9%).

According to the results of the study the overwhelming majority of the study participants (96.0%) reported satisfactory self-management activity. The percentage of patients reported satisfactory self-management was higher among those with adequate knowledge regarding T2DM (98.8%), as well as married (97.0%) and divorced/widowed (94.1) patients compared to single. The overwhelming majority of the study participants were well informed about all the medical services that should be provided free of charge to diabetic patients in outpatient clinics. Relatively low was the awareness of diabetic patients' eligibility for free of charge annual eye examination.

Thus, the study findings support the necessity for the development of well-designed health education programs directed to the increase of patients' knowledge about T2DM and the importance of diabetes medications adherence for the prevention of the disease complications and mortality. Results can serve as baseline for planning and implementation of further intervention programs.

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BEHAVIOUR CHANGE COMMUNICATION STRATEGIES FOR PROMOTION OF COVID-19 VACCINATION

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Abstract

This article discusses the behavioural change communications used during COVID-19. The pandemic left its impact not only on people's health, but also on people's lifestyles and daily behaviour, creating a "new normal". The concept of "new normal" is used today in the context of COVID-19: what used to be abnormal and unacceptable is now becoming commonplace. Changing the behavioural norms is at the core of fighting the pandemic, which includes building skills, capacity and motivation. Once the barriers to behaviour change are identified, it is possible to ensure the desired behavioral change. The scientifically studied behaviour change methods include a range of approaches, from education to role modelling. One of the most difficult obstacles to overcome is social stereotypes.

The main goals of the behaviour change strategy during the COVID-19 pandemic were to contribute to the dissemination of anti-pandemic rules and increase of the vaccination level. In the context of behavioural change communications, experts argued that there is still no clearly proven effective treatment for the coronavirus; the only way to reduce deaths is vaccination.

The analyses of measures taken to promote the vaccination process in Armenia shows that some of them were repressive; instead of overcoming stereotypes and reinforcing positive experiences, the vaccination became a means of avoiding economic harm, the emotional context of fear was used instead of positive emotions.

‘New normal’:The spread of the COVID-19 pandemic around the world, the application of severe restrictions by the authorities in different countries, the lockdown, and the self-isolation lead to a serious, protracted, less predictable crisis. The virus has its impact not only on people's health but also on people's lifestyles and daily behaviour.

The five waves of COVID-19 showed that the world is regularly facing and will face another new strain of the infection. And it seems that the only way out for humanity is to learn to coexist with the coronavirus by learning useful (and not so much) lessons.

On April 22, 2020, when almost the whole world announced self-isolation, the WHO Director-General stated in a briefing for the media: ‘A “new normal world” must emerge that is healthier, safer and more prepared.’ [1]

Undoubtedly, the COVID-19 pandemic has fundamentally changed almost all aspects of our daily lives, but how appropriate is it to present these changes under the term ‘new normal’ common in the fields of economics, marketing, and communications?

‘New normal’ is defined as a decrease in predictability, which leads to an increase in uncertainty and the resulting instability of the behaviour of economic agents [2]. This term originated in the United States in the 1930s during the Great Depression. It later became widespread during the 2007-2008 financial and economic crisis, mainly used to describe the socio-economic consequences of the global recession [3]. Today, the concept of ‘new normal’ is used not so much to describe the economic consequences of the COVID-19 pandemic, that is, what was previously abnormal and unacceptable is now becoming commonplace, spreading in various aspects of social life.

Behaviour change communications:At the core of the fight against COVID-19 worldwide, the main task is to create a ‘new normal’ by changing the rules of behaviour. According to the Center for Behaviour Change at University College London (UCL), there are three components to an individual's behaviour:

1. capabilities,

2. opportunities,
3. motivation. [4]

The process of behaviour change is complex, multi-stage, but feasible. When it is possible to find resistance factors in each of the above-mentioned components and identify barriers to change, it is possible to programme the process of behaviour change. The next step is to select scientifically studied methods of effective intervention that influence behaviour. They include a range of approaches, from education to role modelling. Each is effective and can work in case of certain obstacles. In fact, it is necessary to choose the appropriate toolkit [5].

One of the most difficult obstacles to overcome during behaviour change is social stereotypes - biased opinions and prejudice, that control and coordinate the whole process of perception [6]. Stereotypes are at the core of our habits, they govern a person's behaviour and opinion about this or that event, as well as beliefs about 'right or wrong' behaviour.

Behaviour change communication is an interactive process of public relations, which involves the development and dissemination of messages through various communication channels, platforms and tools to achieve change and approval of the behaviour of the individual, community, society. Behavioural change communication (BCC) is a strategy that encourages the individual/community to change their behaviour, motivates people/society to adopt and apply healthy, beneficial, and positive behavioural practices [7].

The stages of behaviour change are: awareness, knowledge building, advising, action, and maintenance. At the awareness stage, the person is not yet ready to change behaviour, he/she is provided with information about the problem, the risks of undesirable behaviour, as well as the desired behaviour. As a result of the dissemination of information, a person develops knowledge and, consequently, an intention to review behaviour. In the next stage, the person is prepared for the performance of the new desired behaviour pattern through advising. Then a specific action takes place - a test of new behaviour, which is

then repeated continuously and is reinforced by messages about the positive results of the desired behaviour (figure 1).

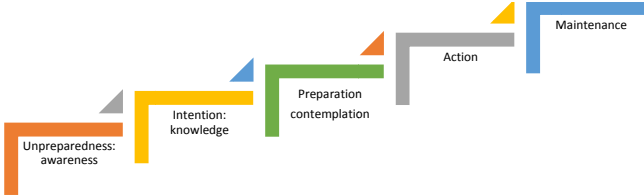


Figure1. Stages of behaviour change [8].

BCC is commonly used in healthcare for the prevention of both communicable and non-communicable diseases, as well as for clinical and public health purposes. It can help prevent acute infections, the development of other diseases, improve the quality of life, and it can prolong life.

The following steps can be considered as an example of a BCC strategy (Figure 2).

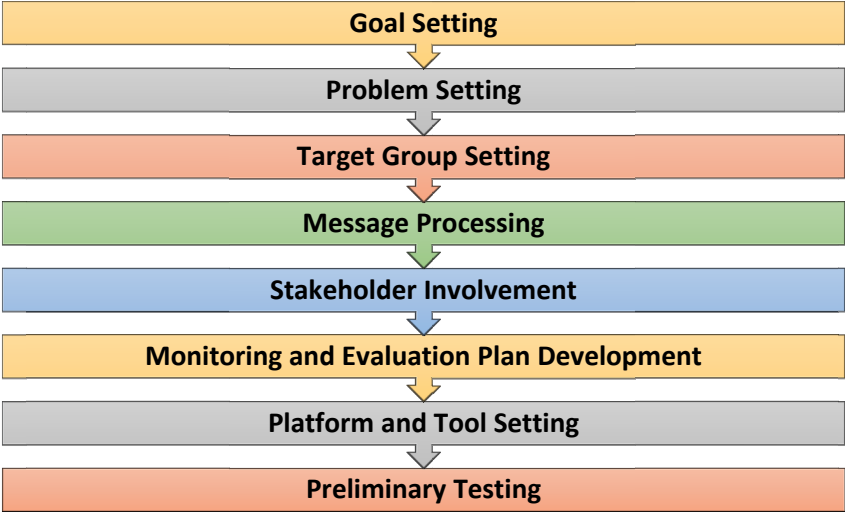


Figure 2. BCC strategy building model [7].

The definition of the BCC strategy goals should be based on the general situation goals and issues, and the messages should be developed according to the context.

Any BCC strategy should have a theoretical basis and be research-based [9]. Prerequisites for efficiency in the development of BCC, especially in the field of healthcare, are:

- identification of the target audience;
- community mobilisation;
- media involvement;
- selection of platforms, and development of appropriate actions for them;
- promoting healthy behaviour messages, etc.

Principles of BCC messages: One of the most important factors in the effective implementation of the BCC strategy is the development of target messages. The BCC messages have defined criteria and certain processing rules. They must be research-oriented, customer-centered, and interrelated with behaviour change.

A general plot can be developed that will appeal to all target groups. The positive context of the topics and messages is an important factor. Experts argue that fear-based plots and messages are ineffective because they encourage target groups to focus on ‘what not to do’ and ‘what to avoid’, while the strategy is more effective if its plot and messages promote the desired behaviour and clearly indicate what the target groups ‘can’ and/or ‘should’ do. Plots and messages should draw attention to the campaign.

Behaviour change communication during the COVID-19 pandemic: During the COVID-19 pandemic, the ‘new normal’ was targeted by the BCC to develop appropriate behaviours. The goals of the behaviour change strategy were:

- To promote widespread compliance with anti-pandemic rules, including:
 - self-isolation,
 - maintaining a distance of 1.5-2 meters between people,

- wearing masks,
- use of sanitisers,
- testing.
- To increase the level of vaccinations.

All around the world and in Armenia as well, during the COVID-19 pandemic, the BCC's role was particularly strong in ensuring vaccine promotion.

The World Health Organization, reputable international organisations, research institutes, doctors, public health specialists, epidemiologists and infectious disease specialists have argued that there is still no clearly proven effective treatment of coronavirus. The only way to reduce the number of serious deaths is to get vaccinated.

The process of vaccination against COVID-19 in Armenia: Vaccinations against COVID-19 in Armenia started in April 2021, using AstraZeneca developed in Oxford, Russian Sputnik V and Chinese CoronaVac. The media and other means of dissemination of information - posters, booklets, social networks - clearly informed the public both about the availability of vaccines, and the free and voluntary nature of vaccination.

The age threshold was initially set□ AstraZeneca was only given to people over the age of 55, and Sputnik V was only available to chronically ill people over the age of 18, healthcare workers aged 18-54, and residents of social care institutions. Such a decision was due to the need to ensure clear planning for the import of vaccines. However, as of July 1, 2021, all 3 vaccines against COVID-19 approved in Armenia were available to everyone.

In October 2021, the Lithuanian government donated 50,000 doses of the Spikevax vaccine of the American company Moderna. Norway donated 62,000 doses of this vaccine to Armenia within the framework of the Team Europe initiative with the support of the EU Civil Protection Mechanism. From October 29, with the consent of the parents, children from 12 years old can be vaccinated with this vaccine.

Measures to promote the vaccination process in the Republic of Armenia: In order to stimulate the vaccination process, the employees of all state institutions were advised to get vaccinated. Those who were not vaccinated were deprived of bonuses, which accelerated the process of vaccinating the government employees.

On October 1, 2021, the order of the Minister of Health of the Republic of Armenia came into force, according to which the employees must present to the employer a vaccination certificate or a negative result of the COVID-19 PCR test every 14 days, and in case of contraindications, a reference. The cost of the PCR examination varied from 7000-15000 AMD, and the observation had to be done within a maximum of 72 hours. Pregnant women, employees with a documented absolute contraindication, and those with a complete or single-dose vaccine were allowed not to take the test [10]. After the mentioned order, the number of citizens being tested doubled, from 9656 tests as of October 1 to 18,141 on October 28 (Figure 3). During that time, the percentage of newconfirmed cases of COVID-19 infection ranged from a minimum of 6.6% (on October 2) to a maximum of 17.4% (on October 20), and there was an increase in deaths, reaching 57 on October 25 (Figure 4).

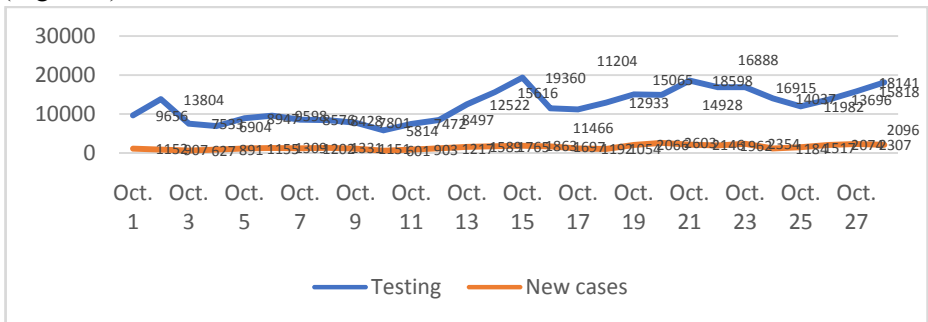


Figure 3. The number of new confirmed cases of PCR tests and COVID-19 infection during October 2021 [11].

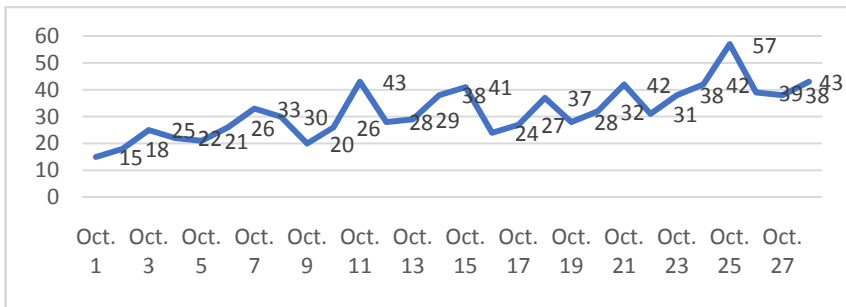


Figure 4. The number of coronavirus-related deaths in October 2021 [11].

These measures were repressive and, therefore, this act did not at all comply with the basic principles of BCC. Instead of developing desirable behaviours through positive communication and positive experiences, vaccination became a means of avoiding economic harm, and instead of positive emotions, the emotional context of fear was used.

After the above-mentioned order, the number of people wishing to be vaccinated increased sharply. The decision of many was influenced by the increase in the number of infections and deaths. Others changed their minds because they did not want to take the test every two weeks, spending their own money and time to get tested in clinics. The increase in vaccinations was recorded not so much due to the targeted BCC, but again as a result of repressive measures against the unvaccinated. There have been numerous reports in BCC concerning the desirable behaviours, such as the need to be vaccinated. However, they were not strengthened and maintained. Instead of the communication of vaccine efficacy evidence, there were increasing morbidity and mortality rates, citizens received contradictory information about morbidity, mortality, vaccine conspiracy theories, possible adverse effects, and information about people being vaccinated with coronavirus. The lack of an effective BCC strategy has led to developing a negative attitude towards vaccines and vaccination, and distrust in the government.

On October 15, 2021, the Ministry of Justice of the Republic of Armenia disseminated information that it is not possible to apply the

dismissal rule to some officials if they fail to submit a vaccination certificate or a PCR test. 'The reason is the following: for example, the deputies of the National Assembly are elected by the people, the President of the Republic, the Human Rights Defender, the members of independent bodies, etc – by the National Assembly. In turn, for example, the powers of judges are terminated on limited grounds provided by the Constitution; the Prime Minister, being appointed as a result of constitutional processes, in fact, does not have a superior body that will dismiss or appoint him to that position, and so on. Therefore, even if we wish, it will not be possible to apply that consequence to the above-mentioned persons, that is, to dismiss them on that basis' [12].

The public perceived this information as a privilege given to the RA Prime Minister and other officials so as not to be vaccinated and not to wear masks, which raised a new wave of distrust in the vaccination process.

However, since the launch of the vaccinations against COVID-19, as of May 23, 2022, in total, 3,089,295 tests have been administered in Armenia, 422,939 cases of coronavirus disease have been registered, and 8624 deaths from coronavirus. As of the same day, in total, 2,193,307 vaccinations have been carried out, 1,132,945 people have received the first dose, 1,003,725 people have been fully vaccinated, and 52,757 people have got boosters [11]. Consequently, 33.8% of the RA population have been fully vaccinated, 1.8% have got boosters. 4.4% of the RA population have received only the first dose of the vaccine.

Vaccine attitudes and stereotypes in Armenia: The results of the study conducted by the International Republican Institute in July 2021 allowed us to identify a number of vaccination patterns. Most vaccinated people are:

- the employed ones, as they are obliged to do it;
- members of the risk groups because they are afraid of a complicated course of the disease;
- those who support state policy [13].

According to the results of the qualitative research conducted by the YSU Applied Sociology Research Laboratory in October 2021 using the in-depth interview method, the vaccinated citizens were vaccinated for the following reasons:

- To protect themselves from the virus and, in case of infection, to avoid complications and/or death,
- To reduce the risk of spreading the infection,
- As a member of the risk group, they are elderly, work in the service sector, communicate with many people at work,
- They had to be vaccinated due to their work: in particular, civil servants, so as not to be deprived of bonuses and employment,
- To be able to go abroad for work or visit relatives,
- It is easier to do so than to think about the reasons for being vaccinated or not (This answer is typical of young people).

The same study also revealed a number of stereotypes that guide unvaccinated citizens:

- All vaccines have a negative effect on the human immune system,
- The vaccine can have a negative effect on health, it was not possible to adequately test the vaccine in a short period of time and to reduce possible side effects. Information on complications and/or deaths after vaccination: according to the respondents, the vaccine causes cardiovascular insufficiency, heart attacks, especially among men. Those who are going to have a child are also afraid of side effects, they are afraid that the child will be born with health problems due to the vaccine,
- One should be vaccinated every six months, up to seven times,
- Familiar doctors are against it, they do not recommend it, and doctors do not get vaccinated, they say they know how to cure coronavirus or cancer, but they do not know how to treat the effects of the vaccine,

- They do not trust the government, the Prime Minister, the Minister of Health, and consequently, vaccines,
- Many simply oppose coercion,
- Conspiracy theories are widespread in Armenia:
 - People are chipped with the vaccine to control their behaviour.
 - The vaccine has a negative effect on reproductive function, causing infertility.
 - Life expectancy is reduced after vaccination.
 - The vaccine is a large-scale scientific experiment for unknown purposes.
 - Coronavirus is a way to make money, a business, including the vaccine.
 - They bring a low-quality, expired vaccine to Armenia, which other countries refuse.

Possible ways to increase the effectiveness of the BCC strategy due to the COVID-19 pandemic: The process of building stereotypes about vaccines is continuous and has a great impact on the formation of citizens' attitudes. Demotivational memes, discussions and videos are shared on social networks. In interpersonal communication, people pass unverified information, stereotypes to each other, and the media do not prioritise the generation and dissemination of expert opinions on vaccines.

The main reason for the emergence of all these stereotypes and conspiracy theories is the lack of full research-based information on the impact of different vaccines and the lack of strategic communication to change fact-based behaviour.

Meanwhile, today the international practice of communication in the field of social-behavioural changes has proven its effectiveness in the fields of health, healthy lifestyle, protection of children's rights, education, and includes a number of approaches and tools: interpersonal communication, mass media, media, social media and social involvement and mobilisation, the appropriate and strategic application of which can lead to a lasting result - the desired change in behaviour.

When developing a communication strategy for behaviour change, it is possible to understand what people think about the vaccination process, to assess which platforms are most effective at different stages of the communication process, and to achieve different goals. Communication through the mass media can provide verified access to reliable information and the development of a positive attitude for the target audience. However, when there is a need for new behaviours, a well-designed policy and the individual's social environment become more important (*Figure 5*).

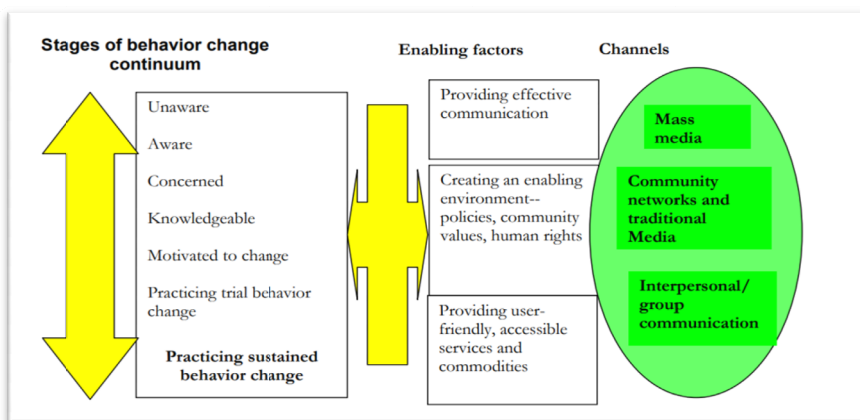


Figure 5. BCC design framework [7].

Thus, the attitudes towards vaccination vary from those who are principally in favour of vaccination to those who abruptly reject it. The hesitating ones are the largest percentage of these opposing loads and are the most diverse mass. BCC campaigns must first be addressed to them. When working with these social groups, it is necessary to apply the already tested communication strategies that are justified [14]. BCCs for vaccination should be clearly positive, with no restrictions or imperatives. It is more effective to set positive goals, that is, to increase the life span, improve the quality of life, follow the rules of a healthy lifestyle, etc.

It is clear that even after coronavirus recedes, certain patterns of behaviour and manifestations will continue to be commonplace; and post-COVID communications must already come from a context that communicates a cohesive way out, with more far-reaching goals.

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BIOLOGICAL, MEDICAL AND SOCIAL RISK FACTORS INFLUENCE ON ENT DISEASES IN SCHOOL-AGE CHILDREN

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Abstract

Medical-social factors, as well as in-school environment have a significant impact on the formation of schoolchildren's health. Of these factors the intensity of the educational process, addition of stressful situations to the routine life, unfavorable effect of the ecological factors are greatly exacerbated. We know that 70% of school-age children suffer from hyperkinesias the result of which is decreased ability to work, increase of the morbidity. 2 randomly selected schools of Yerevan have served as the material base for the investigation. The sample was 650 observation points. According to the age groups the sample was distributed as follows. Among the children with ENT diseases accompanying chronic diseases occur 1, 4 times more often. The specific gravity of children from families where conflicts are often and the psychological atmosphere is unfavorable, and who get ill frequently, 2, 3 times exceeds compared with the control group. Among the schoolchildren who have had physical activity, the specific gravity of frequently getting ill children is 1.7 times less compared to the group with passive physical activity. We have noticed that the child's and the family's life-style has a significant influence on the formation of the chronic ENT pathology group among school-age children. The most influential factors are: unfavorable psychological atmosphere in the family (RR=2,27; AR=44,0%), presence of chronic ENT pathology among parents (RR=1,65; AR=60,5%), schoolchildren's passive life-style

(RR=1,65, AR=60,5%), presence of accompanying chronic diseases (RR=2,56; AR=39,0%), biological, artificial nutrition level. Having the aim to increase the level of revealing chronic ENT pathology by conducting preventive medical examination among school-age children, it is essential to determine and record the risk factors promoting high morbidity indices with the help of screening tests.

Introduction

Diseases of the respiratory system, including ENT pathologies, have a leading place in children's population morbidity [1,3]. Many researchers have investigated the significance of exogamic and androgenic factors in the etiology of ENT pathology. The main exogenous factors are: environmental pollution, social conditions of life, education level, patients' sanitary cultural level, passive smoking. The role of iatrogenic factors should also be considered: administration of long-term and not effective antibiotics, sulfanilamide's, salicylates for not-justified treatment [3]. Medical-social factors, as well as in-school environment have a significant impact on the formation of schoolchildren's health. Of these factors the intensity of the educational process, addition of stressful situations to the routine life, unfavorable effect of the ecological factors is greatly exacerbated. We know that 70% of school-age children suffer from hyperkinesias the result of which is decreased ability to work, increase of the morbidity level [4]. The level of numerous medical-demographic indices is closely connected with the environmental conditions. Such indices are: newborn's weight deficiency, rate of congenital defects, allergy, anemia, disability level. There is a proved existence of the reliable link between the air pollution and ENT morbidity [3]. In order to plan preventive measures for ENT pathology, as well as for improving the medical aid, information on the spreaders of these diseases and the impact of various medical-social factors is of great importance.

The aim of this investigation.

To assess the risk factors of chronic ENT pathology.

Materials and methods

Two randomly selected schools of Yerevan have served as the material base for the investigation. The sample was 650 observation points. According to the age groups the sample was distributed as follows. The investigation design – case control. The data were obtained by surveying families with a questionnaire. The groups are formed according to ENT investigation data (Fig. 1).

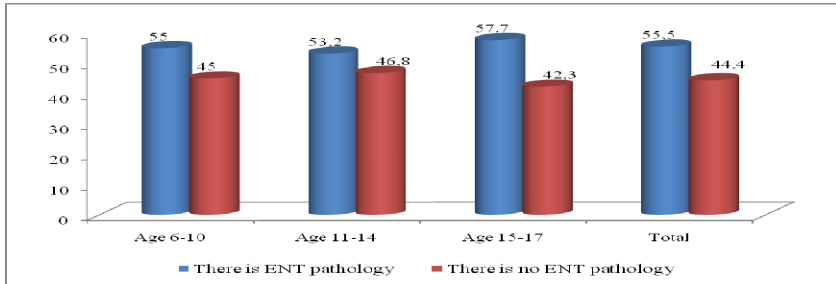


Figure.1 Distribution of school-age children in clinical groups by the presence or absence of ENT diseases

We have assessed the influence of the medical-social factors on the frequency of ENT diseases. We have calculated the ratio of the relative risk and chances. This index allows to substantiate how many times the probability of getting sick increases in the presence of the risk factor.

Results

The most important factors influencing on the rate of ENT diseases among school-age children are: social-hygienic, antenatal and prenatal factors. Alcohol abuse has been found in $5,6 \pm 1,1\%$ parents and $0,5 \pm 0,3\%$ school-age children. $26,9 \pm 2,1\%$ families have a low level of material security and $3,2 \pm 0,8\%$ even lower. According to our investigation data $57,1 \pm 2,4\%$ school-age children haven't maintained the nutrition regimen. In parents' opinion $33,9 \pm 2,4\%$ are malnourished. Parents' low medical activity was recorded in $55,8 \pm 2,4\%$ cases. We have studied the impact of risk factors on the ENT pathology rate (Table. 1).

Table1. Influence of the mainfamily lifestyle factors on ENT pathology rate in school-age children's various clinical groups

Factor:	Children with ENT pathology		Children without ENT pathology		Frequently getting sick children	
	Factor<->	Factor<+>	Factor<->	Factor<+>	Factor<->	Factor<+>
Insufficient housing conditions	35,6±5,1	64,4±5,1	34,0±4,0	66,0±4,0	9,3±2,3	97,3±2,3
Large family	8,1±2,9	91,9±2,7	6,7±2,1	93,3±2,1	3,0±2,4	97,0±2,0
Unfavorablepsychological climate in the family	8,3±4,5	91,7±4,5	3,0±4,2	97,0±4,2	35,7±2,6	64,3±2,6
Disabled in the family	6,5±2,7	93,5±2,7	38,0±11,5	62,0±11,5	16,8±8,2	83,2±8,2
Incomplete family	20,0±3,2	80,0±4,1	19,8±3,2	80,2±3,2	8,5±3,8	91,5±3,8
Low level of material security	25,3±3,0	74,7±3,2	30,3±4,9	69,7±4,9	15,5±5,8	84,5±5,8
Low medical activity of parents	33,5±5,1	66,5±5,1	36,6±4,5	63,4±4,5	6,5±3,4	93,5±3,4
Parents' education is below average	13,0±3,6	87,0±3,6	15,0±3,0	85,0±3,0	8,0±4,7	92,0±4,7
The parents smoke	51,0±5,3	49,0±5,3	56,8±4,2	43,2±4,2	8,8±2,6	91,2±2,6
Parents abuse alcohol	5,1±2,4	94,9±2,4	6,0±2,1	94,0±2,1	92,1±2,0	7,9±2,0
Low physical activity	52,0±5,3	48,0±5,3	48,9±4,2	51,1±4,2	10,4±2,8	89,6±2,8
Low school performance	10,0±3,3	90,0±3,3	11,1±2,7	88,9±2,7	8,5±5,9	91,5±5,9
Harmful habits: smoking	3,5±2,4	96,5±2,4	3,6±2,0	96,4±2,0	4,8±4,9	95,2±4,9
Harmful habits: alcohol	1,4±1,4	98,6±1,4	100	0	100	0

5,5±1,5% school-age children live in a family with a disabled member, 7,3±1,7% - in a large, many children-family and 19,9±2,5% - in an incomplete family. Unfavorable psycho-social factors affect the child's health condition. According to our data 31, 0±6,5% parents create conflict situations in the child's presence. It has turned out that 70, 2±2,2% schoolchildren aren't involved in physical activity, violation of the daily routine has been recorded in 53,3±2,4% children. Chronic ENT

pathology has been registered in 42, 9±2,4% schoolchildren's parents. Thus, numerous indices, describing the school-age children's lifestyle, have had a low level. We have assessed the impact of the risk factors on ENT diseases' rate. Our investigation has shown that the children, whose parents have ENT pathology, get ill with ENT diseases twice as often and the specific gravity of the children who get ill more often is 1.7 times higher among those children whose parents suffer from chronic ENT diseases (Table 2, 3).

Table 2. Impact of risk factors on the formation of the frequently getting sick school-age children group

Factor	Specific gravity of children getting sick often		Relative risk index (RRI)	Absolute risk index (ARI)	Statistical reliability
	Factor(+)	Factor(-)			
Children without additional physical activity	10,4±1,4 (n=46)	6,3±1,2 (n=28)	1,65	60,5	p<0,01
Unfavorable psychological atmosphere in the family	35,7±2,2 (n=156)	15,7±1,7 (n=70)	2,27	44,0	p<0,05
Presence of chronic ENT pathology among parents	12,4±1,6 (n=55)	7,5±1,2 (n=33)	1,65	60,5	p<0,05
Presence of chronic ENT diseases among children	14,1±1,6 (n=62)	5,4±1,1 (n=24)	2,56	39,0	p<0,01

Table 3. Rate of chronic ENT disease occurrence depending on the presence of the risk factor

Factor	Risk factor (+)		Relative risk index (RR)	Absolute risk index (AR)	Statistical reliability
	Presence of ENT pathology	Absence of ENT pathology			
Irrational food	45,9±7,9	30,0±11,0	1,53	65,4	p<0,05
Presence of chronic ENT pathology in parents	35,8±5,0	17,7±3,2	2,0	49,4	p<0,001
Presence of concomitant chronic disease in children	44,6±4,9	27,5±3,5	1,62	61,7	p<0,05

among the children with ENT diseases accompanying chronic diseases occur 1,4 times more often. The specific gravity of children from families where conflicts are often and the psychological atmosphere is unfavorable, and who get ill frequently, 2,3 times exceeds compared with the control group. Among the schoolchildren who have had physical activity, the specific gravity of frequently getting ill children is 1.7 times less compared to the group with passive physical activity.

The family's living conditions have a certain influence on the children's health condition. The schoolchildren, whose family living conditions are unfavorable, the level of chronic ENT pathology is high (Table 4).

Table 4. Impact of the main risk factors on chronic ENT diseases among school-age children

Factor	Factor(+)		RR	AR
	Presence of ENT pathology	Absence of ENT pathology		
Unfavorable housing conditions	5,6±1,1 (n=25)	4,1±0,9 (n=18)	1,37	73,2
Large family	18,1±1,8 (n=80)	6,5±1,2 (n=29)	3,07	27,2
Presence of a disabled person in the family	16,5±1,8 (n=73)	5,9±1,1 (n=26)	2,8	35,8
Severe stressful situation in the family	40,2±2,3 (n=178)	17,4±1,8 (n=77)	2,3	43,8
Irrational food	24,0±2,0 (n=106)	10,4±1,4 (n=46)	2,3	43,3

The results of our investigation substantiate that in many children-families, families with a disabled member the specific gravity of chronic ENT pathology exceeds compared with the control group. The life-style has an impact on the rate of ENT pathology occurrence. Such factors are: violation of the daily routine (RR=2,61; AR=38,4%), presence of bad habit among parents (RR=2,32; AR=42,1%), not rational nutrition (RR=2,21; AR=45,2%)

Thus, we have revealed the following risk factors that have an influence on acute respiratory diseases and chronic ENT pathology rate:

1. Unfavorable psychological atmosphere in the family (RR=2, 27; AR=44, 0%).
2. Presence of chronic ENT pathology among parents (RR=1, 65; AR=60, 5%).
3. Not rational nutrition` (RR=2, 3; AR=43, 3%).
4. Low level of physical activity (RR=1, 65; AR=60, 5%)

5. Presence of accompanying chronic diseases (RR=2, 56; AR=39, 0%).

Among 27,3±2,1% of school-age children chronic accompanying somatic diseases are recorded. According to the investigation data, general somatic pathology rate is 1.1 times higher among children with chronic ENT pathology (14,5±1,7; 12,9±1,6). In the construction of this index the diseases of the digestive system are in the first place (15,6±4,5%), in the second place are those of the respiratory organs (14,1±4,4%), in the third place – blood and hematopoietic organs (10,9±3,9%), endocrine system diseases (10,9±3,9%).

Chronic ENT pathology is also considered a risk factor for the development of often respiratory, bone-muscular system diseases. Thus, the respiratory system diseases are 2.0 and the osseous-muscular system diseases 1,5 times as often occur in children with chronic ENT pathology. The presence of this link speaks about the importance of realizing measures to decrease the ENT morbidity level. In order to realize preventive measures, we should consider not only the presence of ENT pathology, but a number of accompanying somatic diseases as well.

Discussion

The outcome data indicate that chronic respiratory diseases increase the prevalence of oropharyngeal dysphasia (OD) in patients. However, the relatively small number of studies, differences in selection criteria, definitions and assessment techniques used for diagnosing OSA, COPD, and OD point to the need for further research [6]. Hearing difficulty had an independent association with depression, especially depressive symptoms, that was neither fully confounded by chronic illness nor mediated by reduced social interaction, in a large community-based population in the UK. Irrespective of the temporal order of the variables, findings suggest that audiologists should be more aware of psychological issues. The younger males (40–59 years) showed the strongest association when the hearing variable was largely driven by subjective reports [5]. A proper analysis to ascertain the main risk factors is

essential in order to diagnose early and treat adequately. An exploratory analysis based on a heterogeneous sample of 1418 workers is presented in order to identify the main trigger factors for hearing loss. This paper focuses on three parameters: gender, age, and a family history of hearing problems. The least relevant factor is the existence of a family history of deafness, followed by the gender factor, which slopes considerably toward better hearing for females, and most prominent of all, the age factor, given the large differences identified between the various age groups when the gender and family history of deafness variables remain constant [7].

The present findings illustrate the importance of early diagnosis of primary colliery dyskinesia and intensive physiotherapy and antibiotic treatment. The defect is congenital and symptoms are present from early life, which stresses the importance for pediatricians to be aware of this disorder as a relevant albeit rare, differential diagnosis in children with recurrent symptoms from upper and lower airways. Provided such early diagnosis and intensive treatment is available, prognosis for maintaining the lung function seems good [4,8]. This study aimed to identify the role of alters within the allergic rhinitis network and identify the factors that determined their degree of influence as perceived by the patient. This research was a qualitative exploration embedded in an empirical framework and social network theory [1]. CRS is associated with significant impairment in quality of life and with certain medical comorbidities. In contrast to other common ENT disorders, no socioeconomic differences were found between patients and controls in this study [2, 10]. Socioeconomic factors, including income and insurance provision, may impact improvements in productivity loss and HUV following ESS. Further research to validate these findings, ascertain mechanisms behind these results, and improve these outcomes is warranted [3, 11]. Low subjective academic achievement, obesity, drinking and smoking were risk factors for asthma. High FAS, parental bachelor's degree and high subjective academic achievement were risk factors for allergic rhinitis. Finally, high FAS, maternal bachelor's degree

and high subjective academic achievement were risk factors for atopic dermatitis [9, 12].

Conclusion

We have noticed that the child's and the family's life-style has a significant influence on the formation of the chronic ENT pathology group among school-age children. The most influential factors are: unfavorable psychological atmosphere in the family (RR=2,27; AR=44,0%), presence of chronic ENT pathology among parents (RR=1,65; AR=60,5%), schoolchildren's passive life-style (RR=1,65, AR=60,5%), presence of accompanying chronic diseases (RR=2,56; AR=39,0%), biological (ante-and intranasal anamnesis), artificial nutrition level. Having the aim to increase the level of revealing chronic ENT pathology by conducting preventive medical examination among school-age children, it is essential to determine and record the risk factors promoting high morbidity indices with the help of screening tests.

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EPIDEMIOLOGIC FEATURES AND CLINICAL COURSE OF COVID-19: A CROSS-SECTIONAL STUDY AMONG PATIENTS FROM A DESIGNATED COVID-19 HOSPITAL

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Abstract

This study aimed to summarize the epidemiological and clinical characteristics of COVID-19 from September of 2020 to May of 2021 from a designated COVID-19 hospital. An observational, cross-sectional study was performed using demographic, clinical, and laboratory data. Among the confirmed COVID-19 cases, most were male 51.61% (95% CI: 49.52-53.69) with age ranging from 58–67 years old (35.31%). The severity of the disease of patients with COVID-19 it was determined as severe – 69.63% (95% CI: 67.68-71.52). At admission, the most common single clinical symptom was fever 22 (1.00%), the majority had associations of 2 to 8 symptoms (99,00%). In general, men had the largest proportion of symptoms (51.61%). Out of a total of 2203 patients with COVID-19 50.29% had associations of comorbidities involving 2 to 7 affected organ systems (95% CI: 48.59-52.26) According to the results of laboratory investigations of patients with COVID-19 at admission, the share for leukocytosis with lymphopenia increased in 1002 cases (45.48%), ESR in 1527 cases (69.31%), CRP in 1943 cases (88.19%), anemia (hemoglobin) in 2171 cases (98.54%), Glucose in 1510 cases (68.54%). Due to COVID-19 disease 7.08% – died (95% CI: 6.08-8.23). COVID-19 is an evolving disease and this study can help in understanding the epidemiological and clinical features of patients and inform its future prevention.

Introduction

At the end of 2019, emerged in Wuhan, Hubei Province, China, an outbreak of severe respiratory illness of unknown etiology [2–4]. Later, it was reported by the WHO that this novel type of coronavirus is a novel coronavirus-2019, named severe acute respiratory syndrome coronavirus (SARS-CoV-2), and is responsible for the outbreak [5–7]. COVID-19, the name of the disease caused by SARS-CoV-2, shows a mild course in 80% of observed patients and a severe course in 20%, with a worldwide lethality rate of 2.05%, according to Johns Hopkins coronavirus resource center [1]. On March 7, 2020, the first case of a new type of Coronavirus infection (COVID-19) was confirmed in the Republic of Moldova. It is about a 48-year-old woman who returned from Italy on March 7 2020, the Milan-Chisinau flight [8].

As of September 2020, the accelerated increase in cases registered the highest number of cases - 632 - reported in a day since the beginning of the outbreak, with the total number of reported cases reaching 38,372. The average number of daily cases stands at 404. The total number of active cases - 10,318. This represents 26.9% of all registered cases. The overall crude cumulative incidence of cases per 100,000 stands at 1,105 - one of the highest in Europe and in the region. The number of deaths continued to grow, with a total of 60 deaths being reported. The average number of daily deaths over the same period is 8.57. The total number of deaths reached 1,037. The case fatality rate, however, remained stable at 2.7%. The average age of patients who have died from the disease was 66.2, with a little over 90% of all deaths having been reported in patients 50 years of age and older [9].

Some underlying diseases reported to affect the most are obesity, diabetes mellitus, cardiovascular disease, and chronic kidney disease; furthermore, the increase in mortality is mainly associated with cardiovascular diseases [1,10,11]. The epidemiology differs from country to country, depending not only on the disease, but also on differences in case detection, testing, age range, economic

activity/sector, underlying diseases, and implementation of public health measures [1,7,11,12].

Despite the availability and application of several worldwide vaccine alternatives, COVID-19 continues to represent a threat to the global health system [1,13]. It was important in this study to examine and analyze the epidemiology of the coronavirus disease (COVID-19) through a COVID-19 ward open for the SARS-CoV-2 patients, during the first months of the pandemic in the country from September of 2020 to May of 2021.

Consequently, the epidemiological characteristics of COVID-19 in Republic of Moldova may differ from those in other countries. Moreover, SARS-CoV-2 is a newly emerging virus, and its epidemiological characteristics remain inadequately described [14]. Therefore, it is vital to examine the aspects and factors related to severe outcomes to enable appropriate treatment and prevention.

Aim

The aim of this study was to investigate the epidemiological and clinical characteristics of COVID-19 patients from September of 2020 to May of 2021 from a designated COVID-19 hospital.

Materials and methods

Study design and population: An observational, cross-sectional study was performed using demographic, clinical, and laboratory data. The study was carried out on September 2020 - May 2021 during the SARS-CoV-2 pandemic. During the outbreak, the PMSI Republican Clinical Hospital „Timofei Moșneaga” was designated as a specialized hospital with 250 beds for COVID-19 patients from all over the Republic of Moldova.

The research was conducted by actively detecting cases of COVID-19 performed by the method of retrospective analysis of 2203 medical records of adult inpatients, hospitalized in the five sections with COVID and ICU wards. In the hospital with COVID-19 ward, the patients were

hospitalized based on the clinical manifestations and the presence of the positive result of the real-time reverse transcription polymerase chain reaction (RT-PCR) test. Since this is a retrospective study, informed consent was waived.

Collection of clinical and laboratory data: Data on demographic characteristics, clinical manifestations, and laboratory parameters from patients with confirmed SARS-CoV-2 infection was entirely collected and analyzed using Microsoft Office Excel 2016®, a database containing demographic information (e.g., age, gender), patient residential address, comorbidities, symptoms, and laboratory parameters. For processing the results of laboratory investigations, the data were categorized according to the reference range assigned for the norm and pathology.

The severity of the disease was established as mild, moderate and severe.

Fever was classified as a subfebrile condition (0-37.4 °C), mild fever (37.5-38.0 °C), fever (38.1 -39.0 °C), high fever (39.1-40.2 °C), and hyperpyrexia (40.5 °C and more).

Patient residential address was classified as development regions [8].

Statistical analysis: Nominal and ordinal categorical variables were summarized and described as frequency and percentages. The bar chart was generated using Microsoft® Excel® version 2016 (Microsoft). All analyses were performed using Epi Info software (version 7.2.5.0).

Results

Demographic and epidemiological data of the population: Between September 2020 – May 2021, we analyzed 2203 medical records of adult inpatients with SARS-CoV-2 infection, hospitalized in the five COVID wards and ICU ward. Among the confirmed COVID-19 cases, most were male 51.61% (95% CI: 49.52-53.69) and 48.38% (95% CI: 46.31-50.48) were female (Table 1).

Table 1. Morbidity by COVID-19 by patient gender

Gender	Frequency	Precent	Wilson 95% LCL	Wilson 95% UCL
Female	1066	48,39	46,31 %	50,48 %
Male	1137	51,61	49,52 %	53,69 %
TOTAL	2203	100,00		

The higher proportion distribution of patients was between 48 and 77 years old. Patients with age ranging from 58–67 years old showed the largest absolute number of patients with SARS-CoV-2 infection (35.31%); however, those between 48–57 and 58–67 years old had the greatest proportion of infection, 22.78% and 35.31%, respectively (figure 1).

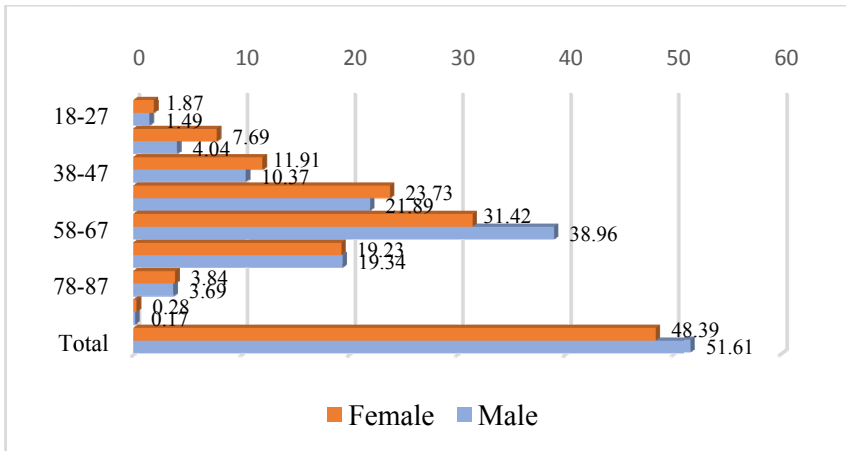


Figure 1. The morbidity structure of COVID-19 according to the age of the patients in relation to the gender of the patients.

Analyzing the structure of distribution of COVID-19 cases by development regions, the highest share was attested from Chisinau municipality – 1246 (56.56%) (95% CI: 54.48-58.62), the Center

Development Region – 511 (23.20%) (95% CI: 21.48-25.00), North Development Region – 220 (9.99%) (95% CI: 8.80-11.31), South Development Region – 155 (7.04%) (95% CI: 6.04-8.18), Balti municipality – 26 (1.18%) (95% CI: 0.81-1.72), Gagauzia Autonomous Territorial Unit(ATU Gagauzia) – 23 (1.04%) (95% CI: 0.70-1.56), Transnistria – 16 (0.73%) (95% CI: 0.45-1.18) as well as citizens of other countries (international students) – 6 (0.27%) (95% CI: 0.12-0.59) (table 2).

Table 2. Distribution of COVID-19 cases by development regions

Development regions	Frequency	Precent	Wilson 95% LCL	Wilson 95% UCL
Other countries	6	0,27	0,12 %	0,59 %
Chisinau municipality	1246	56,56	54,48 %	58,62 %
Balti municipality	26	1,18	0,81 %	1,72 %
Center Development Region	511	23,20	21,48 %	25,00 %
North Development Region	220	9,99	8,80 %	11,31 %
South Development Region	155	7,04	6,04 %	8,18 %
Transnistria	16	0,73	0,45 %	1,18 %
ATU Gagauzia	23	1,04	0,70 %	1,56 %
TOTAL	2203	100,00		

Due to the rapid spread of COVID-19 disease in the Republic of Moldova, 147 (6.67%) were initially hospitalized in another ward (95% CI: 5.70-7.79), after the onset of symptoms and a positive test were transferred to the non-COVID ward, 1835 (83.30%) were admitted to the COVID ward (CI 95%: 81.68-84.79), and 221 (10.03%) had a more serious condition and were hospitalized in the COVID ICU ward (95% CI: 8.85-11.36) (table 3).

Table 3. Morbidity by COVID-19 depending on the inpatient ward

Type of ward	Frequency	Precent	Wilson 95% LCL	Wilson 95% UCL
COVID ICU ward	221	10,03	8,85 %	11,36 %
COVID ward	1835	83,30	81,68 %	84,79 %
non-COVID ward	147	6,67	5,70 %	7,79 %
TOTAL	2203	100,00		

The severity of the disease of patients with COVID-19 it was determined as mild 121 (5.49%) (95% CI: 4.62-6.52), moderate – 548 (24.88%) (95% CI: 23.11-26.72) and severe – 1534 (69.63%) (95% CI: 67.68-71.52) (Table 4).

Table 4. Morbidity in patients with COVID-19 due to the severity of hospitalization

Severity of the disease at the hospital admission	Frequency	Precent	Wilson 95% LCL	Wilson 95% UCL
Severe	1534	69,63	67,68 %	71,52 %
Moderate	548	24,88	23,11 %	26,72 %
Mild	121	5,49	4,62 %	6,52 %
TOTAL	2203	100,00		

Symptoms frequency description in the studied population: Among the hospitalized patients, the symptoms at onset of disease were fever, fatigue, cough, dyspnea, myalgia, anosmia, ageusia, diarrhea, psychosis, and mental and behavioral disorders.

At admission, the most common single clinical symptom was fever 22 (1.00%), the following was in associations of 2 symptoms – 82 (3.71%), 3 symptoms – 241 (11.05%), 4 symptoms – 857 (39.29%), 5 symptoms – 720 (33.01%), 6 symptoms – 168 (7.70%), 7 symptoms – 102 (4.68%), 8

symptoms – 12 (0.55%). In general, men had the larger proportion of symptoms (51.61%) (Table 5).

Table 5. Presence of single and associations of symptoms at the hospitalization of patients with COVID-19 by gender

Symptoms	Female		Male		Total	
	Frequency	Precent	Frequency	Precent	Frequency	Precent
Total	1066	48.39%	1137	51.61%	2203	100.00%
Single	13	0.59%	9	0.41%	22	1.00%
Associations	1053	47.80%	1128	51.20%	2181	99.00%
2	40	3.80%	41	3.64%	81	3.71%
3	109	10.35%	132	11.70%	241	11.05%
4	444	42.17%	413	36.61%	857	39.29%
5	350	33.23%	370	32.80%	720	33.01%
6	66	6.27%	102	9.04%	168	7.70%
7	37	3.51%	65	5.76%	102	4,68%
8	7	0.67%	5	0.44%	12	0.55%

The most common single symptom in patients with SARS-CoV-2 was fever. Out of the total number of patients with fever, 853 (38.73%) registered a subfebrile condition (95% CI: 31.53-48.21), 235 (10.67%) – mild fever (95% CI: 8.52-13.49), 790 (35.87%) – fever (95% CI: 30.22-42.94), 325 (14.77%) – high fever (95% CI: 11.55-19.55), and hyperpyrexia was not recorded in any patient (Table 6).

Table 6. Distribution of patients with COVID-19 by type of fever.

Fever	Frequency	Precent	Wilson 95% LCL	Wilson 95% UCL
Subfebrile condition (0-37,4°C)	853	38,73	31,53 %	48,21 %
Mild fever (37,5-38,0 °C)	235	10,67	8,52 %	13,49 %
Fever (38,1-39,0 °C)	790	35,87	30,22 %	42,94 %
High fever (39,1-40,2 °C)	325	14,77	11,55 %	19,55 %
Hyperpyrexia (40,5+ °C)	0	0,00	0,00	0,00
TOTAL	2203	100,00		

Of the total number of patients with COVID-19, 405 (18.38%) of them did not have comorbidities at the admission to the hospital (95% CI: 16.82-20.06), 690 (31.32%) had single comorbidities (95% CI: 29.42-33.29) and 1108 (50.29%) had associations of comorbidities involving 2 to 7 affected organ systems (95% CI: 48.59-52.26) (Table 7).

