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# Strengthening capacity in injury and violence prevention

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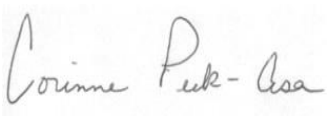
Traumatic injuries and violence pose a staggering burden to human health and wellbeing throughout the world. Injuries are a leading cause of death for all age groups but disproportionately affect the young. These deaths, caused by injuries such as road traffic crashes, drowning, or falls, and violence including homicide and self-directed violence, end lives early and traumatize families and communities. Compared to injury deaths, non-fatal injuries are far more common and can cause disability, lead to high medical expenditures, and psychological trauma. Injuries are inequitably distributed within and across countries. Globally, injury death rates are highest in Low and LowMiddle income countries. And, within any specific country, injury incidence is higher in low-resource communities and for under-served populations. There are many causes of this inequity, including dangerous environments, low health literacy, and lack of access to trauma care. Perhaps one of the most compelling reasons to prioritize research on traumatic injuries and violence is that injuries are preventable. Preventing injuries reduces medical expenditures, improves work readiness, and decreases the number of people living with or caring for people with physical, psychological, or cognitive disabilities caused by trauma, to name just a few prevention impacts. There are many strategies to prevent injuries. Environmental modification strategies range from how we design roadways and vehicles to how we build urban environments to reduce crime. Many of these environmental approaches have other benefits, such as reducing

transportation time or increasing community cohesion. Policy strategies can help prevent injuries, such as policies that require workplaces to use safe equipment, or can help reduce their burden, such as policies that help cover medical costs of those with injury-related disabilities. Behavioral strategies can reduce injuries throughout the lifespan, starting with programs for parents that reduce child abuse and maltreatment through fall prevention programs for the elderly. All of these approaches work together to create a strong safety culture, and research that advances the evidence base for injury prevention, is a critical component of safety culture.

This special issue highlights strong emerging research in injury and violence and will accelerate progress in saving lives being lost from trauma. Although knowledge about the burden of injuries and violence, their causal mechanisms, and evidence-based prevention approaches is growing, the field of injury and violence prevention has not received the level of research investment equal to the burden on society. This issue will advance our knowledge about the prevalence of different types of injuries and violence and will identify important components for future prevention efforts. To conduct this research, research teams have invested in improving data quality, applying new methodologic approaches, and have built new research collaborations.

This work is possible because of a partnership called iCREATE: Increasing Capacity for Injury Research in Eastern Europe. This partnership between leading research universities in Armenia, Georgia, Moldova, Romania, and the US and funded by the National Institutes of Health-Fogarty Center in the US, has had a substantial impact in building research capacity, establishing curriculum, training students, and promoting a safety culture, and it has helped collaborative research teams work together to reduce the high burden of injuries and violence.



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MEDICAL SCIENCES



# EPIDEMIOLOGICAL FEATURES OF TRAUMATIC BRAIN INJURIES FROM A FIRST LEVEL TRAUMA CARE NATIONAL MEDICAL CENTER IN GEORGIA

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***Keywords:*** *traumatic brain injury, hospitalization, Georgia.*

***Introduction.*** *Traumatic brain injuries are a significant public health issue in both developed and developing countries. In Georgia, traumatic brain injuries remain one of the leading causes of mortality and disability. Traumatic brain injuries affect families, communities and societies in Georgia and have far-reaching human, social and economic costs, manifested in increased emergency department visits, hospitalizations, disability and deaths. The aim of this study is to retrospectively analyze the epidemiological features of Traumatic Brain Injuries on the example of Medical Centre in Georgia which provides a first level trauma care for patients in the country.* ***Material and methods****. Retrospective observational study was conducted from August 1 to October 31, 2018. The study included patients who were admitted with a Traumatic Brain Injuries diagnosis and S00-S09.0 codes (ICD 10). SPSS 20 was used for statistical analysis.* ***Results.*** *A total of 96 TBI-related hospitalizations were studied. 56.3% (n=54) of hospitalized patients were males. The average age of patients was 40.7 years. Furthermore, patients aged 25-44 years were more represented in the number of TBI-related hospitalizations (39.6%). 95.8% of all Traumatic brain injuries hospitalizations were as a result of unintentional injuries. Unintentional falls were shown to be the predominant mechanism of injury accounting for over half of TBI-related hospitalizations (56.2%). The second most common mechanism of injury is the road traffic injury, mostly occurring among males (63.9%).* ***Conclusions.*** *This study offers an insight into understanding the epidemiological features of Traumatic Brain Injuries on the example of the National Medical Center from Georgia.*

***Cuvinte cheie:*** *leziuni cerebrale traumatice, spitalizare, Georgia.*

**CARACTERISTICI EPIDEMIOLOGICE ALE LEZIUNILOR TRAUMATICE CEREBRALE DINTR-UN CENTRUL MEDICAL NAȚIONAL DE INGRIJIRE A TRAUMATISMELOR DE PRIM NIVEL DIN GEORGIA**