Table 7. Distribution of patients with COVID-19 according to the presence of single and in associations of comorbidities

Comorbidities	Frequency	Precent	Wilson 95% LCL	Wilson 95% UCL
Without comorbidities	405	18.38	16.82%	20.06%
Single	690	31.32	29.42%	33.29%
Associations	1108	50.29	48.59%	52.26%
2	624	28.32	26.26%	30.01%
3	337	15.29	13.64%	16.63%
4	120	5.45	4.57%	6.47%
5	21	0.95	0.62%	1.45%
6	5	0.23	0.10%	0.53%
7	1	0.05	0.01%	0.26%
TOTAL	2203	100.00		

In 1108 patients with COVID-19, associations of 2, 3, 4, 5, 6 and 7 comorbidities were found. In 624 (28.32%) cases there were two (2) comorbidities (95% CI: 26.26-30.01), 337 (15.29%) - three (3) comorbidities (95% CI: 13.64-16.630), 120 (5.45%) - four (4) comorbidities (95% CI: 4.57-6.47), 21 (0.95%) - five (5) comorbidities (95% CI: 0.62-1.45), 5 (0.23%) - six (6) comorbidities (95% CI: 0.10-0.53) and one (1) (0.05%) - seven (7) comorbidities (95% CI: 0.01-0.26). The most common comorbidities were diabetes mellitus, hypertension, obesity, pathologies of the digestive and renal systems.

Out of a total of 2203 patients with COVID-19 during the study period, 1949 (88.47%) (95% CI: 87.07-89.74) were discharged, 98 (4.45%) (95% CI: 3.66-5.39) - were transferred to other departments, 156 (7.08%) (95% CI: 6.08-8.23) – died due to COVID-19.

Laboratory findings: According to the results of laboratory investigations of patients with COVID-19 at admission, the share for leukocytosis with lymphopenia increased in 1002 cases (45.48%), ESR in 1527 cases (69.31%), CRP in 1943 cases (88.19%), Anemia (hemoglobin) in 2171 cases (98.54%), Glucose in 1510 cases (68.54%) (Table 8).

Table 8. Laboratory findings of patients with SARS-CoV-2 infection

Paraclinical findings	Norm				Pathology				Total Norm		Total Pathology	
	Women		Men		Women		Men					
	Fre q	%	Fre q	%	Fre q	%	Fre q	%	Fre q	%	Fre q	%
Leucocyte	552	45.90	649	4.03	13	1.19	89	8.80	201	4.51	1002	45.48
Neutrophile	525	45.18	637	54.81	541	51.96	500	48.03	1162	52.74	1041	47.25
Lymphocyte	429	46.78	488	53.21	637	49.53	649	50.46	917	41.62	1286	58.37
Hemoglobin	17	53.12	15	46.87	1049	48.31	1122	51.68	32	1.45	2171	98.54
Thrombocyte	813	46.29	943	53.70	253	56.59	194	43.40	1756	79.70	4479	20.29
ESR	34	51.1	330	48.8	720	47.1	807	52.8	676	30.6	1527	69.3

	6	8		1		5		4		8	7	1
CRP	97	37.3 0	163	62.6 9	969	49.8 7	974	50.1 2	560	11.8 0	194 3	88.1 9
AST	67 0	46.0 1	786	53.9 8	396	53.0 1	351	46.9 8	145 6	66.0 9	747	33.9 0
ALT	74 4	45.5 0	891	54.4 9	322	56.6 9	246	43.3 0	163 5	74.2 1	568	25.7 8
Albumins	62 3	50.1 2	620	49.8 7	443	46.1 4	517	53.8 5	124 3	56.4 2	960	43.5 7
K	90 1	48.5 1	956	51.4 8	165	47.6 8	181	52.3 1	185 7	84.2 9	346	15.7 0
Na	90 1	47.8 2	983	52.1 7	165	51.7 2	115 4	48.2 7	188 4	85.5 1	319	44.4 8
Glucose	30 4	43.8 6	389	56.1 3	762	50.4 6	748	49.5 3	693	31.4 5	151 0	68.5 4
Urea	72 7	45.1 2	884	54.8 7	339	57.2 6	253	42.7 3	161 1	73.1 2	592	26.8 7
Creatinine	94 1	46.7 6	107 1	53.2 3	125	65.4 4	66	34.5 5	201 2	91.3 3	191	8.66

Abbreviations: Leukocytes (4-9*10³ u/L), Neutrophils (2.00-5.50), Lymphocytes (1.2-3*10³ u/L), Hemoglobin (12-16 g/dL), Platelets (150.000-450.000/mcL), ESR - Erythrocyte sedimentation rate (2-15 mm/h), CRP - C-reactive protein (0-5 mg/l), AST - aspartate aminotransferase (0-35 u/L), ALT - alanine aminotransferase (0-45 u/L), Albumin (35-53 g/l), K - potassium (3.5-5.1 mmol/l), Na - sodium (135-151 mmol/l), Glucose (3.5-5.5 mmol/l), Urea (2.8-7.2 mmol/l), Creatinine (44-115 mmol/l).

Discussion

In the Republic of Moldova, the accelerated increase in cases registered the highest number of cases - 632 - reported in a day since the beginning of the outbreak, with the total number of reported cases reaching 38.372 were registered at the beginning of the September 2020. The total number of active cases were 10.318. This represented 26.9% of all registered cases [9]. More women were infected with the virus than men, 59% vs. 41% [9]. In terms of geographical distribution, Chisinau, with now 42% of all confirmed cases, remains the most affected area if

the number of cases is considered. Transnistria region, ATU Gagauzia and Balti follow in the list of most affected areas, accounting for 5-6% of all cases each [9].

The total number of COVID-19 cases in the country has continued to increase, albeit at a considerably slower pace than in the first few months of the year, and on May 16, the total number of cases reached 253,845, the number of active cases stood at 2,961 [15]. Overall, fifty-nine percent of all cases have been recorded among women and 41% among men [15]. Chisinau is the most affected area with over 16,000 cases per 100,000 population [15].

Starting with May 13th, the government vaccination portal <https://vaccinare.gov.md/> launched the on-line appointment system for vaccinations. According to the government portal on vaccination (<https://vaccinare.gov.md/>) as of May 17th, a total of 228,971 doses of vaccine were administered (31,765 people received 2 doses) [15].

Based on the results of this study up to May 2021, a total number of 2203 patients were admitted to the designated COVID-19 hospital with a diagnosis of COVID-19. Among the confirmed COVID-19 cases, most were male 51.61%. The higher proportion distribution of patients was between 48 and 77 years old. Patients with age ranging from 58–67 years old showed the largest absolute number of patients with SARS-CoV-2 infection (35.31%). Here, the average age and male predominance of patients confirmed with SARS-CoV-2 infection were similar to those reported by other authors [10,11,16–19]. It is important to mention that the trend varies from country to country. Overall, most countries share a near 50/50 proportion in sex-disaggregated confirmed cases. The observed variations are not solely explained by biology; other factors specific to the sex, such as behavior and society, play a pivotal role in the obtained epidemiological information [1,20].

Due to the rapid spread of COVID-19 disease in the Republic of Moldova, 83.30% were admitted to the COVID ward, and 10.03% had a more serious condition and were hospitalized in the COVID ICU ward. Therefore, recent research indicates that the clinical presentation can

range from mild to critical scenarios [11]. The severity of the disease of patients with COVID-19, in our study it was determined as severe (69.63%). According to the CDC, fever, cough, shortness of breath, fatigue, muscle or body aches, new loss of smell or taste, and diarrhea are the most common symptoms related to COVID-19 [21]. Among the hospitalized patients from our study, the symptoms at onset of disease were fever, fatigue, cough, dyspnea, myalgia, anosmia, ageusia, diarrhea, psychosis, and mental and behavioral disorders. A systematic review that includes 24.410 COVID-19 confirmed adult patients found that 78% of people presented fever, 57% cough, and 31% fatigue [1]. Diarrhea as the only uncommon symptom as gastrointestinal manifestation was reported by Sonal Saxena et al. [11].

In line with recent studies [18,19], we found fever, the most common single clinical symptom (1.00%) of which 38.73% registered a subfebrile condition while 35.87% – fever, Jiangshan Lian et al. [19] reported a total of 85.81% patients had fever with median maximum temperature at admission of 38 °C, while 53.88% had temperature bellow 38 °C [19]. The fallowing was in associations of 2 to 7 symptoms (99,00%). In general, men had the largest proportion of symptoms (51.61%). As reported by other studies, clusters of 2, 3 and 4 symptoms were present [11].

Of the total number of patients with COVID-19, 50.29% had associations of comorbidities involving 2 to 7 affected organ systems. The most common comorbidities were diabetes mellitus, hypertension, obesity, pathologies of the digestive and renal systems. Similar results were reported by Oliver Viera-Segura et al. [1,11,22].

The fatality rate of patients included in the current study was 7.08%, which is quite near to the national mortality rate in Republic of Moldova which was reported to be 5.1% [8] based on documented COVID-19 patients and equally the same with the study from Iran [22], but was significantly higher compared to a study from South Korea – 2.6% [14], Chile – 3.4% [23]. A previous large reports from Wuhan reported an in-hospital mortality rate 28% and the New York Area 21% [23].

According to the results of laboratory investigations of patients with COVID-19 at admission, the share for leukocytosis with lymphopenia increased in 45.48%, ESR in 69.31%, CRP in 88.19%, Anemia (hemoglobin) in 98.54%, Glucose in 68.54%. Similar results have been reported in previous studies, except for the fact that the number of cases with lymphopenia in our study was higher than other studies [10,14,16,22,23].

The strength of this study lies in its large sample of patients (2203 cases). Moreover, as data collection was conducted at an early stage of the outbreak, we collected data of all types of cases. Therefore, the findings of the present study should be interpreted in light of these limitations. High quality research is required in order to confirm the validity of these findings, and to better define the range and frequency of clinical presentations in various degrees of the COVID-19 disease severity.

Conclusion

These findings presented here contribute to improve the knowledge about epidemiological and clinical characteristic reference for future SARS-CoV-2 outbreaks or another epidemic that helps health officials identify patients on risk and elaborate planning efforts of the disease management.

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EPIDEMIOLOGICAL ASPECTS OF TRAUMATIC BRAIN INJURY (TBI) IN ARMENIAN CHILDREN

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Abstract

Traumatic brain injuries (TBI) are one of the leading causes of death from unintentional injury. The CDC defines traumatic brain injury (TBI) as a blow or jolt to the head that can alter brain function. According to World Health Organization (WHO), in 2012 more than 391,000 children between 0 and 14 died from unintentional injuries, one of the leading causes of premature death. Traumatic brain injury (TBI) is a leading cause of morbidity and death in the United States.

The major goal of this research was to determine the prevalence of traumatic brain injuries in children aged 0 to 18 in Yerevan, Armenia, as well as quantify and characterize treatment trends. As a part of this prospective study, Traumatic Brain Injury data was obtained from all children aged 0 – 18 who were hospitalized at St. Astvatsamayr Medical Center, and spent at-least one day in inpatient care, between 1 March, 2019 and 30 August, 2019. St. Astvatsamayr Medical Center is Armenia's largest pediatric trauma center, having the most specialized care for TBI in the country.

Unquestionably, the male gender was more likely than the female to suffer from traumatic brain injury amongst youngsters. Furthermore,

there was a correlation between patient age and TBI mechanism ($P=0.000$). TBI was usually caused by 'struck by/or against' kind of injuries in children under the age of five. However, the most common in jury among children aged six to eighteen was a traffic accident (RTI).

Introduction

TBI are a high priority health issue globally, especially for children. Children are very vulnerable to head trauma because their brains are still in the developmental stages, and they are at risk for long-term, potentially life-long disability. TBI is one of the leading causes of death from unintentional injury. The CDC defines TBI as a blow or jolt to the head that can alter brain function. To achieve the best results, prompt diagnosis and treatment are essential. TBI morbidity and mortality can be reduced greatly by a critical care practitioner who can identify and treat patients correctly using best practice recommendations. The categorization, cause of damage, pathophysiology, and clinical therapeutic treatment options defined as best practice for TBI are described in this article [1-3]. According to World Health Organization (WHO), in 2012 more than 391,000 children between 0 and 14 died from unintentional injuries, one of the leading causes of premature death. TBI are a leading cause of morbidity and death in the United States. TBI affects around 1.7 million people in the United States each year. Of them 52,000 were declared dead, 275,000 were hospitalized, and 1.365 million, nearly 80%, were treated and released from the emergency department of the respective hospitals [4-6]. This study gathered data on a subset of all children aged 0 to 18 suffering from TBI in Yerevan, including baseline information such as demographics, injury intent, and mechanism of injury that may be used in planning and development of public health interventions and healthcare delivery. Many countries have different percentages of injury mechanisms; for example, in Ethiopia, the percentage of RTI (road traffic injury) is 45.4 percent, but in Yerevan, the percentage of injuries of the "struck by" type is the highest (41 percent), because children are actively playing with each other, especially at school and in the garden/ backyard [7]. According to studies conducted

in Yerevan, the injuries were discovered predominantly among males aged 0 to 18, with a ratio of 63 percent. It's also difficult to compare these rates to those found in other studies, especially when it comes to criteria, age, and TBI classifications. According to previous investigations in Togo, the same injuries were reported in 67 percent of the over all studies with men aged 0 to 15 [8-10]. This study considers 197 patients at the St-Astvatsamayr Medical Facility, as well as the various forms of presenting to medical institutions (Walk in- 126 cases, Ambulance- 63 cases). Looking back at the numbers from 2016, there were 275 cases of ITBI (Isolated Traumatic Brain Injury) in Armenia, with 268 cases being reported as walk-in cases and 7 cases being reported as ambulance cases [11]. Many reasons may exist for patients being admitted to Yerevan's St. Astvatsamayr Medical Center. According to studies in Armenia, individuals from the metropolitan region of Yerevan were admitted more frequently (about 70%), while people from rural areas were admitted less frequently (around 29%). Many individuals in rural areas do not seek treatment at medical institutions for minor injuries, which is why the rate of admissions in rural areas was seen to be low. The degree of the injury has also been established as a predictor of functional outcome, with more severe TBI being linked to more issues. Pre-injury status and injury severity are the strongest predictors of long-term outcomes in adaptive skills, behavior, and educational achievement. These findings aid in identifying the most vulnerable children and families following a TBI, and argue that children in the high-risk category of lower pre-injury functioning and greater injury severity should be closely monitored and followed-up long-term after a TBI, with such methods fully integrated into standard medical care, permitting effective interventions before secondary difficulties arise [12].

Materials and methods

The major goal of this research was to determine the prevalence of traumatic brain injuries in children aged 0 to 18 in Yerevan, Armenia, as well as quantify and characterize treatment trends.

Study design: As a part of this prospective study, Traumatic Brain

Injury data was obtained from all children aged 0 – 18 who were hospitalized at St. Astvatsamayr Medical Center, and spent at-least one day in inpatient care, between 1 March, 2019 and 30 August, 2019. St. Astvatsamayr Medical Center is Armenia's largest pediatric trauma center, having the most specialized care for TBI in the country. It is the equivalent of a Level II Trauma Center based on guidelines issued by the US College of Surgeons. The hospital is located in the capital city, but it also acts as the primary referral center for the country's urban and suburban regions.

Data Collection Instrument: Data was collected using a multifaceted survey which comprised of seven sections; Section 1 collected demographic data; Section 2 collected information about the external risk factors for the patient; Section 3 collected Pre-Hospital Information; Section 4 focused on diagnostic and Imaging studies such as CT scans; Section 5 included the diagnoses and Differential diagnosis; Section 6 obtained information about inpatient care; and, Section 7 had detailed patient discharge information.

The first section contained information about date and time of the injuries, and inquired details of the patient condition on the first address to a health care facility. The section including patients external risk factors contained information about the mechanism of injury, timeline and place of occurrence. The Pre-hospital section contained information about the Neurological Assessment done on the patient. The diagnosis section contained information about the specific type of injury occurred where as the Inpatient care section contained information about hospital care and therapy.

An International Collaborative team led by the University of Iowa, Babes-Bolyai University, and Yerevan State Medical University formulated the data collection format and system. Once the core variables and data code book were developed, the team at the Yerevan State Medical University translated the form into Armenian language. The data was collected, entered, and evaluated by researchers from Yerevan State Medical University.

Data Coding: The collected data was entered in a database created and supervised by Iowa University on the RedCap platform. REDCap is secure web application for building and managing online surveys and database. While REDCap can be used to collect virtually any type of data in any environment (including compliance with 21 CFR Part 11, FISMA, HIPAA and GDPR), it is primarily designed to support online and offline data collection for research studies and operations. Researchers from Yerevan State Medical University uploaded the data into REDCap, under constant surveillance from the collaborative team.

Human Subject Protection: This study is a part of an International Multicenter Traumatic Injury and Violence research training grant funded by the US National Institutes of Health (NIH/FICD43 TW007261). The training countries include three post-soviet countries like Armenia, Georgia and Moldova, supervised by Iowa University (USA) and Babes-Bolyai University (Romania).

This study was approved by the Ethics Committee of the Yerevan State Medical University named after Mkhitar Heratsi. The study was performed following the WMA Declaration of Helsinki- Ethical Principles for Medical Research Involving Human Subjects and the patient anonymity was maintained.

Data Analysis: The data analysis was carried out by SPSS 16.0 software. The results were updated in the following age groups: Preschool Age (0-5), Middle-school age (6-12) and High school age (6-18). Chi-square tests were used to determine associations between qualitative variables.

Results

The study had 197 participants (124 boys and 73 girls) with ages from 0 to 18 as shown in table 1. The mean age was 6.0 years.

Table1. Gender and Age distribution

Age	Gender		Total
	Male, N (%)	Female, N (%)	N
0 - 5	69 (53%)	38 (52%)	107
6 - 12	36 (29%)	27 (37%)	63
13 - 18	19 (18%)	8 (11%)	27
Total	126	73	197

The pattern of hospital admission was classified into 5 categories as described in table 2. It was found that the majority of young boys with TBI trauma presented to St. Astvatsamayr Medical Center by “walk-in” type.

Table 2. Mode of Arrival to the Hospital

Mode of arrival	Number (n)	Male (n)	Female (n)
Walk in	126	78	48
Ambulance	63	41	22
Private/ public vehicle	2	2	0
Other	4	2	2
Missing data	2	0	0
Total	197	123	72

Patients were also screened on the basis of the location of the accident causing TBI and it was found that most of the accidents took place in metropolitan area (70%), compared to rural areas (29%).

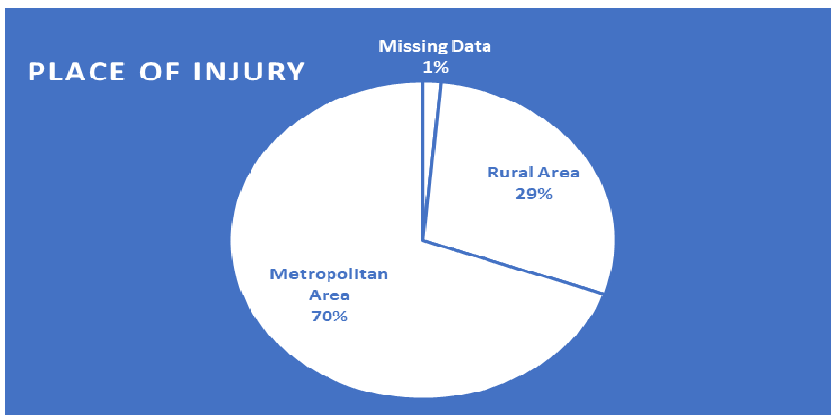


Figure 1. Place of injury

Furthermore, among the studied 197 patients, the intension of injury was also classified and it was found out that the majority of the TBI cases 190 (96%) were unintentional.

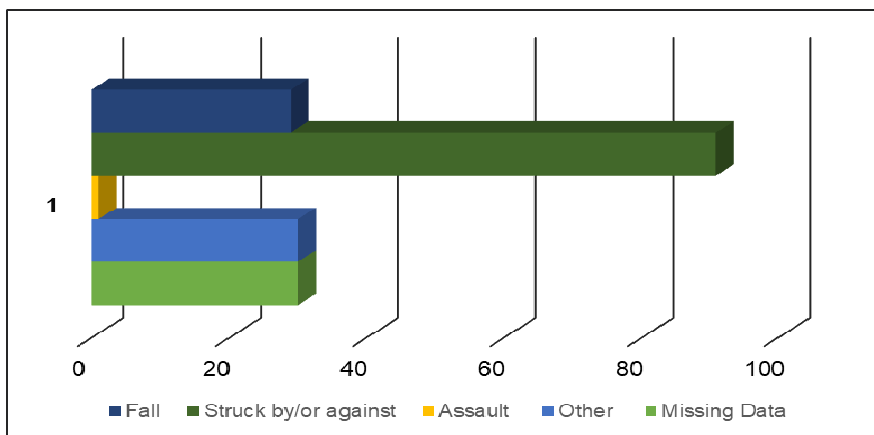


Figure 2. Intention of injury

The mechanism of most of the accidents were “struck by/ or against” type (41%). Only 1 violence case was found out, among a 15-year-old boy.

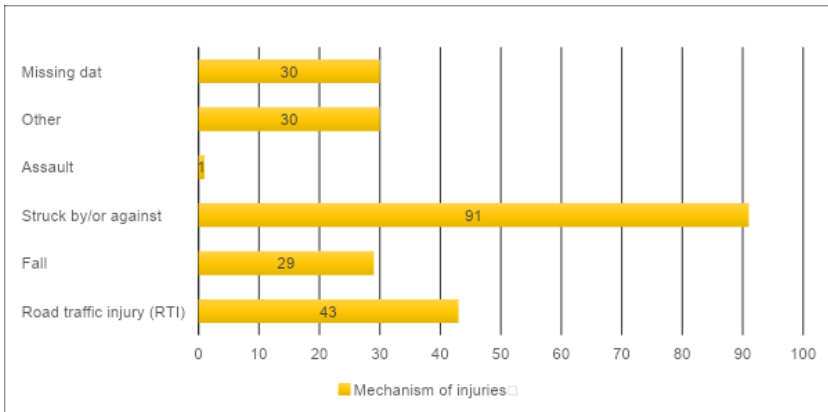


Chart 3. Mechanism of injuries

The mechanisms of injuries were observed at different age groups, it was noted that between the ages of 0 to 5, 54 cases were seen as “Struck by/ or against” type, followed by 18 cases whose mechanism was the “fall” type. In the age interval 6-18, 32 cases (out of total 42 cases) were road accidents.

Table 3. Mechanism injuries in different age groups

Age/mechanism of injury	RTI	Fall	Struck by/or against	Other
0-5	10	18	54	22
6-18	32	11	35	12
Total	42	29	89	34

The relationship between age and trauma mechanisms is statistically significant ($p=0.001$). The prevalence of road traffic injury (RTI) was significantly elevated in the age groups of 6-12 and 13-18. 'Struck by/or Against & Fall' injuries were more prevalent among children aged 0 to 5. The most prevalent form of injury among the 189 children studied was "soft tissue injury to the scalp, face, or neck." It's also worth noting that there were 101 incidences of "Focal Traumatic Brain" damage as

presented in Table 4. It was discovered that combining several of these injury features into one table and comparing them by age and/or gender was more effective:

Injury Characteristic	Age Group 0 – 5 N (%)	6 – 12 N (%)	13 – 18 N (%)
Mode of Arrival			
Private car/walk in	79 (76.0%)	37 (58.8%)	10 (37%)
Ambulance	22 (21.2%)	24 (38.1%)	16 (59.3%)
Other/unknown/missing	2(1.9%)	1 (1.6%)	1 (3.7%)

Z-test was performed to find the associations between the age groups and mode of arrival. Children between the age group the 0-5 mostly arrived to the hospital by private car/walk in mode ($p < 0.05$).

Table 4. The types of injury

Type of injury	Number (n)	Proportion (%)
Soft tissue injury to the scalp, face, or neck	184	93
Fracture of the skull	93	47
Fracture of the facial bones	3	1.5
Fracture of the cervical spine	1	0.5
Concussion	90	46
Traumatic cerebral edema	2	1
Focal traumatic brain injury	101	52
Epidural hemorrhage	22	11
Traumatic subdural hemorrhage	5	3
Total number of injured	197	100

There were thirty occurrences of intracranial injury (ICD-10 code S06) in children under the age of five, and 54 cases in children aged six to eighteen, whereas there were twenty-nine and eleven cases of skull and facial bone fractures (code S02) respectively. Only 105 of the 197 patients had imaging examinations done such as CTscan. In 34

individuals, normal CT findings were discovered, whereas the remaining 71 patients had abnormal results. During the course of the study, no deaths were documented.

Table 5. CT scan results with different age groups

Age/CT scan result	Abnormal	Normal	Missing data
0-5	39	11	55
6-18	32	21	37
Total	71	34	92

Only seven surgical procedures were performed among the 197 patients (table 6).

Table 6. Operations performed on the different age groups

Age/operation	Yes	No	Missing data
0-5	2	80	22
6-18	5	64	21
Missing	0	2	1
Total	7	146	44

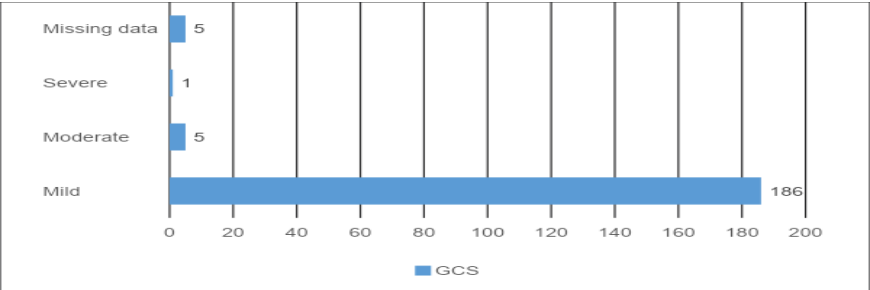


Figure 4. Prehospital GCS score

On arrival, the severity of the injuries was determined using the Glasgow Coma Scale (GCS). It was striking to discover that the vast majority of patients had a mild condition (GCS 13–15), with only 3% having a severe condition (GCS 9–12). There were no severe instances (GCS 3–8) recorded. All of the patients had moderate conditions (GCS 13–15) when they were discharged.

Discussion

The first ever scientific study of this nature was undertaken in Armenia was in 2016, dedicated solely to isolated traumatic brain injury (ITBI). As a part of the study, 3911 patients were selected from the head and neck trauma center and ITBI was found among 3746 patients. Out of which, 2,832 patients were diagnosed with concussion, 295 with weak cerebral contusion, 214 having moderate cerebral contusions, and 217 having severe cerebral contusion. In patients with TBI, additional non-traumatic organ lesions were observed in 338 patients. Particularly 275 patients were referred to specialized hospitals from regional medical institutions, 268 by private transport and 7 by ambulance [11].

“Armenia” Medical Center reported a slight increase of total cases of trauma and TBI from 2017 to 2018. In 2017, the number of injuries was 370, out of which TBI cases were 92, but in 2018 the total number of patients rose to 400, out of which TBI accounted for 94 cases.

An increase in TBI-related emergency department visits (14.4%) and hospitalizations (19.5%) was observed from 2002 to 2006. The estimated average annual number of TBIs that occur among children aged 0 to 14 years was seen to be 511,257. In contrast, the number of TBIs in adults aged 65 years and older was seen to be 237,844. TBI-related emergency department visits accounted for a larger proportion in children (92.7%) than in older adults (59.7%). The incidence of TBIs among males was seen to be 1.4 times higher than among females. 3 Road traffic injuries were the eleventh leading cause of death worldwide, accounting for 2.1 percent of all deaths. In addition to deaths, traffic collisions harm an estimated 20 million to 50 million individual each year. Road traffic

collisions killed an estimated 1.18 million people in 2002, with an average of 3242 people each day [13].

According to studies conducted in Sweden in 2007, it was found that the rate of TBI was 354 per 100,000 people, with men having a greater risk than women (55 percent vs. 45 percent). The 15-64 age group had the most instances (50 percent), followed by the 0-14 age group (33 percent), and the 65-94 age group had the least (17 percent). On arrival, severity was determined using the Glasgow coma scale (GCS), which indicated mild circumstances in 97% of cases (GCS 13-15), moderate conditions in 1% (GCS 9-12), and severe conditions in 2%. (GCS 3-8). Falls (55 percent) and vehicle-related incidents were the most prevalent causes of injury (30 percent) [14]. A similar study was done in 2018 at the SOUH ICU in Lomé, Togo, among children aged 0 to 15. Road traffic accidents were again seen to be the leading cause (79.1%), followed by falls (19.8 percent). On gender comparison scales, males were found to surpass females (67 percent) [8].

In Iran, the number of male patients with TBI was substantially greater (146 men, 71.6 percent) and certain trends were seen in younger patients having far more severe and serious conditions. According to medical records from Ardabil city, road traffic accidents remained the leading cause of injury (41.7%), with the majority of incidents happening during the summer and occurring at night when visibility is substantially low [15].

However, TBI incidences in Belarus decreased from 247.3 to 201.4 per 100,000 population between 2011 and 2013, but climbed to 239.6 per 100,000 in 2015. At the same period, population mortality fell by 48.5 percent, from 20.2 to 10.4 per 100,000 people. From 2011 to 2015, records show that TBI related mortality dropped by 47.6% (from 8.2 to 4.3 per 100 TBI wounded patients) [16].

According to (MANCOVA; O'Brien & Kaiser, 1985), researchers employed a multivariate method to have repeated analysis of covariance. It was found that the consequences of severe TBI were more evident in children from households with greater levels of family stress or

instability than in children from more ideal family situations. On assessments of verbal abilities, language comprehension, teacher ratings of academic achievement, and parent-based adaptive behaviour scores, there were moderating effects observed of family stress on TBI sequelae. The neurobehavioral consequences of TBI render youngsters more sensitive to parental influences, based on an interpretation of the data [17]. Each year, 69 million (95 percent CI 64–74 million) people worldwide are predicted to suffer a TBI. TBIs caused by road traffic crashes were most common in Africa and Southeast Asia (both 56 percent) and least common in North America (25 percent). Southeast Asia (1.5 percent of the population every year) and Europe have similar rates of road traffic accidents (1.2 percent). Lower to middle-income countries have roughly three times the number of TBI cases than higher-income countries [18]. Limited research has been conducted in low and low-middle income countries, which have fewer data collection resources to measure the TBI incidence and are less likely to have pre-hospital trauma systems who may also be challenged with insufficient access to high-level trauma facilities. Further more, a study from Southern Ethiopia examined TBIs treated from September 2017 to September 2018 at Hawassa University Hospital documented 4,258 emergency room (ER) visits during the studyperiod, and TBI contributed to 317 (7.4%) cases. The most common cause of TBI was identified as road traffic injuries, which comprised 144 (45.4%) cases. The majority of road traffic injuries were pedestrians, which comprised 120 (83.3%) cases compared to 24 (16.7%) occupants in vehicles [19]. According to another analysis, TBI can increase the chance of additional health problems in addition to disability. According to the findings of a recent population-based study, people with TBI are 1.8 times more likely to report binge drinking 1 to 3 years after injury, 11 times more likely to develop epilepsy (P. L. Ferguson, written communication, February 2006), and 7.5 times more likely to die earlier than the general population. Furthermore, as people age, new health concerns related with TBI may emerge. With moderate to severe head injury, there is a 1.5-

fold increased chance of depression and a 4.5-fold increased risk of Alzheimer's disease [20]. While the data is sparse, it appears that having numerous potentially curable mental health diseases increases the likelihood of TBI in children and adolescents, and that TBI results in a variety of mental health issues, many of which are treatable. It is critical to focus prevention and management efforts on mental risks and outcomes. Through advocacy, education, policy formation, and clinical practice, pediatric mental health experts may play a significant role in the prevention and management of TBI [21]. According to the National Institute of Health data, the following number of TBI cases were reported in 2018 (coded according ICD-10): Intracranial Injury (Code S06) Up to 1 year – 43 cases; 2- 4 years -104 cases; 5-14 years - 267 cases; 15 -17 years - 57 cases and fracture of skull and facial bones (Code S02) Up to 1 year- 11 cases; 2-4 years – 47 cases; 5- 14 years – 95 cases; and 15- 17 years- 22 cases [22,23] Individuals with seemingly comparable injuries, on the other hand, often have drastically varied results. Differential recovery trajectories may be explained in part by genetic variables. Genetic analysis has become more accessible for application in the investigation of outcomes after TBI, as our genetic and genomic capabilities have progressed. Owing to its significance to the fact that brain damage is such a complicated process, several different molecular pathways may be linked to injury outcomes or recovery. Genes involved with these pathways are especially relevant for future study due to the oxidative stress, inflammatory changes, and death of cells that occur after TBI. Future research should look at the role of genes other than APOE in TBI outcomes in children. Because it is unlikely that a single gene or polymorphism can explain the majority of recoveries, studies that explore commonly encountered pathways and gene-environment relationships should be carried out [24].

Conclusion

Unquestionably, the male gender was more likely than the female to suffer from traumatic brain injury amongst youngsters. Furthermore,

there was a correlation between patient age and TBI mechanism (P=0.000). TBI was usually caused by 'struck by/or against' kind of injuries in children under the age of five. However, the most common injury among children aged six to eighteen was a traffic accident (RTI). The majority of the children with TBI injuries entered at St. Astvacamayr Medical Center as "walk-ins." This research also discovered that the mechanism of TBI is generally inadvertent. According to the study, as a part of an observation made by the researchers, residents in rural regions prefer not to visit medical clinics on one very occasion of trauma.

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ESTIMATION OF OCCUPATIONAL RISK FACTORS IN PREHOSPITAL EMERGENCY MEDICAL SERVICES IN THE REPUBLIC OF MOLDOVA

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Abstract

The article discusses the issue of occupational risk factors in prehospital emergency medical services (EMS). The professional peculiarities of the activity of medical workers create an inherent risk for on-the-job injuries and illnesses. The purpose of this paper - the hygienic estimation of occupational risk factors and the work environment in prehospital care emergency medical services in the Republic of Moldova. A review of the scientific literature, published in 2015-2022 was conducted to identify occupational risk factors and their impact on prehospital EMS workers.

A cross-sectional study was also carried out using the survey, which involves assessing the working conditions and health of the prehospital EMS workers. Were evaluated 110 scientific publications that approached the quality of life of EMS workers, occupational conditions and risk factors, including during the COVID-19 pandemic. The survey was distributed to 5 regional departments, which include a network of 41 substations and 95 emergency medical points, located in the 5 geographical areas of the Republic of Moldova. The study involved 250 health workers, of whom 20.8% were doctors and 79.2% were nurses, from urban or rural areas, regardless of gender, nationality, ethnicity or religion. The results of the study suggest the presence of overall negative impact of the factors specific to the activity on medical workers, namely: physical, chemicals and biological factors. This study explored working

conditions, including occupational risk factors and their impact on the health and quality of life of prehospital EMS workers. The EMS working conditions are harmful, class III, grade 2 and 3. Given the substantial role of health in the lives of all people and appreciating the increased efforts of health workers, it is essential to focus on improving state policies, continuously improving working conditions and ensuring the high social status of health workers in the Republic of Moldova.

Introduction

Prehospital care is provided by emergency medical services (EMS), who serve as the rapid response arm of the health system [1]. According to the data presented by Centers for Disease Control and Prevention, prehospital EMS workers are primary providers of pre-hospital emergency medical care and integral components of accidents, disaster response, being the firsts to recognize the nature of an accident, they can immediately assess the situation and determine the need for resources, including medical resources [2]. From the perspective of health sector, occupational risks encountered by employees and employee safety concepts are considered to be highly topical matters, due to the fact that the health sector involves higher risks compared to many other sectors. Occupational risk factors that adversely affect the health of health workers and increase their disability are classified as biological, physical, chemical, ergonomic and psycho-social, which have led to an increase in occupational diseases, accidents at work and health problems [3].

Given that the provision of emergency medical services care can occur anywhere - the roadside, in a home, or in public settings etc., there are unspecified, unpredictable and/or uncontrollable threats to the safety of prehospital EMS workers [3-4]. Prehospital EMS workers perform a rigorous and dangerous job, which involves physically demanding work - unsafe patient handling - lifting, transferring, repositioning and moving patients without using proper techniques or handling equipment can cause musculoskeletal injury (e.g., back injury and chronic back pain) [5].

According to the World Health Organization, there are risks in the occupational environment such as thermal discomfort (heat or cold stress), noise, exposure to hazardous chemicals (cleaning and disinfecting agents, sterilants, toxic drugs, pesticides, latex, chemicals and laboratory reagents), occupational infections, the most common being tuberculosis, hepatitis B and C, HIV/AIDS and respiratory infections (coronaviruses, influenza), which can cause harm to medical workers.

The category of occupational injuries among health workers includes landslides, obstructions and falls, emergency transport of patients in land and air vehicles, road traffic injuries (ambulance driving at high speed, ambulance crashes), electric shock, explosions and fire [5].

Occupational risk factors vary depending on working conditions, job characteristics, interpersonal relationships, culture and social interactions. The professional peculiarities of the activity of the prehospital EMS workers create an inherent risk for on-the-job injuries and illnesses. According to the most recent injury data from the National Institute for Occupational Safety and Health (NIOSH) Datele Institutului Național de Securitate și Sănătate în Muncă denotă că, în 2020, there were an estimated 16,900 injuries and illnesses among EMS workers that were treated in United States. Furthermore, it was found that, between eight and nine emergency medical workers out of every 100 are treated in hospitals for occupational injuries, whereas only two out of every 100 workers in all other jobs are treated as such [6, 7].

According to specialized studies, the most common injuries among workers are excessive exertion and body movement (28% of all reported injuries), exposure to harmful substances (27%), falls, slips, obstructions or loss of balance (16%), accidents with the involvement of transport units (8%), attacks and violence (7%) etc. [2,8]. A key activity that leads to many body motion injuries among EMS workers is patient and equipment handling. Studies have shown that the most hazardous body motion tasks for EMS workers involved pulling a patient from a bed to a stretcher, initializing stair descent when using a stretcher, and lifting a

patient on a backboard from floor level [8]. Most of the body motion injuries were among workers over 40 years of age. Thus, heavy lifting, forceful exertion, and awkward posture cause serious trauma when repeated over a long period of time. Exposure to harmful substances is another occupational risk factor among prehospital EMS workers.

In addition, according to the scientific study conducted in 2020, the most common exposure injury was the result of accidental needlesticks, which can expose workers to bloodborne pathogens including HIV and hepatitis B [8].

Psycho-social risks include difficult working conditions, time pressure, unpredictability at work, long working hours, shift work, emotional impairment, adjustment problems, lack of support from colleagues, responsibility for patients' health and well-being and lack of adequate opportunities for food and rest - are important risk factors for occupational stress, burnout and fatigue among health workers[5]. Depending on the level of stress, prehospital EMS workers may have some diseases such as migraine, hypertension, and coronary arterial diseases, or may have behavioural and psychological problems, there may have an increase in the instances of chronic insomnia, exhaustion, impairments in memory and concentration, family problems, malpractice, affective disorders etc. In addition, there is a decrease in efficiency and professional performance, quitting work, lack of motivation, practicing addictive smoking, alcohol, sedatives, sleeping pills and antidepressants [3].

Another lesser-known occupational risk factor to which ambulance crews are exposed at work are incidents of violence and harassment involving workplace abuse, threats or assaults on health care workers, including physical abuse, sexual, verbal and psychological harassment and harassment at work, which may adversely affect the health and safety of workers. When the medical staff is confronted with acts of violence, the quality of the medical care provided decreases, emotional disturbances appear, there is an increase in the dismissal or absenteeism of the staff. Compared to other sectors, health workers are more likely to

suffer violence. Cases of assault on ambulance workers occur at a rate of at least 22 times higher than any other occupation. His research on the rate of assaults against EMS workers also reveals that most cases go unreported. [3,5, 7, 9].

Job satisfaction plays an important role in healthcare organization and management, being essential for maintaining and improving staff efficiency and consequently the quality of care provided [10]. Due to the size and scope of this profession and given the need to encourage specific research, this study focuses on specific aspects of prehospital emergency medical services associated with occupational risk factors.

Aim

The aim of the study was the hygienic estimation of occupational risk factors and the work environment in prehospital care emergency medical services in the Republic of Moldova.

Materials and methods

A review of the scientific literature, published in 2015-2022, through the databases of PubMed Central, Medline, Google Scholar, Cochrane Library, ScienceDirect etc. and the supplementary research was conducted to identify occupational risk factors and their impact on prehospital EMS workers.

A cross-sectional study was also carried out using the survey, which involves assessing the working conditions and health of the prehospital EMS workers. The study included the EMS doctors and nurses, from urban or rural areas, regardless of gender, nationality, ethnicity or religion.

Results

Were evaluated 110 scientific publications that approached the quality of life of EMS workers, occupational conditions and risk factors, including during the COVID-19 pandemic. Approximately 90% of the studies showed that the specific activities and working conditions of the

medical workers are due to the complex effects of physical, chemical and biological factors, the need for rapid diagnosis of any pathology outside the hospital, the need to provide qualified healthcare in an unpredictable environment and a 24-hour services, long distance travel, intellectual and psycho-emotional stress (Figure 1).

According to the studied literature and the hygienic classification of work, by the severity and intensity of the work process, the working conditions are harmful, class III, grade 2 and 3, which are characterized by exceeding the permissible levels for work condition and which have a negative effect on the employee's body [11]. At the same time, the literature review revealed the presence of consistent symptoms of depression, insomnia, anxiety and post-traumatic stress disorder of medical workers, especially as a result of the pandemic crisis caused by COVID-19 and more frequently among women.

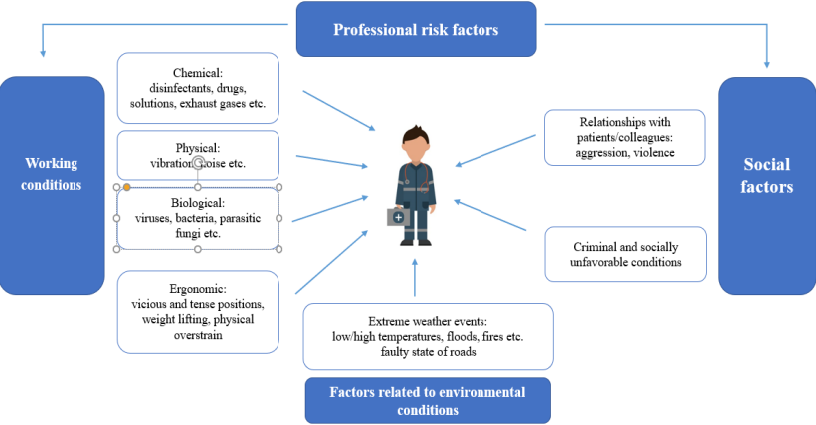


Figure.1. Occupational risk factors in prehospital emergency medical service.

As predictors of occupational stress, among medical workers suffering from anxiety, depression and post-traumatic stress, serve the fear of infection, reduced safety in performing medical procedures, excessive workload, lack of personal protective equipment, family

isolation, social distancing, stigma. The authors of more than 15 publications noted smoking, alcohol consumption, use of antidepressants, sedatives and hypnotics among the EMS workers, due to unfavorable working conditions, especially during the pandemic.

Regarding the survey, it was distributed to 5 regional departments, which include a network of 41 substations and 95 emergency medical points, located in the 5 geographical areas of the Republic of Moldova (Chisinau, Center, North, South, ATU Gagauzia). Given the higher number of nurses employed, among the 250 workers who participated in the survey, 198 (79.2%) were nurses and 52 (20.8%) doctors. Out of the total number of respondents, 215 (86%) were men and 35 (14%) women, and according to the living environment 128 (51.2%) people from urban areas and 122 (48.8%) subjects from rural areas.

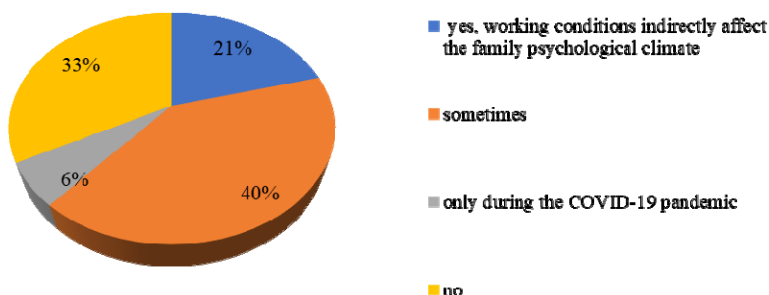


Figure. 2. The influence of working conditions on the family psychological climate.

In reference to internship, the distribution was by 5 age groups: "under 5 years" - 58 (23.2%) people, "5-10 years" - 43 (17.2 %) respondents, "11-20" - 65 (26%) medical workers, "21-30" - 41 (16.4%) people and "over 31 years old" - 43 (17.2%) subjects . The age group "11-20 years" was the most representative, with 26% of participants, followed by 23.2% of medical workers with less than 5 years of work experience. Regarding the influence of working conditions on the

relationship with family, 52 (21%) of the respondents mentioned that working conditions often negatively affect the relationship with family, 101 (40%) health workers indicated that sometimes, 15 (6%) of the subjects specified that during the COVID-19 pandemic the relationship with the family fell under the influence of working conditions, and in the case of 82 (33%) participants the working conditions had no influence on the relationship with family members (Figure 2). Importantly, the majority of 172 (68.8%) health workers in the survey are satisfied with their current job, 67 (26.8%) are partially satisfied, 6 (2.4%) are willing to change job activity and only 5 (2%) are not satisfied (Figure 3). Regarding working conditions, 193 (78.8%) respondents consider that they are satisfactory and partially influence the work capacity and health status, 47 (18.8%) medical workers expressed that they are favorable and do not influence the capacity and only 6 (2.4%) attributed working conditions to unfavorable and dangerous to health.

Given the unpredictability regarding the place and time of providing medical care, 62 (24.8%) respondents indicated that they are constantly working over the normal working hours, 150 (60%) sometimes perform their duties overtime, and 38 (15.2%) works according to the predetermined working regime. The specificity of the EMS work presupposes the work in shifts, 234 (93.6%) of the medical workers provide medical assistance in shifts. The analysis of the data obtained on the risk of occupational disease at work of EMS workers showed that 184 (73.6%) respondents indicated the existence of a very high risk of occupational disease, 56 (22.4%) health workers they attributed it to low risk, and 10 (4%) subjects mentioned that they do not know what the occupational risk of illness is. Following this study, it was found that during the pandemic 161 (64.4%) health workers (39 (24.2%) doctors and 122 (48.8% nurses)) were infected with SARS-CoV-2 virus at work. This is due to the specificity of the work, the high risk of exposure and infection while providing care to patients with COVID-19, being part of the frontline workers in the fight against the pandemic.

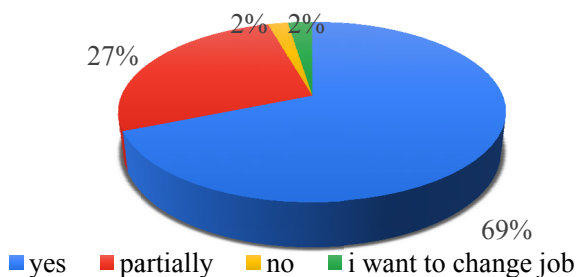


Figure. 3. Level of job satisfaction of medical workers.

At the same time, the data obtained, indicate the presence of chronic diseases in 83 (33.2%) medical workers, registered in the outpatient card or detected during the prophylactic medical examination, the most common being chronic gastritis, pancreatitis, ulcer indicated by 15 (18%) respondents, hypertension suffered by 15 (18%) medical workers and 5 (6%) participants in the study mentioned bronchitis, chronic sinusitis, allergy etc. In this context, 47 (56.6%) peoplenominated unfavorable working conditions, unsatisfactory diet, unbalanced work and rest, as etiological factors of the chronic diseases exposed above, 23 (27.7%) consider that the main etiological factor is the genetic predisposition and unfavorable working conditions, and 13 (15.7%) workers - other causes.

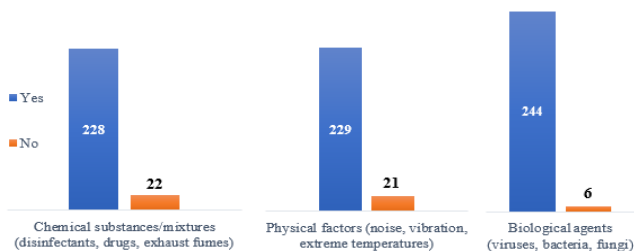


Figure 4. Professional contact with chemical, physical and biological factors.

Out of the total number of participants in the questionnaires, 228 (91.2%) medical workers indicated that they professionally chemicals (disinfectants, medicines, exhaust gases, etc.) contact at work. A similar situation is the presence of physical factors (noise, vibration, extreme temperatures) at work, 229 (91.6%) participants reported their presence in the occupational environment with potential impact on health. Likewise, the vast majority of 244 (97.6%) respondents indicated the presence of professional contact with biological factors - viruses, bacteria, fungi (Figure 4). Moreover, it is important that 55 (22%) medical workers suffered injuries at the place of, during the use of the equipment, inventory, transport, etc., of which 10 (18.2%) cases took place during the last 12 months.

Regarding the vicious habits among medical workers, the data obtained in the study show that 36 (14.4%) of those surveyed said they were regular smokers of cigarettes, 45% of them consume between 15-40 cigarettes per day, the stage of smoker from 15 to 42 years old. With regards to alcohol consumption, 137 (54.8%) medical workers enrolled in the study specified that they consume alcohol only occasionally, respectively 113 (45.2%) subjects mentioned that they do not drink alcohol.

Conclusion

This study explored working conditions, including occupational risk factors and their impact on the health and quality of life of prehospital EMS workers. The study involved 250 health workers, of whom 20.8% were doctors and 79.2% were nurses. According to internship, within the EMS service, the age group "11-20 years" was the most representative, with 26% of participants, followed by 23.2% of medical workers with more seniority 5 years old. The results of the study suggest the presence of overall negative impact of the factors specific to the activity on medical workers, namely: physical factors (noise, vibration, extreme temperatures etc.), chemical (disinfectants, drugs, exhaust), biological (viruses, bacteria, fungi).

Thus, 73.6% of respondents indicated the existence of a very high risk of occupational disease, and 2.4% of participating medical workers attributed working conditions to unfavorable and dangerous to health. The specificity of the EMS service involves working in shifts, 93.6% of medical workers work in shifts, and the unpredictability of the place and time of providing care leads to instability of the work regime, 24.8% of medical workers work over normal working hours. Also, 52 (21%) of the respondents mentioned that working conditions often negatively affect the relationship with the family.

Healthcare workers are the frontline workers in the fight against epidemics, pandemics, with the highest risk of exposure and infection providing care to patients. In this study, it was found that during the COVID-19 pandemic, 64.4% of EMS health workers were infected with the SARS-CoV-2 virus at work. Likewise, the analysis of the data on the health status of the surveyed subjects denotes the presence of chronic diseases (gastritis, pancreatitis, ulcer, hypertension, bronchitis, sinusitis, allergy, etc.) in 33.2% of medical workers, of which 56.6% of people have nominated that unfavorable working conditions, unsatisfactory diet, unbalanced work and rest as etiological factors of chronic diseases, 27.7% consider that the main etiological factor is the genetic predisposition and unfavorable working conditions. It is important to note that both the evaluated literature and the study data show the practice of vicious habits such as smoking, alcohol consumption etc. by medical workers, especially during the pandemic.

Human society is constantly developing, sometimes with faster steps, other times facing various problems and crises. Providing pre-hospital care is an expansive and diverse vocation, which plays a significant role in the day-to-day running of the medical complex. Prehospital EMS are a critical part of healthcare, but they are subject to many security threats.

Despite the fact that, in recent years, there has been a modernization of medical institutions and equipment, improved working conditions, the pre-hospital EMS remains a poorly studied field in hygiene and occupational health. It is an important and priority medical sector of the

state with continuous training needs to meet the current requirements of society.

Medical workers are one of the fundamental components of the health system, without which medical services, the beneficial functioning of medical institutions and the system as a whole, cannot be achieved. Given the substantial role of health in the lives of all people and appreciating the increased efforts of health workers, it is essential to focus on improving state policies, continuously improving working conditions and ensuring the high social status of health workers in the Republic of Moldova.

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EVALUATION OF FOOD SAFETY KNOWLEDGE AMONG TSU STUDENTS

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Abstract

Food safety knowledge is complex and multifaceted, extending from food makers and retailers to public health organizations and health educators. Nearly half of consumers consider the food they eat to be very safe, with a few minor concerns for the food's safety with regards to foodborne illnesses and food handling. Students exhibited a high level of confidence regarding their food safety behaviors (e.g. proper food handling, sanitation, and food preparation procedures) despite not having proper knowledge of the subject. The aim of this study is to assess the food safety knowledge, attitudes and practices (KAP) of students in Georgia.

This was cross-sectional on-line survey of University students. The survey was conducted using Google Forms platform in June-July 2020. An email requesting student participation and containing the link to the survey was sent to 200 students.

In total, 163 students completed the survey (response rate 81,5%). The mean age of students was 22.8 years (standard deviation [SD]: 3.8); 79 (48.5%) were women and 84 (51.5%) were men. The knowledge of the majority about the principles and recommendations for safe food was generally satisfactory. However, survey also identified major gaps in food safety knowledge: up to 40% of students did not know that open wounds and abscess can be sources for bacteria causing food poisoning, only 43.5% of students knew that frozen foods cannot be frozen again after thawed, while 76% of students did not know that frozen food cannot be thawed at room temperature.

Important aspect to consider is that food insecurity is an issue among university students in general and proper knowledge and practices are even more important for students staying away from home countries.

Introduction

Food safety knowledge is complex and multifaceted, extending from food makers and retailers to public health organizations and health educators [1]. WHO breaks down food safety into five easy to manage and comprehend categories that are applicable in many situations, from food service to food preparation in the home [2]. Same time food safety attitudes of consumers can be broken into six separate but related concerns, including chemical issues, health issues, spoilage issues, regulator issues, deceptive practices, and ideal situations [3]. Nearly half of consumers consider the food they eat to be very safe, with a few minor concerns for the food's safety with regards to foodborne illnesses and food handling [4]. Consumers "generally uncertain about the safety and quality of their food, despite the fact the food supply has never been safer and better controlled" [5]. There are holes in food safety knowledge that lead to consumers making uninformed and critical actions. Some of the more concerning knowledge deficient within the general population are incorrect knowledge regarding defrosting practices (improper cooling and reheating of cooked foods), lack of information about proper refrigeration temperatures, and knowledge about how to keep away from cross-pollution of foods [6]. Students exhibits just as many, if not more, food safety problems than the general population. Much like the general population, college students exhibited a high level of confidence regarding their food safety behaviors (e.g. proper food handling, sanitation, and food preparation procedures) despite not having proper knowledge of the subject [7]. Students, as a whole, believes they know the basics of food safety, such as avoiding cross pollution and practicing suitable disinfection procedures, but few shows many of these practices under control [8]. While most educational Institutions' health education focuses more on topics such as

alcohol and substance abuse, sexual health and nutrition, there is a need to inform the students about proper food safety [9]. A study focusing on the University of Maine, found that while students did have a good enough understanding of populations at risk for foodborne illness, they had poor knowledge of the foods that pose the biggest risk for foodborne illness [10]. Students typically engage in food safety behaviors that put them at a higher risk than the general population [9].

Aim

The aim of this study is to assess the food safety knowledge, attitudes and practices (KAP) of students in Georgia, including demographic factors associated with food safety KAP, in order to identify areas for, and groups that may benefit from, possible food safety education.

Materials and methods

This was cross-sectional on-line survey of University students. The survey was conducted using Google Forms platform in June-July 2020. An email requesting student participation and containing the link to the survey was sent to 200 students. Email provided information about the survey, explained that participation was voluntary and that the survey was anonymous, with no personal information directly identifying the person being collected.

The questionnaire was created by selecting questions from existing, internationally validated questionnaires [11-15]. Descriptive statistics were performed to describe responses to survey questionnaires, with results presented as numbers and percentages of answers to each question. Bivariate analysis was performed to assess differences between correct responses to food safety knowledge domain and respondent characteristics. Bivariate comparisons were tested using either Pearson's chi-square or Fisher exact test as appropriate. P value of <0.05 were considered statistically significant. All statistical analyses were performed using IBM SPSS Statistics version 22.

Results

In total, 163 students completed the survey (response rate 81,5%). The mean age of students was 22.8 years (standard deviation [SD]: 3.8); 79 (48.5%) were women and 84 (51.5%) were men. Socio-demographic characteristics of survey respondents are shown in table 1.

Food safety knowledge was assessed with nine questions. In general, majority of participants correctly answered most of the questions (Table 2). 84.7% of respondents correctly answered to the first question, 74.9% - to the second question, 79.7% - to the third question, 97% to the fourth question, 78.5% to the fifth question. Majority incorrectly answered the six and seventh questions 56.5% and 76.1%. Substantial proportion of participants (39.3%) incorrectly answered question 8. The ninth question was correctly answered by 96.3% of students.

Table 1. Socio-demographic characteristics of survey participants

Characteristics	n=163
Age categorise, n (%)	
<23	91 (55.8)
23+	72 (44.2)
Gender, n (%)	
Female	79 (48.5)
Male	84 (51.5)
Year of study, n (%)	
1	60 (36.8)
2	20 (12.3)
3	25 (15.3)
4	11 (6.7)
5	4 (2.5)
6	43 (26.4)
Monthly income, mean (SD)	1328 (1065)
Income categories, n (%)	
<1000	55 (33.7)
1000-<2000	80 (49.1)
2000+	28 (17.2)

Table 2. Food safety knowledge

Questions	Responses, n (%)				
	I certainly don't agree	I don't agree	Neutral	I agree	I certainly agree
Question 1 - Cooked and uncooked foods should be prepared with separate equipment and should be stored separately	1 (0.6)	6 (3.7)	18 (11.0)	6 (52.8)	52 (31.9)
Question 2 - The water used for every work in the kitchen must be drinkable	3 (1.8)	21 (12.9)	17 (10.4)	71 (43.6)	51 (31.3)
Question 3 - Bacteria multiply very quickly in the foods that are kept at room temperature and reach the level that can cause food poisoning	1 (0.6)	12 (7.4)	20 (12.3)	77 (47.2)	53 (32.5)
Question 4 - Bacteria can also be transmitted to food via poorly cleaned equipment	0 (0)	3 (1.8)	2 (1.2)	79 (48.5)	79 (48.5)
Question 5 - There is no harm in keeping animal originated food such as meat, milk, eggs at room temperature	58 (35.6)	70 (42.9)	14 (8.6)	14 (8.6)	7 (4.3)
Question 6 - Frozen foods can be frozen again after thawed	16 (9.8)	55 (33.7)	45 (27.6)	43 (26.4)	4 (2.5)
Question 7 - Frozen foods can be thawed at room temperature	10 (6.1)	29 (17.8)	40 (24.5)	71 (43.6)	13 (8.0)
Question 8 - Open wounds and abscess can be sources for bacteria causing food poisoning	6 (3.7)	24 (14.7)	34 (20.9)	77 (47.2)	22 (13.5)

Question 9 - The most important signs in food poisoning are; diarrhea, nausea, vomiting, fever, abdominal pain, fatigue and loss of appetite	2 (1.2)	3 (1.8)	1 (0.6)	85 (52.1)	72 (44.2)
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Results of bivariate analysis showed that in age categories a statistically significant difference was obtained for the second question (the water used for every work in the kitchen must be drinkable): 61 (67.0%) <23 years and 61 (84.7%) 23+ years, p=0.01.

Borderline difference was observed for the first question (cooked and uncooked foods should be prepared with separate equipment and should be stored separately): 81 (89.0%) <23 age vs. 57 (79.2%) 23+ years, p=0.08. No differences were found between men and women (Table 3).

Table 3. Bivariate association between food safety knowledge and age/gender

Questions	Age categories, n (%)			Gender, n (%)		
	<23 (n=91)	23+ (n=72)	p value	Female (n=79)	Male (n=84)	p value
Cooked and uncooked foods should be prepared with separate equipment and should be stored separately	81 (89.0)	57 (79.2)	0.08	70 (88.6)	68 (81.0)	0.17
The water used for every work in the kitchen must be drinkable	61 (67.0)	61 (84.7)	0.01	58 (73.4)	64 (76.2)	0.68
Bacteria multiply very quickly in the foods that are kept at room temperature and reach the level that can cause food poisoning	73 (80.2)	57 (79.2)	0.86	63 (79.7)	67 (79.8)	0.99

Bacteria can also be transmitted to food via poorly cleaned equipment	89 (97.8)	69 (95.8)	0.4 6	77 (97.5)	81 (96.4)	0.7
There is no harm in keeping animal originated food such as meat, milk, eggs at room temperature	74 (81.3)	54 (75.0)	0.3 2	65 (82.3)	63 (75.0)	0.25
Frozen foods can be frozen again after thawed	36 (39.6)	35 (48.6)	0.2 4	33 (41.8)	38 (45.2)	0.65
Frozen foods can be thawed at room temperature	21 (23.1)	18 (25.0)	0.7 7	16 (20.3)	23 (27.4)	0.28
Open wounds and abscess can be sources for bacteria causing food poisoning	51 (56.0)	48 (66.7)	0.1 6	49 (62.0)	50 (59.5)	0.74
The most important signs in food poisoning are; diarrhea, nausea, vomiting, fever, abdominal pain, fatigue and loss of appetite	89 (97.8)	68 (94.4)	0.2 5	77 (97.5)	80 (95.2)	0.45

Analysis by income status showed the least knowledge related to freezing/de-freezing of food were among students with highest income ($p=0.005$). High income students were also less knowledgeable of food poisoning symptoms (question 9), but the difference did not reach statistical significance ($p=0.09$).

Students in their first and second years of study were least knowledgeable that frozen foods cannot be frozen again after thawing, 35% of 1+2 year students answering correctly vs. 51.8% of 3+ year students, $p=0.03$ (Table 4).

Table 4. Bivariate association between food safety knowledge and monthly income/year of study

Questions	Number and percentage of correct answers by population sub-groups						
	Income, n (%)				Year of study, n (%)		
	<1000 GEL (n=55)	1000- <2000 GEL (n=80)	2000+ GEL (n=28)	p value	1/2 (n=80)	3+ (n=83)	p value
Cooked and uncooked foods should be prepared with separate equipment and should be stored separately	45 (81.8)	67 (83.8)	26 (92.9)	0.39	71 (88.8)	67 (80.7)	0.16
The water used for every work in the kitchen must be drinkable	38 (69.1)	60 (75.0)	24 (85.7)	0.25	55 (68.8)	67 (80.7)	0.78
Bacteria multiply very quickly in the foods that are kept at room temperature and reach the level that can cause food poisoning	42 (76.4)	64 (80.0)	24 (85.7)	0.6	67 (83.8)	63 (75.9)	0.21
Bacteria can also be transmitted to food via poorly cleaned equipment	54 (98.2)	77 (96.3)	27 (96.4)	0.8	79 (98.8)	79 (95.2)	0.18
There is no harm in keeping animal originated food such as meat, milk, eggs at room temperature	44 (80.0)	62 (77.5)	22 (78.6)	0.94	62 (77.5)	66 (79.5)	0.75
Frozen foods can be frozen again after thawed	21 (38.2)	44 (55.0)	6 (21.4)	0.005	28 (35.0)	43 (51.8)	0.03
Frozen foods can be thawed at room temperature	16 (29.1)	19 (23.8)	4 (14.3)	0.32	20 (25.0)	19 (22.9)	0.75
Open wounds and abscess can be sources for bacteria	30 (54.5)	50 (62.5)	19 (67.9)	0.45	45 (56.3)	54 (65.1)	0.25

causing food poisoning							
The most important signs in food poisoning are; diarrhea, nausea, vomiting, fever, abdominal pain, fatigue and loss of appetite	54 (98.2)	78 (97.5)	25 (89.3)	0.09	76 (95.0)	81 (97.6)	0.38

The knowledge of the majority about the principles and recommendations for safe food was generally satisfactory. (Especially this applies to the first of the five principles - "Keep clean", the second - "Separate", the third "Prepare properly" and the fifth "Use safe raw materials and water", although the only exception in this context was the greater number of respondents' ignorance of the fourth principle - "keep it properly" issue related of frozen food thawing regimes. In particular, the 7th question was not answered correctly by the majority, as the choice of thawing food at room temperature was made on the non-recommended method, namely thawing at room temperature, which is an undesirable method compared to other methods of thawing food, such as thawing in refrigeration using a refrigeration cell, thawing with running water, thawing using a preparation (thermal processing) process and thaw in the microwave. This answer was the only incorrect answer observed by the majority of respondents.

It should also be noted that most of the respondents have much better information about the clinical signs related to food poisoning than the knowledge about the prevention of these poisonings. In particular, the percentage of correct answers in this regard was as follows: 96% know the clinical signs of food poisoning, although the lowest knowledge of preventive measures is recorded (at least - 18%) on the question – regarding the importance of personal hygiene and health when preparing food.

Conclusion

Students showed good overall knowledge of food safety: average correct response rate across the 9 questions included in the questionnaire was 71%, including 75% to 85% of students giving correct response to 4 questions, while the rate was 96% and 97% for 2 questions. However, survey also identified major gaps in food safety knowledge: up to 40% of students did not know that open wounds and abscess can be sources for bacteria causing food poisoning, only 43.5% of students knew that frozen foods cannot be frozen again after thawed, while 76% of students did not know that frozen food cannot be thawed at room temperature. Poor knowledge of refrigerating/freezing requirements is not unique to our study, surveys in other countries also identified gaps in this direction [16]. Our study was not powered to determine the reasons for such low knowledge related to freezing practices, but it certainly underlines a potential area for education particularly given that a large proportion of foodborne diseases are caused by food improperly prepared or mishandled at home [17]. Another important aspect to consider is that food insecurity is an issue among university students in general and proper knowledge and practices are even more important for students staying away from home countries [18-19].

This study is subject to several limitations. Firstly, sampling strategy and a small sample size affect the representativeness of the study and thus generalizability of findings. It should be considered that study implementation was significantly affected by COVID-19 pandemic, initially planned as in-person survey, we have to switch to an online format and also due to the imposed restriction in spring 2020 study was postponed coinciding with summer break.

Another limitation is that the study surveyed medical students only, who are expected to have better knowledge about food safety and related issues. On the other hand, 36.8% of participants were in their first of the study and up to two thirds were in the first 3 years of the study, thus they did not get yet education on foodborne diseases and therefore survey was

able to capture important segment of medical student population that might be particularly vulnerable to foodborne diseases.

Despite of limitations our study provides important information both for future research and action. It was the first study of its kind that laid the foundation for understanding food safety knowledge and practices among students in Georgia. Studenthood is essential period for establishing dietary habits and lifestyle behaviors that may have short- and long-term health effects including foodborne diseases (short-term) and chronic disorders (long-term).

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EVALUATION OF THE QUALITY OF THE DOCTORAL PROGRAM IN HIGHER EDUCATION INSTITUTIONS OF THE KYRGYZ REPUBLIC

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Abstract

A doctoral degree is perceived as the pinnacle of educational achievement. A doctoral degree is a central pillar in establishing the human capital needed for global sustainable social, economic, and political development. Despite the rising number of students registering for PhD programs, research has shown concern about a high level of non-completion, low completion rates, and long, tedious time for completion in many institutions globally and Kyrgyzstan. Specifically, the paper will focus on institutional factors, supervision, and facilities. The paper will contribute to limited existing facts in doctoral studies and spotlight factors shaping the doctoral landscape. The purpose of the paper is to research of implementation of measures to strengthen the research and innovation potential in Kyrgyzstan to improve the content and quality of doctoral programs in Kyrgyzstan. The present paper reviewed and analyzed a survey of 471 doctorates, 42 administrative staff, and 92 scientific supervisors. This article is a comprehensive overview of the factors influencing the doctoral program in Kyrgyzstan. It represents a unique contribution to doctoral studies as it attempts to bring together all evidence-based factors discovered to date.

Introduction

A doctoral degree is a central pillar for all nations' social, economic, and political development. The economy demands a workforce with high-quality knowledge, skills, and attitudes that can enhance transformation in all spheres of life and achieve Sustainable Development Goals [1]. The expansion of higher education institutions

depends on their level of throughput in the form of PhD graduates to revamp their human capital base. The demand for PhD degree holders is thus increasing not only to meet the demand of the universities but also for its potential to stimulate national development, build a creative problem-solving human resource base and promote technological advancement. The most significant factor driving expansion in PhD provision has come from pressure at the national level to upgrade the qualifications of higher education staff to the PhD level, mainly resulting from the expanded higher education institutions coupled with increased enrolments. It is important to note that for any country to develop substantially, research output is paramount since the role of researchers is critical in driving scientific output and innovation [2]. This, therefore, calls for increased training of

Results

There are 16 universities in the Kyrgyz Republic with postgraduate, doctoral, and PhD programs. From the statistics of the last eight years, it is clear that the maximum number of applicants and graduates for the PhD program falls in 2017. Of the 2,314 students who entered in 8 years, 582 defended their thesis. In doctoral studies, the picture was different. Of the 99 doctoral students who entered in 2020, 50 doctoral students completed the defense. PhD doctoral studies show the following indicators: 346 enrolled, 99 defended.

Indicators of quality faculty: The number of teachers is 7,978: Doctors of Sciences - 423, PhD professors - 75, candidates of sciences - 1642, masters - 1376, graduates – 4462. The number of publications in the scientific databases Web of Science and Scopus over the past five years – is 735. All surveyed universities have implemented efficiency indicators. Universities noted the following performance indicators of employees and structural departments: awards, articles, manuals, monographs, participation in conferences, advanced training, internships, participation in international competitions, patents, dissertation defenses, academic mobility, guest lectures, attracted investments for teaching

staff, publications, social surveys, patents, design activities, research work, monitoring and analysis, inventive activity.

The questionnaire included 24 components of the curriculum aimed at developing research skills. Postgraduate studies show 100% fulfillment of the listed skills. 4 components showed the smallest percentage of study: financial planning of the experiment, efficient use of open-source resources, the timing of the study process management, and development of entrepreneurial skills.

Indicators of administrative and scientific departments. Regulations on the structure of postgraduate and doctoral studies have 15 universities out of 20. Only 3 out of 20 universities have a PhD department. There are 55 employees in postgraduate and doctoral studies, and 97 employees work in the structure of PhD doctoral studies.

Funding for university science. Financing of postgraduate education programs is made from the budget of the university. Statistics show that postgraduate studies are the most financially supported, 83.72%. 10.45% is paid for doctoral studies, and the PhD doctoral program receives only 0.39% of the subsidies. High costs of financing postgraduate studies from the general budget of the university for all indicators: development of the structure, salaries of scientific supervisors, research equipment/laboratories, participation of teaching staff in conferences, internships of teaching staff, publications, research and educational environment, training of one student, hospitality expenses. Additional conditions have been created in postgraduate and doctoral studies, such as research laboratories, artificial intelligence laboratories, and a research department. Universities also provide financial incentives for publishing activities, the publication of methodological teaching aids, and funding for the publication of articles in scientific journals.

Research Indicators. The number of full-time young scientists under 35 is 1878, 23.54% of the total number of teachers.

Research indicators refer to indicators that measure whether planned activities have been carried out. Examples include meetings, training courses, software development, and patents.

Nine out of 20 universities performed well in research. They have a technopark, an IT academy, an automated brain electroencephalogram data classification system, software and algorithmic tools for bedside monitor data aggregation, innovative copyright programs, invention certificates, a technology, and innovation support center, and international projects, and 114 patents.

For the period from 2015 to 2020, the number of publications - 54,936 articles: international scientific journals - 15,343, national scientific journals - 27,044, conferences - 12,549.

External stakeholders funded seven projects.

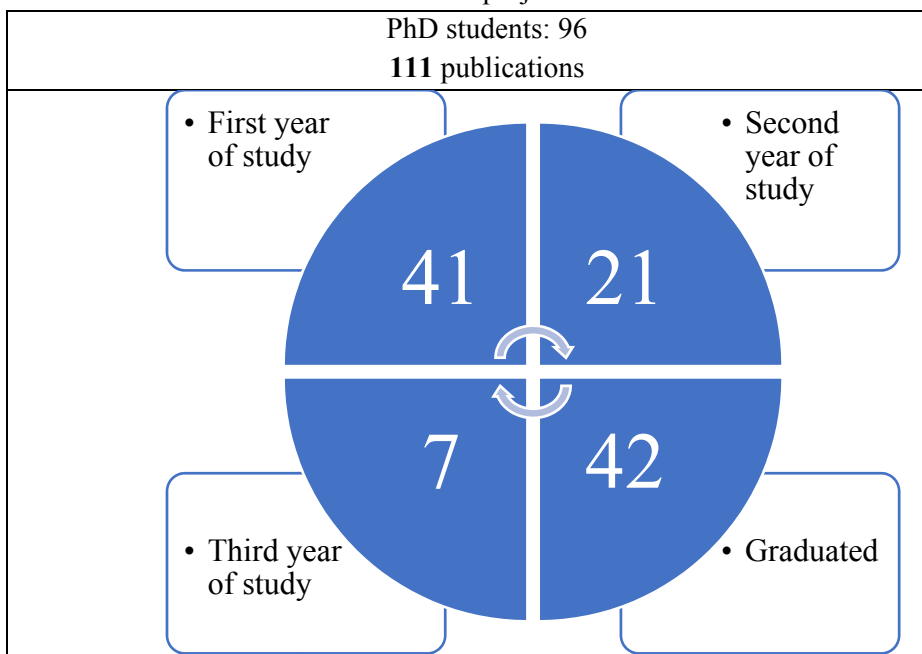


Figure 1. Publication activity of PhD students during the period of study.

All universities cooperate with academic institutions of the National Academy of Sciences of the Kyrgyz Republic. Ten universities have grants for scientific research from the Ministry of Education and Science of the Kyrgyz Republic. Based on universities, scientific-practical and

methodological events are held every year, such as seminars, webinars, scientific conferences, round tables, brain-rings, and video conferences. Brainstorming as a method of interactive learning is widely used in classrooms and scientific seminars. Twelve universities have an anti-plagiarism system. Articles are accepted in strict accordance with the requirements, and the originality of the text is not less than 70%. Only original scientific materials are published that highlight current problems of the branches of knowledge represented in research activities and aim to introduce the results of scientific research into educational activities. Sixteen universities have access to a wide range of library databases, including global educational resources and platforms.

The quality of the research team. Research teams have been formed at 13 universities. Research teams are formed from among doctors of sciences and candidates of sciences. The quality of the research team is a whole concept that covers all functions and activities: teaching and academic programs, research, staffing, facilities, buildings, equipment, work, and academic environment. Persons with a scientific degree participate in the Interdepartmental working groups to consider legal documents. There are also professional teams of specialists in comparative historical, typological, and comparative linguistics who have significant experience in conducting linguistic research [4].

Quality of resource management. Quality management refers to the procedures, processes, or systems that the higher education institution uses to maintain and develop the quality of its activities [5].

Intra-university resource management is determined by the need to organize the interconnected movement of resource flows of all types, their coordinated distribution within the university, rational selection, formation, and accumulation. Resource management correlates with the university's management as a part and whole. Therefore, the patterns inherent in the university underlie the management of its resources, taking into account the object of management, its place, and its role in the activities of the university.

6 out of 20 universities note the high quality of resource management, where the Quality Department monitors the educational process.

Impact of scientific research results. This question was assessed by four indicators: impact on society, environmental impact, economic impact, and impact on productivity. There is 100% economic impact from research. Each scientific research is carried out to achieve the economic efficiency of the work carried out at the enterprise and industry level. According to the optimistic final results of the research, acts of implementation in production are drawn up, where the economic effect of this research is indicated. It has an impact on the banking sector, digitalization, and medicine.

Equally relevant is the environmental impact indicator. Research is being carried out in ecological tourism on the issues of sustainable development of the mountainous regions of Kyrgyzstan in the context of climate change. According to scientists, harmoniously inscribing scientific achievements in natural processes is one of the main tasks of modern scientists. Separate scientific studies of adjuncts relate to the problems of investigating offenses in the field of ecology. So, in 2019, the dissertation works for the degree of candidate of legal sciences on the topic: "Methodology for investigating crimes in the field of ecology" was successfully defended. Scientific results were presented in particular to the State Forestry Agency and law enforcement agencies for application in law enforcement. The departments are working on creating devices that allow to save the environment, reduce emissions into the atmosphere, and save non-renewable energy sources. Programs are being developed to conserve specific plant and animal species.

Employment. All graduate and doctoral students are already employed (they work in universities or educational institutions, industrial enterprises, etc.). Indicators of the administration of scientific departments showed no separate departments for each program; they are often combined. There are 55 employees in postgraduate and doctoral studies, and 97 employees work in the structure of PhD doctoral studies.

The general statistics of postgraduate/doctoral students' employment for six years after graduation are postgraduate studies - 522, PhD studies - 71, and doctoral studies – 24.

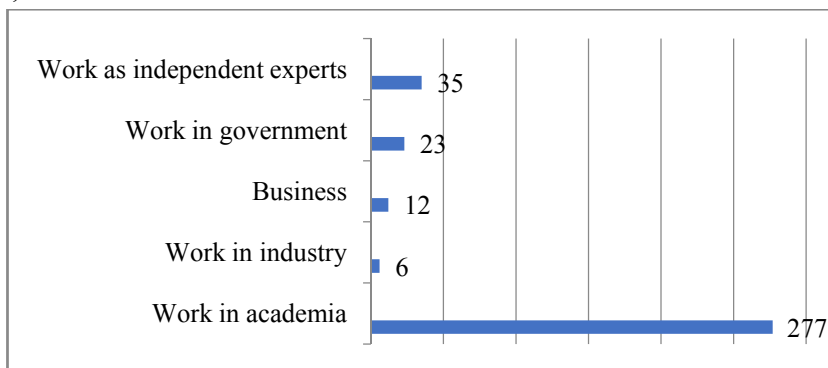


Figure 2. Graduates employment.

As can be seen from Figure 2, a large number of graduates remain in the academic environment. This figure confirms the cause's interest in a better understanding doctoral education and doctoral employment. Using the doctoral degree seems more common when working in academia or research-intensive positions outside academia.

The descriptive nature of the profiling and trend analysis has highlighted areas of institutional and disciplinary differences that warrant closer examination [6].

Discussion

This research among young scientists has acknowledged the role of research in the social and economic development of the country. With realizing the need to build a high-quality human resource base needed to drive sustainable development Goals agenda, investment in PhD studies is imperative. This is demonstrated by the efforts expended to expand postgraduate studies in many universities. However, the unprecedented increase in students seeking admission into doctoral studies has not matched the financial allocation to research nationally and at the institutional level.

Quality enhancement processes are also prominent in doctoral education. Supervision is one of the areas where the DERECKA project has shown how priority is given to quality enhancement and the creation of a quality culture. Institutions in Kyrgyzstan are establishing training for supervisors and creating institutional spaces for exchanging experiences and good practices between supervisors.

A research environment must have a high degree of academic quality or critical mass of research. Formal criteria such as staff requirements or publications are widely used. The initiatives to pool research demonstrate innovative paths to ensure a critical mass of research as the foundation for doctoral education. It is essential to underline that ensuring the quality of the research environment is different from ensuring quality in teaching environments, even in institutions that emphasize research-based education. Enabling a doctoral candidate to produce actual knowledge requires a different environment to the environments that enable students to understand and apply knowledge.

It is necessary to develop specific systems for quality assurance in doctoral education based on the diverse institutional missions and, crucially, linked to the institutional research strategy. For this reason, there is a strong link between the assessment of the research of the institution and the assessment of the research environments that form the basis of doctoral education. Assessment of the academic quality of doctoral education should be based on peer review and be sensitive to disciplinary differences.

Conclusion

Thus, introducing the third stage of education - PhD - is in the implementation process. In this regard, several problematic issues remain that need to be addressed to improve the quality of the PhD program.

The issue of financing doctoral studies is very acute. It is necessary to provide conditions for doctoral students to finance their scientific research, including state support, ensuring monitoring and high quality of doctoral programs.

It is necessary to actively involve all interested parties, including business communities, in developing and improving the program and introducing a system of interaction and integration of research activities and the educational process.

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GENDER DIFFERENCES IN HEALTH-RELATED QUALITY OF LIFE PARAMETERS AMONG THE ADULT POPULATION DURING COVID-19

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Abstract

The apparent differences in health-related quality of life (HRQoL) are partially explained by sociodemographic and clinical profiles between genders. The aim of this study was to evaluate the impact of gender on HRQOL using a generic Short Form SF-36 among the adult population during COVID-19. A total of 400 people (277 female and 123 male) participated in this study. We analyzed baseline HRQOL data for gender differences from a multisite, randomized controlled study among adults. Female residents exhibited significantly high scores than those of male residents for quality of life in the domains of vitality (63.0 females vs 58.9 males; $p=0.02$) and social functioning (82.2 females vs 77.5 males; $p=0.03$). Evaluation SF-36 domains in different gender groups showed, that in female and male groups with positive COVID 19 test significantly low scores for quality of life were in the domains of physical functioning, role limitation due to physical health, role limitation due to emotional problems, vitality, social functioning and pain. We conclude that there are gender differences related to better QOL and the impact of Covid-19 on HRQoL is substantial and the same

in different gender groups. Also the probability of COVID-19 infection is higher in people with low physical activity level.

Introduction

Concept of quality of life has become widespread in the perspective of socioeconomic and cultural development [21]. Health-related quality of life (HRQOL) is a widely-accepted measure of illness state that is related to morbidity and mortality [8]. The assessment of HRQoL helps healthcare providers identify the factors affecting quality of life (QoL) and recognize the aspects of COVID-19 management that needs to be enhanced for improving the QoL of patients [3]. The most evaluated health status instrument and the most reported within randomized controlled trials Health Survey is the Short Form 36 (SF-36) [7].

Two genders manifest significant biological, behavioral, social and cultural differences. Gender differences are also visibly reflected in social conditions, lifestyles, health perception, and health care behaviors [12]. Previous studies examining gender differences of self-rated HRQOL show that women report a lower HRQOL than men in different populations [5,15,18]. Hajian-Tilaki, K et al found out, that on average women have significantly lower scores of self-reported QoL than men in elderly. The apparent differences in HRQoL are partially explained by sociodemographic and clinical profiles between genders [14]. Additionally, good QOL for men was associated with retirement, mixed living arrangement and physical activity, whereas good QOL for women was associated with physical activity; these results are similar to those of other studies [11,16,19].

The pandemic can be managed if we follow new policies that implement economic and public health changes worldwide. [10]. COVID-19 has impacted many aspects of peoples' quality of life (QOL) and sociodemographic attributes of people with a history of COVID-19 revealed significant differences in some QOL domains [2]. The study of Zwar L. et al. showed, that female informal caregivers were more negatively affected than male informal caregivers during the pandemic,

as indicated by higher levels of anxiety and lower quality of life [21]. Lindahl A. et al also found out, that women reported more symptoms and a lower quality of life than men and findings highlight the differences in recovery between men and women and call for active rehabilitation of COVID-19 patients [17].

Previous studies have shown, that i) the physical activity (PA) reduction was associated with worse disease symptoms, depression, perceived health, mental and physical components of quality of life, ii) sufficient physical activity levels were associated with a lower prevalence of COVID-19-related hospitalizations and iii) there is a positive relationship between physical activity and various indicators of the quality of life [1,4,6,9,13].

The aim of this study was to evaluate the impact of gender on health-related quality of life (HRQOL) using a generic Short Form SF-36 among the adult population during COVID-19.

Material and Methods

A total of 400 people (277 female, mean age 39.0±1.0 and 123 male, mean age 37.1±1.5) participated in this study from September 2021 to March 2022. We analyzed baseline HRQOL data for gender differences from a multisite, randomized controlled study among adults using Short Form 36 (SF-36). A survey was also conducted to identify a history of COVID-19 test and the level of physical activity (PA) to evaluate i) the impact of COVID 19 on HRQOL in different gender groups and ii) frequency of COVID 19 cases in different physical activity level groups.

Statistical analysis was performed using SPSS software package. One factor analysis of variance (ANOVA analyzes) was performed. The arithmetic mean is estimated using Student's t-factor, which is equal to 2 (95% certainty, $p < 0.05$).

Results

In our study 400 residents completed the survey: 277 (69.2%) were female and 123 (30.8%) were male. Female residents exhibited signi-

ificantly high scores than those of male residents for quality of life in the domains of vitality (VT) (63.0 females vs 58.9 males; $p=0.02$) and social functioning (SF) (82.2 females vs 77.5 males; $p=0.03$), see Table 1.

Table 1. Comparison of the SF-36 domain scores for the general population by gender

The quality of life parameters	Gender	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Sig. (2-tailed)
						Lower Bound	Upper Bound			
Physical functioning (PF)	female	277	81.11	26.606	1.599	77.96	84.26	0	100	0.334
	male	123	78.33	26.135	2.357	73.67	83.00	0	100	
	Total	400	80.26	26.460	1.323	77.65	82.86	0	100	
Role limitation due to physical health (RP)	female	277	68.48	37.082	2.228	64.10	72.87	0	100	0.362
	male	123	64.84	36.333	3.276	58.35	71.32	0	100	
	Total	400	67.36	36.846	1.842	63.74	70.98	0	100	
Role limitation due to emotional problems (RE)	female	277	68.29	39.205	2.356	63.65	72.93	0	100	0.342
	male	123	64.31	37.277	3.361	57.65	70.96	0	100	
	Total	400	67.07	38.620	1.931	63.27	70.86	0	100	
Energy/fatigue/Vitality (VT)	female	277	63.04	15.729	.945	61.18	64.90	10	100	0.018
	male	123	58.86	17.247	1.555	55.78	61.94	10	100	
	Total	400	61.76	16.304	.815	60.15	63.36	10	100	
Emotional well-being/Mental health (MH)	female	277	56.31	12.186	.732	54.87	57.75	20	80	0.421
	male	123	57.34	10.907	.983	55.39	59.29	24	84	
	Total	400	56.63	11.803	.590	55.47	57.79	20	84	
Social functioning (SF)	female	277	82.16	19.480	1.170	79.85	84.46	12	100	0.026
	male	123	77.52	18.603	1.677	74.20	80.84	38	100	
	Total	400	80.73	19.311	.966	78.83	82.63	12	100	
Pain (BP)	female	277	81.00	24.175	1.453	78.14	83.86	12	100	0.436
	male	123	79.01	22.334	2.014	75.02	82.99	10	100	
	Total	400	80.39	23.615	1.181	78.07	82.71	10	100	
General health (GH)	female	277	53.71	13.721	.824	52.08	55.33	10	85	0.496
	male	123	54.76	15.188	1.369	52.05	57.47	10	100	
	Total	400	54.03	14.177	.709	52.64	55.42	10	100	

The results of the study also showed that the 176 (44%: 71.6% female and 28.4% male) had positive and 224 (54%: 67.4% female and 32.6% male) had negative COVID 19 test in anamneses. Evaluation SF-36 domains in different gender groups based on the results of the COVID-19

test in anamnesis showed, that in female and male groups with positive COVID 19 test significantly low scores for quality of life were in the domains of physical functioning (PF) (74.3, $p=0.00$ females vs 69.5, $p=0.00$ male), role limitation due to physical health (RP) (58.9, $p=0.00$ females vs 54.0, $p=0.00$ male), role limitation due to emotional problems (RE) (57.3, $p=0.00$ females vs 51.2, $p=0.00$ male), vitality (VT) (59.5, $p=0.00$ females vs 52.7, $p=0.00$ male), social functioning (SF) (77.2, $p=0.00$ females vs 70.9, $p=0.00$ male) and pain (BP) (74.9, $p=0.00$ females vs 71.4, $p=0.00$ male), see Table 2.

Table 2. Assessment of quality of life parameters in different gender groups based on the results of the COVID-19 test in anamnesis

FEMALE GROUP							
The quality of life parameters	Covid 19	N	Mean	Std. Deviation	Std. ErrorMean	t	Sig. (2-tailed)
Physical functioning (PF)	pozitive	126	74.25	29.806	2.655	-4.028	.000
	negative	151	86.83	22.126	1.801		
Role limitation due to physical health (RP)	pozitive	126	58.89	38.256	3.408	-4.042	.000
	negative	151	76.49	34.185	2.782		
Role limitation due to emotional problems (RE)	pozitive	126	57.27	40.597	3.617	-4.412	.000
	negative	151	77.48	35.606	2.898		
Energy/fatigue/ Vitality (VT)	pozitive	126	59.52	16.606	1.479	-3.465	.001
	negative	151	65.97	14.366	1.169		
Emotional well-being/Menthal health (MH)	pozitive	126	55.56	12.760	1.137	-.32	.352
	negative	151	56.93	11.692	.951		
Social functioning (SF)	pozitive	126	77.24	19.657	1.751	-3.934	.000
	negative	151	86.25	18.414	1.498		
Pain (BP)	pozitive	126	74.86	25.271	2.251	-3.965	.000
	negative	151	86.13	22.024	1.792		
General health (GH)	pozitive	126	53.06	15.543	1.385	-.722	.471
	negative	151	54.25	12.018	.978		

MALE GROUP							
The quality of life parameters	Covid 19	N	Mean	Std. Deviation	Std. Error Mean	t	Sig. (2-tailed)
Physical functioning (PF)	pozitive	50	69.50	28.966	4.096	-3.219	.002
	negative	73	84.38	22.251	2.604		
Role limitation due to physical health (RP)	pozitive	50	54.00	37.239	5.266	-2.814	.006
	negative	73	72.26	33.994	3.979		
Role limitation due to emotional problems (RE)	pozitive	50	51.20	39.346	5.564	-3.361	.001
	negative	73	73.29	33.165	3.882		
Energy/fatigue/ Vitality (VT)	pozitive	50	52.70	16.420	2.322	-3.420	.001
	negative	73	63.08	16.617	1.945		
Emotional well-being/Mental health (MH)	pozitive	50	56.02	10.638	1.504	-1.113	.268
	negative	73	58.25	11.069	1.296		
Social functioning (SF)	pozitive	50	70.94	18.975	2.683	-3.361	.001
	negative	73	82.02	17.051	1.996		
Pain (BP)	pozitive	50	71.40	22.980	3.250	-3.247	.002
	negative	73	84.22	20.447	2.393		
General health (GH)	pozitive	50	52.10	16.134	2.282	-1.616	.109
	negative	73	56.58	14.334	1.678		

The history of a COVID-19 positive test was reported in 21,0% of participants in high level PA group, 37,7 % in moderate level PA group and 36,4% in low level PA group.

Conclusion

Thus, we conclude that there are gender differences related to better QOL. The impact of Covid-19 on HRQoL is substantial and the same in different gender groups. Also the probability of COVID-19 infection is higher in people with low physical activity level.

The results of this study can be used to develop programs to promote better living standards and services to reduce gender disparities and ultimately, to improve the QoL

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GENDER-BASED VIOLENCE AS A PUBLIC HEALTH PROBLEM IN YEREVAN

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Abstract

Domestic violence is defined as the violent and/or dominant behavior of a family member towards other members of the same family. Women are more likely to be physically assaulted or killed by someone they know, often a family member, husband, or intimate partner. Violence against women can cause a number of short-term, long-term physical and mental health problems.

A quantitative survey was conducted. The participants of the research were 436 females aged 18-60, registered in the Facebook social network, living in the city of Yerevan. 67 (15%) of the participants were unmarried, 351 (81%) were married, 15 (3%) were divorced, and 3 persons (1%) were in a civil marriage. The average age of marriage for women was 21.71, the maximum was 31, and the minimum was 18. There were 214 (49%) women who were abused during their lifetime, 222 (51%) were not abused. 197 women (92%) reported being abused at home, 12 women (6%) at work, 2 (1%) outside and 3 (1%) elsewhere. 184 women (86%) were abused by a husband or partner.

Introduction

Domestic violence is defined as the violent and / or dominant behavior of a family member towards other members of the same family. Within families where the law is relatively less involved, the highest incidence of violence is directed at more vulnerable (mentally / physically fragile) groups (eg, women, children) [1]. Although "women" and "men" can be as victims of violence and perpetrators of violence, but

the characteristics of violence are more often associated with violence against women. Men are more likely to be killed or injured in wars or dispute [2]. Women are generally perceived as victims of violence and men as perpetrators of violence [3]. Women are more likely to be physically assaulted or killed by someone they know, often a family member, husband, or intimate partner [4]. The model most often used to understand violence against women is the "domestic violence" framework, developed mainly by specialists in the field of sociology and psychology. "Domestic violence" refers to all forms of domestic violence, regardless of the age or sex of the victim or abuser. Although women are often abused or killed by their husbands, parents, or other family members, mostly inside the home, the concept of "domestic violence" does not include the many forms of violence perpetrated against women outside the home. For example, harassment in the workplace [5]. The official definition of gender-based violence was first introduced in 1993, when the General Assembly adopted the Declaration on the Elimination of Violence against Women. According to this definition gender-based violence includes a number of harmful behaviors against women because of their gender, including violence against women, sexual assault, covert murder, marital rape, lack of access to food, and forced prostitution etc. [6]. Violence against women can cause physical, sexual or psychological harm, which in many cases deprives women of individual or social freedom [7].

Violence against women can cause a number of short-term, long-term physical and mental health problems. Violence can result in physical injuries, such as cuts, bruises, penetrating injuries such as knife wounds, hearing and vision loss, headaches, arthritis, hypertension, and heart disease. Sexually transmitted infections, including human papillomavirus, can lead to cervical cancer and eventually death [8]. There are three main types of violence against women [9]:

- psychological
- physical
- sexual

The consequences of violence on the victim's health are severe. In addition to direct injuries from the attack, abused women may suffer from chronic pain, gastrointestinal disorders, and psychosomatic symptoms. Although psychological violence is often considered less severe than physical violence, health care providers and advocates around the world argue that all forms of domestic violence can have devastating physical and mental health consequences. Domestic violence is associated with mental health problems such as anxiety, post-traumatic stress, and depression. Women who have been abused may have unplanned or early pregnancies, an increased risk of sexually transmitted diseases, including HIV / AIDS [10].

Psychological damage can cause feelings such as helplessness, mistrust, depression, suicidal ideation as well as attempts. Psychological damage is accompanied by physical damage: chronic headaches, mental disorders, alcohol and drug use [11,12].

Violence takes place at the individual, family, community and community levels. Violence against women has a number of risk factors, including [13].

- Low level of education
- Experience of sexual violence
- History of child abuse (crime and experience)
- Witness domestic violence (mostly within one's own family)
- Antisocial personality disorder
- Alcohol use
- Having multiple partners, or suspecting your partner of infidelity
- Thoughts that justify violence
- Thinking of classifying men as superior and women as inferior

Risk factors for being abused by a partner.

- Previous case of violence
- Disagreements, grievances, communication difficulties with each other
- Behavior of men controlling women

35% of women worldwide have experienced physical and / or sexual violence at some point in their partner's life. However, some national studies show that up to 70 percent of women have experienced physical and / or sexual violence by a partner in their lifetime. Evidence shows that women who have been physically or sexually abused by their partner have higher rates of depression, abortion, and HIV than women who have not been abused [13].

In 2006, the World Health Organization (WHO) conducted a global survey to determine the prevalence of domestic violence against women. According to the study, the survey was conducted from 2000 to 2003 in 15 locations in 10 countries (randomly selected developing and developed countries). A total of 24,097 women (15 to 49 years old) were interviewed. Each participant was asked a number of questions about domestic violence. "Did the partner use violence against them? Physically, sexually, or emotionally. The level of violence - when did the violence occur?" Then, a psychological analysis was performed, which assessed the design of the study, its validity and reliability. They found that 30% to 60% of women were victims of domestic violence. The absolute range was 15% to 71%, with physical and sexual violence being the most common. Research has shown that domestic violence against women is so prevalent around the world that women are more likely to be abused by their partner than by an unknown person or perpetrator [9].

In 2017, there were 87,000 cases of premeditated murder of women, of which more than half (50,000 / 58%) were killed by their partner and / or family members, which means that 137 women are killed daily by their partner and / or family members. More than a third (30,000) of women deliberately killed in 2017 were killed by their current or ex-partner [14]. According to a UN study, every third woman in the world is exposed to at least one type of violence [15].

According to the WHO, the average incidence of violence against women is 23.2%, in the Western Pacific 24.6%, in the Eastern Mediterranean 37%, and in Southeastern Asia 37.7% [13].

The World Health Organization's "Violence Against Women" study provided a rare opportunity to study the "manifestation" of violence in different places. Research has shown that physical violence occurs in conjunction with other forms of violence; violence tends to intensify over time. The results of the study confirm that the acts of physical or sexual violence by a partner or spouse are continuous over time [9].

A study conducted among women in the United States found that most of the physical injuries recorded in women were caused by physical violence. Documented injuries sustained as a result of physical violence include cuts, concussions, fractures, and gunshot wounds [16]. Population-based studies show that 40 to 75 percent of women who are physically abused by a partner reports injury not immediately, but at some point, in their lives [4].

However, injuries are not the result of the most common health damage caused by violence. The most common are "functional disorders", such as work vacations, which often do not have a clear justification for the employer because women do not talk about the case, including gastrointestinal disorders, various chronic pain syndromes, including chronic joint pain. Studies have consistently linked such disorders to a history of physical or sexual violence. Women who have been abused also tend to have worse physical functions, more physical symptoms, and spend more days at home than women who have not been abused [17].

A survey conducted in Georgia found that violence is a common experience in the lives of many women: 14% of 6006 women aged 15-64 reported having been physically, sexually and / or psychologically abused by a partner or spouse. Psychological violence and controlling behavior was considered the most common type [18].

According to a 2014 study on violence against women by the Hacettepe University, Institute for Population Studies in Turkey, 4 out of 10 women in Turkey are subjected to physical or sexual violence [19].

In 2013, the BBC published in one of its articles the data of the Ministry of Internal Affairs of Russia, where it is reported that 600,000

women were physically or psychologically abused at home, 14,000 of them died that year from injuries caused by their partner [20].

The situation of domestic violence in post-Soviet countries (of which Armenia was a part until 1991) differs from that in Western countries, as the fight against domestic violence in those countries began in the 1990s [21].

In Armenia, domestic violence is often ignored as a serious family problem, the society thinks that this problem should be solved within the family, which makes women more vulnerable, because in some families a woman's word is not heard, her rights are ignored.

Although there are a number of surveys conducted since 2007 to evaluate domestic violence in Armenia, there are still shortcomings in domestic violence statistics due to the lack of a control system [22].

Domestic violence is widespread in Armenia [23]. The 2011 Domestic Violence Survey conducted by the Proactive Society NGO for the Yerevan office of the European Organization for Security and Cooperation (OECD) found that 59.6% of respondents had been subjected to violence in their lifetime [22].

A nationwide survey conducted by the United Nations Population Fund's National Statistical Service in 2008 found that 25% of women surveyed were subjected to psychological violence, 61% to control behavior, and 9% to physical and / or sexual violence [23].

Armenia is a country where all major international human rights conventions and regional instruments operate [24]. However, there is no specific law against violence against women in the Criminal Code [25].

There are currently two shelters for women victims of domestic violence in Armenia: the Women's Rights Center and the Women's Support Center. In addition to providing safe haven, these organizations also work in other areas, such as enforcement law, awareness raising, education campaigns, and a range of support services. NGOs are currently working in the area of partner violence through hotlines and consultations [26].

According to the NGO Against Violence Against Women, 2,000 cases of domestic violence occur in Armenia each year. Between 2012 and 2017, 50 women died as a result of violence [27]. Despite the fact that violence in Armenia is one of the least reported crimes, we can assume that the real picture is much worse.

According to the official data of the RA Investigative Committee, in the first half of 2017, 215 criminal cases of domestic violence were investigated in Armenia. Almost one third of criminal cases are related to violence committed by men against their partners, moreover, murders committed in the context of domestic violence in 2015 accounted for 17% of homicides in the country [28].

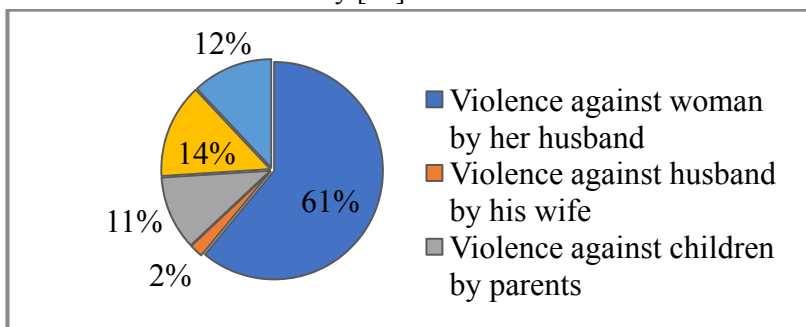


Figure 1. Violence cases registered in Armenia in 2015-2017.
Source: Coalition Against Violence Against Women.

Each year, members of the Coalition Against Violence Against Women receive an average of 5,000 reports of domestic and sexual violence through hotline services [29].