***Introducere****. Leziunile cerebrale traumatice (LCT) reprezintă o problemă semnificativă de sănătate publică atât în țările dezvoltate, cât și în cele în curs de dezvoltare. În Georgia, leziunile cerebrale traumatice rămân una dintre principalele cauze de mortalitate și dizabilitate. Leziunile cerebrale traumatice afectează familiile, comunitățile și societățile din Georgia și au costuri umane, sociale și economice de anvergură, manifestate prin creșterea vizitelor la secțiile de urgență, spitalizări, dizabilități și decese. Scopul acestui studiu este de a analiza, retrospectiv, trăsăturile epidemiologice ale leziunilor cerebrale traumatice, în baza exemplului Centrului Medical din Georgia, care oferă un prim nivel de îngrijire a traumei, pacienților din țară.* ***Material și metode.*** *A fost realizat un studiul observațional retrospectiv în perioada 1 august – 31 octombrie 2018. Studiul a inclus pacienți care au fost internați cu diagnostic de leziuni cerebrale traumatice - codurile S00-S09.0 (ICD 10). Analiza statistică a datelor a fost realizată în SPSS 20.* ***Rezultate.*** *Au fost studiate 96 de spitalizări legate de LCT; 56,3% (n=54) dintre pacienții internați fiind bărbați. Vârsta medie a pacienților a fost de 40,7 ani. În plus, pacienții cu vârsta cuprinsă între 25-44 de ani au fost mai frecvenți în numărul de spitalizări legate de LCT (39,6%). 95,8% dintre toate spitalizările cu leziuni cerebrale traumatice au fost ca urmare a unor leziuni neintenționate. Căderile neintenționate s-au dovedit a fi mecanismul predominant de rănire, reprezentând peste jumătate din spitalizările legate de LCT (56,2%). Al doilea cel mai frecvent mecanism de rănire este vătămarea rutieră, care se înregistrează, mai ales, în rândul bărbaților (63,9%).* ***Concluzii.*** *Acest studiu oferă o perspectivă asupra înțelegerii caracteristicilor epidemiologice ale leziunilor cerebrale traumatice, în baza Centrului Medical Național din Georgia.*

## INTRODUCTION

Traumatic brain injuries (TBI) are a significant public health issue in both developed and developing countries (1-9) accounting for about 41% of overall Years of Life Lost (YLL) (10), with an estimated annual incidence of TBI globally about 27 to 69 million (11, 12). A surveillance study of TBI-related deaths in the US indicated that TBI remains the chief cause of death and disability in young people (13). Another study (14) found an increasing incidence rate of TBIs among people aged 65 years and older in high-income countries as a result of an unintentional fall. A meta-analysis of hospital-based studies from 16 European countries found the incidence of hospital-admitted TBIs to be approximately 262 cases per 100,000 individuals (15). Low-income and middle-income countries report higher incidence rates of TBI compared to developed countries. Estimates from Maas et al. indicate that from 50-60 million new TBI cases which occur annually, only about 2.5 million are reported to occur in high-income countries with almost 90% of TBI-related deaths occurring in low-income and middle-income countries (16). TBI incidence rates in Latin America is 150 and mortality from Severe TBI is very high, as well (17).

Georgia, by virtue of its GNI per capita of US $ 4046,8, is categorized as a middle-income country that is still in the 'Centre of Development' (18). In Georgia, just like other developing countries, TBI remains one of the leading causes of mortality and disability, especially among young Georgians (19). TBI affects families, communities and societies in Georgia and have far-reaching human, social and economic costs manifested in increased emergency department visits, hospitalizations, disability and deaths. According to a 2016 report by the 'Brain and Spinal Cord Injury Trust Fund Commission' (20), Georgia reported 27,840 TBI injuries which involve 20,488 emergency department visits and 7,352 hospital admissions.

*The aim of this study* is to retrospectively analyze the epidemiological features of TBI on the example of National Medical Centre in Georgia which provides a first level trauma care for patients across the country.

## MATERIAL AND METHODS

This present study was designed within the project "INITIatE: International Collaboration to Increase Traumatic Brain Injury Surveillance in Europe", funded by the United States National Institutes of Health and led by the University of Iowa and the Cluj School of Public Health. Retrospective observational study was conducted from August, 1st to October, 31st 2018, within the first level trauma center, located in Tbilisi, the capital of Georgia, which provides both 320 beds and f trauma care to the population of Georgia (3,716,900). The study included patients admitted in the Medical Center during the study period with a TBI diagnosis and S00-S09.0 codes (ICD 10). The collected data were uploaded into a REDCap (research electronic software) database. SPSS 20 (from IBM Corp, NY, USA) was used for the descriptive statistical analyses of TBI-related variables.

## RESULTS

A total of 96 TBI-related hospitalizations were studied. 56.3% (n=54) of hospitalized patients were males and 43.8% (n=42) were females, indicating a male to female ratio of 1.3:1. The age of the patients ranged between 2 years to 85 years. The average age of the participants in this study was 40.7 years. Furthermore, the modal age group was 25-44 years old, reflective of the fact that patients who were aged between 25-44 years old were more represented in the number of TBI-related hospitalizations in the health facility at 39.6% (n=38), followed by 45-64 years accounting for 25 (26.0%) patients and 15-24 years who accounted for 19 (19.8%) patients. The males were also over-represented among the two most frequent age groups of TBI patients making up 68.4% (n=26) and 64% (n=16), respectively. The employment and social status of the patients were in consonance with the age distribution viz. 34 (35.4%) hospitalized patients were still unemployed, followed by 20 (20.8%) employed patients. Retirees accounted for 12.5% (n=12) of all hospitalized patients, while 16 (16.7%) patients had no employment and social statuses.