According to the RA Police, in 2015-2017, 2333 cases of domestic violence were registered, of which 1422 (61%) were violence against a woman by her husband, 14% were violence against a parent by a child, 11% were violence against a child by a parent, 2% by a woman. Spousal violence, 12% other cases (Figure 1) [30].

According to official statistics, 452 cases of domestic violence against women were registered only in 2016, 784 in 2015, 575 in 2014, about 500 in 2013, and 625 in 2012 [31].

Aim: The aim of the study is to evaluate the structure and features of gender-based violence in Yerevan.

The objectives of this study are:

- Find out the cases of violence against women in Yerevan, their types, find out who committed the incident, the place of the violence.
- Identify physical injuries caused by violence:
- Examine the degree of women applying to a health facility u the number of days spent there, linking to some internationally defined risk factors and cases of violence.

Materials and Methods

Survey participants and location. The participants of the research are 436 females aged 18-60 registered in the Facebook social network living in the city of Yerevan.

Research design and tools. A non-experimental method of quantitative research was chosen to conduct the research, and a structured questionnaire was used as a tool [32]. An analysis of the literature shows that cases of violence in Armenia are mostly among married women, the perpetrators of violence against them are considered their husbands, so some of the questions in the questionnaire are intended to obtain information about the husband.

It consists of 34 questions, which are grouped into 2 sections:

- Demographics
- Main questions

The demographic section includes questions about women's age, educational level, family income.

The main section includes questions about the types of violence, physical injuries, and the manifestation of psychological violence.

Results

Out of 436 participants in the study, 117 were 27-25 years old or 27%, 168 (38%) aged 26-35, 107 (25%) aged 36-45, 44 (10%) aged 46-

60. The maximum age was 60, the minimum age was 18, the average age was 32.75 (Figure 2).

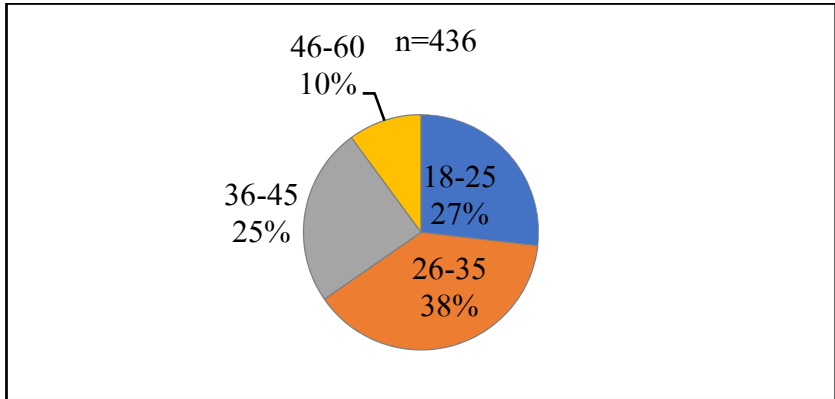


Figure 2. Age distribution of study participants.

67 (15%) of the participants were unmarried, 351 (81%) were married, 15 (3%) were divorced, and 3 persons (1%) were in a civil marriage. The average age of marriage for women was 21.71, the maximum was 31 and the minimum was 18.

54 women or 12% had primary education, 96 (22%) had secondary education and 286 (66%) had high education. The Chi-square test was performed, and it was found that there were no associations between the level of education of women and in a case of violence ($p = 0.546$). No significant associations were found between spouse's level of education and in a case of violence ($p = 0.348$).

The average family consisted of 4 people, with a maximum of 9 and a minimum of 1.

69 women (18%), 1 child 85 (22%), 2 children 174 (46%), 3 children 49 (13%), 4 children 9 women (1%) do not have children. No significant associations were found between the number of children and in a case of violence ($p = 0.818$).

180 people (41%) were employed, 256 (59%) were unemployed. A significant association was found between employment of women and in a case of violence ($P = 0.01$) and between spouse work and in a case of

violence (P = 0.024). 30 out of 40 unemployed spouses committed violence.

The average monthly income of 1 family was up to 50,000 AMD, 44 families (10%) - 50,000-99,000 AMD, 201 families (46%) - 100,000-149,000, 154 families (35%) 150,100-199,000 AMD, 30 families (7%) : 200,000-299,000, 6 families (2%) .000 300,000 more. No associations household income and in a case of violence (P = 0.852).

There were 214 (49%) women who were abused during their lifetime, 222 (51%) were not abused.

197 women (92%) reported being abused at home, 12 women (6%) at work, 2 (1%) outside u 3 (1%) elsewhere. 184 women (86%) were abused by a husband or partner. 184 women (86%) were abused by a husband or partner. A significant association were found between the perpetrator's and the "place of violence" (P = 0.05), 173 cases took place at home.

102 women (48%) were subjected to physical violence, 97 women (45%) were subjected to psychological violence, and 15 women (7%) were sexually abused (Figure 3).

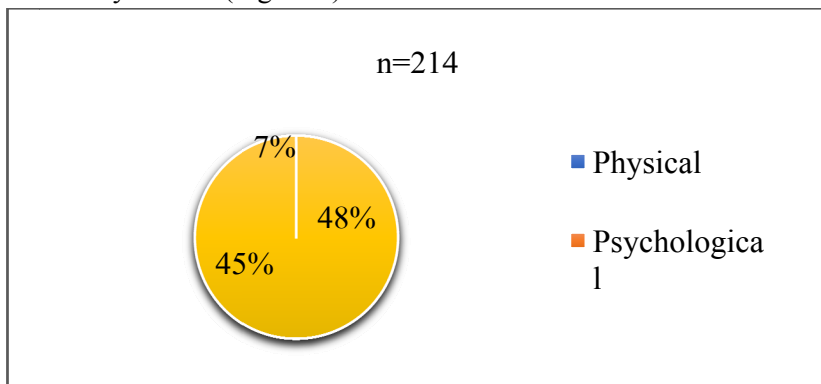


Figure 3. Type of violence.

97 women who were subjected to psychological violence responded to the description of violence by responding: 45 persons (46%) restricted their opinion and/or speech, restricted free movement 10 (10%), threats 22 (23%), coercion 20 (21%) (Figure 4).

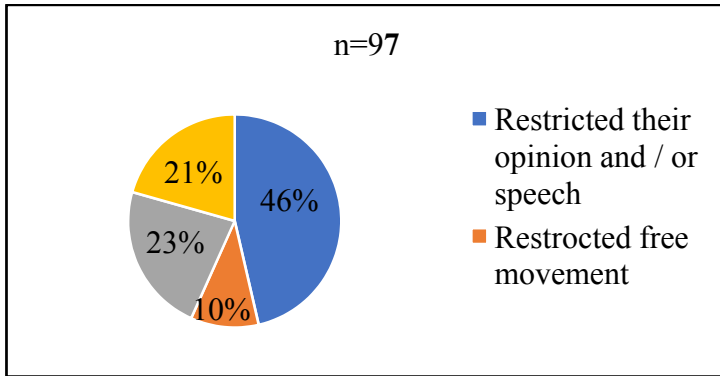


Figure 4. Description of psychological violence.

To the question of 102 women who were subjected to physical violence, 46 (45%) answered yes, 56 (55%) – no.

Of the 43 physically injured women, 48% had a hematoma, 28% had a ruptures bleeding injuries, 9% had a fracture, and 15% had other injuries (Figure 5).

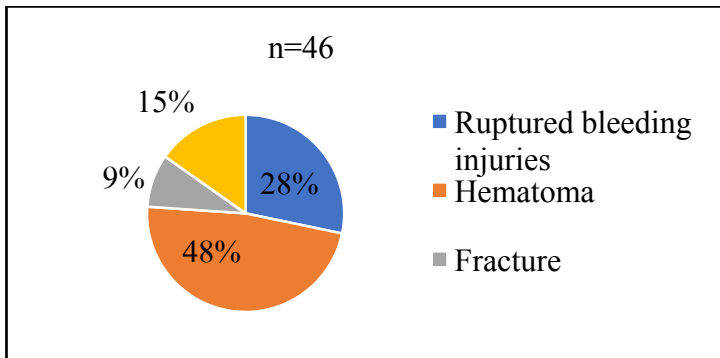


Figure 5. Types of physical injuries.

Five women applied to the police after the incident, 209 did not apply.

Out of 184 women who were abused by their spouse (physical, psychological, sexual), 77 (42%) answered yes to their husband / partner's harmful habit (alcohol abuse, drug use, gambling). A significant

association were found between the harmful habit of the spouse and in case of violence ($P = 0.000$).

Out of 73 women with children who were physically abused by their husbands, 39 (53%) stated that the incident took place in the presence of children.

Of the 436 women surveyed, 94 (22%) said they thought it was possible to justify violence, 149 (34%) said it was impossible, and 193 (44%) depended on the case. 205 (47%) women stated that they were aware of their rights and where to turn in the event of violence, 231 (53%) stated that they were not informed.

Discussion: The results of the study revealed that none of the women who received physical injuries and applied to a medical institution underwent a forensic examination, from this fact it can be assumed that the women did not present the real cause of the injuries to the police.

No significant associations were found between spouse's level of education and in a case of violence, according to WHO a perpetrator's low level of education is a risk factor for violence cases [13].

There is also a significant association between a spouse's harmful habit and in a case of violence. Bad habits are the most common risk factors [13].

4 out of 4 women with fractures applied to a medical institution. They applied to a medical institution mainly in case of a serious injury, and one of the reasons for not applying was the mandatory condition to apply to the police from the hospital.

53% of cases of violence took place in the presence of children, which according to the WHO is a risk factor for children [13].

Out of a total of 97 to 84 cases of psychological violence were committed by the husband, 39 of which were in the form of opinion and / or speech restriction, which is evidenced by the fact that a woman's /s wife's speech is lower, which is also a risk factor according to the WHO.

Conclusion

1. None of the women who were physically injured and applied to a medical institution underwent a forensic examination. From this fact, it can be assumed that the women did not present the real cause of the injury to the police.

2. There is a low rate of hospitalization and reporting the police.

3. Cases of psychological violence have occurred mainly by the husband in the form of opinion and / or speech restriction, which is evidenced by the fact that or wife's speech is lower, which is also a risk factor according to the WHO.

4. 53% of cases of violence took place in the presence of children, which according to the WHO is a risk factor for a child.

A significant association has been found between the harmful habits and the incident of violence, which is also considered a risk factor by the WHO.

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GROUP HOMES IN THE FIELD OF MENTAL HEALTH IN ARMENIA: SOLUTION OR PROBLEM?

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Abstract

This article presents the expediency and the development of disseminating the model of group homes in the field of mental health in the Republic of Armenia based on the study of international and domestic regulations as well as on the results of the research on "Group homes in the field of mental health in the Republic of Armenia: development opportunities and constraints".

The article substantiates the high risk of group homes being transformed into an institution, emphasizing the importance of caution for both policy and practice level in creating a large number of grouphomes. The author emphasizes thead option of regulations that will reduce the risk of group homes becoming an institution, which will be a mandatory requirement for already operating group homes in the Republic of Armenia, as well as for the new ones that are to be established. Those requirements will include the exclusion of institutional culture in group homes, the existence of policies and mechanisms to prevent and intervene in cases of violence and harassment, and the existence of approaches that do not restrict the rights and interests of residents, as well as their autonomy and freedom of decision. This article (underlying research), describing the activities of group homes operating in the Republic of Armenia, their impact on the realization of the rights and freedoms of residents, can become the basis for a sectoral policy and strategy.

Introduction

Mental health problems cannot be grounds for isolating people from society, restricting their rights and freedoms, while for centuries people with mental health problems have been excluded from society by being kept in psychiatric and care institutions.

Psychiatric and care facilities as total institutions limit the rights, social relations, the ability to make decisions of people living there. This contradicts the rights of people with mental health problems, which are enshrined in several international and local laws, the core of which is the UN Convention on the Rights of Persons with Disabilities (hereinafter referred to as the Convention).

Article 19 of the Convention defines the right to live independently and to be included in the community, one of the components of which is the choice of persons with mental health problems where to live with.

Although Republic of Armenia ratified the Convention in 2010, in Armenia, as in several post-Soviet countries, many people with mental health problems continue to receive services in care and psychiatric institutions.

Various studies have shown that these institutions are overcrowded, isolated residents from their community, inactivating individuals, imposing regularized behavior. Residents do not have a private space, they live with people they did not choose, they are mostly deprived of the opportunity to raise the problems they face in their daily life, and also cases of human rights violations, etc.

In international practice, the way to address these issues is deinstitutionalization, which is the process of changing the living conditions of people with mental health problems, which involves the transition from institutional or other isolating systems to community-based services based on an assessment of persons' individual abilities and preferences.

Deinstitutionalization in the field of mental health was also planned to be launched in the Republic of Armenia under the Concept on "Provision of alternative care and social services for people with mental health problems" starting from 2013.

The 2014-2019 Mental Health Care and Improvement Strategy in the Republic of Armenia and the List of Measures to Ensure the Implementation of the Strategy envisages the creation of a large number of alternative community-based services (group homes, support housing, community day care centers). However, there have been no significant changes in the diversity of services provided in the RA.

Among these proposed models, there are group homes in the field of mental health in Armenia. As of 2022, there are four group houses for adults in Armenia: 3 group homes of the "Warm Corner" (Jermik) Foundation and "Spitak" Group Home.

It should be noted that the study of the documents regulating the field of mental health in Armenia shows a tendency to create a large number of group homes in Armenia. Although a large number of group home shave been established in different countries as an intermediate model of ensuring the return of people out of psychiatric and care institutions to the community, group homes have been interpreted ambiguously as an alternative model.

In the process of deinstitutionalization, it is necessary to answer the question of whether the creation of group homes is an alternative to the institutions or it is another institution?

Aim

The aim of this article is to present the limitations of group homes in the field of mental health in the Republic of Armenia as well as development opportunities, and to answer the question of whether group homes can be considered as alternative to institutions in the process of deinstitutionalization. The basis for achieving the goal was the research "Group homes in the field of mental health in the Republic of Armenia, development opportunities and constraints"

Materials and methods

To achieve the defined aim, the study of RA practice and an analysis of the international and domestic legal regulations and standards of

group homes was carried out. The practice of the Republic of Armenia was studied through qualitative research in the period 23.11.2021-30.12.2021. The survey was conducted in all 4 group homes operating in the Republic of Armenia, including group homes residents, employees, and directors. The method of in-depth interview was chosen to get more in-depth information, to reveal the causal links.

A total of 34 in-depth interviews were conducted, of which 22 were for residents, 9 for specialists (psychologist, psychiatrist, social worker, social supporter, social pedagogue, art therapist), and 3 with key informants (coordinator or director, home manager). 13 interviews were conducted at the Spitak Group Home, and 21 interviews were conducted at the "Warm Corner" (Jermik) Foundation group homes.

Results

The study of international regulations shows that when addressing deinstitutionalization in the field of mental health, in the process of discussing alternative services, in particular group homes, it is first necessary to clarify in which cases the residential area can be considered an institution. "Institution" can be considered the provision of assistance in any residential area where:

- residents are isolated from the community, and (or) forced to live together,
- residents do not have enough control over decisions that affect their lives,
- the requirements of organization take precedence over the individual needs of the residents,
- there is an "institutional culture", such as depersonalization of residents (e.g. alienation of personal belongings, personality traits), strict daily routine (e.g. fixed schedules for waking up, eating, and doing different activities, regardless of personal preferences or needs), existence of social distance (different status between the staff and residents), etc.

For its part, the European Coalition for Community Life states that

an institution is any place where people who are considered to have a disability are isolated, and/or forced to live together. An institution is any place where people do not have the opportunity to control their daily life decisions. The institution is not determined only by its physical size and the number of inhabitants.

In the process of deinstitutionalization, states must propose reforms—changes that will go beyond the regulation of structures with both institutional and institutionalized elements.

A study of international practice shows that in the process of deinstitutionalization in the field of mental health in different countries, many group homes have been created as an alternative to institutions. Group homes were considered to be a solution, a transitional link, especially for those who have been in psychiatric institutions for a long time and are facing the problem of social inclusion.

Proponents of group home development argue that it is the group home model that can be used as an alternative to care and psychiatric institutions in the deinstitutionalization process. However, there are also many criticisms. In particular, the Council of Europe Commissioner for Human Rights has strongly criticized the idea of group homes, noting that group homes are little different from institutions as they limit people's control over their own lives and isolate them from society, despite the fact that they are physically situated in habitable areas. The grouping of adults in the community draws the attention of individuals to them, removing them from the community, viewing them not as individuals but as a group.

The Commissioner notes in his report on the “Right of persons with disabilities to live independently and to be included in the community” that an incomplete understanding of the right to live in a community poses a risk of replacing one type of exclusion (institutions) with another (institutionalized areas).

Similar concern expressed the UN High Commissioner for Human Rights in his thematic study on the “Right of persons with disabilities to live independently and to be included in the community”, noting that

institutionalization is not just about living in a certain environment, it is about losing control. In this sense, small environments, including group homes, do not necessarily have to be better than large institutions if full control over those areas remains in the hands of others (supervisors, staff, etc.). The results of the research on Armenian practice show, that although in contrast to care and psychiatric institutions, the living conditions offered in group homes in Armenia are better: fewer people share the same area, there are fewer restrictions on movement, communication with other people, more services are available, but there are also several issues. In particular, the purpose of group homes is to return the residents to their community and/or to provide independent living. However, very few residents returned to their families and/or returned to the community and live independently. In addition, all group homes in Armenia have a schedule that regulates the behavior of residents, the actions of residents are mostly predetermined (when to sleep, when to wake up, when to eat, etc.). The routine of daily activities, the limited choice of options, reduces the control of a person over his/her actions, as it is one of the elements typical of the "institution".

Not all group homes are in the community where most of the residents lived but are in another region. Moreover, the residents live with the people in the area, in the community, which they did not initially choose. In addition, in some cases, the ability of residents to move freely, to manage their own finances is restricted, living conditions are controlled, which reduces the autonomy and self-determination of individuals.

The results of the research show that there is an unequal distribution of power among the staff of the residents, a distance that is expressed in the simplest relationships.

The study of international practice shows that the risk of violence and harassment in group homes is high, while the study in group homes in Armenia showed that there are no policies, mechanisms on harassment: residents do not know what to do when faced with such a

problem. In addition, surveyed residents in all group homes are unaware of their sexual and reproductive health rights, and group homes exclude the exercise of these rights.

As for the policy pursued, the study of legislative regulations in this regard shows that although the direction of reforms in the field is deinstitutionalization, no regulation has been developed by the responsible agencies in Armenia, where there will be a clear requirement that "institution- specific "manifestations should be excluded in newly established mental health services. Instead, those services should promote the exercise of individuals' right to an independent life and inclusion in the community.

Conclusion

Although several documents regulating the field of mental health in Armenia are unequivocally presented group homes as an alternative to care and psychiatric institutions, the results of the research presented in this article show that group homes have a high risk of becoming institutions. In group homes in Armenia, there are elements typical of institutions, including the regulatory regime and its mandatory nature, restrictions and/or limited choices in decision-making on various aspects of life, control of living conditions, the lack of internal documents on prevention of violence and harassment, sexual and reproductive health and rights, etc. Therefore, if the Republic of Armenia has defined deinstitutionalization as a guideline in the field of mental health, and group homes have a high risk of transformation into institutions, then the state should set minimum requirements for group homes that will reduce the risks of those residences becoming institutions. These requirements may include the principle of non-institutional elements, effective and flexible mechanisms for the protection of the rights and interests of service users, and the existence of policies and procedures to prevent violence and harassment.

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HEALTHCARE WORKERS' ATTITUDES TOWARDS PEOPLE LIVING WITH HIV AND DRUG USERS

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Abstract

HIV and addiction are challenging topics of global health. According to World Health Organization (WHO), 38 million people in the world were living with HIV at the end of 2019. HIV treatment and medical services are increasing worldwide. Available data and researches show that attitudes of doctors and health care workers are important factors that affect the process of treatment and public health management. The studies that aim to identify and evaluate the attitudes of the health care workers who may benefit from the intervention are highly needed. We conducted a cross-sectional study to assess attitudes of health care workers towards people living with HIV and drug users in hospitals and clinics in Tbilisi. The cross-sectional study was conducted from 1st of May 2020 till 30th of September 2020. Study was conducted in three hospitals. In total, data was collected from 164 respondents who filled the questionnaire, among them 107 (65.2%) women and 56 (34.1%) men. The median age was 40-49 (30.5%). People struggling with HIV and drug use need nonjudgmental and positive behaviors from health care workers and physicians in order to help them in a good manner for harm reduction and receiving appropriate treatment. In summary, this study demonstrates the attitudes of health care workers in Georgia towards people with HIV and drug users. We found significant differences regarding respondent's attitudes based on gender, medical specialty and working experience in health care system. Our study shows that HCWs with higher education have more positive attitudes and acceptance towards patients with HIV and drug users. Considering the results of this research, it is suggested that female and younger personnel be employed in the first line of treatment

and clinical interviews in the hospital. Also, this result can be used to motivate health care workers to participate in ongoing continuous medical educational activities and training during their work.

Introduction

HIV and addiction are challenging topics of global health. According to World Health Organization (WHO), 38 million people in the world were living with HIV at the end of 2019. HIV treatment and medical services are increasing worldwide [1]. The epidemiologic data, treatment, and outcome of disease in high-income countries are well improved, in low and middle-income countries little is known and there is a strong need to address the epidemiologic and etiologic factors and comorbidities related to HIV [2]. The coexistence of HIV and drug abuse makes it more complicated. The prevention and treatment of substance abuse are one of the global targets by reducing premature mortality rates and promote wellbeing. Among 13 million people who inject drugs, 1.7 million are infected with HIV [3]. People living with HIV (PLWH) who use drugs are less likely to keep ongoing antiviral treatment. These kinds of patients may encounter reciprocal stigma due to HIV and drug-use [4]. Based on numerous studies PLWH, experiences more rates of psychological and mental health problems compared to the general population. For instance, based on the study in the United State, PLWH had 36% major depression and 15% of generalized anxiety disorder [5], while these percentages in the general population are just 6.7 and 2.1%, respectively [6]. Psychological problems in PLWH are like barriers to continued treatment and there is a direct relationship between mental health problems and receiving primary care and treatment [7]. Adherence to ART treatment among PLWH with symptoms of depression is about 42% less than PLWH without depressive symptoms [8]. Attitudes of Health care workers towards people who use drugs could affect health care services and treatment negatively. It can lead to avoidance or interval during relapse. Negative attitudes towards substance users make a weak relationship between health professionals and the patients and decrease of consistency

of the therapeutic process and misperception of other physical symptoms to drug use-related problems. This is also known as diagnostic overshadowing [9]. Researches about stigma in general, express the factors attributed to stigmatizing attitudes are beliefs and knowledge and the experience of the health care workers. Plus, these attitudes impact the diagnosis, treatment, and rehabilitation of drug users [10]. People who use substances have substantial difficulties to access treatment and medical services in hospitals. They are usually are judged by health care workers as manipulative, stimulating, and tough and drug-seeking. [11, 12] many drug users do not trust doctors and nurses due to their past experiences with insufficient treatment for relieving the pain and withdrawal symptoms as well as negative attitudes of medical staff towards them. Sometimes they leave hospitals despite medical order and advice. [13] For proper care and treatment of HIV patients and drug users, the medical staff and physicians must have a correct and positive attitude and knowledge towards such patients. Cultural differences and personal beliefs combined with professional ethics lead to conflicts that unintentionally disrupt the treatment process of PLWH and drug users [14-15].

Available data and researches show that attitudes of doctors and health care workers are important factors that affect the process of treatment and public health management. The studies that aim to identify and evaluate the attitudes of the health care workers who may benefit from the intervention are highly needed. To address this gap in the literature, we conducted this survey in Georgia to estimate and evaluate the behaviors and attitudes related to health care workers. This study aimed to assess the attitudes in a sample of health care workers working in different hospitals and clinics and medical students in Georgia towards HIV infected people and drug users in Tbilisi.

Materials and methods

We conducted a cross-sectional study to assess attitudes of health care workers towards people living with HIV and drug users in hospitals and clinics in Tbilisi. The cross-sectional study was conducted from 1st

of May 2020 till 30th of September 2020. Study was conducted in three hospitals. Study Participants were medical staffs including medical doctors, medical residents and students and other health care workers. Because of COVID-19 pandemics, and quarantine, we created online version of the study instrument and sent it to hospital representatives and then hospital representatives distributed questionnaire among their medical staff. Participants gave their written informed consent by submission of agreement in the first part of the online questionnaire. Data were collected using a self-administered structured questionnaire, developed by See et al. [16]. The validity and reliability of this tool, was proved by a team of expert in psychological counseling and medical care in their study [16]. With this tool we evaluated four facets of attitudes: Discrimination, Acceptance of HIV/AIDS patients, Acceptance of drug users and Fear. For every of the four aspects there were four multiple choice. Answers had ranging from “strongly disagree” =1, “disagree” =2, “agree” =3, “strongly agree” =4 [17]. All data were imported and analyzed with the software SPSS 22 for windows.

Descriptive statistic was used to evaluate population characteristic. Results were reported as frequencies percentages and cumulative percentages. Four main aspects of attitudes (Discrimination, Acceptance of people with HIV, Acceptance of drug users and Fear) which considered and coded as quantitative variables were reported as Mean and Standard deviations. For the bivariate analyses T test and one-way ANOVA test was performed to evaluate differences in quantitative variables and significant statistical differences between the group mean`s expressed with P value. The level of significance was set at P value ≤ 0.05 .

Results: In total, data was collected from 164 respondents who filled the questionnaire, among them 107 (65.2%) women and 56 (34.1%) men. The median age was 40-49 (30.5%). The majority of participants were medical doctors, 105 (64.0%) and 78 (47.6%) of the participants had less than 10 years working experiences. Socio-demographic characteristic results are presented in Table 1. More than fifty percent of participants were women

(65.6%) and the majority of respondents were less than 50 years old and among the age groups the third age group was the median age (30.5%).

Table 1. Socio-demographic characteristic

Characteristic	Results(total=164)	Cumulative percent
Gender		
Female	107 (65.2%)	65.6
Male	56 (34.1%)	100
Age		
20-29	34 (20.7%)	20.7
30-39	41 (25.0 %)	45.7
40-49	50(30.5%)	76.2
50-59	34 (20.7%)	97
≥60	5 (3.0%)	100
Specialty		
Medical Doctors	105 (64.0%)	64
Medical Residents and Students	26 (15.9%)	79.9
Other Health Care Workers	33(20.1%)	100
Work Experience		
≤10 Years	78 (50%)	50
11-20 Years	35 (22.4%)	72.4
≥21	43(27.6%)	100

Among health care workers who filled the questionnaire majority (64%) of them was medical doctors. Medical residents and medical students were (16%) and the rest of the respondents (20 %) were different health care workers in hospitals and clinic. The four aspects of attitudes (discrimination, acceptance of HIV/AIDS, acceptance of drug users and fear) were analyzed with total number of responses, mean and standard deviation. The maximum mean score for discrimination questions was $1.207 \pm .5012$. The maximum mean score for acceptance of HIV/AIDS was $3.793 \pm .5251$. The maximum mean score for

acceptance of drug users was $3.780 \pm .5653$. The maximum mean score for question regarding fear was $2.207 \pm .9430$ (Table 2).

Table 2

	N	Mean	Std. Deviation
Discrimination			
Question-1	164	1.195	.5298
Question-2	164	1.189	.4509
Question-3	164	1.195	.4684
Question-4	164	1.207	.5012*
Acceptance of HIV/AIDS			
Question-1	164	3.793	.5251*
Question-2	164	1.421	.6552
Question-3	164	1.372	.5981
Question-4	164	1.439	.7110
Acceptance of Drug Users			
Question-1	164	3.780	.5653*
Question-2	163	1.436	.6577
Question-3	164	1.372	.5878
Question-4	164	1.384	.6305
Fear			
Question-1	164	2.207	.9430*
Question-2	164	1.421	.6916
Question-3	164	1.378	.5994
Question-4	164	1.45	.703

An independent sample T-test was conducted to compare difference in attitudes of healthcare workers based on their gender. There was significant difference between means in acceptance of drug users among men and women (P value= 0.031). With comparing the mean and SD of these two groups concluded that women have more acceptance attitudes rather than men towards drug abusers (Table 3).

Table 3

Sex		N	Mean	Std. Deviation	P_value
Discrimination_1	Female	107	1.150	.4515	.225
	Male	56	1.268	.6464	
Discrimination_2	Female	107	1.159	.4587	.323
	Male	56	1.232	.4260	
Discrimination_3	Female	107	1.140	.4222	.078
	Male	56	1.286	.5296	
Discrimination_4	Female	107	1.159	.4587	.150
	Male	56	1.286	.5629	
Acceptance_HIV/AIDS_patients_1	Female	107	3.813	.5164	.469
	Male	56	3.750	.5477	
Acceptance_HIV/AIDS_patients_2	Female	107	1.364	.6203	.157
	Male	56	1.518	.7133	
Acceptance of HIV/AIDS patients_3	Female	107	1.327	.5952	.227
	Male	56	1.446	.6006	
Acceptance_HIV/AIDS_patients_4	Female	107	1.374	.6940	.126
	Male	56	1.554	.7366	
Acceptance_drug users_1	Female	107	3.822	.5105	.215
	Male	56	3.696	.6584	
Acceptance_drug users_2	Female	106	1.340	.5325*	.031*
	Male	56	1.607	.8241*	
Acceptance_drug users_3	Female	107	1.318	.5924	.131
	Male	56	1.464	.5709	
Acceptance_drug users_4	Female	107	1.308	.5732	.061
	Male	56	1.518	.7133	
Fear_1	Female	107	2.140	.8949	.203
	Male	56	2.339	1.0318	
Fear_2	Female	107	1.346	.5338	.121
	Male	56	1.554	.9129	
Fear_3	Female	107	1.336	.5129	.321
	Male	56	1.446	.7366	
Fear_4	Female	107	1.38	.560	.162
	Male	56	1.57	.912	

A one-way ANOVA was conducted to evaluate the difference among attitudes of HCW's based on their ages, specialty, work experiences. Every aspect of attitudes (discrimination, acceptance of drug users, acceptance of people with HIV and fear) considered as dependent variables and age groups, specialty and work experiences were analyzed as independent variables in this test. The assumption of homogeneity of variances was tested by Levene's Test. Post Hoc comparisons to evaluate differences among group means were conducted by the Tukey HSD test. Tests revealed pairwise differences between different groups of variables. Tests revealed significant pairwise differences between the mean of age group more than 50 with the age group 30-39 (P Value=0.048). Hereby, these two groups of age had significant differences related to discrimination, while there are no significant differences between mean of the other age groups (Table 4).

Table 4. Multiple comparisons

Dependent Variable			Mean Difference (I-J)	P Value
Discrimination_coded_2	20-29	30-39	.1033	.750
		40-49	-.0035	1.000
		>=50	-.1569	.440
	30-39	20-29	-.1033	.750
		40-49	-.1068	.667
		>=50	-.2602*	.048*
	40-49	20-29	.0035	1.000
		30-39	.1068	.667
		>=50	-.1533	.376
	>=50	20-29	.1569	.440
		30-39	.2602*	.048*
		40-49	.1533	.376
Discrimination_coded_4	20-29	30-39	.1621	.494
		40-49	.0553	.958
		>=50	-.1237	.712
	30-39	20-29	-.1621	.494

	40-49	-.1068	.736
	>=50	-.2858	.052
40-49	20-29	-.0553	.958
	30-39	.1068	.736
	>=50	-.1790	.332
>=50	20-29	.1237	.712
	30-39	.2858	.052
	40-49	.1790	.332

*. The mean difference is significant at the 0.05 level.

We used ANOVA test to compare means of second question about acceptance of HIV/AIDS patients to evaluate null hypothesis which states there is no differences among attitudes of HCW's (Acceptance of HIV patients) based on their age groups. The assumption of homogeneity of variances was tested by levene's Test and as the significance level in every group was less than 0.05 indicated that variances of the groups differ significantly and were unequal and the assumption of homogeneity of variances was violated. So we needed to run a Welch F test. We used correction by Welch test (Robust Tests of Equality) which is the correction of the fact that our variances are not equal. The overall ANOVA test in question 2 reported the P Value less than 0.05. Therefore, there is significant evidence to reject null hypothesis and conclude there is a significant difference among mean groups of attitudes (acceptance of drug users) based on their ages. Post Hoc comparisons to evaluate acceptance of drug users differences among group means were conducted with the use of Tukey HSD test.

Table 5. Multiple comparison test

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Acceptance_drug_Coded_1	20-29	30-39	-.2999	.1288	.096	-.634	.035
		40-49	-.3306*	.1235	.040*	-.651	-.010
		>=50	-.3167	.1303	.076	-.655	.022
	30-39	20-29	.2999	.1288	.096	-.035	.634
		40-49	-.0307	.1170	.994	-.335	.273
		>=50	-.0169	.1243	.999	-.339	.306
	40-49	20-29	.3306*	.1235	.040*	.010	.651
		30-39	.0307	.1170	.994	-.273	.335
		>=50	.0138	.1187	.999	-.294	.322
	>=50	20-29	.3167	.1303	.076	-.022	.655
		30-39	.0169	.1243	.999	-.306	.339
		40-49	-.0138	.1187	.999	-.322	.294
Acceptance_drug_Coded_3	20-29	30-39	.1872	.1342	.504	-.161	.536
		40-49	.0224	.1286	.998	-.312	.356
		>=50	-.1817	.1358	.540	-.534	.171
	30-39	20-29	-.1872	.1342	.504	-.536	.161
		40-49	-.1649	.1219	.531	-.481	.152
		>=50	-.3690*	.1294	.025*	-.705	-.033
	40-49	20-29	-.0224	.1286	.998	-.356	.312
		30-39	.1649	.1219	.531	-.152	.481
		>=50	-.2041	.1236	.353	-.525	.117
	>=50	20-29	.1817	.1358	.540	-.171	.534

		30-39	.3690*	.1294	.025*	.033	.705
		40-49	.2041	.1236	.353	-.117	.525
Acceptance_drug_Coded_4	20-29	30-39	.1334	.1444	.792	-.241	.508
		40-49	-.0271	.1384	.997	-.386	.332
		>=50	-.2368	.1461	.370	-.616	.142
	30-39	20-29	-.1334	.1444	.792	-.508	.241
		40-49	-.1605	.1312	.613	-.501	.180
		>=50	-.3702*	.1392	.042*	-.732	-.009
	40-49	20-29	.0271	.1384	.997	-.332	.386
		30-39	.1605	.1312	.613	-.180	.501
		>=50	-.2097	.1330	.395	-.555	.136
	>=50	20-29	.2368	.1461	.370	-.142	.616
		30-39	.3702*	.1392	.042*	.009	.732

Tests revealed significant pairwise differences between the mean of age group 20-29 compared with the age group 40-49 in question 1. (Value=0.040). Also, comparison test revealed significant pairwise differences between the mean of age group more than 50 with the age group 30-39 in question 3 (P= .042). Hereby, these two groups of age had significant differences related to Acceptance of drug users while there are no significant differences between mean of the other age groups (Table 5).

Post Hoc comparisons were conducted to evaluate fear differences among group means with the use of Tukey HSD test. Tests revealed significant pairwise differences between the mean of age group more than 50 with the age group 30-39 in question 2 and 3 (P= .019 and p= .048). Accordingly, these two groups of age had significant differences related to fear while there are no significant differences between mean of the other age groups (Table 6).

Table 6. Multiple comparisons

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.
Fear_Coded_2	20-29	30-39	.3637	.1567	.098
		40-49	.2188	.1502	.466
		>=50	-.0822	.1585	.955
	30-39	20-29	-.3637	.1567	.098
		40-49	-.1449	.1423	.739
		>=50	-.4459*	.1511	.019*
	40-49	20-29	-.2188	.1502	.466
		30-39	.1449	.1423	.739
		>=50	-.3010	.1443	.162
	>=50	20-29	.0822	.1585	.955
		30-39	.4459*	.1511	.019*
		40-49	.3010	.1443	.162
Fear_Coded_3	20-29	30-39	.1385	.1371	.744
		40-49	.0624	.1314	.965
		>=50	-.2074	.1387	.443
	30-39	20-29	-.1385	.1371	.744
		40-49	-.0761	.1245	.928
		>=50	-.3458*	.1322	.048*
	40-49	20-29	-.0624	.1314	.965
		30-39	.0761	.1245	.928
		>=50	-.2697	.1263	.146
	>=50	20-29	.2074	.1387	.443
		30-39	.3458*	.1322	.048*
		40-49	.2697	.1263	.146

Post Hoc comparisons were conducted to evaluate Acceptance of HIV differences among group means with the use of Tukey HSD test. Tests revealed significant pairwise differences between the mean group of medical doctors and the medical residents, regarding the questions 1 and 2 (P= .011). Also, in question 4 we found significant difference

between mean (acceptance of HIV differences) of medical doctors and other health care workers (Table 7).

Table 7. Multiple comparisons

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.
Acceptance_HIV_1	Medical doctors	Medical Residents / students	.3282*	.1128	.011*
		Other HCW	.1091	.1027	.539
	Medical Residents /students	Medical doctors	-.3282*	.1128	.011*
		Other HCW	-.2191	.1350	.239
Other HCW	Medical doctors	-.1091	.1027	.539	
	Medical Residents /students	.2191	.1350	.239	
Acceptance_HIV_2	Medical doctors	Medical Residents /students	-.3491*	.1403	.037*
		Other HCW	-.3013	.1278	.051
	Medical Residents /students	Medical doctors	.3491*	.1403	.037*
		Other HCW	.0478	.1679	.956
Other HCW	Medical doctors	.3013	.1278	.051	
	Medical Residents /students	-.0478	.1679	.956	
Acceptance_HIV_4	Medical doctors	Medical Residents /students	-.2916	.1529	.140
		Other HCW	-.3429*	.1393	.039*
	Medical Residents /students	Medical doctors	.2916	.1529	.140
		Other HCW	-.0513	.1831	.958
Other HCW	Medical doctors	.3429*	.1393	.039*	
	Medical Residents / students	.0513	.1831	.958	

Post Hoc comparisons were conducted to evaluate acceptance of drug users' differences among group means with the use of Tukey HSD test. Tests revealed significant pairwise differences between the mean group of medical doctors and medical residents, regarding the questions 1 and 2 (P= .001 and p=.009) (Table 8). Work experiences and attitudes. Post Hoc comparisons were conducted to evaluate discrimination differences among group means with the use of Tukey HSD test. Tests revealed significant pairwise differences between the mean group of working experience 21years and more, with working experience 10- 20 and less than 10 years regarding the questions 1, 2 and 4 (P= .030, p=.014 and p=.012) (Table 9).

Table 8. Multiple comparison

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.
Acceptance of drug users_1	Medical doctors	Medical Residents/students	.4242*	.1197	.001*
		Other HCW	.1887	.1090	.197
	Medical Residents/students	Medical doctors	-.4242*	.1197	.001
		Other HCW	-.2354	.1433	.231
	Other HCW	Medical doctors	-.1887	.1090	.197
		Medical Residents/students	.2354	.1433	.231
Acceptance of drug users_2	Medical doctors	Medical Residents/students	-.4231*	.1412	.009*
		Other HCW	-.1084	.1286	.677
	Medical Residents/students	Medical doctors	.4231*	.1412	.009
		Other HCW	.3147	.1688	.153
	Other HCW	Medical doctors	.1084	.1286	.677
		Medical Residents/students	-.3147	.1688	.153

Table 9. Multiple Comparisons

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.
Discrimination_1	<=10 years	11-20years	.0839	.1061	.709
		>=21years	-.2543*	.0991	.030*
	11-20years	<=10 years	-.0839	.1061	.709
		>=21years	-.3382*	.1187	.014*
>=21years	<=10 years	.2543*	.0991	.030*	
		11-20years	.3382*	.1187	.014*
Discrimination_2	<=10 years	11-20years	.0967	.0898	.530
		>=21years	-.1950	.0838	.055
	11-20years	<=10 years	-.0967	.0898	.530
		>=21years	-.2917*	.1005	.012*
>=21years	<=10 years	.1950	.0838	.055	
		11-20years	.2917*	.1005	.012*
Discrimination_4	<=10 years	11-20years	.1223	.1006	.446
		>=21years	-.1926	.0939	.104
	11-20years	<=10 years	-.1223	.1006	.446
		>=21years	-.3150*	.1126	.016*
>=21years	<=10 years	.1926	.0939	.104	
		11-20years	.3150*	.1126	.016*

Discussion

According to our findings there is a low level of negative attitudes like discrimination and fear and high level of positive attitudes like acceptance towards HIV patients and drug users. Mean of attitudes in four aspects of attitudes was around 2 which showed positive attitudes. Maximum Mean was found in acceptance of HIV and acceptance of drug users, which indicated the acceptance of patients with HIV and drug users by health care workers are different comparing with other attitudes. *Gender and attitudes.* There were significant differences attitudes towards acceptance of drug users among two genders and women had more acceptance attitudes rather than men towards drug users (P value= 0.031). This result is consistent with result from Italy (2017), where male showed higher range of discrimination and fear attitudes than females (17). Similarly, in another study, done in Bangladesh, the female health care workers had lower discrimination attitude rather than men (18). *Age*

and attitudes. There was significant difference regarding expressing negative feelings such as discrimination and fear towards HIV/AIDS and drug users between HCW who were more than 50 and 30-39 age groups. Also, our study showed significant differences regarding positive attitudes such as acceptance of drug abusers among HCW's who were more than 50 and other age group. They were expressing more negative attitudes in all four aspects of attitudes, comparing other age groups especially the age group 30-39. Discriminative attitudes differ between age groups demonstrating that the health care workers more than 50 had different and more discriminatory attitudes compared with lower age groups ($P= .048$). This result is similar with results of other countries. Research in Bangladesh showed that level of discriminative attitude increased with age (18). Study in Italy, revealed increasing discriminative attitudes and low level of acceptance towards HIV patients and drug users among HCWs over 40 years old. Being more than 40 was a risk factor of discriminatory attitudes in their study (17). Specialty and attitudes. Our result for evaluating attitudes based on specialty of HCW's revealed in four aspects; There were not significant differences regarding discriminative attitude between different specialty groups. However, regarding acceptance of HIV patients and acceptance of drug users we found significant differences between different specialties. Medical doctors expressed more acceptances towards people with HIV. Also, in evaluating drug users' acceptance tests, medical doctors and medical students showed more acceptance attitude towards drug users ($P=.001$ and $P=.009$). In evaluation of fear as an attitude there was no statistically significant difference among different specialty. However, medical doctors had lowest mean score regarding to fear which indicates less amount of fear towards patient with HIV. This result can be compatible with the level of education and knowledge, as higher level of education leads to more positive attitudes and acceptance and less fear towards patients with HIV. This is in line with other studies in other countries, for example the positive attitudes have been associated with high levels of knowledge/awareness and training regarding HIV and alcohol use

through on-going training [17] and other study expressed significant positive correlation between length of education and positive attitudes among nurses [19]. *Work experiences and attitudes*. All four aspects of attitudes were measured based on different work experiences and significant differences regarding discrimination were found among health care workers who had different work experiences. The tests revealed statistically significant differences between the group who had over 21 years experiences and two other groups ($P=.012$), accordingly, the health care workers with over 21 years' work experience expressed more discriminative attitudes towards people with HIV and drug users comparing with the other health care workers with less years of working experience. Comparing result of other study, similarly, years of working tend to be a risk factor, as HCWs with more than 11 years' work experience have higher level of discriminatory attitudes [17]. The reason of this difference can be related to the cultural environment that they grew up and younger HCWs had the chance to be familiar to HIV and drug abuse more deeply [20]. In fact, many people think that HIV is connected to immorality, such as unsafe sex and illicit drug use which increase the possibility of discrimination against them (16).

However, other study indicated that stigmatizing attitudes among doctors and nurses including occupational discrimination, fear of HIV and having negative feelings are less likely with longer period of working experiences on treatment of people with HIV. Moreover, doctors who worked at referral hospital for HIV had proved fewer negative attitudes towards people living with HIV comparing to doctors who worked at regional hospital. The assumption was that the medical staff gained more experience and familiarity with HIV and thereby developed greater ability to offer better treatment to patients with HIV and the result was close to other study conducted in India [20, 21]. Most evidence demonstrated that HCWs had less concern about drug user patients and they had feeling of displeasure while treating and providing services to them. This problem was often explained by HCWs that these patients are possibly abusive, manipulative which can cause feelings of

anger and powerlessness. Meanwhile, HCWs who had more interaction with drug abuse patients showed more positive attitudes. This is consistent with hypothesis which indicates that people who have more communication and experience with a stigmatic disorder have more positive attitudes and acceptance towards those patients (10). With the understanding that the doctors and health professional have negative feeling and behaviors towards patients with drug abuse, they may hide their problems and do not try to change. This can make more conflict in the process of treatment and harm reduction in the society.

Our study has limitations as it was conducted in three hospitals of Tbilisi, which may limit generalizability. It was planned to share paper-based questionnaire among doctors and health care workers at hospitals and clinics by providing them verbal explanation about questionnaire and confidentiality. However, due to Covid-19, we changed our plan and designed online questionnaire which may affect the participants' responses. Attitudes status relied on self-report (no objective measure). We did not have enough representatives of different profession and medical specialists which makes limitation in regards of comparison between them. So, we made all specialist doctors in one group. However, this study is the first study among doctors and health care workers regarding attitudes in Georgia and provides important data for action and for further research.

Conclusion

People struggling with HIV and drug use need nonjudgmental and positive behaviors from health care workers and physicians in order to help them in a good manner for harm reduction and receiving appropriate treatment. In summary, this study demonstrates the attitudes of health care workers in Georgia towards people with HIV and drug users. We found significant differences regarding respondent's attitudes based on gender, medical specialty and working experience in health care system. Our study shows that HCWs with higher education have more positive attitudes and acceptance towards patients with HIV and

drug users. Considering the results of this research, it is suggested that female and younger personnel be employed in the first line of treatment and clinical interviews in the hospital. Also, this result can be used to motivate health care workers to participate in ongoing continuous medical educational activities and training during their work.

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HOME CONFINEMENT AND ITS IMPACT ON PHYSICAL ACTIVITY AND EATING BEHAVIOR DURING COVID-19

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Abstract

Public health recommendations and governmental measures during the COVID-19 pandemic have resulted in numerous restrictions on daily living including social distancing, home confinement. While these measures are necessary to contain the spread of COVID-19, the impact of these restrictions on health behaviors and lifestyles at home has not been determined in Armenia. Therefore, we conducted an online survey to elucidate the behavioral and lifestyle consequences of COVID-19 restrictions. This report presents the results from the first hundred and five responders on physical activity (PA) and nutrition behaviors in Yerevan. We used a developed questionnaire. Electronic survey was designed by a steering group of multidisciplinary scientists and academics. The survey was uploaded and shared on the Google online survey platform. Thirty-five research organizations from Europe, North-Africa, Western Asia and the Americas promoted the survey in English, German, French, Arabic, Spanish, Portuguese and Slovenian languages. Now also in Armenian. Questions were presented in a differential format, with questions related to responses “before” and “during” confinement conditions. A quasi-experimental, before-and-after survey was performed. 105 residents of Yerevan, who were in home confinement, took part in the poll. 105 residents (65.7% female, 34.3% male) of Yerevan were included in the analysis. The COVID-19 home

confinement had a negative effect on all PA intensity levels (vigorous, moderate, walking and overall). Despite that, daily sitting time decreased from 8 h per day. Food consumption and meal patterns (the type of food, eating out of control, snacks between meals) were unhealthier during home confinement, with only alcohol drinking decreasing significantly. While home confinement is a necessary measure to protect public health, results indicate that it alters physical activity and eating behaviors in a health compromising direction.

Introduction

During the COVID-19 pandemic, public health advice and government measures have resulted in forced lockdowns and restrictions. While these restrictions help reduce infection rates, such restrictions have negative consequences by limiting participation in normal daily activities, physical activity (PA), travel, and access to many forms of exercise (e.g. indoor gyms, lack of group gatherings, increased social distancing).

Worldwide, lack of physical activity and poor mental health are among the most important risk factors for serious morbidity [2]. For children and young people, physical activity is closely related to school, active transport and sports [3]. Because schools have been closed during the COVID-19 pandemic, increasing the risk of prolonged sedentary lifestyles.

In addition to problems with participation in PA, the closure of food vendors has placed a burden on normal eating behaviors [12]. This is remarkable as good nutrition is important for health and well-being, especially when the immune system is at risk [13]. Anxiety and boredom caused by home confinement are considered risk factors for consuming more food and products of lower quality compared to standard living conditions [14]. In combination with a potential decrease in PA levels, disruption of dietary habits can lead to a positive energy balance (i.e., weight gain) [4].

There are limited data to assess the impact of home confinement on physical activity and dietary behavior. Therefore, it was important to investigate how long-term restrictions might affect PA and eating behavior in order to establish a fundamental basis for the development of appropriate rules.

The aim of the study: To what extent are physical activity and eating behaviors changed during lengthy restrictions?

Materials and methods

We report the results of the first 105 responses to the online multidimensional lifestyle survey during home confinement (ECLB-COVID19). Given the situation caused by the coronavirus in Armenia, we considered it appropriate to conduct a survey through the Google Forms electronic questionnaire created in the Google system.

The link to the e-survey was posted on Facebook, WhatsApp and Twitter.

To collect data, we used an international online survey (Effects of Home Confinement on Multiple Behaviors During the COVID-19 Outbreak (ECLB-COVID19)), developed by various experts and supplemented by us. A multilanguage validated version already existed for the questionnaire. The questionnaire in Armenian did not exist, so we followed the procedure of translation and back-translation with an additional review. The questionnaire was approved by the Yerevan State Medical University Ethics Committee.

The survey included an introductory page describing background and objectives, and information about the participants. ECLB-COVID19 opened on October 11, 2021 and was available approximately one week after the survey was distributed.

Participation in the survey consists of being in home confinement and filling out a questionnaire.

The questions in the questionnaire are understandable and easy to understand for every person, since the diversity of people in terms of

upbringing, character and personal development was taken into account. Participation in the survey consists of being in home confinement and filling out a questionnaire. This survey was open for all people aged 18 years or older.

Participants' answers are anonymous and confidential.

Participants were not permitted to provide their names or contact information. Additionally, participants were able to stop study participation and leave the questionnaire at any stage before the submission process; if doing so, their responses would not be saved.

All questions were presented in a differential format, which had to be answered directly in sequence regarding the conditions "before" and "during" confinement conditions [5-8].

It contains 51 questions related to physical activity and diet.

According to the intensity of energy consumption, physical activity is classified into three levels: low, moderate and intense. Low physical activity corresponds to a relaxed state, such as when a person is sleeping or lying down. Moderate physical activity is a level of physical activity that slightly increases heart rate, feels warm, and breathes faster, such as light exercise and moderate cycling. Intense physical activity is a level of physical activity that significantly increases the heart rate and induces sweating, such as lifting weights, running, playing football, cycling fast. The analysis of the results of the survey was carried out according to questionnaire.

Descriptive statistics were used to define the proportion of responses for each question and the total distribution in the total score of each questionnaire. All statistical analyses were performed using the SPSS (version 16.0) and Microsoft Excel 2010. Normality of the data distribution was confirmed using the Shapiro–Wilks W-test. Values were computed and reported as mean \pm SD (standard deviation). To assess for significant differences in responses before and during the confinement period, paired samples t-tests were used. Effect size (Cohen's d) was calculated to determine the magnitude of the change of the score and was

interpreted using the following criteria: 0.2 (small), 0.5 (moderate) and 0.8 (large) [9]. Statistical significance was accepted as $p < 0.05$.

Results

The present study focused on the first hundred responses (105 participants), which were reached after 11 October 2021. Overall, 65.7% (69) of the participants were female, 34.3% (36) - male. According to the analysis of the survey results, 26.6% of the respondents were in the 18-24 age group, 48.5% - 25-45 and 24.7% - 46-64 age group.

63.8% of the respondents work, 34.3% do not work, and 1.9% refused to answer the question. 20% of the respondents had health and physical problems, 80% didn't have such problems.

Physical Activity (PA) before and during the home confinement period: Responses to the physical activity by gender recorded before and during home confinement are presented in table 1.

Table 1. Physical activity by gender recorded before and during home confinement

Physical activity	Answer	Male		Female	
		N	%	N	%
physical activity before confinement	yes	12	33.3%	26	37.7%
	no	24	66.7%	42	60.9%
	I refuse to answer	0	0.0%	1	1.4%
physical activity during confinement period	yes	16	44.4%	39	56.5%
	no	19	52.8%	30	43.5%
	I refuse to answer	1	2.8%	0	0.0%
	Total	36	100.0%	69	100.0%
p>0.05					

36.2% of the respondents had been involved in sports before home confinement, 62.9% had not been involved. 52.4% were engaged in

sports during home confinement, 46.7% were not engaged ($p < 0.05$) (Table 1).

Based on independent sample t-test results, there was no statistically significant difference between women's mean scores on enjoyment of physical activity during home confinement compared with men's responses (Mean (women) = 3.75, SE = 0.6; Mean (men) = 3.78, SE = 0.24, $p > 0.05$).

The average score of 18-45-year old's associated with a positive perception of usefulness of physical activity was statistically higher compared to 46 older people (Mean 18-45 years old = 4.31, SE = 0.12, Mean 46 older people = 3.32, SE = 0.25, $p < 0.05$).

There was no statistically significant difference between the mean scores of individuals aged 18-45 years and 46 years and older who exercised almost daily during home confinement (Mean 18-45 years = 3.43, SE = 0.17; Mean 46 years older = 3.0, SE = 0.24, $p > 0.05$).

Both women and men dislike being physically active (Mean (women) = 2.67, SE = 1.19; Mean (men) = 2.36, SE = 0.22, $p > 0.05$) and across age groups (Mean 18 -45 years = 2.69, SE = 0.18, Mean 46 older adults = 2.26, SE = 0.25, $p > 0.05$) there was no statistically significant difference in mean scores.

For the question "I think that physical activity is rather tiring", we have a statistically significant difference between employed and unemployed people scores (Mean (employed) = 1.97, SE = 1.69; Mean(unemployed) = 1.53, SE = 0, 25, $p < 0.05$).

Vigorous Intensity. The percent responders with vigorous intensity PA during, compared to before, home confinement decreased by 12.5% ($t = 3.076$, $p < 0.05$, $d = 0.313$).

Responses to the physical activity recorded before and during home confinement are presented in table 2.

Table 2. Responses to the physical activity questionnaire recorded before and during home confinement

		\bar{x}	Δ	T	P
1	Involved sport before and during self-isolation	.162	.053	3.076	.003
2	Number of days of moderate physical activity before and during self-isolation	-.038	.062	-.615	.540
3	Average time for physical activity before and during self-isolation	.181	.070	2.584	.011
4	Average walking time before and during self-isolation	-.143	.064	-2.229	.028
5	Average sitting time before and during self-isolation	-.048	.071	-.672	.503

When asked how many days before confinement they were engaged in moderate-intensity physical activity, 29.5% answered 1-3 days, 19% - 4-7 days, and 51.4% did not engage in moderate-intensity physical activity. During confinement, 21% exercised 1 day a week, 32.4% - 3 days a week and 46.7% did not engage in moderate physical activity ($t=-0.615$, $p>0.05$, $d=-0.04$).

Before confinement, 20% of the surveyed were engaged in physical activity for 25 minutes a day, 50.5% - for 1-3 hours a day, and 29.5% answered "don't know". 41% of respondents spent 25 minutes a day exercising during confinement, 26.7% spent 1-3 hours a day, and 32.4% answered "I don't know." ($t=-2.584$, $p < 0.05$, $d = 0.2$).

When asked how much time they spend on average walking during confinement, 21.9% answered "15 minutes a day", 55.2% answered "25 minutes a day" and 22.9% answered "don't know or not sure". Before confinement 35.2% - "1-2 hours a day", 42.9% - "3-5 hours a day", 21.9% - "don't know or not sure". ($t=2.229$, $p<0.05$, $d = -0.2$).

Before confinement, 26% spent sitting 1 hour a day, 54.2% - 2-8 hours a day. During home confinement 26% of respondents spent an average of 1-2 hours a day, 58.2% - more than 8 hours, ($t= -0.672$, $p>0.05$, $d=0.8$).

Dietary behaviors before and during the home confinement period: The score of question consuming unhealthy food was significantly higher during home confinement ($t=3.6$, $p<0.05$, $d=0.3$). The percentage of responses that indicated consuming unhealthy food either most of the time or always was higher during home confinement (20% vs. 14% for most of the time and 11.4% vs. 0.95% for always).

The score of question «eating vegetables» was significantly higher during home confinement ($t=-2463$, $p<0.05$, $d=-0.2$). The percentage of responses that indicated eating vegetables either most of the time or always were higher during home confinement (40% vs. 35.2 % for most of the time and 41.9 %vs. 37.1% for always).

There is no significantly diferenses the score of question «alcohol drink» before and during home confinement ($t=0.869$, $p>0.05$, $d=0.8$). In fact, the percentage of responses that indicated alcohol drinking most of the time was higher during home confinement (53.3% % vs. 46% for sometimes, 11.4% vs. 14% for most of the time). During home confinement alcohol was consumed more in the 25-45 year age group Figure 1.

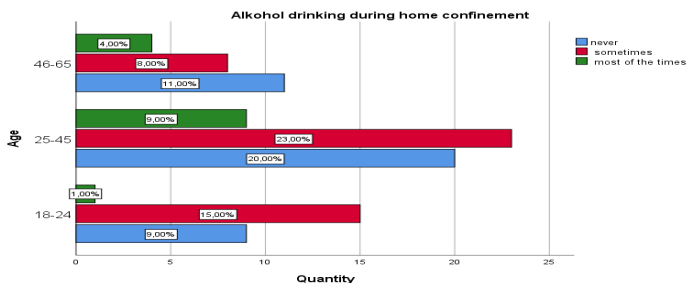


Figure 1. Age and alcohol drinking during home confinement.

The score of question «weight gain» was significantly higher during home confinement

($t=-4.759$, $p<0.05$, $d=0.6$). The percentage of responses that indicated weight gain was higher during home confinement (20% vs. 28.6% gained 1-2 kg and 22.9% gained 2-5 kg, didn't gain weight 76.2% vs. 13.3%).

Comes to the use of sausage dishes and burgers, cakes, sweets, fruit consumers, fat and fried food, there were no statistically significant differences in responses ($t = 0.185$, $p > 0.05$, $d = 0$ score of question «preferred low-fat foods»).

The number of snacks between meals or late-night snacking increased significantly during home confinement ($t = -6.5$, $p < 0.05$, $d = 0.4$). The percentage of responses that indicated having a snack between meals or late-night snack either most of the time or always was higher during home confinement (25% vs. 14.9% for most of the time and 17% vs. 7% for always).

Discussion

We present the data from an online survey collected in Armenian language, comparing physical activity (PA) and dietary behaviors before and during home confinement as a result of COVID-19. There were 105 replies (65.7% female, 34.3% male) from Yerevan, which revealed that the COVID-19 home confinement has had a negative effect on PA (vigorous, moderate, walking and overall) and increase in daily sitting time by more than about 4.2%. Additionally, an unhealthy pattern of food consumption (the type of food, eating out of control, snacks between meals, alcohol drinking) was exhibited.

Despite recommendations that home confinement should not hinder people from being physically active [15,16,17], present results show that there has been a decline in all PA levels during the COVID-19 home confinement period. While the effect size (Cohen's d) is small to medium for most parameters, the 13.3% reduction in number of hours per week walking is medium to large. In fact, 0.9 days is a serious change,

independent from the number of walking days before home confinement. The most obvious change in reported outcomes occurred during sitting (effect size $d=0.8$), most likely due to an increase in the time people were required to stay within their home confinement location. Indeed, 58.2% of the sample reported sitting for 6–8 h a day during confinement (vs. 54.2% before). Data indicate that 26% of the sample did not change their sitting behavior by 1 h or less.

The results of this survey concur with recent studies demonstrating that the current COVID-19 home confinement could dramatically impact lifestyle activities globally, including participation in sports and PA engagement [6, 10].

Our study found that women were more likely than men to exercise during lockdown, and COVID-19 home isolation had a negative impact on all levels of physical activity. Restrictions have reduced access to general physical activity. Despite an increase in physical activity advice available on social media, current results indicate that it was not possible to properly maintain regular exercise patterns at home.

We also found that the time spent in physical activity during the home confinement was reduced by 24.3%. This may be due to the fact that due to restrictions, people spend a lot of time sleeping due to boredom at home. According to a number of international studies, the ratio of insufficient physical activity and sleep quality affects the body mass index. Obesity itself is a risk factor for sleep disorders. Weight gain over time is an independent risk factor for a number of sleep problems, such as the development of daytime sleepiness [1].

Our results also showed that, contrary to the recommendations of the World Health Organization, people changed their eating habits by with increased consumption of unhealthy food, eating irregularly, including more snacks in between meals. Negative changes in eating behavior can be attributed to the epidemic, such as anxiety, stress and depression caused by the 44-day Artsakh war, which led to a decrease in motivation for healthy eating and an increase in overeating due to stress.

Comes to dietary behavior, there doesn't seem to be a single behavioral issue.

In terms of food consumption, before and during home confinement, data on eating habits show that most of the respondents did not prefer a soft drink to a diet, avoided eating a lot of sausages, burgers while eating at home.

Our study found that sugar consumption increased by 3.8% during home confinement. Women consume more sugar than men.

During home confinement people tried to eat more salads, vegetables, did not reduce fat intake.

It turned out that during the home confinement, people were more likely to order food with delivery. This may also be due to the fact that delivery services in Armenia were provided at a high level, in compliance with anti-epidemic rules.

While a medium effect size ($d = 0.6$) was recorded for weight gain, a small effect size was recorded for food type and uncontrolled food intake.

In fact, the percentage of responses that indicated alcohol drinking most of the time was higher during home confinement ($d=0.8$). Alcohol consumption has increased which may be due to the fact of a large amount of free time.

The negative changes in the majority of eating behaviors could be attributed to eating out of anxiety or boredom [1,13,14], a dip in motivation to participate in PA or maintain healthy eating or an increase in mood-driven eating [18,19].

Despite already existing recommendations [10,11,13], people need additional support to effectively use the services offered and understand the consequences of inaction. It is necessary to support innovative health behaviors through fitness apps and video streaming, as well as support motivation and gamification, while encouraging and supporting physical activity.

Research limitations are:

- The survey was conducted only among those in self-isolation living in the city of Yerevan, so the results could not be extended to all those in self-isolation in the Republic of Armenia.

- Some of the participants refused the survey or did not complete it;
- Depression of people in isolation.

Conclusions

The results of the survey indicate a negative effect of home confinement on physical activity and diet behavior with a significant increase in sitting time and unhealthy diet, indicative of a more sedentary lifestyle. These observations have potential implications that could aid the development of physical activity and nutritional recommendations to maintain health during the home confinements.

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OCCUPATIONAL STRESS AS A PREDICTOR OF BURNOUT AMONG PREVENTIVE MEDICINE PHYSICIANS

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Abstract

Burnout is a professional syndrome associated with stress caused by overwork. Our aim was to assess the prevalence of occupational stress and burnout among preventive physicians, as well as to determine predictors of burnout and stress. An anonymous questionnaire was applied (n = 175). The statistical analysis consisted of a descriptive and inferential analysis. The prevalence of burnout and stress was calculated to be 88.1 and 82.3%, respectively. The dimensions that generated higher levels of stress were "shuttle" and "overload". Burnout was directly related to the size of the "overwork" stress. The prevalence of burnout in Moldovan preventive medicine doctors is as high as in their colleagues in other countries as well as in teachers. Therefore, intervention strategies can be devised.

Introduction

Scientific and technological progress, improved production, have greatly facilitated human labor. Improving working conditions and the work process has led to significant changes in "work-illness" dependencies. From the time of Bernadino Ramazzini (1700) over several centuries and even until the first half of the twentieth century, there was a clear specific link between profession and disease [1]. At

present, the pronounced, specific clinical forms of health disorders, characteristic of hard and tiring work, have long since disappeared.

In occupational health research, topics on work stress have been identified as a priority [2]. Indeed, the prevalence of exposure to psychological overload and the corresponding health effects have increased during the past decades and will probably increase even further in the near future. Healthcare personnel are particularly at risk of developing work-related psychological disorders, impacting negatively on patient care. Furthermore, it has been suggested that recent reforms in the National Health System threaten to increase emotional distress and decrease satisfaction that doctors derive from their work [3].

Most people work in acceptable conditions. And more and more often there are patients in whom the health disorders associated with working conditions manifest themselves in the form of non-specific diseases from an etiological point of view [4-5]. These are presented by common somatic diseases, called by experts WHO "Work related diseases", in the pathogenesis of which "work" is only a contributing cause, a risk factor, which affects the entire working age population. With the emergence of new categories of work-related diseases, the nature of occupational exposure has also changed: it has become multifactorial, without a special factor to offer a clinic of occupational diseases, poly-factorial and usually low intensity (harmless exposures).

Professional stress is gaining more and more professions and jobs, having a significant impact on both public health and socio-economic [6]. The term "burnout" was coined in the 1970s by the American psychologist Herbert Freudenberger. He used it to describe the consequences of severe stress and high ideals in "helping" professions. Doctors and nurses, for example, who sacrifice themselves for others, would often end up being "burned out" – exhausted, listless, and unable to cope. Nowadays, the term is not only used for these helping professions, or for the dark side of self-sacrifice. It can affect anyone, from stressed-out career-driven people and celebrities to overworked employees and homemakers. Surprisingly, experts don't always agree on

what burnout actually is. This has consequences: Because it's not exactly clear what burnout is and how it can be diagnosed, it's also not possible to say how common it is. [7].

Currently, the issue of professional burnout is a complex subject, approached multidisciplinary by specialists in occupational health, ergonomics, pedagogy, psychology, psychotherapy, theology [6].

Among the professions with the highest risk of developing burnout are all non-productive professions [8] which involve intense "human-to-human" communication, with teachers and medical staff being the headliners. A series of studies have elucidated the professional categories in the health system, with the highest level of emotional exhaustion: urology (63.6%) [9], physical medicine and rehabilitation (63.3%), family medicine (63.0%) [5]. At the same time, similar studies addressed to specialists in Preventive Medicine have not been identified, which led us to choose this topic for research.

The aim of the study was to assess the spread of occupational stress and burnout syndrome among preventive medicine physicians.

Materials and Methods

In order to achieve the proposed goal, a descriptive cross-sectional study was initiated. All procedures were in accordance with the ethical standards of the IGH-GCP guidelines and with the Declaration of Helsinki. The present study was approved by the Ethics Committee of "Nicolae Testemitanu" State University of Medicine and Pharmacy, Chisinau, Republic of Moldova (Decision no. 17 from 14.04.2019).

The questionnaire was composed by demographic, labour and personal questions followed by application of two instruments: Stress Questionnaire for Health Professionals (SQHP) and Maslach's Burnout Inventory – Human Service Surveys (MBI-HSS).

Stress Questionnaire for Health Professionals is an instrument that evaluates the general level of stress in the work activity (one item) and the sources of stress that health professionals face in their activities (25 items distributed across the six stress dimensions). The items of the six

stress dimensions evaluate the intensity of stress on a 5-point Likert scale (0 = No stress at all, 4 = Very high stress). Mean scores are calculated in order to obtain the values of the six subscales. The highest values in each dimension indicate higher perception of stress by health professionals. The instrument also includes a single item to evaluate the general perception of stress of the health activity, also answered in a 5-point Likert scale (0 = No stress at all, 4 = Very high stress).

The MBI-HSS is the original and most widely used version of the MBI. Designed for professionals in the human services, it is appropriate for respondents working in a diverse array of occupations, including nurses, physicians, health aides, social workers, health counsellors, therapists, police, correctional officers, clergy, and other fields focused on helping people live better lives by offering guidance, preventing harm, and ameliorating physical, emotional or cognitive problems. The MBI-HSS addresses three scales: Emotional Exhaustion measures feelings of being emotionally overextended and exhausted by one's work. Depersonalization measures an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction. Personal Accomplishment measures feelings of competence and successful achievement in one's work.

Statistical analysis was divided in three parts: descriptive analysis, double variable inferential analysis and multiple inferential analysis. On the double variable inferential analysis, burnout and stress dimensions averaged values were compared between the three specialties. The multiple comparisons were made by the Bonferroni method (statistical significance for $p \leq .017$). On the multiple inferential analysis, to search for burnout and stress predicting factors, the independent variables ($p \leq .1$) were included on the hierarchical regression. Statistical significance was established at $p \leq .05$, except in those cases mentioned above.

Sample characteristics. The investigated sample consisted by 175 physicians working within the National Agency for Public Health from the Republic of Moldova.

Results

The majority of respondents are female - 145 (82.9%, (78.5-89.3)). The age group was between 31-65 years (mean 46.7 ± 8.94 years), the proportion of people over 40 years is 71.4% (64.7-78.1). It should be noted that the average age of men is 50 years. In relation to the activity direction of National Agency for Public Health, the respondents work in 6 directions: State Health Control Department - 31.4% (24.5-38.3), Communicable Disease Surveillance Department - 22.9% (16.7-29.1), Health Protection Department - 20.0% (14.1-25.9), Health and Chemical Laboratory Diagnosis and Physical Factors Department - 20.0% (14.1-25.9), Non-communicable diseases surveillance department - 2.9% (0.4-5.4), Management department - 2.9% (0.4-5.4).

The great majority of respondents work in the central office of NAPH - 35.3% (28.2-42.4), followed by those working in the regional Public Health Centers (PHC) - 29.4% (22.6 -36.2), district PHCs - 26.5% (20.0-33.0) and departmental PHCs - 8.8% (4.6-13.0).

The people trained in the study have a work experience between 5 and 40 years (average 21.1 ± 9.22 years). Most of them have a work experience of 31-35 years - 20.0% (14.1-25.9), followed by those with 6-10 years of experience - 17.1% (11.5-22.7) and 26-60 years - 14.3% (9.1-19.5). Young specialists represent a proportion of 2.9% (0.4-5.4). Practically every second respondent has a higher category of professional qualification - 95 (54.3%, (46.9-61.7) persons, followed by those who hold the first category - 50 (28.6%, (21.9-35.3)).

From a socio-economic point of view, the majority of respondents are married - 140 (80.0%, (74.1-85.9)), of which 95 (54.3%, (46.9-61.7)) have under guardianship minor children, including 70 (73.4%, (64.5-82.)) - one child each. Respondents' life partners work mainly in the budget sector (49%, (41.6-56.4)), in the transport sector (14.3%, (9.1-19.5)) and construction (14.3 %, (9.1-19.5)). In 46.0% (38.6-53.4) cases the life partner works full time. Over 60% (55.7-70.1) of the respondents reported a similar financial situation with other families, followed by those who reported a slightly better financial situation - 14.3% (9.91-

19.5), slightly worse - 8.6% (4.4-12.8) and much worse 5.7% (2.3-9.1). Almost always “they have a bad financial situation” 35 (20.0%, (14.1-25.9) respondents, “they hardly pay the necessary things (food, maintenance, telephone)” - 5 (2.9%, 0.4-5.4) people, “do not have enough money for the desired leisure activities (theater, concerts, fitness, SPA.)” - 85 (48.6%, 41.2 -56.0), “cannot afford a vacation at sea / mountain” - 35 35 (20.0%, 14.1-25.9) respondents.

Characterizing the living conditions then in 100% cases they were characterized as good and very good. Most respondents live in separate apartments - 115 (65.7%, (58.7-72.7). Practically every third respondent has his house located near the main streets, and every second near the old spaces.

The results of the questionnaire highlighted as a stressful factor the problem of traveling to and from work, because 35 (20.0%, (14.1-25.9) of the respondents commute, 65 (37%, (29.9-44.30) is placed at work on foot, 65 (37%, (29.9-44.30) - by public transport and 25 (14.3%, (9.1-19.5) - by individual car. Travel to work (in one direction) from 10 to 90 minutes, averaging 45.3 ± 11.84 minutes. Every third respondent gets to work in 15 minutes, every fifth - in 20-25 minutes. It should be noted that 41 (23.4%, (16.8-29.2) respondents spend 2-3 hours on the road.

Regarding the working conditions, most of them rated them as “satisfactory” - 70 (40.0%, (32.7-47.3), followed by those who considered them “good” - 65 (37.1% (29.9-44.3). “Very good” and “unsatisfactory” conditions were declared equally - 20 each (11.4%, (6.7-16.1). Regarding the psychological climate, 95 (54.3%, 46.9-61.7) rated them as “pleasant”, 35 (20%, (14.1-25, 9) - “relatively tense”, 30 (17.1%, (11.5-22.7) - “tense”, and 5 (2.9%, (0.4-5.4).

At the same time, 120-145 respondents mentioned that they can get “very easy” and “quite easy” from colleagues to discuss work problems and receive advice on how to solve them, and 105-115 respondents also mention the openness to discussion and other issues, which indicate the establishment of friendships. It should be noted that every seventh respondent mentioned can obtain “very difficult” advice (Table 1).

Table 1. Respondents' opinion regarding the openness of colleagues to collaboration

How easy or difficult would it be to get the following from your colleagues?	Quite difficult		Pretty easy		Very difficult		Very easy	
	n	%±ΔCI _{95%}	n	%±ΔCI _{95%}	n	%±ΔCI _{95%}	n	%±ΔCI _{95%}
Discussions about work issues	5	2,9±2,48	115	65,7±7,03	25	14,3±5,19	30	17,1±5,57
Tips for resolving work issues	30	17,1±5,58	95	54,3±7,38	25	14,3±5,19	25	14,1±5,16
Tips related to other topics (projects) of yours	40	22,9±6,22	100	57,1±7,33	20	11,4±4,71	15	8,6±4,12
Help on various issues	50	28,6±6,69	85	48,5±7,40	20	11,4±4,71	20	11,4±4,70

Regarding the professional stress, every third respondent stated that “quite often they feel excessively stressed and unable to cope with the work schedule” - 50 (28.6%, (21.9-35.3)), and 120 - equally “occasionally” and “rarely” (34.3% each, (27.3-41.3 respectively).

In the professional activity, the preventive medicine physicians are working from 3 to 4.5 hours a day, mainly for “writing service documents” - 155 (88.6%, (83.9-93.3)) and for "Consultation of databases and their analysis" - 120 (68.6%, (61.7-75.5)). Also daily 60 (34.3%, (27.3-41.3)) respondents prioritize the Internet during breaks for reactive purposes and communication with friends and family members versus active rest.

Regarding the psycho-emotional state of the respondents, it should be mentioned that 5-40 (2.9-22.9%) people were involved or witnessed some situations that marked them emotionally in the last 12 months from time of interview, including 5-35 (2.9-20.0%) people in the last 30 days. In descending order of reported frequencies, we quote: “a serious quarrel” happened to them - 40 (22.8%), “death of a parent and / or

friend” - 45 (27.7%), “someone in the family and- lost their job”- 15 (806%), or witnessed “an argument”- 40 (22.8%), “an act of psychological violence / abuse”- 35 (2.9-20.0%). It should be noted that 5 (2.9%) respondents reported a serious illness.

The night's sleep varies from 5 to 8 hours. Practically every third respondent reported a sleep duration of less than 6 hours - 60 (34.3%, (27.3-41.3), an additional 65 (37.1%, (29.9-44.3) reported difficulty falling asleep, which attests to the presence of at least a chronic fatigue, with the risk of transition to overwork. Most of the respondents reported the extinguishment at 23:00 - 80 (45.7%, (38.3-53.1), followed by those who reported 22-23 - 70 (40.0%, (32-47.3).

Regarding the subjective assessment of health status 110 (62.9%, (55.7-70.1) respondents reported a “satisfactory” level, followed by those who reported a “good” level - 50 (28.6 %, (21.9-35.3). 110 (62.9%, (55.7-70.1) respondents are registered with the family doctor in case of chronic illness. It should be mentioned that 25 (14.3%, (9.1-19.5) show an inadequate attitude towards their own health. Only every fourth respondent has not been ill in the last 12 months. More than half of the respondents reported that they usually get sick 1-2 times a year, most in the cold season, and every third - all year round.

According to the results, the lifestyle characterized by intense activity and high levels of stress was registered in 115 respondents (65.7%, (58.7-72.7) and in 28.5% of cases (21.8-35.2) activity is a continuous struggle, they are ambitious, they dream of a career, but they are dependent on other people's evaluations, at the same time, people with a high level of stress were not detected. High stress level was identified at 34.3% (27.3-41.3) respondents, and a very high level of 8.6% (4.4-12.8).

The results of the inventory test for the presence of stress symptoms show that the signs of stress were reported by 100% of respondents, including 88.1% (83.3-92.9) - moderate stress. The ranking of the signs, in descending order, is as follows: "easily innervated even by fringes" - 105 (60.0%, (52.7-67.3), "always busy, always full of activities" - 70 (40.0%, (32.7-47.3), “they are nervous if they have to wait for

something” - 65 (37.1%, (29.9-44.3), ”are disturbed of criticism ”- 60 (34.3%, (27.3-41.3) respondents.

The quantitative assessment of the individual characteristics that contribute to the formation of organizational stress found that the values recorded are in the range of 7.0 to 13.0 conventional points in terms of the level of self-knowledge (cognition), 8-15 points for the range of interests, 4-12 points for accepting the values of others, 9-16 points for flexibility of behavior and 5-15 points for work ability.

Regarding the frequency of registration of different levels of individual characteristics, it was found that 75% of respondents have an average level of cognitive abilities, 60% - average level and 10% above average level of the range of interests, 67% average level and 8.6% above average level of work capacity, 71.4% sub-average level and 25.7% - average level of acceptance of the values of others, 62.8% average level and 20.0% sub-average level of behavioral flexibility.

It is well known that the negative effects of occupational stress are largely determined by the type of stress response, which is why in current research we have considered it important to diagnose the type of stress response. It was found that most NAPH specialists (55 or 31.4%, (24.5-38.3) have a conscious response to stress, followed by those with a calm approach (45 or 25.7%, (19.2-32.3), optimistic type (35 or 20.0%, (14.1-25.9) and alarming type (20 or 11.4% (6.7-16.1).

The results of the diagnosis of occupational burnout syndrome are presented in the following table. Regarding the level of manipulation of the 3 dimensions of the professional burnout, it was found that 144 (82.3 ± 5.65%) respondents have a high level of depersonalization, 90 (51.4 ± 7.41%) - high level of reduction personal merit, and 80 (45.7 ± 7.38%) - emotional exhaustion.

Table 2. Assessment of the intensity of the burnout syndrome of the NAPH specialists

Level	Components of burnout syndrome								
	Emotional exhaustion			Depersonalization			Personal Accomplishment		
	Low	medium	high	Low	medium	high	Low	medium	high
	L	M	H	L	M	H	L	M	H
Evaluation scale, conv points.	0-15	16-24	25-54	0-5	6-10	11-30	48-37	36-31	30-0
n	45	50	80	21	10	144	55	30	90
%	25,7	28,6	45,7	12,0	5,7	82,3	31,4	17,1	51,4
±Δ CI95%	6,47	6,7	7,38	4,81	3,44	5,65	6,88	5,58	7,41

The individual evaluation of the test result, according to the scale, found that 34 (19.2%, (13.4 + 25.0) NAPH specialists have a high level of all components of the burnout syndrome. These people need to take urgent treatment and remedial measures for occupational stressors.

Discussion

This study demonstrates the hypothesis and the main purpose of the study, namely that occupational stress is a serious problem among preventive medicine doctors. They demonstrated high levels of stress, as demonstrated by Ana Joaquim and co-authors [10] in their similar study of oncologists.

The problem of burnout has also been identified in other non-profit professional groups, such as teachers. Similarities could be observed in the main causes of burnout. Cheptea D. [11] in his study Assessment of teachers' health in relation to working conditions showed that the main causes of emotional exhaustion were lack of socialization and social relationships between employees, a fact demonstrated in the present study

As in the French study (Blanchard et al., 2010), [12] the stress dimension 'overwork' was a strong predictor of burnout. This is consistent with the revision published by (Thomas, 2014) [13], that

established the take-home work and its interference with family life great predictors of medical residents' burnout (Thomas, 2014). Stress dimensions have proved to be less likely predictable than the burnout dimensions as expected as stress constitutes an inherent individual response and evolution of stress to burnout depends on environmental factors (Thomas, 2014).

Although the present study provided a contribution to an area of knowledge still unexplored in Republic of Moldova, it shows some limitations, such as the fact that the study is based on self-registration measurements, which may overestimate the results obtained and the fact that the translation and validation of the instruments were based on normative values of burnout dimensions of the U.S. population [14], as conducted in other studies [12].

Conclusions

The obtained results of burnout and stress in the medical population might be used to build and implement stress management programs or preventive structural reforms that aim to create support groups, the separation of work and personal life and the increase of the sensation of job control. One strategy that seems to be useful in the residents is training in communication of bad news as well as in labor management. Another important strategy are effective coping mechanisms, depending on the tastes and personal life of each other.

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STUDY OF THE KNOWLEDGE-ATTITUDE OF HEALTH AND LAW SPECIALISTS IN GEORGIA IN THE FIELD OF HEALTH LAW

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Abstract

It is noteworthy that health law plays an important role in global and public health. Knowledge of health legislation as a legal discipline raises awareness among health professionals about human rights. In Georgia, the health law is not established as an independent discipline and is a novelty. Public awareness of this field is scarce. Consequently, the need and importance of health law as a separate discipline are not yet perceived. It should be noted that as of today, in Georgia, the knowledge and attitude of health and legal specialists in the field of the health law have not been thoroughly studied and researched, and this research is a novelty in the direction of establishing health law as a separate discipline. This paper allows us to see the need to introduce health law in Georgia as a separate discipline. Due to the specifics of the research topic, the in-depth survey method of qualitative research was used. Delphi Method. The anonymity of the interviewees (number 15) was maintained. The audio recordings of the interview were deciphered and their transcripts prepared (written form of the audio recording). Then, through PRIZMA2020 (www.eshackathon.org), the data were coded (extracting and summarizing key concepts and ideas) and categorized (gathering what the interviewees were saying about the issues mentioned). Only one stage of the survey was conducted with the interviewees, as in the first survey, a consensus was reached among respondents on a key issue such as the need to raise awareness among health and legal professionals in the field of the health law. Further investigation did not yield any new information. Field work took place

from December 2021 to January 2022. The duration of the interview was: 20-45 minutes. The survey revealed that the interviewees' attitude towards health law as an independent discipline is quite high, positive, and directed towards the development of the field. The need to introduce health law in Georgia as a separate discipline was seen. The issue of the need for health law specialists was also on the agenda. The study showed that several effective measures are to be taken to introduce and popularize health law in Georgia as an independent discipline, and to raise the level of awareness among both health and law professionals.

Introduction

The supreme and fundamental right of a human is his right to health and life. The law, as a tool for improving the health of the population, is increasingly used and recognized at the global, national, and sub-national levels. Notable is the Ottawa Charter on Health Promotion (1986), which recognizes that good health requires coordinating action by each stakeholder. Be it government, nongovernmental organizations (NGOs), or local organizations. At the same time, the most important agreement is the Ljubljana Charter on Health Reform (1996), which regulates some fundamental principles and recommends that the health care system address human needs and encourage patients to make positive changes (Section 5.3). "Health - Human Right" should be more than a slogan, it should include both international and national legislation, as well as health policy [1].

It is noteworthy that health law plays an important role in global and public health [2]. Knowledge of health legislation as a legal discipline raises awareness among health professionals about human rights. Demonstrate the importance of medical ethics and medical law among medical staff - this is the message to healthcare professionals that they need to adopt ethical principles and knowledge of medical law [3].

Health law combines existing legislation, patient rights and responsibilities, the role of health care representatives, and the rights of marginalized groups. The development of health law as a souvenir

subject of law can be considered as a correlation as a result of the development of international human rights law, as human rights can be used to assess the effectiveness of health legislation, as well as its compliance with both human rights and health goals.

In many countries of the world (USA, Germany, England, etc.) health law has a practical use. In the 1970s, law and medicine courses in European countries expanded to include public policy. Including the issue of access to and quality of health care. At the same time, the development and advancement of medical technology have created new legal areas, such as organ transplantation, abortion, and in vitro fertilization. These issues became increasingly involved in law and medicine courses. It later became known as the Health Law.

In Georgia, the health law is not established as an independent discipline and is a novelty. Public awareness of this field is scarce. Consequently, the need and importance of health law as a separate discipline are not yet perceived.

Before the restoration of independence, the Georgian healthcare system was regulated by orders, instructions, methodological constructions, circular PCs, etc. of the Ministry of Health of the Union of Soviet Social Republics. Which, without taking into account the peculiarities of the regions, were created by the structural subdivisions of the Ministry and up to 100 scientific research institutes. The system operated without legislative regulation.

According to the Act of Restoration of State Independence of Georgia of April 9, 1991, one of the main principles of the Republic of Georgia was the primacy of international law over the laws of the Republic of Georgia. Also, the direct effect of its norms on the territory of Georgia.

In 1994, the country's anti-crisis program was approved, under which work was underway to fundamentally reorganize the health care system and develop a new model. The current legislation in the field of health care contradicted the sociopolitical direction of the country's development, which was one of the reasons for the need for cardinal changes in the existing system [4].

Aims

This paper aims to study the importance of health law in Georgia and the need to introduce it as an independent discipline and develop relevant recommendations. Within the framework of the qualitative research, through an in-depth interview, the knowledge-attitude of health and law specialists in the field of health law in Georgia was studied.

It should be noted that as of today, in Georgia, the knowledge and attitude of health and legal specialists in the field of the health law have not been thoroughly studied and researched, and this research is a novelty in the direction of establishing health law as a separate discipline. This paper allows us to see the need to introduce health law in Georgia as a separate discipline.

Materials and methods

Due to the specifics of the research topic, the in-depth survey method of qualitative research was used. Delphi Method [5]. The anonymity of the interviewers was maintained. The audio recordings of the interview were deciphered and their transcripts prepared (written form of the audio recording). Then, through PRIZMA2020 (www.eshackathon.org), the data were coded (extracting and summarizing key concepts and ideas) and categorized (gathering what the interviewers were saying about the issues mentioned). Only one stage of the survey was conducted with the interviewers, as in the first survey, a consensus was reached among respondents on a key issue such as the need to raise awareness among health and legal professionals in the field of the health law. Further investigation did not yield any new information. According to Dalk and Helmer [6], the Delphi method is a technique designed to gain the most credible consensus of a group of experts. It should be noted that the Delphi method can not be attributed to any particular paradigm. Thus, there are no universally recognized quality criteria [7].

Field work took place from December 2021 to January 2022. The duration of the interview was: 20-45 minutes.

Hypothesis: See the need to introduce healthcare law in Georgia as a separate discipline.

Target segment and selection criteria:

In planning and conducting the research, the following target segments were selected and the following criteria were considered:

1. Representatives of the healthcare sector - number 6

1.1. Medical Policy Maker and Decision Maker - Number 2: In one case - a representative of the Health Committee of the Parliament of Georgia, is the decision-maker. In the second case - a representative of the Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs (in the direction of health policy), the decision-maker,

1.2. Persons employed in the managerial position of medical institutions (which provide medical services throughout Georgia) - Number 2: In one case, a multidisciplinary (both outpatient and inpatient care provider), and in the other case, a mono profile, narrow-minded, mental health and drug service provider (both outpatient and inpatient care provider) based on global mental health goals.

1.3. Experienced medical staff (doctors) employed in medical institutions - number 2: In one case - a doctor with at least ten years of experience in independent medical practice, member of the Professional Development Council of the Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia, which considers both certification and professional responsibility. Also, engages in academic activities, In the second case - a doctor who has an independent medical activity, the Professional Development Council of the Ministry of Refugees, Labor, Health and Social Affairs raised the issue of his professional responsibility. Also, engages in academic activities,

2. Representatives of the field of law - number 6

2.1. Lawyers representing the administrative institution making policy in the field of medicine - number 2: In one case - a representative of the Georgian legislature, the Parliamentary Legal Committee, a

decision-maker. In the second case - a representative of the Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs (in the field of law), the decision-maker.

2.2. Lawyers of the medical institution (hospitals) - number 2: In one case - a practicing lawyer in the field of health law, who has at least five years of experience working in the health regulatory body and is currently employed in a medical institution, In the second case - a practicing lawyer in the field of general law, including health law, who has at least five years of experience and is currently employed in a medical institution.

2.3. Survey of private practice attorneys with experience in health law (civil, criminal, administrative, and/or general specialization) - 2: In one case, a lawyer with at least five years of experience working in a medical facility is currently a private practice lawyer, both in general specialization and in health law. Also, engages in academic activities, Second case - Lawyer, only a private practicing lawyer, engaged in academic activities and is a member/founder of the Health Law Association in Georgia.

3. Representative of the regulatory administrative institution, decision-maker - number 1.

4. Representative of the Georgian Healthcare Group in the field of postgraduate training and accreditation of doctors - number 1.

5. Representative of an international non-governmental organization in Georgia in the field of healthcare - number 1.

Results

The survey of the interviewed interviewees (15 interviewees in total. The interviewer questionnaire included eight questions) assessed the knowledge-attitude of health law as a separate discipline and showed that the interest in the mentioned discipline is growing and the field needs to be developed.

1.To the question, did the interviewees have any subject in health law (or similar) passed through their higher education as a discipline, or any

course, or program, or did they organize a similar one? Where? And if you remember, what were the main directions of this discipline? What was important during the program/course and how relevant was it to protect the rights of patients and doctors?

Twelve of the fifteen interviewees mentioned that they did not pass healthcare law or any similar discipline while receiving higher education. During their studies in Georgia, they were not offered medical law or related issues, that the main part of their knowledge comes from self-education, education obtained from professional needs, based on practice.

A different position was taken by two representatives of the legal field. In particular, in one case, the interviewer explained that while receiving higher education, while studying at Iv. Javakhishvili Tbilisi State University, undergraduate (2002-2006), studied health law as an elective subject. Noted that there were interesting issues with the health legislation and it was mainly a review of the law.

In the second case, the second interviewer noted that while receiving higher education in Georgia (Iv. Javakhishvili Tbilisi State University, 1997-2002), health law was not passed as a separate discipline and was not even offered as an elective subject. Noted that only in the following period (2015-2017), during his education in the United States (Chicago-Kent School of Law, Master's Degree (LLM)) was allowed to choose a one-semester course in health law, which covered all areas as a public policy Implementation, the American health care system in general, as well as patient and physician rights.

A different position was expressed by the representative of the international non-governmental organization in Georgia, in the field of healthcare. The interviewer noted that while receiving higher education in Georgia (the University of Georgia, 2016-2019, Public Health and Health Policy), only at the stage of teaching in the master's program was allowed to study a subject - bioethics and medical law, which related to ethics and law in the medical field.

As it turned out in the interview, in the field of health law, the interviewers have theoretical knowledge, mainly advanced after receiving higher education, various training or courses, as well as participation in conferences on issues such as health management, politics, tobacco control, organ transplantation, palate, etc. Which had an intersection with the legal aspects.

2. When asked about the rights of doctors and patients, what role does the knowledge of the doctor's own and patient rights play? Could you give an example? The full composition of the interviewers unequivocally stated that this is the most important issue. It was noted, "Knowledge of the doctor's own and patient's rights is important. The citizen has the right to receive quality medical care, which can be provided by health care personnel who know both his and the patient's rights. The professional activity of a doctor is of strategic importance and is directly related to human health and life."

3. On the question, the health law is a specific direction that needs relevant specialists. Is there a qualified staff in Georgia? If not, what could be the reason for this? Differences in the opinion of the interviewers were noted. In particular, in most cases, it was difficult to give an accurate answer and the reason given was the fact that health law in Georgia is a relatively new direction, which, as an independent discipline, is not introduced. Consequently, at present, there is no academic degree in this field in Georgia, health law specialists are mainly practicing lawyers who have accumulated some practical knowledge and experience in the field of health in the field of law. However, there has been a consensus on the direction that is needed and it would be good to have staff who specialize in health law.

4. To the question, what role does health law play in the formation and implementation of health policy? The opinions of the interviewers coincided. It was noted that health law plays an important role in shaping health policy, as health law regulates the relationship in the health care system, manages disputes over the quality of medical care, fees, disputes

between medical staff and patients, as well as issues between insured and insurance companies.“ "Health law is the basis of health policy."

5. To the question, is the participation of health law specialists together with health policy specialists important in determining health policy? Can you recall any examples? The opinion of the interviewers fully coincided with the part that the coordinated work of health law specialists and health policy specialists is necessary for defining the policy. However, two lawyers from the legal field did not see the need for the categorical involvement of the health law specialists in defining the policy directly and only focused on the part of the involvement in defining the policy from a certain legal point of view.

6. To the question, do doctors/healthmanagers/lawyers need to deepen their knowledge in the field of health law? How will this affect doctors, medical facilities, and the quality of service? Why? Could you give an example? A complete concurrence of the interviewers' opinions was observed. It was noted that "health managers/lawyers need to deepen their knowledge in the field of the health law. With proper health care management, managers and lawyers armed with the knowledge of health law will be a great acquisition for the agencies where they operate. Health law specialists will have a positive impact on the performance of medical institutions and the quality of services. "The main indicator of their work is patient satisfaction, therefore, it is important to increase knowledge in protecting the rights of patients and other vulnerable people." It was noted that "Acquisition and deepening of knowledge should be a continuous and permanent process, which should be provided by the state. This should apply to all areas, not only public health but also health law. It can not lead to anything other than a positive result. As professional development requires a doctor constantly, as well as additional knowledge of all areas related to his activities. This is not a static process. It is a dynamic process, a moment of deepening knowledge, including in the direction of rights."

7. On the question of integration of health law as an independent discipline, medical and law students in the curriculum? Why? Can you

give an example? By the interviewers, the issue was evaluated positively and a complete concurrence of opinions was observed. The need to introduce health law as an independent discipline through integration into the student curriculum was seen. However, there was a need to conduct research by students of the Faculty of Law and Medicine in this direction. Also, foreign practices were highlighted and an example of the existence of medical criminal law was cited, which can be introduced into the Georgian reality with the same success. The need for the existence of health law specialists was also revealed.

8. To the question, what will be the impact, how effective and efficient will the introduction of health law as a separate discipline be? Why? Can you give a relevant example? The main position on the issue was focused on the time factor, in particular, the first that it would be good to introduce an independent discipline, as it was necessary to have specialists in the field of the health law. It will also be important in terms of developing scientific papers or articles. Second - if the need arises over time, it is possible.

9. At the end of the interview, you would add that interesting and important remarks were made regarding the need to introduce, develop and specialize in health law as a separate discipline.

It was noted that "for a medical activity to become fair, it is necessary to develop this field."

It was noted that research in this area is interesting. This area is the most important because no person can not have contact with health care or a doctor. Surgical surgeries, plastic surgery, etc. It is so developed and raises so many legal issues that in this field, along with the development of technology, it is necessary to develop the direction of law. Therefore, we need human resources and people who are interested in healthcare law. In this direction, be it research, papers, articles or the offer of elective subjects in general, it is desirable to develop this direction."

Conclusion/Discussion

It is the duty and obligation of health professionals, as well as every citizen, to follow both the law and the norms of professional ethics. However, there can be some inconsistencies in what is "legal" and what is "ethical" in the treatment of a patient, which can be confusing for both health professionals and patients.

To avoid uncertainty, it is essential to ensure access to legislation and raise awareness of health law among both health and legal professionals.

The survey revealed that the interviewees' (number 15) attitude towards health law as an independent discipline is quite high, positive, and directed towards the development of the field.

The need to introduce health law in Georgia as a separate discipline was seen. The issue of the need for health law specialists was also on the agenda.

The study showed that several effective measures are to be taken to introduce and popularize health law in Georgia as an independent discipline, and to raise the level of awareness among both health and law professionals. In particular:

1. The need for health law specialists has been identified, for which it is necessary to introduce the educational practice in the country, at least for medical and law students, by integrating the health law component into the curriculum as an independent discipline. For students of each direction.

2. Based on the experience and practice of foreign countries, it is clear that countries began to develop the health law by integrating it into the student education program decades ago. Therefore, to integrate the health law into the education of students and introduce them as a separate discipline, it is necessary to conduct additional research, both in higher education institutions (in the field of medicine and law), as well as among practicing lawyers and doctors. It is also necessary for the administrative bodies (in the field of education and health, within the scope of competence) to develop an appropriate model of teaching. At the same time, it is advisable to introduce an exchange educational

program in the field of health law, which will enable specialists in health and law to deepen their knowledge, which will increase access to international practice and experience, and contribute to the development of modern practice. It should be noted that the introduction of the Institute of Health Law Specialists will contribute to public welfare, and improve the health care system.

3. It is necessary to activate associations and educational institutions by raising the awareness of patients and doctors about their rights and responsibilities by planning training and seminars.

4. The interview highlighted the need to revise and amend the legal framework in the field of healthcare.

5. However, it should be noted that there are no studies on health law in the country. Empirical research in the field of health law has a positive impact on policy. Empirical research of theoretical predictions and assumptions increases both confidence in legislation and the effectiveness of policy proposals. Therefore, it is necessary to conduct research in the field of health law, which in turn will increase the availability of papers and articles in the Georgian language and create a database of scientific papers, which is currently in short supply in Georgia.

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THE DEVELOPMENT OF PHD STUDIES IN THE KYRGYZ REPUBLIC

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Abstract

The function of higher education is to advance the training of personnel by a country's needs and the need to integrate a particular country into the world educational space.

Over the past decade, targeted work has been carried out in Kyrgyzstan to introduce the third level of higher education - PhD doctoral studies to improve the training of scientific, scientific and teachingstaff of a new formation capable of meeting modern challenges of the economy, culture, science, and education.

In this article, the authors share their experience in introducing PhD doctoral studies in Kyrgyzstan and the problems and prospects for developing this area.

Introduction

The socio-cultural significance and function of modern higher education lie in the advanced training of personnel by the needs of the country and the need to integrate a particular country into the world educational space. In the Kyrgyz Republic, this means the need to train scientific, scientific, and pedagogical personnel for a new formation capable of meeting modern challenges of the economy, culture, science, and education [1].

Over the past three decades, the higher education system in Kyrgyzstan has undergone significant structural changes, as in the rest of the world. About 50 European countries participated in the reforms under the Bologna Process, which brought together politicians, decision-makers, the academic community, and students [2-5]. The Bologna Principles were implemented in Europe and many other countries outside of Europe [6]. Our country did not remain aloof from these transformations [7-8]. One of the main objectives of the Bologna process was to make the education system more focused on the needs of society, and its structure is comparable in the global aspect.

For the first time, the issue of the transition from the existing higher education system to the three-level system well established now in broad international practice (bachelor's, master's, and PhD doctoral studies) was raised back in 1991-92 as part of the process of preparing and adopting the first Law on Education of the sovereign Kyrgyz Republic. Broad discussions resulted in the adoption of the law in a version based on a symbiosis of the higher education system that existed at the time of the adoption of the law, and three-level higher education, which implies the possibility of obtaining, along with qualifications in the relevant specialties, also academic degrees of bachelor and master [9]. At the same time, the classical (German) system of awarding academic degrees (candidate and doctor of science) was preserved. The subsequent course of events in the international practice of the development of the higher education system showed that the first attempts to reform higher education in the Kyrgyz Republic, undertaken at the dawn of the country's modern sovereignty, were quite progressive.

This paper describes the experience of introducing PhD doctoral studies, existing problems, and prospects for developing this area in Kyrgyzstan.

From history of the introduction of PhD in Kyrgyzstan: In 1999, the International University of Kyrgyzstan hosted the first defense of a dissertation by a doctoral student from the United States for a Doctor of Philosophy (Ph.D.) in Economics. At the same university in 2009, a

doctoral student from Germany defended his dissertation for the degree of Doctor of Philosophy (Ph.D.) in medicine.

With the introduction of the degree of Doctor of Philosophy (Ph.D.) as a qualification level of postgraduate professional education, giving individuals the right to carry out scientific and other professional activities to the Law of the Kyrgyz Republic "On Education" in 2019, a multidisciplinary working group was created to develop a regulation on PhD in the Kyrgyz Republic.

It was preceded by a long process of introducing and implementing two-level higher education, an experiment with pilot PhD programs, and the participation of Kyrgyz universities in several international projects to reform higher education.

In 2013, in Kyrgyzstan, based on the order of the Minister of Education and Science of the Kyrgyz Republic, experimental PhD programs were launched, universities were selected as pilot universities, which were implementing European projects to introduce the third cycle of education in cooperation with leading European universities. Pilot programs were launched in 8 areas, including public health and healthcare.

The experiment results showed that, in general, the experiment went well, but not all of the declared programs were successfully defended.

An example of a positive experience in implementing the PhD program was the experience of the International University of the Kyrgyz Republic (from now on - IUKR). From 2013 to 2018, more than 50 doctoral students entered the IUKR for two experimental programs in economics and business management. More than 20 people successfully defended doctoral dissertations and received Ph.D. diplomas from the IUKR. Some doctoral students were also representatives of Kazakhstan and Belarus, whose diplomas were nostrified (recognized) in their republics.

Legislation in the field of PhD doctoral studies: For the successful implementation of PhD programs, normative documents were developed and approved: state requirements for PhD dissertations, state

requirements for the defense of PhD dissertations, regulations for training in PhD programs (order of the Ministry of Education and Science of the Kyrgyz Republic No. 311/1 dated May 31, 2013).

Representatives of the member universities of the Erasmus + DERECKA project consortium, as part of an interdepartmental group, developed the PhD Regulations in the Kyrgyz Republic, which spelled out the requirements for opening and implementing PhD programs, as well as quality assurance procedures. Recommendations on licensing requirements for PhD programs have also been developed. The Regulation on PhD was adopted by the Decree of the Government of the Kyrgyz Republic dated December 16, 2020.

In 2019, a Roadmap for introducing the National Qualifications System was developed (the development and approval of the National Qualifications Framework Kyrgyz Republic, NQFKR).

In February 2020, representatives of the DERECKA project consortium developed and presented recommendations on learning outcomes (descriptors) for the 8th qualification level of the NQFKR project. In addition, members of the working group took part in a broad discussion of the draft NQFKR.

The working group on preparing the regulatory framework for a PhD, based on a successful experiment on the implementation of PhD programs in pilot universities in Kyrgyzstan, proposed a national model of the PhD program comparable to European programs.

On September 18, 2020, the draft NQFKR was adopted by the Decree of the Government of the Kyrgyz Republic No. 491 "On approval of the National Qualifications Framework".

The professional and personal competence of PhDs is prescribed by the eighth level in the NQFRK. According to it a graduate of a PhD program must possess the most advanced knowledge in the field of work or study in related fields, the most advanced and specialized skills and methods, including synthesis and assessment, necessary to solve the most critical research and/or innovation problems, as well as to expand and rethink existing knowledge or professional practice. He/she must

demonstrate self-reliance, innovation, scientific and professional integrity, and a commitment to developing new ideas or processes in cutting-edge professional practice or learning areas, including research. The PhD program graduate is responsible for implementing the results of his research at the institutional level and / or industry scale and also leads research or professional groups in solving complex or interdisciplinary problems.

Features of PhD programs in Kyrgyzstan: The content of the PhD programs in the Kyrgyz Republics is close to the international experience and the Salzburg principles of doctoral studies [10], according to which the university approves the curriculum of doctoral students, and the training period covers three years, which can be extended by no more than two years. The labor intensity of a doctoral program ranges from 180 to 240 credits, with at least 60 credits allocated for the study of academic disciplines. Most importantly, during the study period, the doctoral student is obliged to publish at least two articles reflecting the most important scientific results of the study in scientific publications with a "non-zero" impact factor and indexed by the international systems like the Web of Science and Scopus. To date, the publication activity of Kyrgyz scientists in such journals has significantly increased.

A PhD program of the International Higher School of Medicine (IHSM) in Public Health became a member of the European Association of PhD studies in Public Health - ORPHEUS.

A distinctive feature of the experimental programs at the IHSM and other universities was the obligatory passage of a research internship in non-CIS countries and the presence of a second foreign scientific consultant. Research internships are held both within the framework of Erasmus Plus projects and within the framework of credit mobility of doctoral students under the program Ph.D. Under the TUTORIAL project, doctoral students of the IHSM and Osh State University completed internships at the University of Milan (Italy) and under the KA-1 program at the University of Tartu (Estonia). The internship of some doctoral students was supported on a competitive basis by

stimulating grants from the universities themselves. Osh State University signed an agreement with the University of Cadiz (Spain) for the internship of the joint leadership of 11 doctoral students in public health and mathematics. Within the framework of the DERECKA project, doctoral students from 7 universities in Kyrgyzstan will undergo their scientific training at Vilnius Gediminas Technical University (Lithuania), Hamburg University of Applied Sciences (Germany), and Brunel University London (UK).

A necessary condition for successfully defending a PhD dissertation is checking it for plagiarism.

About the Erasmus Plus project "Development of the scientific potential of Kyrgyz science through PhD programs" DERECKA (2020-2023).

Aim

The project aims at strengthening the research and innovation potential in Kyrgyzstan through the promotion of the PhD system.

Project objectives:

1. Upgrading existing PhD studies and developing new PhD programs that meet EU standards.
2. Improving the research competencies of the teaching staff and the innovative potential of scientific research in Kyrgyzstan.
3. Improving the administration and management of PhD programs.
4. Promoting a PhD culture among academia, stakeholders, and the general public in Kyrgyzstan.

The project consortium consists of 7 universities in Kyrgyzstan, Vilnius Gediminas Technical University (Lithuania), Hamburg University of Applied Sciences (Germany), Brunel University London (UK), and EXO Launch (Germany).

At the beginning of the project, a specially designed questionnaire was used to survey teaching staff, university administrations, students who graduated and are studying PhD students to study the scientific

potential and needs in the field of training scientific personnel and the development of science, and problems in the implementation of PhD programs in the Kyrgyz Republic. Based on the results of the survey, training programs were developed.

The target groups of the training included doctoral administrators, faculty, and PhD students.

For the first two target groups, a series of 32 webinars were held, a summer school "training for trainers" scheme (72 hours), and a study tour to European universities were organized.

The curriculum for the PhD doctoral program administrators has focused on establishing effective PhD program management, establishing and expanding the link between industry and academia, providing inclusive education, and seeking investment in science.

The training program for teachers and supervisors of PhD students was focused on teaching and scientific leadership of PhD. It included: what is a doctoral degree and how to supervise the work of PhD students, what are the needs of PhD students, the expectations of supervisors, knowledge transfer, blended learning (b-learning) and preparation of online materials, inclusive education, etc.

The trained 56 teachers conducted the second wave of training seminars for the faculty of their universities.

Two PhD students from each of the seven target universities have the opportunity to complete a 2-month internship at an EU university on their topics.

Within the project framework, each of the seven universities, including different areas (medicine, healthcare, economics, business management, agronomy and veterinary medicine, international relations and linguistics, construction and architecture, and technical direction), purchased laboratory and computer equipment.

The project participants discussed their curricula in detail with European partners, modernized the existing curricula and module programs, and developed new programs. These modules will focus on survival skills for PhD students and researchers (creating a research

project, research design, writing a dissertation, writing an article, etc.) and transferable skills.

The consortium members developed the Regulations on the scientific supervision of PhD students.

To promote the PhD system in Kyrgyzstan, the first national round table on PhD research was held in April 2021. The round table was attended by the leadership of the Ministry of Education and Science of the Kyrgyz Republic, chief specialists of the Ministry of Education and Science of the Kyrgyz Republic, heads of universities, members of the DERECKA project consortium, representatives of international organizations and business structures, international experts in the field of higher education, national experts on higher education reform of the Ministry of Education and Science of the Kyrgyz Republic, representatives of the scientific and pedagogical community of the Kyrgyz Republic, doctoral students.

During the round table, issues of organizing the activities of universities, government agencies, and other participants in the development of the PhD system in the Kyrgyz Republic were discussed, results achieved, difficulties, strengths and weaknesses of the process, and lessons learned in the process of piloting experimental PhD programs, initiatives of the Ministry of Education and Science of the Kyrgyz Republic on the development of legislation (Regulations on PhD, minimum requirements for accredited PhD programs, etc.). Necessary activities and conditions were identified for further implementation and improvement of the quality of PhD programs to the socio-economic needs of stakeholders.

Promotion of PhD culture among academia, the business community, other stakeholders, and the general public in Kyrgyzstan (development and implementation of a communication strategy for PhD doctoral studies).

In autumn 2022, it is planned to hold the second national round table to discuss achievements and problems in implementing PhD programs in the republic.

There will also be a final conference where partner universities share their achievements and PhD students present their research topics and learning outcomes.

Challenges in the development of PhD programs in Kyrgyzstan: low state funding of scientific research in the republic and the lack of grant places in PhD doctoral studies are two of the main obstacles to developing this direction.

There is an acute issue of providing doctoral studies with an appropriate educational environment: material (infrastructure, equipment) and information resources (open resources, database, etc.). Insufficient equipping of university scientific laboratories with modern equipment, for example, in environmental technology and health care, significantly slows down doctoral research.

It remains unclear to what extent PhD doctoral studies' missions and research topics align with the priority areas of the country's development.

The regulatory framework requires further improvement (labor relations, remuneration, financing, licensing requirements, quality criteria for accreditation agencies for training programs, organizational and administrative documents, etc.) at the national and institutional levels.

The link between science and business is at a low level. The results of much-applied research are not used in the national economy, and the business community has not yet learned how to order research in university laboratories.

Staffing continues to be an essential issue. The lack of scientific workers with advanced degrees capable of advising doctoral students is felt in many scientific fields of the republic. There is an urgent need to create a pool of doctoral supervisors with publications in journals registered in the Web of Science and Scopus databases. Local professors published mainly in local journals or in Russian-language editions of the post-Soviet countries, at best, in journals based on the RSCI. It is also necessary to improve the quality of scientific mentoring of doctoral research work, which differs from traditional mentoring. Local

professors lack the knowledge of doctoral requirements and the skills required for scientific guidance. It is necessary to organize periodic training of scientific supervisors.

Despite the more than 10-year history of PhD programs in the country, broad discussion in the scientific community through the media, and several events, the Kyrgyz academic society is still cautious about introducing the PhD system. Not all institutions did not well receive the new pilot programs. The older generation of scholars are ignorant of this system and oppose the introduction of the PhD system, arguing that it will reduce the quality of local research. The need to widely promote the culture of the doctoral system among the local scientific community remains relevant.

Perspectives in the development of PhD programs in Kyrgyzstan: the creation of doctoral centers in Bishkek and Osh with state support in the future. Teachers and scientific consultants will receive educational and methodological support and training in these centers. Permanent general courses and modules for students will be organized (Research Methodology, Research Design, Statistical Support for Scientific Research, etc.) and modules on teaching soft and transferable skills (academic writing, public speaking, data visualization, etc.).

The working group of the Ministry of Education and Science of the Kyrgyz Republic will continue to work on the institutionalization of PhD doctoral studies, the correspondence of the mission of PhD doctoral studies with the priority directions of the country's development, and the improvement of the regulatory framework at the national and institutional levels.

Within the frame of international projects and with the support of future Doctoral Centers, universities will continue to improve the material and information infrastructure, the content of courses and modules, and teaching methodology and increase their scientific, pedagogical, and research potential.

Conclusion

At this stage of development in Kyrgyzstan, in connection with the work done by the Ministry of Education and Science of the Kyrgyz Republic and the expert community, there is the confidence that universities in Kyrgyzstan will continue to implement PhD programs to train scientific and teaching staff and integrate scientific research into the international space. Today, government policy aims to develop science and education, particularly PhD programs in close connection with business, in partnership, and by the needs of government agencies.

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THE EFFECT OF PASSIVE SMOKING ON POPULATION OF CHILDREN: THE ELSPAC STUDY

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Abstract

The act of passive smoking causes large scale of diseases among children. Bodies of children are constantly developing, they have weaker immune system and they are more susceptible to compounds found in tobacco smoke. Because of that, they are the most vulnerable to the effects of passive smoking. The purpose of our study was to confirm the impact of passive smoking on the population of three to five-year-old children in Bratislava region who participated in the ELSPAC study. The data were obtained from questionnaires filled in by respondents participated in ELSPAC - the European Longitudinal Study of Pregnancy and Childhood. Our cohort consisted of 1286 boys and girls aged three to five from the Bratislava region exposed to second-hand smoke. The group consisted of 1034 parents, caregivers or legal guardians, when we were analysing the number of smokers in households. To evaluate the effects of passive smoking on occurrence of pneumonia and bronchitis the group consisted of 1273 children. In the group of children, we did not confirm a statistically significant relationship between passive smoking and the occurrence of pneumonia or bronchitis in children aged three to five years ($p=NS$). The ELSPAC study enlightened us with new knowledges about evaluating the exposure to second-hand smoke and our findings also contribute to understanding the risk of children's exposure to passive smoke.

Introduction

The growth and development of children requires special as well as individual attention and care. Their growth and development have been a subject of many studies, however most of the studies have been focused only to a selected part of their lives and development. Only in few cases the studies were complex once, or studies comparing the situation from different cities and states. Based on this fact, an international ELSPAC study - The European Longitudinal Study of Pregnancy and Childhood, realized in Slovak Republic, England, Isle of Man, Czech Republic, Greece, Ukraine, and Russia, was created with the initiative of the WHO. Thanks to an unified methodology and data collection, it has been possible to analyse and to compare the impact of the social system and lifestyle on the development and growth of children exposed to the passive smoking [1-7].

ELSPAC in Slovakia: The ELSPAC study is a prospective longitudinal study developed by the WHO (World Health Organization) in the 1980s. ELSPAC can be characterized as a unique, extensive, and very valuable study, in which participated 3100 children born between 1993 and 1995 in the Bratislava region. The data were collected in Slovakia between 1993 and 2013. Approximately 55000 questionnaires were collected during this period. The data were collected mainly by questionnaires and clinical examinations in the outpatient clinics of the Institute of Preventive and Clinical Medicine (ÚPKM) and at the workplaces of ÚPKM, the Slovak Medical University (SZU) in Bratislava, as well as at cooperating outpatient clinics. Individual questionnaires were filled in by the mother, the father, the paediatrician, the person caring for the child and later also by the monitored child at different ages. The return of the questionnaires decreased over time and was different from person to person [1-4].

The ELSPAC project is unique because it focuses on monitoring groups of children and their families since pregnancy [2]. Data focused on the pregnant woman and fetal development, childbirth, neonatal period and adulthood were obtained using questionnaires and medical

records. Questionnaires have been used to collect data about the child from the pregnancy period, birth of the child, period right after the child was born, then from the period of 6th and 18th month after birth and then from the 3rd, 5th, 7th, 11th and 15th year of the child.

The data obtained from ELSPAC provide deep understanding of the psychological, biological, economic, social, and environmental factors as well as factors of children's and adolescent's healthcare. The results of this extensive study serve to increase and improve the quality of life and preventive health care of the population [1-4].

Passive smoking: Passive smoking is a societal health problem that affects the health of adults, adolescents and mainly children on a daily basis. One of the reasons why the exposure to second-hand smoke is considered hazardous is that the second-hand smoker inhales unfiltered cigarette smoke containing toxic and carcinogenic substances, including formaldehyde, benzene, chloroethylene, arsenic, ammonia and hydrocyanic acid. Exposure to second-hand smoke in children increases the risk of sudden infant death syndrome (SIDS), asthma, eczema, ear infection as well as an infection of upper and lower respiratory tract. It also increases the risk of cardiovascular and oncological diseases and can negatively affect the physical development of the child. Children are also more likely to start smoking earlier in the future [8 -16].

The environment with the highest exposure of children to second-hand smoke: Household is an environment where the exposure to second-hand smoke in preschool children is the highest. The children usually spend most of the time in this environment. Hawthorne et al. [17] reported that the Canadian Human Activity Pattern Survey (CHAPS) and the California Activity Pattern Survey (CAPS) have confirmed that the household is the most risky environment for children in term of exposure to second-hand smoke. Chaudhart et al. [18] reported that children under the age of five account for approximately 40% of all diseases whose formation and persistence are conditioned by environmental risk factors, including exposure to environmental tobacco smoke.

Respiratory diseases in children: The children's respiratory system is particularly sensitive to the presence of environmental tobacco smoke (ETS) due to the insufficiently developed structure of the respiratory system and the child's immunity haven't been developed yet. Hawamdeh et al. [8] reported that in a study involving 850 newborns, the number of shortnesses of breath in these newborns was significantly higher when the mother smoked. They also pointed out, that children whose mothers smoked also developed respiratory diseases earlier than children of mothers who did not smoke. There has been reported a higher incidence of lower respiratory tract diseases, middle ear effusions and viral lung diseases in children exposed to environmental tobacco smoke. The same authors also reported that in another study involving 2,200 children from the United Kingdom was the incidence of pneumonia and bronchitis associated with ETS exposure. The prevalence of pneumonia and bronchitis was 7.8% in children whose parents were both non-smokers. In cases where one parent was a smoker, the incidence was 11.4% and if both parents were smokers the incidence was 17.6% [8].

Objectives:

The main objective:

- To determine the impact of passive smoking on the population of three to five-year-old children from the Bratislava region in a selected set of the ELSPAC study.

Side objective:

- To determine the effect of second-hand smoke on the incidence of pneumonia or bronchitis in three to five-year-old children from the Bratislava region.

Hypotheses:

- We assume that children aged three to five from the Bratislava region who were exposed to second-hand smoke developed more cases of pneumonia or bronchitis than children who were not exposed to second-hand smoke.

Materials and methods

Our group consisted of respondents who participated in the European Longitudinal Study of Pregnancy and Childhood - ELSPEC. The data were collected from questionnaires. Data were reported by mothers and fathers (or guardian, legal representative).

We performed a survey about the exposure of children to second-hand smoke, in which the group consisted of 1286 boys and girls from the Bratislava region. In this survey, parents, caregivers or legal guardians stated whether the children were or weren't exposed to second-hand smoke.

When we were analysing the number of smokers in households, the group consisted of 1034 parents, caregivers or legal guardians.

In the case of the number of smoked cigarettes, the group consisted of 2564 parents, caregivers or legal guardians.

When we were analysing the association between exposure to second-hand smoke and the occurrence of pneumonia or bronchitis, the group consisted of 1273 children.

The individual questions in the analyzed questionnaires were not always filled in by the mother, father (or guardian, legal representative), thus our set is different in the results.

Statistical evaluation: We used IBM SPSS 19 and Microsoft Excel to evaluate the data. We expressed our values using relative (%) and absolute (n) numbers. We determined the significance level $\alpha = 0.05$. We considered statistically significant results to be those in which the p value was less than or equal to the value of the significance level ($p \leq 0.05$). In IBM SPSS 19, we used a normality test to see if our "smoking over the weekend" and "smoking over the week" files were normally distributed. We also used the 2x2 tables and the chi-square test to determine the statistical significance between exposure to second-hand smoke and the incidence of pneumonia or bronchitis in three to five-year-old children in the Bratislava region.

Results

Exposure of children to passive smoking: Out of the total number (n = 1286) of children 5 (0.4%) parents, legal guardians or carers stated, that their child was exposed to second-hand smoke all day every day of the week and 10 (0.8%) that their child he was exposed all day throughout the weekends. Six (0.5%) parents, legal guardians or carers stated, that their children were exposed to second-hand smoke for more than 5 hours every day of the week and 13 (1%) reported, that on weekends. Eleven (0.9%) parents, legal guardians or carers reported that their child was exposed to second-hand smoke for 3-5 hours each day of the week, and 26 (2.1%) respondents stated that their child had been exposed to second-hand smoke for 3-5 hours on weekends. The child's exposure to second-hand smoke every day of the week for 1-2 hours was reported by 46 (3.6%) respondents and 42 (3.2%) reported the same exposure on weekends. Exposure that was less than an hour each day of the week was reported by 97 (7.5%) respondents and 137 (10.6%) reported the same exposure over the weekend. 1114 (86.6%) respondents reported no exposure during the week and 1052 (81.8%) reported no exposure over the weekend. This question has not been answered by 13 respondents (1%) (Table 1).

Table 1. Exposure of three to five-year-old children to passive smoking in Bratislava region, Slovakia, n=1286

Exposure of children to passive smoking (n)	Week		Weekend	
	n	%	n	%
All day	5	0,4	10	0,8
More than 5 hours	6	0,5	13	1
3 – 5 hours	11	0,9	26	2,1
1 – 2 hours	46	3,6	42	3,2
Less than an hour	97	7,5	137	10,6
No exposure	1114	86,6	1052	81,8
Not filled in	7	0,5	6	0,5
Total	1286	100	1286	100

Number of smokers in households: Out of the total number (n = 1034) of parents, carers or legal guardians, 594 (57.4%) stated that there were no smokers in the household, 267 (25.9%) stated that one smoker lived in the household, 133 (12.8 %) stated that there were two smokers living in the household, 22 (2.1%) stated that three smokers lived in the household, 12 (1.2%) stated that there were four smokers living in the household, 5 (0.5%) stated that five smokers lived in the household and 1 (0.1%) stated that six smokers lived in the household (Figure 1).

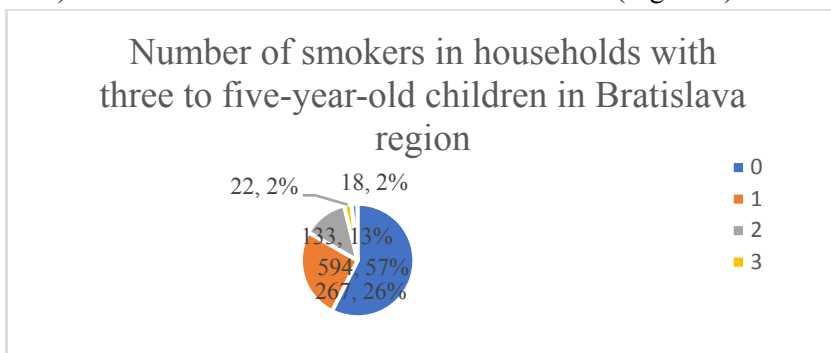


Figure 1. Graphic representation of smokers in households with three to five-year-old children in the Bratislava Region, Slovakia, n = 1034.

Number of smoked cigarettes: Out of the total number (n = 2564) of parents, carers or legal guardians, 1018 women (39.6%) and 876 men (34.1%) marked themselves as non-smokers. The smoking of 1-4 cigarettes per day was reported by 77 women (3%) and 35 men (1.4%). The smoking of 5-9 cigarettes per day was reported by 70 women (2.7%) and 53 men (2.1%). The smoking of 10 - 14 cigarettes per day was reported by 61 women (2.7%) and 98 men (3.8%). The smoking of 15-19 cigarettes per day was reported by 32 women (1.3%) and 75 men (2.9%). Eighteen women (0.7%) and 98 men (3.7%) reported consuming 20-24 cigarettes a day. The smoking of 25-29 cigarettes per day was reported by 5 women (0.2%) and 13 men (0.5%). One woman (0.03%) and 34 men (1.3%) reported consuming 30 or more cigarettes per day (Figure 2).

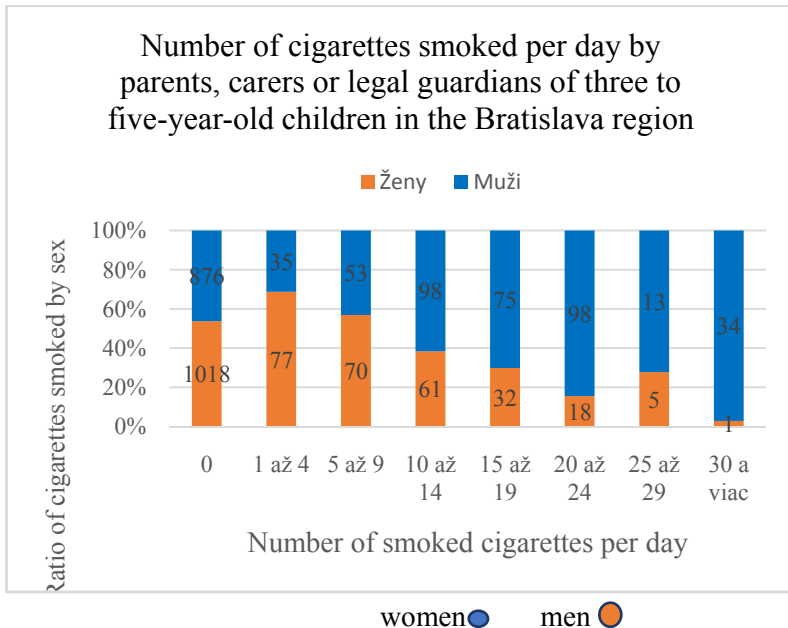


Figure 2. Percent quantification of the ratio and number of cigarettes smoked per day by sex for parents, carers or legal guardians of three to five-year-old children in the Bratislava Region, Slovakia, n = 2564.

Occurrence of bronchitis or pneumonia

Out of the total number (n = 1286) of parents, legal guardians or carers, 690 (54%) stated that their child hadn't contracted bronchitis or pneumonia and 583 (45%) respondents stated that their child contracted at least one of these diseases (Figure 3).

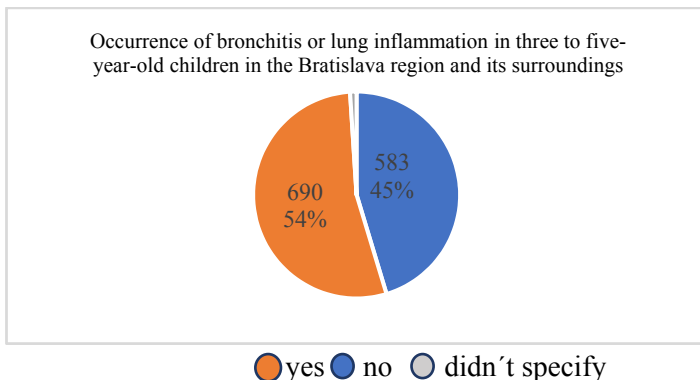


Figure 3. Occurrence of bronchitis or lung inflammation in three to five-year-old children in the Bratislava region, Slovakia, n = 1286.

We discovered that the exposure to secondhand smoke resulted in an increased incidence of pneumonia and bronchitis. We examined this factor in a sample of 1273 children. Out of the total number (n = 1273) of children, 226 (17.8%) parents, carers or legal guardians stated that their children were exposed to second-hand smoke over the weekend. The exposure during throughout the week was reported by 161 (12.6%) parents, carers or legal guardians.

To evaluate the results, we used a chi-square test separately for a group of children exposed during the week and separately for a group of children exposed during the weekend. A chi-square test comparing the incidence of pneumonia or bronchitis during the week showed us that 80 (49.7%) children who were exposed to second-hand smoke during the week had contracted one of these diseases and 81 (50.3%) children didn't have contracted them (table 2). When they were exposed to passive smoking over the weekend, one of the diseases occurred in 108 (47.8%) children and the diseases did not occur in 118 (52.2%) (table 3). The level of significance in the "weekend smoking" group was confirmed to be statistically insignificant (p = 0.285) and was also statistically insignificant in the "weekly smoking" group (p = 0.166). We did not confirm hypothesis.

Table 2. Table 2x2 and chi-square test of exposure to second-hand passive smoking and the occurrence of pneumonia or bronchitis in three to five-year-old children in the Bratislava region, Slovakia, n = 1268

		Pneumonia or bronchitis		Sum
		1	2	
smoking_ ,00 week	Number	501	606	1107
	%	45,3%	54,7%	100,0%
1,0 0	Number	80	81	161
	%	49,7%	50,3%	100,0%
Sum	Number	581	687	1268
	%	45,8%	54,2%	100,0%
Fisher's Exact Test	p=0,166			

Table 3. Table 2x2 and Chi-square test of exposure to passive smoking over the weekend and the occurrence of pneumonia or bronchitis in three to five-year-old children in the Bratislava Region, Slovakia, n = 1269

		Pneumonia or bronchitis		Sum
		1	2	
smoking_ ,00 weekend	Number	474	569	1043
	%	45,4%	54,6%	100,0%
1,0 0	Number	108	118	226
	%	47,8%	52,2%	100,0%
Sum	Number	582	687	1269
	%	45,9%	54,1%	100,0%
Fisher's Exact Test	p=0,285			

Discussion

Studies examining the effects of second-hand smoke on the human body began to appear in the 1930s and are still ongoing to this day. The Harlap and Davies [19] study was one of the first large-scale studies on the effects of second-hand smoke on children's health. It involved 10672 children and proved that increased exposure to secondhand smoke resulted in an increased incidence of pneumonia and bronchitis. There were 28% more diagnoses of these diseases in children whose mothers smoked than in children whose mothers were non-smokers.

The authors of a study, Merianos et al. [20], which involved more than 3200 children, also concluded that the exposure to second-hand smoke resulted in an increased incidence of pneumonia and bronchitis. In 1047 children with pneumonia, exposure to second-hand smoke was confirmed in 732 (69.9%) of them. In 1999 children diagnosed with bronchitis, exposure to secondhand smoke was confirmed in 1179 (59%) of them.

A study conducted in Spain in 2015 proved that exposure to second-hand smoke resulted in 7097 cases of lower respiratory tract infections (pneumonia, bronchitis and tracheitis) [21]. These studies have shown us a clear link between exposure to second-hand smoke and an increased incidence of pneumonia, tracheitis and bronchitis. In our study, the results did not confirm this connection. The incidence of pneumonia or bronchitis was almost the same in both groups (weekend smoking and weekly smoking) when children were exposed to second-hand smoke. The reason might be the insufficient number of respondents we were working with.

A study by Baysal et al. [22] conducted in Turkey, which involved 32 children, also showed no significant association between exposure to second-hand smoke and pneumonia or bronchitis. In this study, out of 32 children exposed to second-hand smoke, only 17 (53.1%) had developed pneumonia or bronchitis and 15 (46.9%) had not contracted any of these diseases. Based on the results of these studies, we can conclude that the reason for not confirming the hypothesis in our study might be the lack

of respondents. Low number of respondents can be associated by the methodology of children's second-hand smoke exposure data collection [24]. Furthermore, several parents, carers or legal guardians may have concealed that their children are exposed to second-hand smoke when they were filling out the questionnaire.

Conclusion

Children's exposure to second-hand smoke is a societal health problem that results in various types of diseases and can even cause their death. Despite legislative restrictions in Slovakia, the number of smokers, and thus the exposure to second-hand smoke, is still high.

The goal of our paper was to show the association of passive smoking with the health disorders of the population of three to five-year-old children from the Bratislava region in a selected set of the ELSPAC study.

- In the group of children, we did observe the association between the passive smoking and the occurrence of pneumonia or bronchitis in children aged three to five years. However, to obtain a statistically relevant and significant data, further research in this field is deserved.

- We have observed a higher number of male smokers (60.6%) than female smokers (39.4%) in the study group.

The public health professional plays an important role in education about the risks of smoking and can therefore help to reduce the number of smokers. There is a need to initiate projects aimed at raising awareness about the risks of active and passive smoking, education of children (about the risks of smoking) and especially parents about the harmfulness of smoking. Our findings also contribute to understanding the risk of children's exposure to second-hand smoke.

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THE INFLUENCE OF SLEEP DEFICIT ON HIGH SCHOOL STUDENTS' HEALTH AND ACADEMIC PERFORMANCE IN YEREVAN

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Abstract

Sleep is an important component of normal development and its importance is particularly high in wellbeing and health of children and adolescents. Chronic sleep deficit in adolescents negatively impacts their everyday activities and health and can result in social, psychological and public health problems. Our study aimed to describe the sleep duration and its consequences among students of the first (10th) and last (12th) grades of high schools in Yerevan. Our study was performed using a questionnaire-based survey with participation of 1382 students of 10th and 12th grades of high schools in Yerevan. The study has shown that 14-17 year old high school students sleep less than necessary. If 10th grade students sleep 7.6 hours on average, 12th grade students only get 6.6 hours ($p < 0.05$). On school days adolescents of age 14-15 and 17-18 studying at high schools in Yerevan sleep less than is considered sufficient for their age; 39% of 10th grade and 76% of 12th grade students have sleep deficit. Students who get sufficient sleep time rated their own health higher.

Introduction

Sleep is an important component of normal development and its importance is particularly high in wellbeing and health of children and adolescents. According to National Sleep Foundation, a 14-17 year old adolescent needs 8-10 hours, and an 18-25 year old young adult – 7-9

hours of nightly sleep for functional restoration of the organism and active functioning of the brain [1]. Nevertheless, deficit of necessary sleep duration has been observed recently among school age children. According to 2007-2013 CDC data, two thirds of US high school students reported sleeping less than 8 hours during school attendance days [2]. Studies conducted in different countries have shown that the duration of sleep in adolescents is shorter than is suggested as optimal [3-7]. The shortening of sleep has been progressing: an analysis of data of 690747 children and adolescents from 20 countries during 103 years (1905-2008) has revealed that sleep duration has been steadily and rapidly decreasing by 0.75 minutes yearly [8-9]. Another meta-analysis of data from 23 countries has shown different sleep times in adolescents depending on geographic location, age and gender of subjects. This study suggests that adolescents living in Asian countries sleep 40-60 minutes shorter than their American peers and 60-120 minutes shorter compared to European adolescents. Girls sleep longer than boys, and the difference on school days is 11 minutes per night. With each year of age the sleep duration is shortened by 14 minutes per night (on school days) [9]. The gender differences in sleep duration have been addressed by other researchers as well and it has been shown in general that girls get longer sleep compared to boys [10]. The continuous sleep deficit results in several consequences. According to a group of researchers, it impacts physical health [11-13] as well as mental health [3, 6, 11-12], impairs memory, attention, daily activity [6, 14-15], academic performance [3, 12-15], and causes fatigue [16] in students. Importantly, academic activity is a predictor of sleep time shortening [17-18]. Chronic short sleep results in daytime sleepiness [3-4, 6, 15, 19]. According to NSF data, 60% of children below 18 years of age have daytime fatigue as reported by their parents, and 15% indicate feeling sleepy at school [20]. Several authors suggest the cause of the latter should be sought in personal characteristics of adolescents, age-related circadian changes or low quality of sleep. [11, 21-22]. A number of data suggest a link

between coffee drinking habit and shortening of sleep in adolescents [4,11, 23-24].

It can be inferred that chronic sleep deficit in adolescents negatively impacts their everyday activities and health and can result in social, psychological and public health problems. However, taking into account the age-specific, biological, geographical, ethnic and other characteristics of children and adolescents, some researchers have postulated in recent years that the optimal sleep duration proposed by NSF for this population groups needs to be backed up by more solid evidence and possibly revised [22, 25]. Some scientists propose, particularly based on papers on circadian mechanisms, to postpone the class starting time to ensure children and adolescents get the amount of sleep necessary for their age [26]. The American Academy of Pediatrics published a statement in 2014 that called for adapting class start time in middle and high schools so that students can get sufficient sleep and improve their physical and mental health, safety, academic performance and quality of life. They suggested starting classes in mentioned schools no earlier than 8:30 [27]. Over the past few years many researchers proved that postponed school start time has a good impact on students' health and academic performance [28-35].

Armenia has implemented new 12-year general school education system since 2006 as a part of recent educational reforms in the country. High school is the last part of general education and has to prepare students for living independently and entering the job market. There are scarce data on health and socioeconomic status of high school students after the implementation of new program in our country. Our study aimed to describe the sleep duration and its consequences among students of the first (10th) and last (12th) grades of high schools in Yerevan.

Materials and methods

The study was performed using a questionnaire-based survey with participation of 1382 students of 10th and 12th grades of high schools in Yerevan. Among the participants, 728 studied in 10th grade (14 and 15

years old) and 654 in 12th grade (17 and 18 years old). The age distribution was as follows: 56% females and 44% males. Since the proposed sleep durations by NSF are different for 17 and 18 years of age, the survey data of 12th grade students were divided into 2 groups based on their age. The data of 254 subjects aged 18 years (54.3% female, 45.7% male) were analyzed separately. The comparative analysis of data of 10th and 12th grade students included only 17-year old students of 12th grade, and the number of subjects of 10th and 12th grade was 728 (57.3% female and 42.7% male) and 400 (54.5% female and 45.5% male), respectively.

Usage of questionnaire for the research was approved by YSMU Ethics Committee. The questionnaire included questions on sleep duration and quality, time devoted to homework, fatigue after classes, academic performance, well-being, health status, changes in attention and memory, coffee habits (including frequency per day) and physical activity. Questionnaire contained the following types of questions: multiple choice, checkboxes, and short answer. The answers were encoded and entered to SPSS database. The collected data were analyzed using SPSS statistical software. Descriptive statistics as well as comparisons between means of two independent variables and correlations between variables (correlation analysis) were used. Comparisons were made between results of 10th and 12th graders.

Results and discussion

Our study has shown that 14-17 year old high school students sleep less than necessary. If 10th grade students sleep 7.6 hours on average, 12th grade students only get 6.6 hours ($p < 0.05$). Among 10th grade students 61% get sufficient sleep duration. Boys are majority in this group: 67% of them get 8-10 hours of sleep compared to 56% of girls (boys sleep longer than girls by 9 minutes per night). More than $\frac{3}{4}$ of students do not get enough sleep, boys equally to girls. It is clear that by the time of graduation the number of sleep deprived adolescents has almost doubled, and this cannot go unnoticed in terms of impacting their

health and academic performance. Indeed, if excellent performance is recorded among 17% of 10th graders who sleep less than 8 hours and 10.4% of those who sleep 8-10 hours, in 12th grade this number is similar (17.8%) among those who sleep less than 8 hours, but is increased to 28.1% among students getting sufficient sleep ($p<0.05$).

It is important to know whether preparing homework shortens sleep duration. While no association was found in the first year of high school, in graduate year there was a negative however weak correlation between sleep duration and time allocated for homework. We found that the average time allocated to homework was 3.2 hours in 10th grade students regardless of sleep duration, whereas 12th grade students spent 4.3 hours ($p<0.05$), and this time varied depending on sleep duration. According to the survey data, the 12th grade students getting less than 8 hours of sleep spend 4.5 hours on average on homework, while those who get enough sleep – 3.5 hours ($p<0.05$). Remarkably, long homework time and resulting shorter sleep are more frequently observed in girls in graduate class ($r=-0,209$, $P<0.05$). Those 12th grade students who get sufficient sleep time spend less time on homework and perform better. Conversely, by comparing the data on homework time and performance of shorter sleeping students it becomes clear that in study dynamics the shortening of sleep time is paralleled by decreased work productivity of students. Among other possible causes (possible curriculum incompatibility, priorities in studying certain subjects, etc.), periodically allocating long time to homework does not provide excellent performance in students of 12th grade in the setting of sleep deficit.

Some interesting data were obtained regarding development of fatigue depending on sleep duration. Based on the survey data, about 3/4 of 10th grade students who sleep less than 8 hours develops fatigue after classes, and the average sleep duration in this group is 7.5 hours compared to 7.9 hours in the group without fatigue. Even more important is the fact that feeling fatigued is more characteristic for those 10th graders who sleep longer than 8 hours. This could possibly be explained by prolonged adaptation process and emotional strain due to new

educational and curricular programs and new social environment in high school. The situation changes drastically in 12th grade: while the vast majority of 12th grade students who sleep less than 8 hours (73.7%) report fatigue after classes, this feeling is still more common in students who get insufficient sleep. In contrast to students of 10th grade, 12th graders who sleep less than 8 hours reported fatigue development 4.6 times more frequently than students getting sufficient sleep time ($\chi^2=17.262$, $p<0.001$). Of note, those students who feel fatigued sleep 6.4 hours on average, and those who do not – 7 hours, i.e. 36 minutes longer. Another important consideration is that since fatigue by itself has stimulating effect and contributes to increased restorative and functional capacities of the organism, it is very important to restore the feeling of rest after developing fatigue. The analysis of survey data revealed the significance of sleep duration in this process. First, in the first year of training the majority of students (61.4%) get enough time to rest after fatigue developing by the end of classes, and this is not the case in graduation year where 45.1% of students is able to get enough rest time ($p<0.05$). Also, if in the first year more than half of the students who feel fatigued and get insufficient sleep are able to rest vs. 67.7% of those who get sufficient sleep ($\chi^2=11.614$, $p<0.001$), then during graduating year only 44.2% of students who feel fatigue and get insufficient sleep are able to restore vs. 49% of those getting sufficient sleep. In fact, fatigued students of 12th grade do not have enough restoration time even in the setting of sufficient sleep.

Our study showed that sleep duration is crucial in health status self-assessment. It is noteworthy that the number of students who evaluate their health as good does not change from the first to last year of high school, regardless of sleep duration (Table 1). However, both in 10th and 12th grade the self-assessment of health status was mostly excellent among students who get sufficient sleep, although the number of students with excellent self-reported health is more than twice lower ($p<0.05$). Conversely, both in 10th and 12th grade the self-assessed health status was sufficient mainly among students who get insufficient

sleep, and in graduating class the number of students giving this self-assessment grade increases by more than twice ($p < 0.05$).

Table 1. The grades of self-assessed health status depending on sleep duration

grade	sleep duration	self-assessed health status %			
		excellent	good	sufficient	poor
10	less than 8 hours	21	59,7	19,3	0
	more than 8 hours	35,9	58,7	5,4	0
12	less than 8 hours	12,5	59,2	25,3	3
	more than 8 hours	21,9	62,5	15,6	0

Gender-specific analysis showed that while at the beginning of high school education male students mostly rate their health as excellent in the setting of insufficient sleep (38.2% of male and 11.5% of female students, $p < 0.05$) and sufficient grade is given by mostly girls (9.8% of boys with sleep deficit and 24.6% of girls with sleep deficit, $p < 0.05$), by graduating high school girls and boys evaluate their health similarly in the same setting of sleep deficit (excellent by 11.5% of boys, 13.3% of girls, good – 63.3% and 55.8%, respectively, and sufficient – 23% and 27.3%, respectively). The only exception is that while in 10th grade neither girls nor boys rate their health as poor, 2.2% of boys and 3.6% of girls do in 12th grade. In the setting of sufficient sleep, the self-assessed health status rates were significantly different only among 12th graders: 35% of boys who get sufficient sleep rated their health as excellent, 58% as good and 7% as sufficient, vs. 11.3%, 66% and 22.7% of girls with respective rates ($p < 0.05$).

It is known that insufficient sleep negatively impacts also mental capacities of adolescents due to impaired memory, focusing and general decreased work productivity. The analysis of survey data showed that at the beginning of high school sleep deficit has a certain role in issues

related to decreased memory in students. As an example, such issues were almost not reported in the group with sufficient sleep (0.7%) while 4.6% of students with sleep deficit had worsened memory ($\chi^2=12.173$, $P<0.001$); 13.6% of students reported focusing problems. By graduation, no significant difference in memory and focusing problems is reported related to sleep deficit. It is however obvious that students of 12th grade with sleep deficit report impaired memory (11.9%) and focusing (21.4%) more frequently than 10th grade students (4.6% and 11.7%, respectively) ($p<0.05$).

Next we will discuss the prevalence of coffee drinking habit among adolescents. Our data showed that it is directly linked to sleep duration. Among 10th grade students, 26.7% of them who sleep less than 8 hours are habitual coffee drinkers compared to 21.7% of students who get sufficient sleep. Students who do not drink coffee habitually sleep on average 7.7 hours whereas habitual coffee drinkers the average sleep duration is 7.35 hours ($p<0.05$). The decreased average sleep duration related to coffee consumption is particularly evident among female students in whom it decreases from 7.7 to 7.2 hours ($p<0.05$). The habitual coffee drinking frequency increases in 12th grade. Among students who sleep 8 or more hours, 27.7% report drinking coffee whereas more than half of students with insufficient sleep reports this habit ($\chi^2=14.953$, $P<0.05$). It is known that coffee consumption helps staying alert and therefore decreases sleep duration. The average sleep duration of 12th graders who consume coffee is 6.27 hours vs. 6.84 hours among those without the habit, with 34 minutes of difference ($p<0.05$). In addition to duration, it is important that sleep is restful and without interruptions. The majority of high school students have restful sleep without interruptions including 80.5% in 10th grade and lower number – 70.5% in 12th grade ($p<0.05$). However, some students reported sleeping with interruptions which naturally can negatively impact their health. Sleep interruptions are reported in 9.2% of students in 10th grade and 1/5 of students in 12th grade ($p<0.05$). Our study data showed that sleep interruptions occur more frequently in cases of

insufficient sleep duration. Sixteen percent of 10th grade students and 24.7% of 12th grade students who sleep less than 8 hours, report sleep interruptions ($p<0.05$), while 5% ($p<0.05$) and 7.3% ($p<0.05$), respectively, report sleep with interruptions but sufficient duration. A proportion of high school students (8.0% at start of high school and 8.3% at graduation) reports sleepiness. We looked at whether sleep duration is associated to sleepiness in students. No such association was found among students of 10th grade, and among 12th graders sleepiness was most commonly reported in the group of insufficient sleep. In the latter group, 9.5% had sleepiness vs. 4.2% in the group with sufficient sleep duration ($p<0.05$). Of note, classes at Yerevan high schools start at 8:30 in the morning. Although one tenth of 12th graders who sleep insufficiently reported daytime sleepiness, it is obvious that this problem is less frequent among students of high schools in Yerevan compared to numbers reported in literature.

Conclusion

On school days adolescents of age 14-15 and 17-18 studying at high schools in Yerevan sleep less than is considered sufficient for their age; 39% of 10th grade and 76% of 12th grade students have sleep deficit. Gender differences in sleep duration are only observed in 10th grade: boys get 9 minutes per night longer sleep than girls. Girls of 12th grade perform better academically.

The time spent on homework is longer among girls in 12th grade compared to 10th grade and is higher in the group of subjects with sleep deficit.

Students who report fatigue sleep longer in 10th grade, and in 12th grade sleep duration is shorter in the group with fatigue.

Students who get sufficient sleep time rated their own health higher.

In the setting of insufficient sleep students experienced impairment of memory and focusing.

The difference in sleep duration depending on habitual coffee drinking was 21 minutes per night in 10th grade students and 34 minutes per night – in 12th grade.

Sleepiness associated with shorter sleep duration is characteristic for 12th grade students.

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THE ROLE OF MASS MEDIA ON PUBLIC PERCEPTION AND BEHAVIOR DURING COVID-19 PANDEMIC: OWERVIEW

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Abstract

The coronavirus pandemic has affected the vast majority of countries in the world, affecting the social, economic, political, cultural and other aspects of the life of the population. In this regard, the world community continues to search for effective ways to save human lives, and the preservation of the socio-economic system, the health of the saving direction and the role of the media in this process on a national scale has become extremely important. The negative consequences on the economy caused by the spread of COVID-19 were observed and recorded in all countries, including Armenia.

Introduction

In a matter of days, the outbreak of COVID-19 spreads like a wave around the world, and due to the mobility of society and traveling, the epidemic turned into a pandemic overnight. In the modern world, the media have become a powerful tool that can influence the possible outcomes of the disease and can play both a positive and a negative role in a pandemic situation. In this sense, in the process of combating COVID-19, the media have introduced unique opportunities for their use as a tool of struggle and protection.

The beginning of the spread of infection in Armenia was associated with “imported cases”. Let us turn to the chronology of events: on March 1, the first case of coronavirus was detected in an Armenian citizen who arrived from Iran, he and the people in contact with them were isolated.

On March 11, three new cases of coronavirus were recorded: two infected were citizens of Armenia, one was an Italian. On March 14, two new confirmed cases of coronavirus were reported in the city of Vagharshapat (Etchmiadzin). All infected persons who were related to this case were isolated. As of March 22, 1246 tests were carried out, 157 of the confirmed 190 cases of coronavirus infection were associated with two primary cases. The Ministry of Health aims to ensure the availability of 500-600 new beds intended for the treatment of patients with the corona virus. On March 26, the first death from COVID-19 was reported. The victim of a new coronavirus infection was a 72-year-old woman who had underlying chronic diseases. Despite the measures taken by the government, the number of infected people began to grow at an increasing pace. The healthcare structures of the capital in an emergency mode began to prepare for the reception of patients with coronavirus infection, acting "ahead of the curve" in accordance with the most likely scenarios for forecasting the epidemiological situation.

On March 11, 2020, WHO declared COVID-19 a global pandemic, and on the same day, the Sprinklr social media management system recorded about 20 million mentions of the coronavirus. The extensive news coverage was enough to stun the public and confuse them with an unidentified disease. In this pandemic, false and misleading information has been spread unchecked through various forms of media [1,4,7]. In the COVID-19 era, telemedicine has become the backbone of clinical practice. Virtual treatment of patients started at the beginning of the pandemic. People became scared of going to hospitals even for major problems. A helpline was also set up, enabling people to decide whether their symptoms accounted for COVID-19 testing. Media was used to promote it and hence, maintain norms of the lockdown [4]. No checks were maintained initially, and many “fake doctors” started using prominent social media platforms for this purpose. This specifically did the damage of spreading erroneous information regarding the virus and additionally persuaded beliefs in simple enigmatic treatments, thus causing people to become careless and assist the spread of the disease.

For instance, rumors were spread about the use of humidification and steam for thwarting the disease and a video was aired on Facebook live lasting 40 minutes explaining the use of 'steam inhalation' as a way of killing the virus [4,5].

Steam inhalation was just the beginning, many other local treatments appeared on social media and spread swiftly via messages. COVID-19 has no cure yet, and consequently, any potential cure has been shared without genuine medical research. It was widely emphasized to take vitamin C to boost immunity and strengthen the body as a preventative measure against the disease. Vitamin C is highly effective in combating the common cold. A meta-analysis showed the role of prophylactic intake of vitamin C in reducing the duration of disease but no effect on incidence and severity [6].

Discussion/Conclusion

Analyzing the experience of the media in the period 2020-2021, it can be noted that during the pandemic, the media should adhere to the following principles:

- For broadcast on television and radio or placement in social groups, only information that is related to the regulatory principles of WHO or the national Ministry of Health should be allowed. Although it should be noted that, given the convergence of the media, it is difficult to recognize which of them give out information to the masses earlier.

- Every media should have a way to connect people with reliable sources of information using special tabs or pop-ups. This would help reduce the level and pace of the spread of fake news. Of course, here it would not be superfluous to recall the words of the famous writer Mark Twain, in terms of the speed of the spread of fake news: "A lie can travel around the world, while the truth puts on shoes."

- The media should serve as a bridge between people in need of help and officials from the Ministry of Health or the local government to solve health problems.

- The media should not advertise medical equipment and medicines, the therapeutic effect of the use (application) of which has not been proven. As an example, one can mention the cases of disappearance from pharmacy shelves of often advertised in the media anti-cold drugs due to the widespread belief that they are the only possible treatment.

- Scientific and political statements should be held separately and properly identified.

- Information about rewards and recognition of medical workers fighting the epidemic should also be disseminated.

If we consider the COVID-19 epidemic as an isolated case from modern history, as a single event, then the measures taken by the states to some extent coped with their task. But, if we consider the situation with a possible repetition of such a scenario, then it is necessary to consider and analyze what happened in order to adjust (improve) the existing economic and social policy and the state of the country's health care as a whole. Based on this, we consider it appropriate to note several tasks, the implementation of which, in our opinion, will make the actions of the media more effective and practical in the outbreak of any epidemic on a national scale or a pandemic in general:

- Highlight recommendations for recognizing the disease (here caution is needed),

Checking online or checking yourself for symptoms can cause unnecessary panic.

- Distribution via the Internet of guidelines to combat the epidemic (pandemic) is carried out from only one source (for example, WHO or local health authority). The media, in turn, must check the information before its release.

- Highlight the issues of maintaining and prioritizing the mental health of the population along with issues of physical health.

- Publish and disseminate assessments or opinions of experts on issues related to epidemics (pandemics) only after a qualification check of experts (expert communities).

- Develop special mobile applications aimed at simplifying the difficult pandemic conditions for citizens. With the help of these applications, users will be able to find information about the availability of necessary medicines and hygiene products in pharmacies, a certain list of goods in grocery stores, free places in hospitals, etc.

Of course, health education also plays a very important role in this process. And in this regard, as noted above, a key role that the media can play is also to promote physical and mental health measures and ensure the resilience of people belonging to different socio-economic and age groups. The pandemic period has shown that social isolation is also associated with psychological changes in the state of people, caused by feelings of loneliness, anxiety and depression. And all this can spread and aggravate due to the controversial role of the media, including in such a difficult, critical situation for the entire human community. However, the media can prevent this by promoting and following certain strategies, such as: mental health programs to prevent depression and anxiety, both for the general population and for healthcare professionals as a separate focus group, video relaxation exercises, in order to maintain health, fitness and mental abilities, educational services aimed at different age categories of children, reducing stigma, discrimination and prejudice.

News related to COVID-19 has been exaggerated on both TV news and social media, causing panic among the general public. T. Gebreigus, the head of WHO, in connection with the current situation, even advised not to watch or read news about COVID for more than half an hour a day, instead to engage in physical activity or some kind of hobby [2].

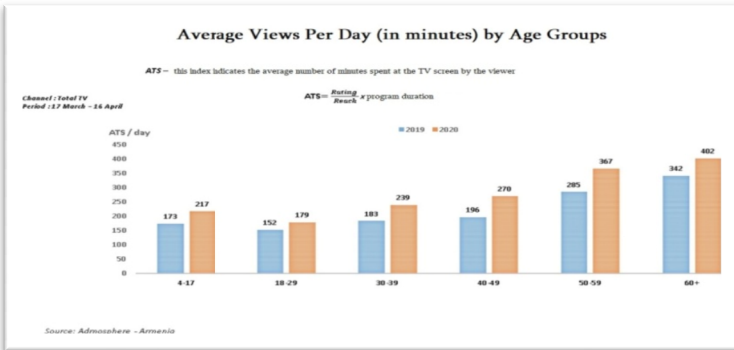


Figure 1. Average views per day (in minutes) by age groups.

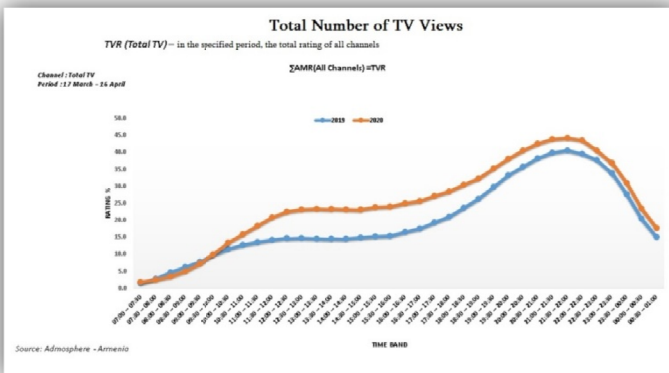


Figure 2. Total number of TV views.

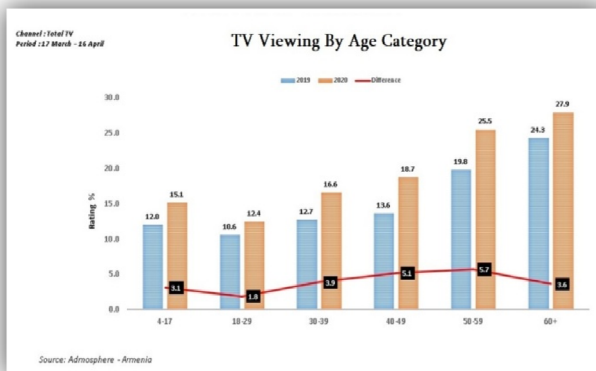


Figure 3. TV viewing by age category.

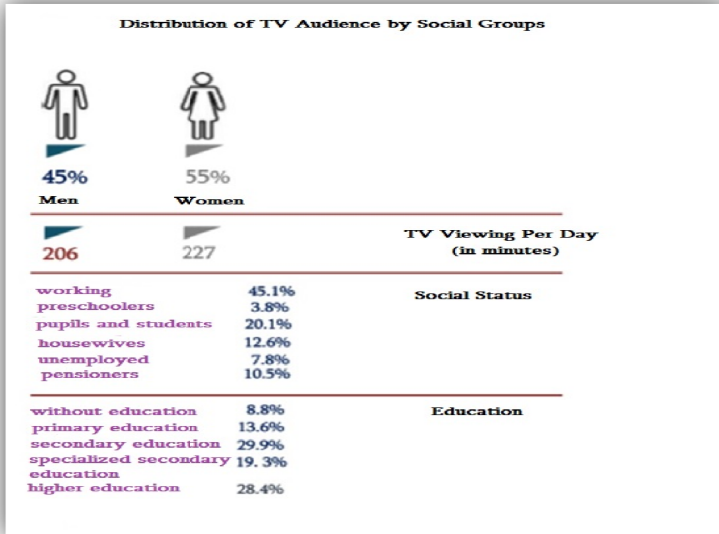


Figure 4. Distribution of TV audience by social groups.

But despite this, the time spent on the media, and more specifically on watching TV during isolation or quarantine, has increased significantly. To describe this situation, Figure 1 shows data that demonstrates a quantitative increase in TV viewing. In particular, it shows the total number of TV views on a uniform time scale and the total rating of all TV channels located in the territory of the Republic of Armenia, TV views by age categories, averaged data (according to the formula indicated in Fig. 1, 2, 3, 4) of TV viewing by age categories, shows the distribution of the TV audience in 2020 by different social groups.

A derivative phenomenon that accompanies epidemics is the infodemic, which also needs to be managed. For example, the WHO publication *Managing Epidemics: Key Facts on Major Killer Diseases* (May 2018) states that there are three main aspects of “outbreak risk communication” that need to be addressed: experts and stakeholders should quickly use ways to convey the necessary information regarding

public awareness using the media. Any methods of information transfer should be used to help the population, eliminate social and cultural prejudices, the authorities need to address people's fears, perceptions and concerns, and for this it is necessary to use the power of the media. Control of rumors and disinformation is required. Social networks, which are the source of such spread, can take fundamental measures to reduce them in a timely manner [3].

In order to determine the role of the media in the process of health education, we conducted the following study: an Internet survey was conducted among 500 respondents. The data were processed using the SPSS software system (version 26). According to the results of the study, the following assessments were obtained: 64.7% of respondents confirmed that these funds were decisive in preventing a pandemic, 59.1% of respondents recognized the importance of the media for informing and preventing the pandemic and 64% rated the importance of the media for contextual (meaningful) management of the pandemic. These estimates show a significant relationship with each other.

In this regard, the need for a strategic and tactical, deliberate, ethical and socially responsible attitude is substantiated, which will bring maximum benefit to citizens in a situation with a pandemic. The use of the Internet and television news has increased during the lockdown, while the use of newspapers, radio and magazines has dropped significantly or are used as "converging media", i.e. traditional media, but already in the Internet environment or social networks. The decline in listening to traditional radio in the country has been linked to a ban on public transport and severe restrictions on the use of private vehicles.

In the course of this study, the relationship between the spread of false information (disinformation) and fear when contacting the media during a pandemic was examined. Anxiety due to news about COVID-19 in the media was found to be highest in the 40-49 age group (25.4%) and lowest at 12.5% in the 20-29 age group. In the 30-39 age group, about 40.2% of those surveyed were frightened, and 26% of people experienced panic due to news of the pandemic in the media in the 50-59

age group. The 20-29 age group was found to be the most active social media user, followed by the 10-19 age group. If before the pandemic there was a group of people who rarely read, watched or listened to the news, now they turn to it in their daily lives.

This paper describes the positive and negative impact of the media on the consciousness and behavior of individuals, groups of people in the context of COVID-19 and the steps that, in the opinion of the authors, should be taken to effectively use the media's capabilities to ensure management of the socio-economic life of society during outbreaks of diseases. In addition, in our opinion, it is possible to use the described model as a tool for assessing the reaction and behavior of the media at the end of each epidemic (pandemic).

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UNDERSTANDING MEASLES AS IT RE-EMERGES: FROM ETIOLOGY TO ELIMINATION – A LITERATURE REVIEW

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Abstract

Measles is considered to be one of the world's most contagious viral diseases. It is an acute viral respiratory illness and is specified by a prodrome of fever ($\geq 38.3^{\circ}\text{C}$ or higher), malaise, cough, rhinitis, conjunctivitis (the three “C’s”), and Koplik’s spots. Incubation period for measles usually is 10 to 14 days (range: 7-23 days). Measles virus (MV) is a myelotropic, lymphotropic and epitheliotropic negative strand RNA virus which also causes great effects on the immune system. The entrance doors to infection are the mucous membrane of the upper respiratory tract, from where, penetrating into the body, the virus multiplies in the epithelium of the respiratory tract and peripheral lymph nodes. WHO defines a single measles case as a measles outbreak, which requires prompt and proper response and identification. Both endemic and imported cases need some key activities as a part of outbreak control. Measles elimination in the United States was proclaimed in 2000 after a 2-dose MMR vaccine administration. However, imported cases from low vaccination rate countries can lead to outbreaks. Vaccination of non-immune individuals is considered the key strategy in limiting the spread of measles during outbreaks.

The main purpose of this article is to provide up-to-date data on the detection of measles disease in different countries, experience in the field

of prevention and surveillance, as well as vaccination and specific responses to immunization. All modern methods used in public health are presented, not only to reduce the number of cases of the disease, but also to further eliminate measles.

1. Introduction

All over human history, Infectious diseases have been the leading cause of human affliction in terms of both morbidity and mortality. Through the ages, humankind underwent large pandemics that threatened its existence. Despite the commonness of infectious diseases in the non-industrialized world, the prevalence of infection is still very high for some infectious diseases in the industrialized world. Globally, every third death is on ground of an infectious disease. As stated by the World Health Organization (WHO), the most common causes of infectious disease deaths were lower respiratory infections (3.46 million), diarrheal diseases (2.46 million), HIV/AIDS (1.78 million), tuberculosis (1.34 million), malaria (1.1 million), and measles (900,000) [1].

Measles is a disease characterized by a systemic rash with diverse and unique pathogenic features, as well as complications of infection. It may spread via airborne droplets and/or direct contamination through nasal or throat secretions of infected individuals [2]. In the pre-vaccination era, measles infected more than 90% of children at the age below 15 years, causing more than two million deaths. Large outbreaks would take place every 2-3 years during late winter or early spring, as the number of susceptible individuals in the community increased [3]. Since 1980, due to global measles vaccination efforts, measles-associated mortality has decreased by 95%, from an estimated 2.6 million deaths yearly, to an estimated 134,000 in 2015 [4]. The first measles vaccine was introduced in 1963. After 50 years, endemic measles was proclaimed eliminated in North America and by 2016, elimination of endemic measles was declared for the whole of the Americas region, the first WHO region to achieve this huge endpoint [4].

Coverage of $\geq 95\%$ with Measles-containing-vaccine first-dose (MCV1) and Measles-containing-vaccine second-dose (MCV2) is essential to ensure and sustain high population immunity against measles. MCV1 coverage has stagnated since 2010, and the largest annual increase seen since 2000 in children who did not receive MCV1 was reported in 2020, representing an acute setback in progress toward measles elimination [5]. Hastened efforts are needed to expand MCV1 coverage among the 22.3 million unvaccinated children in 2020. Since 2017, routine MCV2 immunization has been suggested [5]. Before 1985, immunization coverage was low; measles incidence was 88.5 cases/100000. Afterwards incidence declined as vaccination uptake improved. Nevertheless, whenever there was a downturn in coverage, the incidence increased two to three years later. In 1997, when the catch-up vaccination program was introduced, measles incidence declined further to 2.9 cases/100 000 population in 1998. Ever since, the incidence has remained below 4.0 cases/100 000 [6].

Yearly reported measles incidence diminished globally during 2000–2016, rose in all regions during 2017–2019, and then decreased in 2020. Measles surveillance worsened in 2020. Since 2000, estimated measles deaths decreased 94%. Measles vaccination has disallowed an estimated 31.7 million deaths globally [5]. In 2000–2016 the number of reported measles cases diminished 84%, from 853,479 (2000) to 132,490 (2016). From 2000 to 2016, annual measles incidence dwindled 88%, from 145 cases per million (2000) to 18 (2016), then increased 567% to 120 per million (2019) before decreasing 82% to 22 (2020) [5]. In 2020, 26 large and disruptive outbreaks (≥ 20 cases per million) were reported across five WHO regions 17 (65%) of these outbreaks occurred in countries in the African region (AFR) [5]. Although a safe and effective attenuated live virus vaccine is available, Measles continues to cause the deaths of more than 100,000 children annually [7]. It remains an important disease in many areas of the world and continues to cause the deaths of more than 100,000 children each year despite the availability of a safe and effective attenuated live virus vaccine [7]. Most of the mortality caused

by infection with wild type MeV is due to a measles-induced increased susceptibility to infection with bacteria or other viruses [7]. Only one measles serotype has been described that facilitates protection against the disease by vaccination. Measles eradication has not been attained because global high vaccination coverage has not been reached [3]. Added, that although a safe and effective vaccine has been available for nearly 60 years, measles still causes noteworthy morbidity and mortality, especially among children in under-resourced settings [8]. In order to achieve regional measles elimination, intense efforts are needed to vaccinate all children with 2 doses and identify and close immunity gaps, implement general and specific public health measures, as well as seek to spread vaccine awareness.

This article summarizes the general data on measles disease, as well as the latest statistics on measles detection and public health problems exacerbated due to other accompanying infectious diseases. Our main goal is to provide up-to-date data on the detection of measles disease in different countries, experience in the field of prevention and surveillance, vaccination and specific responses to immunization, as well as modern day public health measures used in limiting spread and finally eliminating the disease are presented.

2. Measles etiology and geographical distribution:

Measles virus (MV) is a member of the family Paramyxoviridae, the subfamily Paramyxovirinae and the genus Morbillivirus. MV is an enveloped virus, which contains non-segmented, negative-sense RNA. The diameter of the virus is 100–300 nm [8]. It has six structural proteins: the nucleoprotein, phosphoprotein, matrix, fusion, hemagglutinin, large protein, and two non-structural proteins V and C, which are encoded by genome [9]. It exclusively causes disease in old- and new-world non-human primates (NHPs) and humans. Like all morbilliviruses, MV is highly infectious, as well as myelotropic, lymphotropic and epitheliotropic virus and is transmitted via the respiratory route [9-10]. If one person is infected, up to 90% of healthy unprotected individuals in the surrounding are will become infected [2].

In the virus particle, two surface glycoproteins, the fusion (F) and hemagglutinin (H) form a multimeric complex that mediates viral entry. The hemagglutinin protein provides banding to cellular receptors, namely signaling lymphocyte activation molecule (SLAM or CD150) on monocytes, lymphocytes, macrophages and dendritic cells (DCs), and nectin-4, a component of epithelial cell adherens junctions. The distribution of these receptors determines the broad cell types and tissues infected with measles virus. The nucleoprotein (N) encapsidates the viral genome and is the most abundant viral protein in diversity of the virion and in infected cells and explains clinical symptoms [11].

WHO defines measles elimination when a defined geographical area endemic transmission is absent for more than 12 months [5]. Progress with the aim of measles elimination has differed by WHO region. Hence, 37 of 53 countries had eliminated measles by 2017. In the European region, five of 11 countries in the South-East Asia region, and 9 of 37 countries in the Western Pacific region had also achieved elimination status by 2017. Nonetheless, in the region of the Americas, despite verification that measles had been eliminated in September 2016, the region reported its highest increase of cases in 2017, and that endemic transmission of measles restarted in Venezuela. In the African region and the Eastern Mediterranean Region, there are no countries confirmed as having eliminated measles [5]. In October 2018, the WHO verified that Singapore had eliminated endemic transmission of measles [6]. Up till 2020, Independent regional commissions verified 81 (42%) countries that had sustained measles elimination, but no new countries had achieved elimination. No WHO region had achieved and sustained elimination, and no AFR country has yet confirmed to eliminate measles [5]. In 2016, the WHO region of the Americas achieved verification of measles elimination. However, endemic measles transmission was reestablished in Venezuela (2016) and Brazil (2018), and since 2016, it restarted in nine other countries that had eliminated measles earlier (Albania, Cambodia, Czech, Germany, Lithuania, Mongolia, Slovakia, the United Kingdom, and Uzbekistan) [5].

3. Virulence and pathogenicity:

The entrance doors to infection are the mucous membrane of the upper respiratory tract, from where, penetrating into the body, the virus multiplies in the epithelium of the respiratory tract and peripheral lymph nodes. On the 3-5 day of the incubation period, short-term viremia is observed. The virus spreads hepatogenically throughout the body, and is fixed and accumulated in the reticuloendothelial system. The interaction of the immune system with virulent cells is accompanied by cytolysis of the latter and secondary penetration into the blood (secondary viremia). Due to the tropism in relation to epithelial cells, the virus is again fixed in the mucous membrane of the oral cavity, eye, and respiratory tract. Allergy caused by the components of the destroyed virus causes vascular damage, edema, as well as necrosis of cells and tissues. Cicatricial collet element is an inflammatory focus around the vessels due to damage to the vascular endothelium. The tropism of the virus in relation to the central nervous system may be the cause of measles encephalitis. During autopsy of people who died from measles, alterative and proliferative changes are observed in the upper respiratory tract, oral cavity, gastrointestinal tract, necrotic changes are found in almost all organs, and intravascular infiltrates are found in the liver, spleen, and lymph nodes. Edema, vascular hemorrhages, diabetes hemorrhages, endovascular infiltrates of various sizes (granulomas) are present in the membranes of the brain and cerebellum [10, 12].

3.1 Mechanism of distribution in the immune system. The measles virus causes severe systemic disease. The rash occurs simultaneously with the onset of the effector phase of the antiviral immune response and significant signs of immune activation. This immune response is effective in eliminating the virus and establishing long-term resistance to reinfection, but is associated with immune suppression, autoimmune encephalomyelitis, and increased susceptibility to secondary infections. This apparent paradox may be partly explained by the preferential long-term activation of type 2 CD4⁺ T cells upon measles virus infection. Preferential stimulation of type 1 CD4* T cells by inactivated viral

vaccines has been suggested to play a role in the subsequent development of atypical measles [13].

Clearance of measles virus from peripheral blood mononuclear cells (PBMCs) correlates with the appearance of Interferon- γ -(INF- γ) brilliant CD4+ and CD8+ T cells in the blood, and several lines of evidence suggest that CD8+ T cells are the most important elimination effectors. During the onset of the rash and the onset of CD8+ elimination, measles-specific T cells appear in circulation during natural and experimental infection. In vitro, CD8+, but not CD4+ T cells, can control viral replication in B cells. In addition, depletion of CD8+ T cells in macaques results in higher levels of viremia and delayed clearance of the measles virus. It is hypothesized that CD8+ T cells eliminate infected cells through cytotoxic mechanisms, but may also suppress virus production in surviving infected cells through non-cytotoxic mechanisms such as IFN- γ production [13].

3.2 Virus detection on macaque monkeys. Although important for protective immunity, the direct role in the clearance of CD4+ T cells and antiviral antibodies is less clear. IFN- γ -producing Th1 cells are produced in large numbers during rash when plasma levels of IFN- γ are elevated. Depletion of CD20+ B cells in macaques delays the production of measles-specific antibodies but does not prolong viremia. However, monkeys depleted of both CD8+ T cells and CD20+ B cells develop a scaly skin rash in addition to long-term viremia, suggesting a role for CD4+ T cells in the pathology. After the rash and fever subside, the infectious virus can no longer be isolated from the blood or respiratory secretions, and there is a rapid decline in the number of IFN- γ producing T cells in circulation [7].

The ribonucleic acid of persistent measles virus may contribute to the development of lifelong immunity. The development of an immune response to the measles virus continues for several months with continued maturation of antibodies and waves of functionally distinct T cells entering the bloodstream. Continued stimulation of B cells is also reflected in the continued emergence of antibody-secreting cells (ASCs)

in the circulation with a maximum number 6-8 weeks after infection and maturation of the avidity of measles-specific immunoglobulin G (IgG). In the lymph nodes, there is a steady proliferation of B cells, an increase in the number of germinal centers that become hyalinized late after infection, and the production of intestinal stem cells (ISCs) for at least 5–6 months, with predominant accumulation in the bone marrow of ISCs that secrete antibodies to the hemagglutinin protein (H) [7].

3.3 Possible return of the virus. Although the infectious virus is cleared, B cell responses are associated with chronic infection and suggest that persistent measles virus ribonucleic acid induces persistent measles virus protein synthesis sufficient to stimulate immune cells and select B cells. Although the importance of antigen persistence in the development of long-lived plasma cells is not clear, continued production of the viral protein may promote continued T cell development as well as antigen supply to follicular dendritic cells to stimulate B cell selection [10,14]

T cells are essential for this process, and during elimination of the infectious virus, most measles-specific CD4+ and CD8+ T cells produce IFN- γ , while later IL-17-producing cells, which are associated with both autoimmunity and with the maturation of B-cells. In addition, the number of CD4+ CXCR5+ peripheral Tfh cells in circulation is steadily increasing. In secondary lymphoid tissue, both Th17 and Tfh cells can contribute to the formation of the germinal center and the production of ASCs, and their appearance in circulation probably reflects an increase in their number in the tissue. Changes in plasma cytokine levels also suggest shifts in the activation of functionally distinct T cell populations over time, with increased levels of IFN- γ early and Interleukin-4 (IL-4), IL-13 and IL-10 later. Presumably, the evolution of T and B cell differentiation over time after infection reflects as yet unidentified progressive changes in the milieu of the lymphoid tissue immune response [14].

Several mechanisms have been proposed to explain the immune suppression associated with measles, such as suppression of lymphocyte

proliferation, altered cytokine profiles, apoptosis of foreign lymphocytes, and infection and depletion of pre-existing CD150+ DCs and lymphocytes. This decrease was found more than a month after recovery. Children are more likely to develop non-measles infectious diseases, especially upper respiratory tract infections, which can last for several years after recovery from measles [14].

4. Disease and clinical manifestations.

The incubation period of Measles regularly lasts 10 to 14 days, and is connected with leukopenia. The prodromal phase is noted by onset of fever followed by cough, rhinitis or conjunctivitis. Rash is usually seen from three to five days following onset of fever. People are considered to be infectious from about four days before rash to four days after rash onset. Entire uncomplicated disease course is 17–21 days from the first sign of fever [10].

For most of the people it is possible to recover without any negative effects after 1 week of illness suffering from the beforehand mentioned symptoms [15]. For young age children who have weak immune system, measles can lead to progressive lung or nervous system infections as well as fatal system disease subacute sclerosing panencephalitis (SSPE). It can also lead to death for immunocompromised or cancer immunocompromised patients [7].

It can be also lead to such complications as immunosuppression, diarrhea, keratoconjunctivitis (which becomes the reason of blindness, especially among those who have lack of vitamin A), otitis media and pneumonia (it is considered the main reason of measles-related deaths). Rarely this illness (nearly 1 in 1000 patients) is accompanied by fatal neurologic complications such as acute disseminated encephalomyelitis, neurologic complication (nearly 1 in 10,000 patients), and SSPE [15].

For immunocompromised patients, research shows that more than 50% of cancer patients may have atypical rash (maculopapular, transient/evanescent, or severe and desquamative). Moreover 20% may start without rash and are recognized only after developing encephalitis or at autopsy. Sometimes it is very difficult to make the right diagnosis

for cancer patients as it can develop without fever and viral upper respiratory symptoms [16].

When a patient recovers from measles, they produce lifelong immunity, nevertheless during and after acute infection, the patient can experience transient immunosuppression, which is substantiated by the suppression of delayed-type hypersensitivity responses. Because of Mv-induced immunosuppression, secondary infections frequently occur, leading to pneumonia or gastrointestinal infections, which are the main cause of morbidity and mortality. Recent researches show that increased susceptibility to infections may continue for 2–3 years after measles. Secondary bacterial infections and the connected morbidity and mortality are stopped by measles vaccination [17].

5. Measles and COVID-19.

The World Health Organization (WHO) recommends that countries aiming at measles elimination should achieve $\geq 95\%$ coverage with both doses of vaccine equitably to all children in every district. Due to disruptions in immunization caused by the COVID-19 pandemic, the current state of global and regional measles control is unsatisfactory [18].

Due to the COVID-19 pandemic affecting ≥ 93 million people, 24 scheduled preventive immunizations in 23 countries have been postponed [5]. A substantial decrease in measles incidence and associated mortality occurred worldwide in 2020 during the COVID-19 pandemic, but there was a significant decrease in measles incidence and associated mortality worldwide. Nevertheless, this did not affect measles susceptibility, more children were susceptible to measles in 2020 compared to 2019, 22.3 million children did not receive MCV1 through routine immunizations, and 93 million people did not receive MCV1 due to COVID-19-related measles Supplementary Immunization Activity (SIA) deferral. Measles surveillance was also not well organized: the number of reports was the lowest in over a decade, many countries did not have specific data, and only a few countries (32%) achieved measles surveillance sensitivity. The lower number of reported cases may depend

on both increased immunity from outbreaks in 2017-2019 and measures to mitigate the effects of COVID-19 [5]. We believe that the decrease in COVID-19 cases during this year will lead to increased focus on re-emerging infectious diseases and their elimination.

On the other hand, positive regards can also be made. There is evidence that preventive measures to limit the spread of Covid-19, such as wearing masks, travel restrictions and social distancing, have also been successful in reducing measles transmission. There is no information yet on the increase in measles cases and deaths due to low measles vaccination coverage. But this may be the result of poor surveillance and COVID-19-related restrictions that distort the reality. It should also be noted that several large measles outbreaks were reported in 2020 in 26 countries [19].

6. The role of public health in prevention and elimination of measles.

Measles cases have surged across the globe, with a 30% year-over-year increase in the number of reported infections worldwide. Such a sharp increase in infection is associated with the rise of the anti-vaccine movements, which is most prevalent in developed countries. Vaccination reductions are not only a threat to herd immunity, but also a serious danger to immunocompromised patients, especially in regions where measles is considered eliminated [16]. Hence, solving this contemporary problem is very important in order to achieve determined public health goals.

To achieve measles elimination, the public health system must improve surveillance, implement measures to ensure high immunization coverage, and provide good training for physicians [18, 20] Hence, we present some key public health strategies for limiting the spread of measles.

6.1 General public health measures.

6.1.1 Definition of outbreak. WHO defines a single measles case as a measles outbreak, which requires prompt and proper response and identification. Both endemic and imported cases need some key activities

as a part of outbreak control [21]. Measles elimination in the United States was proclaimed in 2000 after a 2-dose MMR vaccine administration. However, imported cases from low vaccination rate countries can lead to outbreaks [22].

6.1.2 Rapid response team formation. As the outbreak control needs preparation and planning, a rapid response team or a committee of outbreak control is required. Determined by the circumstances of the outbreak, the teams are formed from specialists from local hospitals, national, regional and local health departments and laboratories [20]. Like any other quick response team, the outbreak control committee needs routine exercises and emergency preparation activities to function adequately during the outbreak.[20-23] These committees decide whether there is need for additional resources. Also they can create targeted vaccination clinics in addition to measles outbreak management steps [24].

6.1.3 Measles transmission risk and prophylaxis. Immediately after a case is identified, the transmission possibility should be determined. Finding exposed people at high risk for disease complications who may profit from post exposure prophylaxis is a primary issue. Among those people are infants, pregnant women and immunocompromised patients [20]. Each case can result in hundreds of contacts, and finding those contacts can be extremely difficult. Especially it can be problematic during community exposures (e.g. stores), where it may be almost unreal to determine who was present, and that can lead to new undetected transmission chains [23]. Besides, the evaluation of local vaccination coverage data should be done. Immunization registry data has been used to determine areas where vaccination may be in suboptimal levels [25].

Suggesting vaccination to non-immunized people and post-exposure prophylactic vaccine or immunoglobulin to people at high risk can help prevent the spread of measles [20]. Parents' unawareness about the significance of vaccination and worries about the unpredictable adverse reactions after the injection are important factors in low vaccination rate regions. That means courses should be created to fill the education gaps

and to raise awareness of the importance of vaccination [26]. Alerting and informing messages convincing to get vaccinated, and immune status testing also may be used among the contacts especially if they are under high risk of getting infected (pregnant women and infants) [27].

6.1.4 Surveillance. Surveillance needs to be strengthened to detect further cases and ensure the diagnosis of measles at the right time. Raising awareness of local measles transmission is a key approach to solve this problem. Doctors, laboratories and educational facilities working for the affected community are an important part of surveillance. They should inform about the confirmed and suspected measles cases to local health departments [20]. Among some common measles surveillance problems are completeness of the information, timeliness, laboratory specimen management, epidemiological analysis and surveillance system management [21].

6.1.5 Raising awareness. Raising awareness of the risk of measles is an important step since it has a highly contagious nature. This can be done by communicating with the public and other health forces. Keeping the public informed about a potential exposure is especially important when outbreaks occur in big places (such as malls) and the level of risk is unknown [20]. Patients and their caregivers should be informed about the way of transmission, contagious period, and how to decrease the expansion of the virus. Counsel should be provided to citizens by setting up measles telephone lines [20]. Another approach to this issue is creating “Frequently Asked Questions” sheet for explaining sample collection and testing processes and holding regular update teleconference meetings [28].

6.1.6 Obtaining clinical samples. Clinical samples must be collected to confirm measles in all suspected cases and to detect the virus. Genotyping is also an important activity especially after elimination, because the roots of the outbreak can be identified, different transmission chains can be separated, and wild type virus and the vaccine strain in newly vaccinated people can be differentiated. However, the process of collecting clinical species is challenged by some factors, which make

difficulties in reaching the demanded level of laboratory results. In some cases it is difficult to obtain species for measles testing and alternative clinical species (such as oral fluid and dried blood spots) may be used to overcome these issues [29].

6.1.7 Data collection and analysis: Relevant information must be collected during the interviews of cases within the first 48 hours after case confirmation. Measles evaluation forms are regularly recorded into a database creating a case data which contains surveillance variables. Electronic journal usage is also suggested [20]. Recording the number of vaccine doses and given immunoglobulin programs, the complete contact number of each case, and data about the quarantine measures carried out during the response, is important to evaluate the efficacy of control measures [20]. After each outbreak a data analysis should be done. Previous experience can help to describe the disease among under-immunized people and to evaluate response strategies and steps that were efficient in decreasing the spread of the virus. Financial impact of measles outbreak on public health sector are also in the center of interest [20].

6.2 Specific public health measures.

6.2.1 Isolating the infectious patients. One way for the prevention of measles transmission from an infected or suspected individual is isolating them for the period required until he/she is not contagious anymore or until the presence of the virus is ruled out. The period of isolation varies and depends on the timing of viral communicability, which is the amount of day prior to and after the onset of rash. This is when the viral content in the respiratory droplets is highest. Considering that the onset of rash as day zero, the accepted criteria is the fourth day prior to the onset of rash until the fourth day following it. However, this consideration has its limitations, since transmission may take place before the rash is seen, and this requires high quality investigations and surveillance of contact transmission [20].

6.2.2 Quarantining susceptible individuals. Protection from potential exposure can be done through excluding the susceptible population from

the outbreak. This reduced infection risk, potential exposure and transmission. Quarantine on the other hand will reduce transmissions through restricting the movement of healthy individuals who are suspected to develop the disease. Isolation of infected individuals who cannot present evidence of presumptive immunity or did not receive post-exposure vaccines as prophylaxis is also recommended. A limitation here would be determining those who are not immune to the virus. On the other hand, susceptibility to MV is easily detectable (unvaccinated children, infants, anti-vaccination groups, medically contraindicated groups) [20].

6.2.3 Vaccination of susceptible individuals. Properly limiting MV spread during outbreak can most efficiently be done through vaccination. On an individual scale, post-exposure shot within 72-hours of contact can shift the nature of clinical symptoms and course of disease, and so it is considered a preventive measure. Control through vaccination also affect viral transmission at a community level and reduces the numbers of measles developing secondary to another disease. The main challenge in case if implementing vaccine based strategies is the timely precision of vaccine administration to the susceptible groups, given the fact that the infected can transmit the virus even before the appearance of the key sign (rash). A strong healthcare basis is needed to correctly implement the vaccine strategy. A team of well trained healthcare providers and public health specialists is essential in identifying and reporting the susceptible cases through modern surveillance methods [20].

A study conducted by Čalkić et al. [30] has described measles epidemic during the period 2014-2015 in Zenica-Doboj Canton (ZDC) involving 325 patients and resulting in incidence of 81.25/100.000 population. The children of the target population for vaccine (< 6 years) in ZDC was 30.528, and the percentage of those who were vaccinated was 83.34%, which was significantly more than the non-vaccinated being 16.66% ($p < 0.05$) with the measles, mumps, rubella (MMR) vaccine. This significance was not enough to create herd immunity. The study demonstrated that the unvaccinated group are more often sick and the

prevalence of disease was 76 times more in non-vaccinated children. On the other hand, in the Netherlands, the measles epidemic emerged in 2013-2014 despite the high rate of MCV 1 received children [31]. Another study by Lo et. al found that even a modest 5% decline in MMR vaccine coverage may lead to a three times increase in the yearly cases. This leads to a substantial economic impact with more than 2.1 million US dollars costs in children aged 2-11 years old [32]. They concluded that the virus is still considered a threat for outbreaks among children and non-vaccinated groups with further decline in vaccination rates. Furthermore, the safety of MMR and other vaccines is well established in the scientific literature, including the finding that MMR vaccination has no association with the development of autism.[33-34].

Conclusions

Measles represents one of the re-emerging infectious diseases that can possess danger on both healthy and immunocompromised individuals. The virus, with its droplet way of transmission, can lead to a rapid occurrence of endemics, leaving health related, social, and economic consequences. Although some countries have achieved measles elimination, emerging outbreaks and increasing number of measles cases worldwide state the opposite. The imported cases may have a role in outbreaks in high-vaccination rate countries. The increasing number of measles cases per year is associated with anti-vaccine movements. Besides, the vaccination process is highly affected by different public health and social challenges. Hence, to achieve and sustain measles elimination, some key public health activities are needed, such as rapid response team formation, transmission risk detection and prophylaxis, surveillance, raising awareness, obtaining clinical samples, data collection and analysis, isolating the infectious patient, quarantining susceptible individuals, and vaccinating susceptible individuals. The poor surveillance during COVID-19 does not allow us to investigate the link between the pandemic and measles cases and deaths. However, the

decrease in COVID-19 cases will bring greater attention to plans seeking to decrease the spread and eliminate measles.

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USE OF DIGITAL TECHNOLOGIES IN THE PROVISION OF MEDICAL SERVICES IN GEORGIA

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Abstract

Digital health is now considered as one of the key instruments for scaling-up access to affordable and quality health services towards achieving sustainable development goal of “ensuring healthy lives and promoting well-being for all”.

Digital health is gaining ground in Georgia as well. For example, National health information system was established by the Ministry of Health and Social Affairs of Georgia, which incorporates various modules service delivery and management purposes. Despite the increased uptake of digital health solution in Georgia in recent period, to the best of our knowledge no formal studies were conducted so far. Objective of our study was to assess the use of digital technologies in the provision of medical services among healthcare consumers and professionals, as well as to evaluate their attitudes towards digital health in Georgia. Online, cross-sectional anonymous surveys were conducted during May – June 2021 in 6 medical institutions. A total of 234 potential healthcare users participating in a survey. Majority of the respondents knew what digital health means – 136 (58.1%), 66 (28.2%) were not sure and 32 (13.7%) mentioned that they don't know what digital health is. More than half of the respondents 135 (57.7%) have used digital health approaches for obtaining medical services, of whom 63 (46.7%) used it for treatment prescription or monitoring and/or other services, while 69 (46.7%) used it for physician's consultation and/or

other services (without treatment). A total of 68 healthcare providers participated in the survey. Majority of the respondents – 47.4% mentioned that they use digital healthcare approaches “often”, 23.6% uses daily, 15.8% - sometimes and 13.2% - rarely. Based on the results of the research and given the trend in the world that all fields, including medicine, are striving for digitization, we can single out some important recommendations that will help the population and medical providers in the future to master digital medical services.

Introduction

Digital health is now considered as one of the key instruments for scaling-up access to affordable and quality health services towards achieving sustainable development goal of “ensuring healthy lives and promoting well-being for all” [1]. Digital health is a broad term that encompasses a range of health and medical care services delivered using information and communication technologies (ICT) and includes interventions for clients (e.g., eHealth services utilizing telehealth/medicine and mobile care for remote monitoring and consultation), as well as interventions for providers and managers (electronic health information systems, electronic health records) [2]. The value of digital health in advancing universal health coverage has been recognized in the World Health Assembly resolution of 21 May 2018, unanimously approved by all member states. Following this resolution, World Health Organization (WHO) developed Global Strategy on digital health and guidelines on implementing respective services to contribute to the attainment of triple billion targets defined as “1 billion more people benefitting from universal health coverage without financial hardship, one billion more people better protected from health emergencies, and one billion more people enjoying better health and well-being” [3-5].

Effective and efficient diffusion of digital technologies in healthcare requires strong commitment and leadership reflected in availability of national policies/strategies on digital health as well as adequate funding. WHO global survey showed that by 2015, 58% of countries had national

policies or strategies on digital health adopted (figure 1), while only 22% had specific policies related to delivery of telehealth [6]. With regard to funding, sources varied substantially based on country income status. While in high-income countries public investment were dominant, share of domestic spending declined with decreasing income status with respective increase in donor support in low- and lower-middle income countries to up to 90% [6]. Development of digital health has been associated with advances in technology that led to integration of ICT in various areas of healthcare delivery including prevention and management of diseases using specific internet and mobile applications [7]. Digital health solutions are also considered to reduce healthcare costs through efficiently matching demand on health services and providing individualized and tailored care [8]. Progress in implementing digital health solutions over the last two decades has been tremendous. First emerged in the beginning of 21st century, nowadays we have numerous good practice examples of effective delivery of services using digital technologies [9]. The Extension for Community Healthcare Outcomes (ECHO) project has been exemplary in improving access to complex health problems using video-conferencing technology. First initiated for implementing hepatitis C treatment in primary healthcare in the state of New Mexico, USA, ECHO project expanded virtually to all disease areas throughout the world [10]. Series of surveys conducted by the WHO Regional Office for Europe between 2009 and 2016 showed significant increase in the use of digital health solutions, for example by 2016 59% of countries in the region had national electronic health record systems, 72% using telehealth for remote monitoring of patients, and 49% - had government supported mobile health programs [11]. Recent analysis of 85 programs related to care of patients with multi-morbidities showed 79% use of digital technologies for medical care, 68% - for prevention purposes, 64% - for medication adherence and medical treatment intervention [12]. Global crisis caused by COVID-19 had major effect on health systems, but also presented new avenues for transforming challenges into opportunities [13]. This is particularly applies to further

development of digital health [14, 15]. Because of social distancing and other restrictive measures implemented around the world for containing the pandemic, healthcare providers have been more often relying on digital health solutions for the management of their patients, and not only for COVID-19 patients, but it has been expanding virtually in disciplines including internal medicine, ophthalmology, dentistry, psychiatry, etc. [16-24]. Accelerated use of digital health solutions during pandemic has been reflected in increased numbers. According to one of the world's leading market and consumer data provider Statista, only in USA virtual health consultation for chronic diseases increased to 41% compared to 6% during pre-COVID era [25]. Based on the same report, virtual clinical visits will be maintained at around one-third of all visits, including in primary healthcare, in post-COVID period. The telemedicine market is forecasted to remain the largest category with market size growing from 50 billion USD in 2019 to 460 billion USD by 2030 [25].

Digital health is gaining ground in Georgia as well. Much of the assistance in developing national framework for eHealth in Georgia has been coming from the EU4Digital Initiative, which channels European Union's (EU) support to improve eHealth capacities for the benefit of patients, professionals and health system [26]. Although substantial steps need to be taken to bring Georgian digital health system to European standards, important developments should be mentioned. Among these are launch of one national health information system by the Ministry of Internally Displaced Persons from the Occupied Territories Labour Health and Social Affairs of Georgia, which incorporates various modules service delivery and management purposes, including electronic prescription portal (ePrescription), electronic health records (eHR), vital registry [27]. Initiatives implemented through private and public-private partnership include mobile telemonitoring of cardiac patients [28], ECHO project for the management of hepatitis C was introduced in 2015 [29] that has been later expanded for the management of tuberculosis as well [30]. Another innovation in the field of tuberculosis was the introduction of new types of direct observed therapy in Georgia, namely

implementation of video-observed treatment and a mobile outpatient clinic [31]. As in the rest of the world COVID-19 pandemic has served as trigger for accelerating digital health use in various areas. COVID-related activities included implementation of remote monitoring of COVID-19 positive outpatients by primary care physicians that served virtually all outpatients during the pandemic. More sophisticated solution has been implemented Katheti region of Georgia – “Project Atlas”, which created virtual clinics using combination of teleconferencing solutions and smartphones to access and provides medical consultation to outpatients with COVID-19 [32]. Examples of private eHealth initiatives include mobile and web applications “Ekimo” (<https://ekimo.ge/>) and “REDMED” (<https://redmed.ge/>), which were created to give Georgian citizens opportunity to step into digitalized medical services, which includes video-chat sessions with doctors, purchasing pharmaceutical products on distance, monitor treatment and prevention of the diseases.

Despite the increased uptake of digital health solution in Georgia in recent period, to the best of our knowledge no formal studies were conducted so far. Objective of our study was to assess the use of digital technologies in the provision of medical services among healthcare professionals and healthcare consumers, as well as to evaluate their attitudes towards digital health in Georgia.

Materials and methods

Two online, cross-sectional anonymous surveys were conducted to assess use of digital technologies in the provision of medical services among potential healthcare users representing general population and healthcare providers. The surveys were conducted using Google Forms platform during May – June 2021. Link to online questionnaire was initially emailed to personnel of 6 medical institutions (including primary healthcare center, general hospital and specialty clinics). Email requesting participation in the survey contained brief information about the purpose of the survey, that participation is voluntary and anonymous. Potential respondents were asked to share the link to the survey with their peers.

Link to questionnaire targeting potential beneficiaries was shared using social media platforms.

The survey questionnaires were developed based on existing instruments published in peer reviewed journal adapted to Georgian context. Initial version of questionnaires was evaluated for content validity by seven experts and were revised based on their recommendations. The questionnaires were designed to take up to 10 minutes to complete and contained a range of questions related to respondent's background, awareness of the digital medicine approaches, uptake of digital health services their use and personal opinion regarding their implementation. Final questionnaire of healthcare providers included 17 items and collected the following information: socio-demographic characteristics, professional information, questions related to awareness of digital health, its use and attitudes.

Statistical analysis

Responses to questionnaires were exported from Google Forms to MS Excel spreadsheet. Data processing steps undertaken included editing, coding and classification. Cleaned data was imported to SPSS statistical software for statistical analysis. Univariate analysis was performed to describe study population and responses to questionnaire. Results of univariate analysis were presented as absolute numbers and percentages to each questionnaire item separately for healthcare users and healthcare providers. Associations between population characteristics (separately for healthcare users and healthcare providers) and history of using of digital health services were assessed in bivariate analysis. Because of small cell size and statistical power issues, some of the original variables were dichotomized for healthcare provider survey age was dichotomized into 20-<40 vs. 40+, medical specialty was categorized into all sub-disciplines of internal medicine vs, all other, type of organization working with into specialty clinics vs. combined primary healthcare and general hospital, time on current position 0-<10 years vs 10+ years, average number of patients seen a day 1-<10 vs. 10+. For healthcare users age was

dichotomized into 20-<30 vs. 30+, university degree vs. all other educational levels, employed/self-employed vs. unemployed/currently student, very good/good general health status vs. all other, computer proficiency very/good/good vs. all other categories. Bivariate comparisons were tested using either Pearson's chi-square or Fisher exact test as appropriate. P value of <0.05 were considered statistically significant. All statistical analyses were performed using IBM SPSS Statistics version 22.

Results

A total of 68 healthcare providers participated in the survey. Demographic and professional characteristics are as follows. Majority of the healthcare providers 51 (75.0%) were female. Among the respondents age groups are as follows: (1) 20-<30 – 13 (19.1%), (2) 30-<40 – 25 (36.8%), (3) 40-<50 – 23 (33.8%), (4) 50-<60 – 6 (8.8%), (5) 60+ - 1 (1.5%). The main share of our healthcare providers were representatives of Internal medicine (all subspecialties) 41 (60.3%) and 27 (39.7%) are marked as “all other”, which contains next profiles: Nurse, Laboratory Assistant, Anesthesiologist, Obstetrician-Gynecologist, Neurosurgeon, Otorhinolaryngologist, Radiologist, Endoscopist, Surgeon, Dentist, Periodontist. 32 (47.1%) of the respondents work in specialty clinic, 25 (36.8%) works in multiprofile hospital and the minority of them 8 (11.8%) works in primary healthcare. 24 (35.3%) of the respondents worked up to 5 years on the current position, 10 (14.7%) worked from 5 to 10 years on the current position, 17 (25.0%) mentioned 10-<15 years, 8 (11.8%) mentioned 15-<20 years and 9 (13.2%) mentioned more than 20 years on the current position. We asked the healthcare providers about the number of patients received per day and the answers are next: 24 (35.3%) chose “1-10”, 33 (n=48.5%) chose “11-20”, 10 (14.7%) chose “21-30” and 1 (2.5%) chose “30+” as the number of patientseen per day (Table 1).

Table 1. Characteristics of healthcare professionals (n=68)

Characteristic	n=68	
	n	%
Gender		
Female	51	75.0
Male	17	25.0
Age category		
20-<30	13	19.1
30-<40	25	36.8
40-<50	23	33.8
50-<60	6	8.8
60+	1	1.5
Specialty		
Internal medicine (all subspecialties)	41	60.3
All other	27	39.7
Type of medical organization		
Primary healthcare	8	11.8
Multiprofile hospital	25	36.8
Specialty clinic	32	47.1
Time on current position (years)		
0-<5	24	35.3
5-<10	10	14.7
10-<15	17	25.0
15-<20	8	11.8
20+	9	13.2
Average number of patients seen per day		
1-10	24	35.3
11-20	33	48.5
21-30	10	14.7
30+	1	1.5

Table 2 describes the responses to digital health related questions among healthcare professionals. The first question we asked, if about meaning of digital health. Turns out that majority of our respondents know what digital health means 49 (72.1%), 18 (26.5%) are not sure and only 1 (1.5%) doesn't know what is digital health. We also asked healthcare providers, if they have ever used digital health approaches in their clinical practice and 38 (55.9%) confirmed, 30 (44.1%) declined. We also wanted to know if our respondents were trained in using digital health approaches in clinical practice, turns out that only 8 (11.8%) healthcare providers out of 68 have attended some trainings in this field, and majority – 60 (88.2%) have never been trained.

15 (22.1%) of our respondents think that it is “very useful” to implement digital health approaches in their clinical practice, 31 (45.6%) considers it “useful”, 20 (29.4%) are “not sure” and only 2 (3%) chose “useless” and “completely useless”. With regards to comparison of digital healthcare approaches to standard one answer are as follows: 2 (2.9%) considers digital healthcare approaches always better than the standard one, 41 (60.3%) thinks it's better in certain circumstances, 24 (35.3%) are not sure, and 1 (1.5%) thinks it's never better. We asked our respondents if delivering digital healthcare services with and without first personal interaction with patient was acceptable and the results are next: “completely acceptable” in case of not having prior personal interaction with patient chose 2 (3.0%) respondents and 5 (7.4%) chose the same answer in case of having prior personal interaction with patient, “acceptable” chose 17 (25.0%) without prior interaction with patient and 41 (60.3%) in case of having interaction first before delivering digital healthcare services to patient, 26 (38.2%) chose “not sure” in the first question and 16 (23.5%) in case of second question, “unacceptable” was for 20 (29.4%) respondents in case of not having prior interaction with patient and 6 (8.8%) in case of having prior interaction, “completely unacceptable” was for 3 (4.4%) respondents only in case of not having prior physical interaction with patient before delivering digital healthcare services. We also wanted to know attitude of the healthcare providers to

digital healthcare approaches from the material side and asked if they considered providing digital services to patients more cost-effective than the standard one: 7 (10.3%) completely agreed, 33 (48.5%) agreed, 15 (36.8%) were not sure, 3 (4.4%) did not agree and none of our respondents disagreed completely the question. At last we asked for their opinion if it's worth investing in promotion/development of digital healthcare industry in Georgia. 14 (20.6%) completely agreed the idea, 35 (51.5%) agreed, 16 (23.5%) were not sure, 2 (2.9%) did not agree and 1 (2.5%) completely did not agree the idea of investing in digital healthcare services development in Georgia (Table 2).

We asked several detailed questions (type of delivered services, frequency of using digital health) to those healthcare providers who had past experience of delivering digital healthcare services to patients.

Table 2. Responses to digital health related questions among healthcare professionals (n=68)

Question	n=68	
	n	%
Do you know what is digital health?		
Yes	49	72.1
No	1	1.5
Not sure	18	26.5
Have you ever used digital medicine approaches in clinical practice (e.g., telemedicine, mobile medicine)?		
Yes	38	55.9
No	30	44.1
Have you ever been training in using digital health approaches in clinical practice		
Yes	8	11.8
No	60	88.2

How useful it is to implement digital health approaches in your routine clinical practice		
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Very useful	15	22.1
Useful	31	45.6
Not sure	20	29.4
Useless	1	1.5
Completely useless	1	1.5
Do you think delivering services using digital approaches is better than standard approaches		
Yes, always	2	2.9
Yes, in certain circumstances	41	60.3
Not sure	24	35.3
Never	1	1.5
Is it acceptable to deliver digital health service without first personal interaction with patient		
Completely acceptable	2	3.0
Acceptable	17	25.0
Not sure	26	38.2
Unacceptable	20	29.4
Completely unacceptable	3	4.4
Is it acceptable to deliver digital health services for health/disease monitoring after first personal interaction with patient		
Completely acceptable	5	7.4
Acceptable	41	60.3
Not sure	16	23.5
Unacceptable	6	8.8
Completely unacceptable	0	0
Do you think digital health is more cost-effective compared standard approaches of service delivery		
Completely agree	7	10.3
Agree	33	48.5
Not sure	25	36.8
Do not agree	3	4.4
Completely do not agree	0	0
Do you think it is worth investing in development/promotion of digital health		

infrastructure in Georgia		
Completely agree	14	20.6
Agree	35	51.5
Not sure	16	23.5
Do not agree	2	2.9
Completely do not agree	1	1.5

Turns out that majority of the services were treatment related (71.1%) and only 28.9% were other consultations. Majority of the respondents – 47.4% mentioned that they use digital healthcare approaches “often”, 23.6% uses daily, 15.8% - sometimes and 13.2% - rarely (Figure 1).

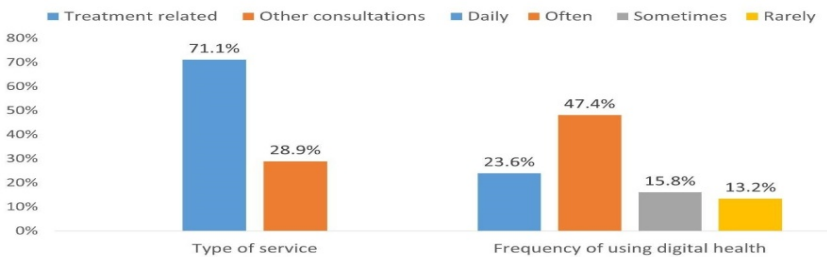


Figure 1. Types and frequency services provided by doctors who had past experience of delivering digital health (n=38).

Statistical analysis – bivariate analysis of factors associated with past use of digital health services among healthcare professionals was conducted for the next factors: (1) gender, (2) age category, (3) specialty, (4) type of medical organization, (5) time on current position(years), (6) average number of patients seen per day. Turns out that none of mentioned factors have statistically significant association with past use of digital healthcare services among healthcare providers (Table 3).

Table 3. Bivariate analysis of factors associated with past use of digital health services among healthcare professionals (n=68)

	Total N	Used digital health service		p value
		n	%	
Gender				
Female	49	27	52.9	0.398
Male	13	11	64.7	
Age category				
20-40	35	22	57.9	0.707
40+	27	16	53.3	
Specialty				
Internal medicine (all subspecialties)	38	25	61.00	0.297
All other	24	13	48	
Type of medical organization				
Specialty clinic	32	22	64.70	0.143
Primary / Mutliprofile	30	16	47	
Time on current position (years)				
0-<10	30	18	52.90	0.625
10+	32	20	58.80	
Average number of patients seen per day				
1-10	21	12	50.00	0.471
10+	41	26	59	

Survey of potential healthcare users: A total of 234 potential healthcare users participating in a survey. Among them the majority were women 165 (70.5%), most of them were in age category 20 to 30 years 144 (61.5%) with share of respondents decreasing with the age and no persons 60 years or older participating in the survey. Overall, only 42 (18.0%) respondents were over 40 years old (Table 4). With regard to socio-economic characteristics - majority of the respondents have received higher education 155 (66.2%), 59 (25.2%) were currently students at university, 11 (4.7%) went to vocational school and the rest of the respondents 9 (3.8%) had high school education only. A total of 152 (65.0%) were employed, 21 (9.0%) – self-employed, 31 (13.2%) were unemployed and 30 (12.8%) were not employed because of being

currently student. Survey examined computer proficiency: 151 (64.6%) described their computer skills either “good” or “very good”, 69 (29.5%) respondents reported “fair” computer proficiency and 14 (6.0%) – had “poor” or “very poor” level of knowledge (Table 4). Survey also inquired about the current health status of respondents: 41 (17.5%) had ongoing chronic disease. Majority of respondents 124 (52.9%) described their health status as either “good” or “very good”, 98 (41.9%) reported “fair” health status and 12 (5.1%) – had either “poor” or “very poor” health status (Table 4).

Table 4. Characteristics of potential healthcare users (n=234)

Characteristic	n=234	
	n	%
Gender		
Female	165	70.5
Male	69	29.5
Age category		
20-<30	144	61.5
30-<40	48	20.5
40-<50	32	13.7
50-<60	10	4.3
Educational level		
High school	9	3.8
Vocational school	11	4.7
University degree	155	66.2
Currently student at university	59	25.2
Employment status		
Employed	152	65.0
Self-employed	21	9.0
Unemployed	31	13.2
Currently student	30	12.8
Computer proficiency		
Very good	79	33.8
Good	72	30.8
Fair	69	29.5

Poor	13	5.6
Very poor	1	0.4
Suffering from chronic disease		
Yes	41	17.5
No	193	82.5
Current health status		
Very good	42	17.9
Good	82	35.0
Fair	98	41.9
Poor	11	4.7
Very poor	1	0.4

Table 5 describes responses to digital health related questions. Responses to question related to frequency of using internet to obtain the information about health or diseases showed that only 16 (6.8%) use it daily, equal number (66 persons a piece) use internet for health/disease related information several times a week or at least once in a week, 80 (32.2%) respondents use about once in two weeks or rarely and 6 (2.6%) never use internet to obtain the information about health or diseases at all (Table 5).

Majority of the respondents knew what digital health means – 136 (58.1%), 66 (28.2%) were not sure and 32 (13.7%) mentioned that they don't know what digital health is. More than half of the respondents 135 (57.7%) have used digital health approaches for obtaining medical services, of whom 63 (46.7%) used it for treatment prescription or monitoring and/or other services, while 69 (46.7%) used it for physician's consultation and/or other services (without treatment) (Figure 2).

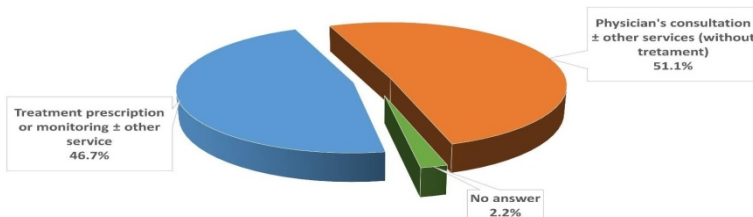


Figure 2. Types of digital health services received by potential users among those with previous experience (n=135).

Survey examined attitudes towards using digital health services. Vast majority of respondents (196, 83.8%) expressed willingness to use digital services in the future, while only 8 (3.4%) were against and 30 (12.8%) were not sure. Using digital health services without first personal interaction with physician was “completely acceptable” or “acceptable” for 177 (75.6%) respondents, this was “unacceptable” or “completely unacceptable” for 15 (6.4%) respondents, while 42 (17.9%) – were not sure (Table 5).

Table 5. Responses to digital health related questions among potential users (n=234)

Question	n=234	
	N	%
How frequently you use internet to obtain the information about health or diseases		
Daily	16	6.8
Often (about several times a week)	66	28.2
Sometimes (about once in a week)	66	28.2
Rarely (about once in two weeks or rarely)	80	32.2
Never	6	2.6
Do you know what is digital health?		
Yes	136	58.1
No	32	13.7
Not sure	66	28.2
Have you ever used digital health approaches for obtaining medical services (e.g. distant consultation with physician using computer or mobile device)		
Yes	135	57.7

No	99	42.3
Would you use digital health services in the future		
Yes	196	83.8
No	8	3.4
Don't know	30	12.8
Is it acceptable to get digital health service without first personal interaction with healthcare provider		
Completely acceptable	53	22.6
Acceptable	124	53.0
Not sure	42	17.9
Unacceptable	14	6.0
Completely unacceptable	1	0.4
Is it acceptable to get digital health services for health/disease monitoring after first personal interaction with healthcare provider		
Completely acceptable	58	24.8
Acceptable	129	55.1
Not sure	32	13.7
Unacceptable	13	5.6
Completely unacceptable	2	0.9
Is it reasonable to develop and promote digital health services in Georgia		
Completely reasonable	84	35.9
Reasonable	114	48.7
Not sure	25	10.7
Not reasonable	9	3.8
Completely not reasonable	2	0.9

Receiving digital health services after the first personal interaction with physician was “completely acceptable” or “acceptable” for 187 (79.9%) respondents, this was “unacceptable” or “completely unacceptable” for 15 (6.4%) respondents, while 32 (13.7%) – were not sure. At last we asked the potential users of digital healthcare services if they considered developing and promoting digital health services in Georgia reasonable and majority of them 198 (84.6%) chose “completely reasonable” or “reasonable” answers, 25 (10.7%) were not sure, 9 (3.8%) considered not reasonable and 2 (0.9%) considered completely not reasonable (Table 5).

Factors associated with the past use of digital health services among potential healthcare users were explored in bivariate analysis. Data of 234 potential digital healthcare service users was treated as dichotomous variables as described in the methods section (Table 6). The results of bivariate analysis of factors associated with the use of digital health services among potential users are next for each variable: (1) gender – from the total number of female respondents 61.8% (102) used digital health services, from the total number of male respondents 47.8% (33) used digital healthcare services, (2) age category – from the total number of the respondents between 20-29 ages 56.9% (144) used digital health services, from the total number of 30 and more years old respondents 58.9% (53) used digital healthcare services, (3) educational level – from the total number of respondents who has received university degree 59.4% (92) and from all other educational level respondents 54.3% (43) used digital healthcare services, (4) employment status – from the total number of employed or self-employed respondents 60.7% (105) used digital healthcare services and from the total number of unemployed or student respondents 49.2 (30) used digital healthcare services, (5) suffering from chronic disease – from the total number of those respondents who are suffering from chronic diseases 68.3% (28) and from those who don't 55.4% (107) used digital healthcare services, (6) current health status – from the total number of respondents who chose good to very good health condition as an answer 60.5% (75) and from those who chose any other of the probable answers 54.4% (60) used digital healthcare services, (7) computer proficiency – 61.6% (93) of the respondents with very good or good computer proficiency have used digital healthcare services and from all other 50.6% (42) respondents used digital healthcare services.

Table 6. Bivariate analysis of factors associated with past use of digital health services among potential healthcare users (n=234)

	Total N	Used digital health service		p value
		n	%	
Gender				
Female	165	102	61.8	0.048
Male	69	33	47.8	
Age category				
20-29	144	82	56.9	0.77
30+	90	53	58.9	
Educational level				
University degree	155	92	59.4	0.471
All other	79	43	54.4	
Employment status, n (%)				
Employed/self-employed	173	105	60.7	0.118
Unemployed/student	61	30	49.2	
Suffering from chronic disease, n (%)				
Yes	41	28	68.3	0.13
No	193	107	55.4	
Current health status, n (%)				
Very good/good	124	75	60.5	0.359
All other	110	60	54.4	
Computer proficiency, n (%)				
Very good/good	151	93	61.6	0.104
All other	83	42	50.6	

In case of gender and digital healthcare service use, association was statistically significant p value=0.048 which means that women tend to use digital healthcare services more than men do. None of the other

variables show any significant association with the use of digital healthcare services, with only computer proficiency showing some trend with borderline association of $p=0.104$, yet this was not statistically significant.

Conclusions and recommendations

Based on the results of the research and given the trend in the world that all fields, including medicine, are striving for digitization, we can single out some important recommendations that will help the population and medical providers in the future to master digital medical services.

First of all, we need to focus on medical service providers skills development towards the information technology. In addition, it would be a very important step to accustom future medical workers to the use of digital approaches from their students; such study programs may be included in their university curricula as well. As a result, there will be an increase in the availability of qualified staff who will be able to provide digital medical services to the population seamlessly.

The second recommendation is the existence of a common, improved infrastructure for the use of digital medical services in Georgia.

The next recommendation would be to increase the awareness of the population. Gain their trust in digital medical services, thereby increasing referrals.

Finally, conducting detailed research on digital healthcare in Georgia would be a good step towards digitalization, as there is no large-scale official research to identify existing trends in this field.

Despite these limitations, survey provided very important information for future action. As mentioned previously, to the best of our knowledge this was the first formal study assessing the implementation of digital health approaches in Georgia. Findings of the survey build a ground for future research as well as steps to be taken towards further roll-out and promotion of digital health services.

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VIOLENCE AGAINST MEDICAL STAFF, ASSESSMENT OF RISK FACTORS AND JUSTIFICATION OF PREVENTIVE MEASURES. OVERVIEW

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Abstract

According to the WHO, more than 1 million people worldwide die annually from various forms of violence. It has been strengthened in various cultural, everyday-customary relations. Violence has been on the rise in recent years, affecting many areas of people's lives and activities, including healthcare. The medical staff is especially vulnerable in the performance of their duties.

As violence spreads, its manifestations become more diverse. All this is a serious problem for the society, as the medical staff can suffer both physically and mentally.

The applied psychological pressures and humiliations of the medical staff can lead to psychological and social problems of different manifestations. In turn, leading to a decline in work capacity and lack of motivation among medical staff. As it affects the full and effective use of the professional skills of medical staff, medical staff find it difficult to make quick and accurate decisions under psychological or other pressures. It leads to professional mistakes.

Thus, violence against medical workers in the workplace is widespread throughout the world. Health care is considered to be the most common field of labor violence. The issue is often covered in the media with different interpretations, but there are no statistically reliable data on violence against medical staff in Armenia.

Introduction

Violence has always existed in human history, and we witness its various manifestations in many parts of the world. It is one of the leading causes of death among people aged 15-44. It also puts a strain on the health care system, directing billions of dollars a year to save the lives of victims of violence. The state is giving money for post-violence rehabilitation treatment and pensions for people with disabilities. As it increases the socio-economic burden due to the number of working days missed by people and the potential products / benefits lost during them. According to the World Health Organization (WHO), more than one million people die annually from violence, and many more suffer from non-fatal injuries [1].

Among the types of violence used in the world are wars, terrorism, riots, which are reflected daily on television and in news platforms. Some forms of violence have intensified and taken root in the socio-cultural life of different countries. Victims of violence are often young, some of whom are weak or unable to defend themselves [1].

Domestic and sexual violence are most prevalent, and labor violence, especially against doctors, is invisible to the human eye. It is assumed that information on the issue is not available or incomplete and is not discussed or covered in the media.

Medical workers around the world are at high risk of violence. According to the WHO, 8-35% of health workers are physically abused during their work. Medical personnel are often exposed to other forms of violence, including threats or verbal aggression. Moreover, in some emergencies, health care providers may be subjected to group violence [2].

Verbal and physical violence against health workers has reached a significant level, and the manifestations are spread all over the world. The WHO recently assessed violence against health care workers as an international catastrophic situation that undermines the foundations of the healthcare system [3].

Data summarized from 253 relevant surveys published up to 2018, in which 331,544 people participated, 61.9% of health workers reported any form of violence against health workers in the workplace, 42.5% reported various forms of non-physical violence, and 24.4% of health care workers reported who experienced physical abuse in the past year. The most common types of non-physical violence were verbal abuse (56.7%), followed by threats (33.2%) and sexual harassment (12.4%)[4].

The cases of violence against medical workers are remarkable all over the world. The prevalence of violence against health care providers is particularly high in Asian countries, and in North America, both doctors and nurses in the emergency department. Cases of such violence are reported in India, where medical workers are subjected to stigma, ostracism, discrimination and physical assault. The cases are significant and are registered in different countries in France, Great Britain, Australia, Mexico, Philippines [5].

Currently, the World Medical Association condemns the increase in cases of violence against healthcare workers, especially recently, due to fears of the spread of SARS-CoV-2 by healthcare workers [6].

The main perpetrators of violence are the patients or the patient's visitors, relatives. Most often abused are health care providers who work directly with patients, including physicians, nurses, paramedics, and paramedics.

Violence against health care workers affects physical and psychological health, it also affects the work motivation of health care workers [2].

Violence not only disrupts the normal rhythm of work, as a result of which the quality of medical care, doctor-patient, nurse-nurse-patient relationship suffers, it also carries great risks. Cases of violence against health workers trigger work and psychological stress mechanisms that have a serious impact on the human body and nervous system, leading to pathological conditions. In practice, violence is perceived by medical staff as an integral part of the job [7].

However, it is difficult to assess the scale of the problem, as information on cases of violence against health workers is scarce.

According to another Italian study, only 48.6-65.9% of cases of violence against ambulance workers were reported. Ramacciati and his colleagues found that 76.0% of nurses and 60.2% of medical staff were verbally abused in the last 12 months of their study. One of the most common expressions of verbal violence is shouting, insulting or swearing [7]. According to the other results of the survey, 31.5% of the medical staff were subjected to physical violence, the most frequent manifestation of which was pushing. Reasons for the use of violence are combined both with organizational and environmental problems and of respect to the doctor and distrust of treatment as well [7].

It should also be noted that universal approaches, tools, and evaluation criteria need to be developed to investigate cases of violence against health workers around the world.

Violence has increased, especially during the COVID19 pandemic. According to Terry Kovalenko (Charleston, South Carolina), the pandemic has seen an increase in cases of violence due to patient's suspicions that health workers were infected [8].

The International Committee of the Red Cross (ICRC) has reported cases of violence against health workers in connection with the COVID19 pandemic in various countries. According to the data, in the first 6 months of the pandemic, 611 cases of violence were directed at medical workers. According to data collected from more than 40 countries, from the 325 cases of violence 32% was against health workers [8].

According to systematic observations and meta-analyzes of Sandro Vento, Faculty of Medicine, University of Puthisastra (Phnom Penh, Cambodia) during the Covid epidemic, cases of violence against health care workers are a serious problem for both physicians and nurses.

Both developed and developing countries around the world face the problem of violence against medical workers. Many are concerned about

the prevalence of the problem and the frequency of violence against health care providers [5].

According to a 2012 survey of medical professionals by the China Hospital Association, which included 316 hospital staff, 96 % reported experiencing a variety of violent incidents [9].

Chinese Physicians Association concluded that 70% of health care workers have ever experienced verbal or physical violence [5].

A study by the Supreme Court of China in 2010-2016 of cases of violence against medical workers found that the main manifestations of violence were hitting, beating, pushing, and verbal abuse of medical workers, followed by threats. During the cases of violence being investigated by the legislative bodies, a large number of damaged furnitures and the doors of the mentioned medical institution were broken [10].

In India, the increase in the incidence of violence against health workers has prompted the government to introduce legislative changes that make violence against health workers punishable by law and sentence violence or harassment of health care workers to up to seven years in prison [11].

In Germany, the problem is also present and 23% of health workers are subjected to severe forms of violence, such as aggression or violence. In Spain, the scale of the problem is growing. A UNISON study in the UK found that 181 foundations reported physical assaults on 56,435 healthcare workers between 2016 and 2017.

Violence against health care workers accounts for 70-75% of labor violence in the United States. In Italy alone, in one year, 50% of nurses were verbally abused, 1% physically assaulted, 4% were threatened with a gun, and 50% of doctors were verbally abused and 4% physically assaulted [5].

Violence against health workers are faced in Poland, the Czech Republic, and Slovakia. In South Africa, during only 5 months of 2019, cases were registered by 30 hospitals. Violence in Cape Town is particularly prevalent against ambulance staff. In Iran, the prevalence of

violence in the emergency department is 36% in the case of physical violence and 73% in the case of physical violence [5].

In 2015 survey of emergency care workers at the Mayo Clinic in Rochester, Minnesota found that 55.8% of health care providers rated violence as part of their job [12].

This phenomenon is a serious problem for health, as violence causes moral and psychological and physical damage, affects the daily work of the doctor, disrupts the doctor-patient relationship, as a result of which both the doctor and the medical care suffer. It also violates the provision of safe working conditions for the physician, which requires the training of medical staff and the development of a critical attitude towards violence [12].

Increasing expressions of violence - domestic, sexual violence, which are more visible, are spoken more in society. And the aggression and violence against doctors and medical staff is still an unknown and unspoken issue for many [7].

In East Asian countries, such as India, the doctor is spoken of as a humanitarian, noble profession, but at the same time in that country there are many cases of violence against medical workers. According to an Indian source, violence against doctors is a significant part of labor violence. Reasons include belonging to different religious castes, lack of choice of physician in difficult times, long waiting time for hospitalization, examination or treatment, as well as low number of senior and mid-level medical staff, lack of trust in medical care. According to the authors of a study of violence against medical workers in India, it is inadmissible for cases of violence to take place in hospitals or medical facilities, as they provide a continuous solution to the problems of the health system within the country [13].

Data from the European Organization for workplace Safety and Health (WHO) show that health care is the most common area of violence [14].

Workplace violence can be considered a unique case or small episodes of recurring violence that can cause serious harm to a

physician's physical and mental health at the convention. This is an important occupational risk factor for health care providers [15,16].

Physicians have a key role to play in maintaining a healthy public health system. Violence against them is a serious problem not only for the individual physician, but also for the organization, management and creation of safe working conditions for physicians throughout the system. Therefore, understanding the prevalence of violence and its causes is a major health issue [17].

The WHO classifies violence as the deliberate use of a threat or the use of physical force against a person or group of persons that could cause physical or psychological trauma [1].

The literature describes that the most common instigators of violence are patients, patients' relatives and visitors [18].

Medical professionals are often subjected to emotional assault, physical violence, and sexual harassment [7].

Any form of attack is considered violent and has a physical component, accompanied by the use of force against another person [19].

Knowledge of violence in medical institutions is low, especially its non-physical manifestations. The reasons are different. Medical staff view violence as part of their job, thinking that it is their responsibility to take care of the patient in all cases, or that raising the issue alone will not lead to a solution, leading to fear [7].

Diseases, morbid conditions that patients suffer from, make them feel scared and anxious. In this case, the condition of the patients or the improvement of the well-being depends on the help provided by the medical staff. At this stage, the doctor-patient, nurse-patient relationship is formed, and here are the great risks of violence used by the patient and his relatives. Problems in these relationships increase the likelihood of violence [20].

Patients justify their use of violence with a sense of inadequate contact with medical staff, conflict situations during communication, misunderstanding of each other, inadequate communication of doctor-patient information, doctor-patient, nurse-patient with insufficient trust,

unreliable or unrelated patient or patient, incomplete first aid or disagreement with the doctor [17].

These reasons are combined with organizational and environmental issues. Other reasons for this are lack of respect for the doctor and distrust of treatment [7].

Numerous studies show that, regardless of social and cultural differences, the causes of violence are similar [19].

Both direct and indirect manifestations of violence have short-term, long-term and general effects at different levels [13].

Workplace violence reduces the feeling of job satisfaction, and the feeling of job satisfaction of doctors and nurses is directly related to the feeling of satisfaction with patients' treatment, and vice versa [21].

Workplace violence is also associated with high work stress [21]. When stress, low job satisfaction, and violence intersect in the workplace, negative consequences quickly accumulate, leading to the formation of a vicious circle that is difficult to resolve [7].

Violence also affects the professional success of health care providers, the making of the right decisions, and the fulfillment of day-to-day responsibilities [17]. At the same time, it reduces the confidence of the medical staff in their professional knowledge, leading to an increase in the number of professional errors [22]. All this leads to a decrease in the efficiency of the health system [17].

The consequences of violence include serious, life-threatening injuries, deaths among the medical staff, reduced self-control among the medical staff, post-traumatic stress disorder, depression, decreased ethical values, decreased work capacity, and increased vacation days. Due to the violence used, the medical staff acquires an emotional burning syndrome, which leaves its mark on the provided medical care, both on the reduction of the patients' safety, and on the numerous cases of dissatisfaction with the medical care provided by the patients [23].

A pandemic of violence against medical personnel is most common among the medical workers who are the front line. The front line are the intensive care unit, ambulance, reception medical staff, as well as the

most frequent violence in remote medical facilities without the presence of security staff and one doctor on duty [5].

According to a study conducted in Cambodia in 2019, the preconditions for violence against medical staff are work in remote medical facilities, lack of security staff, insufficient number of medical staff, emotional and tense state of patients, lack of preventive measures [5].

Prolonged waiting time for medical care, high cost of care provided, distrust of medical staff or health care system, low number of health care providers, insufficient time and consequent insufficient communication with patients, divergence of satisfaction with expected and received medical care, and low level of positive treatment outcomes leave an impact and contribute to the emergence of violence. Departments equipped with remote, understaffed medical equipment and medical supplies do not allow medical workers to provide adequate medical care [24]

Violence against medical workers from patients their relatives and visitors is a common problem for medical staff in both developed and developing countries [7].

According to Sandro Ventro (Cambodia), finding a solution or reducing the problem is difficult because it is ambiguous and requires the solution of the problem at several levels at the same time. According to the results of different researches in the world, the mechanisms of problem solving are different, even contradictory, as they are obtained as a result of using different research methods, each of which has its own conditions of application and leads to different results. The results of such a randomized study confirm that the solution to the problem can be the introduction of even one program to prevent violence. So far, the results of cross-sectional research show that the introduction of anti-violence programs in the healthcare system does not effectively reduce the incidence of violence [5].

According to the medical staff, more drastic measures are needed to solve the problem. According to some literature sources, the solution to

the problem only by strict measures can not be a solution. The literature proves that there are no definite preventive measures to solve the problem, even good work planning, creating safe conditions, reducing the waiting time of patients do not lead to an effective solution to the problem and prove the need for new research. Among the necessary criteria in the new research are the unification of several specialists at the same time: public health, psychologists, sociologists, anthropologists and the work on the problem, the application of new interdisciplinary measures [5].

Necessary preventive and protective measures for health care providers include supplementing the shortage of health care providers, which will naturally increase the time spent by the health care provider with each patient, especially in overcrowded departments and hospitals, as well as increasing funding for health care. As another preventive measure, it is necessary for the medical staff to develop mechanisms for communication with patients, which will allow patients and relatives of patients to provide the necessary information through effective means of information, to achieve a correct assessment of the situation by them. This will reduce the cases of not meeting the expectations of the medical staff. Getting the full support of health care providers from the medical facility where they work plays an important role in preventing violence. The list of necessary measures also includes administrative fines and accurate and fast uncovering of cases by the mass media [25].

Although the Ministry of Health of the Republic of Armenia strongly condemns any harassment or violence against doctors or even acts of atrocity, there are no clear statistics on this issue in the Republic of Armenia [26]. Recently, some cases have been uncovered by news websites, but it is still not enough to assess the real scale of the problem and resolve the issue [27]. The Ministry of Health of the Republic of Armenia also lacks normative acts for the settlement of the problem in the legal field, there are no clear guidelines. There are no measures for recording, investigating, analyzing, preventing, monitoring and uncovering cases of violence against medical workers. It in turn

overshadows the real scale of the problem. In such cases, the violence against the medical staff while providing medical care remains unappreciated, leaving the doctor unprotected.

Conclusion

Thus, violence against medical workers in the workplace is widespread throughout the world. Health care is considered to be the most common field of labor violence. It is an urgent problem in both developing and developed countries. The types of violence against medical personnel are various: psychological, physical, sexual, and the manifestations are various: pressure, threatening, shouting, swearing, pushing, hitting, beating, displaying indecent behavior, etc.

The perpetrators of violence are mainly patients, relatives or visitors. The reasons for the violence are various: distrust of the medical staff and treatment, more expectations of the patients from the medical staff, being in a difficult emotional state of the patient's relatives, everyday-customary, religious and cultural peculiarities.

Cases of violence against medical staff lead to the activation of stress mechanisms among the medical staff, the syndrome of emotional burnout, the reduction of professional satisfaction of medical staff. They violate the creation of safe working conditions for medical workers and disrupt the provision of medical care, as well as the doctor-patient, nurse-patient relationship.

Information about the problem is scarce all over the world, as cases of violence against medical workers are not uncovered or discussed in the media. The solution to the problem and the reduction of cases is difficult and the solution of the problem at one level alone can not be the way to the solution.

There are no clear statistics on the problem in Armenia. Cases of violence against health workers are condemned by the Ministry of Health, but there are no legal regulations on the issue or they do not work effectively, leaving the doctor unprotected.

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ABOUT THE INTERPRETATION OF THE CONCEPT OF COMMUNITY SOCIAL WORK: THEORETICAL AND PRACTICAL ISSUES

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Abstract

There are a lot of versions in the scientific literature on how we can explain the concept of the community social work. Traditionally expected approaches suggest to consider it as a method of social work which is directed towards helping the whole community in overcoming its social problems. In this case the main goal of the community social work becomes the promotion of the needed social changes in community organizations, services, or networks. But there is another way to interpret the community social work as well. According to it, community social work means the complex of the professional interventions directed towards assisting the community members based on the community resources and its capacities.

This article aims at studying those main two approaches and justifying the importance of using them both in order to be able to promote the realization of the “whole package” of the community social work’s opportunities and capabilities.

Community and social work

Community and social work are closely related.

Community has a real influence on the social work as it is a considerable source of the social assistance and service provision to the community members. Besides, it also creates socio-cultural environment for the community members to carry out their everyday life. Social worker should take that environment into account while working with the beneficiaries. We should also emphasize that the community has its

own problems that consider working with the community as an entire system.

But how we can define the community and based on that definition what main characteristics can be stressed?

Definitions of the community

There are several approaches for defining the community.

One of those is a legal approach, which is basically refers to the definitions that are presented in the legislations of the exact countries. For example, in the legislation of Armenia, particularly in the law “On Local self-government”, adopted in 2016, community is defined as a legal entity that disposes its property independently and has its budget.

According to the political sciences, community is a cradle of the democracy, as it makes possible direct participation of all members of the community in the processes of community governance.

Public administration is another approach of the definition and it considers the community as a unit of the public administration procedures. For instance, in Armenia two main units of public administration are defined: regions and communities.

Sociology provides its own vision to the definition of the community as well. It “suggests” viewing the latter as one of the social systems that is crucial in the societies. According to the sociology community is a system of interactions, human behaviors that have meaning and experience between its members. This perspective lies on the social work methodology bases as it promotes deeper and broader understanding of the community in contrast to the interpretations that perceive community mainly as a territorial unit or shape it only with its borders. This perspective helps to see the layer of the social relationships, the causal links of the social problems and envisages intensive work directed towards revealing the main needs of the community and mobilizing its resources for satisfying those needs.

Community as a social system

Analysis of the community as a social system, points out its structural and functional peculiarities. Thus, the community as a social system

conducts the following social functions: provision of social services and social assistance, economic activity, socialization of its members, social control and social inclusion. These functions ensures the important role of the community in the society as it, in line with other social systems, promotes society's normal functioning in behalf of adequate implementation of its functions.

Community as a social system has also its structural components: Those are:

- ✓ inhabitants of the community,
- ✓ community services and institutions,
- ✓ social relationships in the community between its members and institutions,
- ✓ social norms and values that have considerable influence on the community life and relations.

Community as a social system is described also with its resources that can be financial, physical, human and natural potential and abilities. The community usually faces many social problems, which usually affect the living activities of the residents, and overcoming them requires working with the whole community.

Hence, in terms of helping effectively those members of the community or the entire community as a social system, reference to the community's resources is inevitable. This is crucial in social work.

Community social work as a method of social work

The first initiatives for the development of community social work were made at the beginning of the formation of the profession. However, experts still find it difficult to present the exact and exhaustive definition of the concept of "community social work". And the problem is not at all that community social work is not studied or defined. Exactly the opposite: it is interpreted within different theoretical approaches and studied from different perspectives. Due to this, many definitions of community social work have been formed. Some of them characterize it as a basic method of social work, others as an inseparable part of community practice. In some definitions, community social work,

particularly community development and organization, is considered a form of the group social work. According to one of the opinions, community social work can be interpreted as a completely independent direction of macro practice of social work. Although these definitions do not contradict each other, but while offering different approaches to study, they make the work of community social workers more difficult, presenting a wide range of choice of work direction and methodology.

The purpose of its interpretation can be the main guideline for the exact definition of the "community social work" notion. Since community social work is aimed at solving the social problems of the community and its individual residents, and for this purpose a whole "arsenal" of professional work is offered, it can be justified to consider it as one of the main methods of social work and define it as a set of appropriate processes and procedures that are used to promote the wellbeing and normal functioning of the community.

Regarding to the social work methods, it should be mentioned that those are formal ways of solving social problems. Their main feature is that they are clearly defined and presented. Thus, in social work, methods are used:

in order to recognize social reality and enrich the theoretical foundations of social work,

to solve the problems of the object of social work.

Based on this circumstance, they are divided into the following two groups:

- scientific-cognitive methods of social work,
- methods of social work practice.

The first group is the ways and means of social reality recognition and scientific studies. Moreover, depending on the circumstance in which discipline they were formed, they are divided into the following subgroups:

- universal methods that were developed in the discipline of philosophy and are widely used in all social sciences, for example, the epistemological method of cognition, the dialectical method, etc.,

- general scientific methods, which are the "birth" of various social sciences, are used in a number of this type disciplines, including social work. As such methods we can mention, for example, social modeling, and various methods of sociological research: questionnaire survey, interviews, scientific experiment, etc.

- specific methods of social work, which were formed in order to solve the problems of the science of social work. Among them are, for example, need assessment, biographical analysis, the study of social networks, psychosocial diagnostic methods, etc.

Methods of social work practice are classified according to several criteria.

If the criterion for the classification of methods is the direction of work, then such methods of social work as socio-economic, socio-pedagogical, socio-psychological, organizational, distributive, etc. can be distinguished.

Another criterion for the classification of methods in the practice of social work is the object, that is, the "target" to which the activity of the social worker is directed. According to this criterion, the methods of social work are individual, group and community. Their separation derives from the main goals of social work, which involve preventing or neutralizing the harmful effects of crisis situations and social injustices, as well as overcoming obstacles to the healthy development of individuals, groups and communities.

Thus, community social work is one of the traditional methods, which aims to assist the community to solve the problems that have made its life difficult.

The leading international experience shows that community social workers are involved in the development of community infrastructure, improvement of the activities of community institutions, activation of cooperation between community services and other similar processes.

At first glance, it may seem that the mentioned processes are not directly related to social work, but if we look deeper, we will understand that the social needs of the community, unresolved issues that concern

the entire population of the community or most of them, significantly affect their quality of life and social welfare. That is why the community social worker directs his activities to increase the quality of life and social well-being of the residents by causing systemic changes. The task of community social work is also to improve community relations, contribute to the resolution of conflicts and support the improvement of the efficiency of community management processes.

However, in professional literature there is also the opinion that community social work is work with individuals or groups in need of social support in the community.

Community social work: social work within the community or with the community?

The idea of organizing and providing social work services in the community is not new. In the early days of the formation of the profession, it was important to provide social support to vulnerable members of the population in the places of residence. According to the well-known theorist of community social work D. Hardcastle, the totality of these forms of professional work is community social work, because it is carried out in the immediate environment of the beneficiaries' living activities and implies solving the beneficiary's problems and satisfying social needs with the effective use of community potential and abilities.

Thus, the question of who or what is the object of community social work is still not clear. The whole community with its common problems, or those groups of community residents who have various social problems and needs, and therefore also feel the need for the support of a social worker? To overcome the confusion related to the description of community social work, sometimes professionals use the concept of "community social work", referring to the use of the community's potential in solving the beneficiary's problems. However, this does not remove from the agenda the question whether community social work is an activity with the community as a beneficiary or work in the immediate social environment of the beneficiary.

According to the Armenian professional community, there are two ways to resolve the situation: either by “community social work” we mean the method of intervention of a social worker in the life of an individual beneficiary, i.e. the work carried out in the community to support the beneficiary, and in that case social work with the community is seen as a part of individual social work, or we acknowledge that the classic method of community social work has two types: work in the community and work with the community.

In order to solve the created methodological and terminological confusion, we consider the second option applicable, according to which community social work is viewed as a method that has two separate types: work in the community and with the community. Giving preference to this approach is due to the purpose of reflecting a clear connection between the community and the work carried out in the community with some groups of the residents. Finally, social work with the community, aimed at solving the community's social problems, also implies solving the group, environmental, systemic problems of its residents and thus improving their living conditions.

Therefore, the concept of "community social work" should be interpreted as a method of social work aimed at supporting both the entire community to solve its problems and, based on the potential and capabilities of the community, and those members or families of the community who have social support need.

As the international experience of community social work shows, these two main types are not used separately, but jointly and complementing each other. Only thanks to such systematic and complex work, it is possible to achieve the use of real opportunities of community social work and the realization of its main goals. Therefore, this definition enables a comprehensive approach to the interpretation of community social work.

When community social work services are organized to provide social support to individual members of the community or their groups, and the community is seen as the environment in which all this is carried

out, we are dealing with the community social work method, and when the goal is to develop the capacity of the community and improving the lives of residents through problem solving, then the specialist's activity is directed to work with the community. In the latter case, the community becomes a collective individual with its own difficulties.

Referring to the this approach of the community social work method, it is necessary to note that it is often interpreted as a separate branch of social work macro practice, the task of which is to bring about desired changes in communities or create the necessary prerequisites for them by carrying out pre-planned and targeted activities.

Social work with the community, as a part of macro practice, implies the identification and in-depth study of community problems, the consolidation and development of community resources, the development of strategies aimed at overcoming common problems, etc. Based on the many directions of social work with the community, several approaches to it are distinguished, and sometimes types, models, styles, etc. of community social work are also presented. For example one of the first theorists of community social work, Murray Ross, in one of his famous works, grouped and presented three main approaches to community social work, tentatively calling them "reform-oriented", "planning-oriented" and "process-oriented". According to Ross, the reform-oriented approach of community social work emphasizes the procedures for developing and implementing social policy in the community. In the planning approach, emphasis is placed on the development and efficient use of community resources to achieve certain changes. And the regulation of processes implies active involvement of community members and their associations and direct participation in solving community problems. Ross believes that choosing and applying any approach to community social work is determined by the goals of community social work and the problems faced by the professional.

J. Rotman singles out the approaches of community development, social planning and social action among the main approaches of community social work intervention. And Weil and Gamble suggest that

community social work should be guided by such approaches as: community organization, community social and economic development, community functioning improvement, social planning, social service implementation and development, strengthening community ties and formation of associations, political and social action performance, development of social movements in the community.

Analyzing the opinions formed about community social worker intervention approaches in the professional literature, we can note that they, along with the key differences on various issues and procedures, also have essential commonalities and are closely connected to each other in a logical chain. Based on the fact that the activity of community social workers has historically had three main goals: community planning, organization, development, we can state that these are the main and key approaches of community social work, among which it is possible to classify and characterize others. Moreover, we consider it appropriate to characterize community planning, organization and development not as a "community social work approach" but as a "community social work model" because, as community social work theorist Elaine Netting points out, the model is a social is the orientation of the worker's intervention, which clearly guides his actions and work in certain situations, and the approach offers a general perspective for responding to similar problems. Since these approaches of community social work have the ability to direct and orient the activity of a specialist, we think it would be justified to consider them as a model of community social work. In that case, we will be able to first clarify the terminological system of community social work, and then also create methodological foundations to ensure the application of theoretical achievements in the field of community social work in practice.

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IS ANTIBODY SYNTHESIS DIFFERENT IN COVID-19 PCR POSITIVE AND NEGATIVE GROUPS? A CASE-CONTROL STUDY

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Abstract

Following COVID 19 disease checking for the presence of anti-SARS-CoV-2 antibodies and assessing the evolution over time of their levels may provide key knowledge to guide individual and population conduct and safety practices. To address this issue, we detected the presence of SARS-CoV-2 antibodies in different groups of individuals previously diagnosed with COVID-19 disease who had positive PCR response (case group) and in a representative group of individuals with PCR negative response (control group). The primary outcome was specific anti-SARS-CoV-2 antibodies in the different groups assessed by qualitative analysis at 3 and 6 months follow-up. 86 patients participated in the study (43 patients in each group). Positive IG level was observed in 83 (96.5%) patients. 1 patient in PCR positive and 2 in PCR negative groups had negative IG level (bellow cut off). The research results show, positive antibodies were recorded in both PCR positive and negative groups. The mean level of anti-SARS-CoV-2 antibodies were similar in both groups. During the period from symptom onset to hospitalization, PCR-negative patients had contact with people more than 2 times compared with PCR positive patients, which can increase epidemiological risks.

Introduction

The coronavirus infection (COVID-19) pandemic began in December 2019 in Wuhan, central China's Hubei province, with the first cases of pneumonia of unknown origin in locally linked animal and seafood markets [1,2].

The first coronavirus to infect humans was discovered in the 1960s. The new coronavirus is the seventh known coronavirus to infect humans. Four of these seven known human coronaviruses cause mild disease, and the other three, SARS-CoV, MERS-CoV and 2019-nCoV, can cause serious health problems. There are several known cases of coronavirus outbreaks in history, including SARS in 2002–2003 and MERS in 2012. The acute respiratory syndrome coronavirus (SARS-CoV) was reported in the Chinese province of Guangdong in 2002 and has spread to 37 countries, with a further spread of 8,096 cases and 774 deaths. Ten years later, the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) spread to 27 countries, causing 858 deaths in 2,494 cases worldwide. According to current statistics, the number of deaths from COVID-19 infected people is much higher than the number of cases of SARS and MERS, and continues to increase.

This pandemic is unprecedented in terms of testing the preparedness and stability of each country on a global scale. Many of the factors that contribute to preparedness and resilience include the ability to organize medical care and respond to outbreaks of infectious diseases. As we can see, regardless of the level of development, all countries are at risk of infectious disease outbreaks, they must strengthen their capacity to respond effectively to the situation in a timely manner [3-6].

In different countries, the government and its territorial infrastructure - regions and communities - are at the forefront of crisis management and economic recovery, which is due to COVID-19. COVID-19 was a major challenge for different countries and their healthcare systems. It had serious implications not only on the economic, social, and fiscal spheres within countries, but also in the regions and local governments [7-9].

Under such conditions, the prevention and overcoming of crisis processes in economies is ensured by a balanced anti-crisis policy, which includes a series of mutually agreed measures in financial, budgetary, fiscal, social, economic and other spheres. The study of the impact of COVID-19 on the socio-economic situation in different countries of the world is mainly empirical in nature [5, 10-14]:

The aim of the study is to evaluate the synthesis of antibodies in PCR positive and negative groups.

Material and Methods

The subjects of the research were the patients who received medical care in University clinics with coronavirus disease.

The study was conducted with a case-control design. Patients receiving medical care related to coronavirus disease in University clinics were selected, then groups were formed from the results of the PCR test accepted as diagnostic criteria by the RA Ministry of Health for the diagnosis of the COVID-19 /PCR positive and PCR false negative groups. 86 patients participated in the study (43 patients in each group).

The questionnaire developed by the research team, which consists of demographic, epidemiological and clinical parts, was used in the framework of the study.

After confirmation of the disease, 2 follow-ups were performed at 3 and 6 months with antibody determination. Antibodies were determined by Cobas e411-Roche Diagnostics automatic immunohematological device, the research method was immunohemiluminescence.

Data collection and statistical analyses was done with the help of SPSS.

Results and discussion

Overall, 86 patients admitted with Covid-19 were recruited between February until October 2021 in University Clinics in Yerevan, Armenia. The baseline characteristics of COVID-19 patients with PCR test positive or negative response are presented in

Table 1.

Mean age of all study subjects was 53.8 ± 1.9 years, 33.7% of the patients were men. 26 patients in case group (60.47%) and 27 in control group (62.79%) had a higher education. 22 patients in case group (51.16%) and 24 in control group (55.81%) were employed. There weren't detected any differences between groups ($P < 0.05$).

Table 1. Baseline characteristics of case and control groups included in the study

Characteristics	Response	PCR test response			
		positive		negative	
		N	%	N	%
Gender	male	15	34.90	14	32.56
	female	28	65.10	29	67.44
Family status	married	30	69.77	32	74.42
	devorsed	3	6.98	1	2.33
	widowed	2	4.65	1	2.33
	single	8	18.60	9	20.93
Education	primary	2	4.65	0	0
	secondary	15	34.88	16	37.21
	higher	26	60.47	27	62.79
Affiliation	employed	22	51.16	24	55.81
	unemployed	12	27.91	13	30.23
	student	4	9.30	2	4.65
	retired	5	11.63	4	9.30

During the period from symptom onset to hospitalization, PCR-negative patients had contact with more people (7.65 ± 0.87) compared with PCR positive patients (3.17 ± 0.42).

During the first follow-up (after 3 months of discharge) the level of IG was registered (Figure 1). As seen from the Figure 1, positive IG

level was observed in 83 (96.5%) patients. 1 patient in PCR positive and 2 in PCR negative groups had negative IG level (below 1).

During the first follow-up mean level of anti-SARS-CoV-2 antibodies in PCR positive group was 92.36 ± 9.34 , in PCR negative group – 86.4 ± 8.09 .

During the second follow-up mean level of anti-SARS-CoV-2 antibodies in PCR positive group was 102.37 ± 9.68 , in PCR negative group – 106.02 ± 8.67 .

The mean level of anti-SARS-CoV-2 antibodies were similar in both groups during 2 follow-ups (Table 2).

Table 2. The results of anti-SARS-CoV-2 antibodies among PCR positive in negative groups during 2 follow-ups performed at 3 and 6 months

anti-SARS-CoV-2 antibodies	PCR test response				P value
	positive		negative		
	Mean	Standard Error of Mean	Mean	Standard Error of Mean	
After 3 months	92.36	9.34	86.40	8.09	<0.05
After 6 months	102.37	9.68	106.02	8.67	<0.05

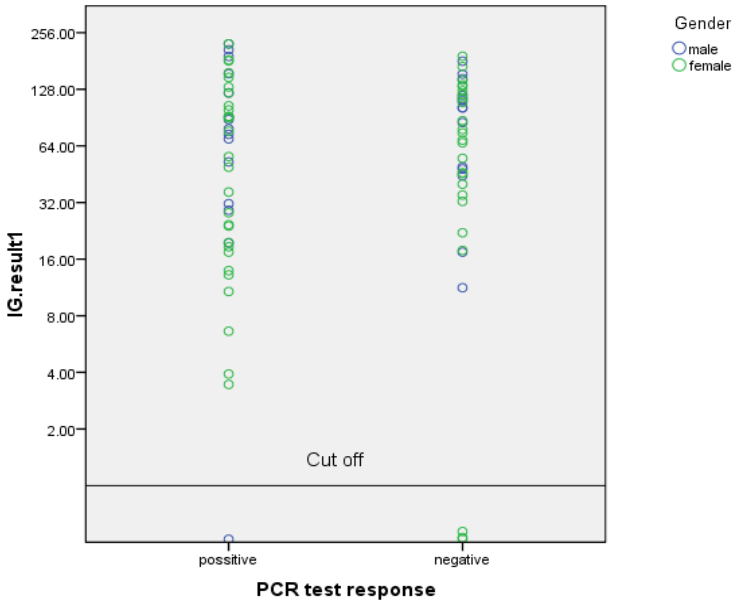


Figure 1. The level of Anti-SARS-CoV-2 IG among Covid convalescent two groups, stratified by gender.

The level of IG among Covid-19 convalescent patients during first follow-up hadn't normal distribution, it's more likely to be a left asymmetric (Figure 2). As seen from the chart, distribution of IG was almost normal during second follow-up. In second follow-up blood samples was taken from 62 patients (32 in case and 30 in control groups). The mean level of Anti-SARS-CoV-2 IG during second follow-up was statistically significant higher ($p < 0.05$).

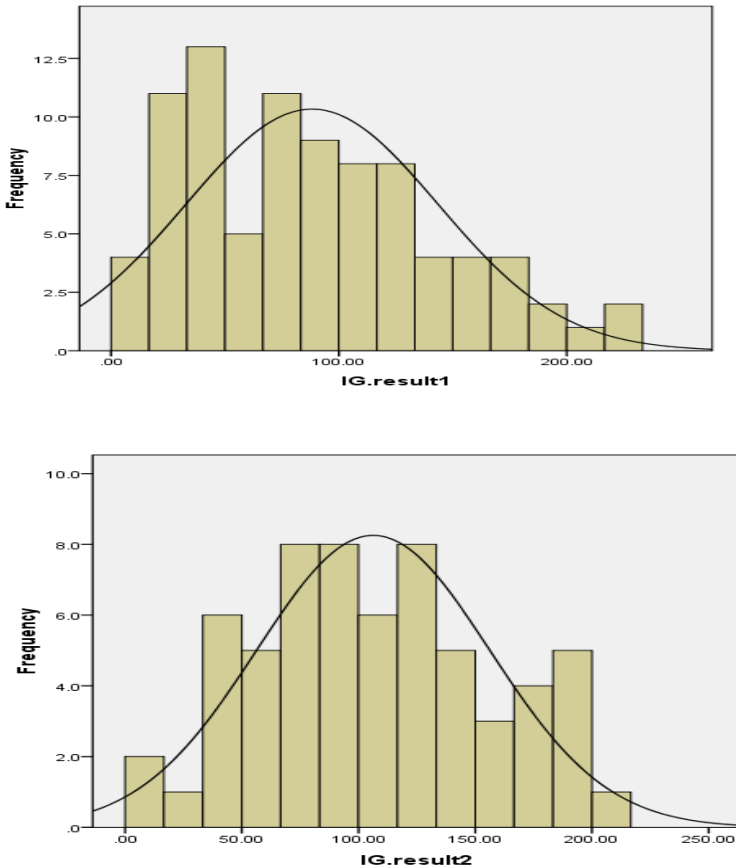


Figure 2. Distribution of Anti-SARS-CoV-2 IG level after 3 and 6 months.

The level of IG among Covid-19 convalescent patients during first follow-up hadn't normal distribution; it's more likely to be a left asymmetric (fig. 2). As seen from the chart, distribution of IG was almost normal during second follow-up. In second follow-up blood samples was taken from 62 patients (32 in case and 30 in control groups). The mean level of Anti-SARS-CoV-2 IG during second follow-up was statistically significant higher ($p < 0.05$).

Thus, as the research results show, positive antibodies were recorded in both PCR positive and negative groups. The observation of a positive PCR response as a criterion for hospitalization by the RA Ministry of Health was not very objective and needs to be revised. In the results of the research conducted by a number of researchers, there are different periods of the antibody peak, but mainly it starts to decrease after 3 months, but in our research, the opposite picture was recorded and an increase in the level of antibodies was observed. In order to study and clarify the obtained results, it is necessary to carry out a larger sample and in-depth research.

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