Most TBIs were recorded to occur in urban areas (n=90; 93.8%) with transport systems, which include public highways, streets or roads viz. the most common place of TBI occurrence (38; 39.6%), followed by home accidents, accounting for 27.1% (n=26) of all TBI occurrences. The result showed that 95.8% (n=92) of all TBI hospitalizations were as a result of unintentional injuries

with only 2.1% (n=2) of patients shown to have sustained work-related injuries. In accordance with the intent of injuries, unintentional falls were shown to be the predominant mechanism of injury, accounting for over half of TBI-related hospitalizations (56.2%; n=54) and evenly distributed among both males and females (50%; n=27). The second most common mechanism of injury was determined to be the road traffic injury (RTI), mostly occurring among males (63.9%; n=23), accounting for 37.5% (n=36) of TBI-related hospitalizations, followed by being struck by an object and assault offences at 3.1% (n=3) and 2.1% (n=2), respectively. Cumulatively, falls were found more likely to occur in females rather than men (64.3% in females vs. 50% in males) in most TBI-related hospitalizations.

Thus, over half of all TBI-related hospitalizations were due to falls, mainly occurring in the 25-44 and 45-64 age groups, viz. in 61.1% (n=33) of cases. It is noteworthy that the most causes of TBI hospitalizations were most prevalent among the 25-44 age group. TBI hospitalizations resulting from falls and road traffic injuries contribute 92,1% (n=35) of the TBI cases in this age group. All TBI cases resulting from assaults fall within this age group with half of assault-related injuries occurring among females. Road traffic injuries were the most common cause of TBI-related hospitalizations among those aged 15-24 years accounting for over half of TBI hospitalizations in this age category (52.6%; n=10). Most of injuries 46.3% (n=25) result from falls at home, followed by other unspecified locations – 22.2% (n=12), 13% (n=7) at residential institutions, where mostly were not work-related injuries (92.6%; n=50). All assaults occurred in urban areas (100%; n=3), mostly among females (66.7%; n=2), occurring at some unspecified locations. The majority (97.2%; n=35) of road traffic injuries occurred at public highways, streets or roads and 2.8% (n=1) at other specified locations. The highest male to female ratio (2:1) accounted for injuries resulting from being struck by or against an object while the lowest ratio was for falls (1:1). However, injuries caused by assault (violence) also showed a highest female to male ratio (1:1).

The most common hospital arrivals were carried out by ambulances, which accounted for 62.5% of hospital arrivals (n=60) with 14.6% (n=14) of injury cases arriving through 'other' means. Among the patients who arrived by other means, 71.4% (n=10) were referrals from another hospital and 14.3% (n=2) were brought by helicopters. While 13.5% (n=13) arrived by private/public transport, injury-to-hospital arrival timeframe ranged from 3 minutes to 73 hours. However, the average time interval between the injury onset and time of attendance was 3.36 hours. Nearly half (47.9%; n=46) of the TBI patients came to the hospital in less than 1 hour, while 8.3% (n=8) of patients arrived 1-2 hours post-injury. In addition, 15.6% (n=15) of TBI patients experienced an injury-to-hospital attendance timeframe of 2-4 hours while it took more than four hours for 9.4% (n=9) of injured patients to arrive to the health facility (tab. 1, tab. 2). The amount of days spent in the health facility varied from 0 to 72 days and was determined by the injury severity. Most patients (38.1%; n=37) spent 1 day in hospital (a modal length of 1 day) and 1 day was also the mean duration of hospital stay. In-patient treatment was completed in all TBI cases (100%). However, the discharge status was also related to TBI severity as 2.1% (n=2) of hospitalized TBI patients died, 1% (n=1) transferred to a rehabilitation Center and 96.9% (n=93) were sent home. Over two-thirds of TBI patients who spent more than 7 days in hospital were males (68.75%; n=11); 43.6% (n=17) of 25-44 years old spent up to 1 week in hospital and were overrepresented among those who spent over 15 days in hospital (77.8%; n=7). 44% (n=11) and 22.2% (n=2) of 45-64 years old spent close to 7 days and over two weeks in hospital respectively. The longest hospital stay length was related to TBIs resulting from falls and road traffic accidents, whereas the latter accounted for 88.9% of all hospital stays that lasted 15 days or more. Patients with severe TBI had a longer hospital stay; 77.8% (n=7) of patients who spent more than 15 days in hospital arrived by ambulance, and most patients who arrived within an hour (less than 1 hour) post-injury had the shortest hospital stays.

## DISCUSSIONS

This hospital-based study relied on comprehensive demographic, epidemiological, management and outcome characteristics of traumatic brain injury from the INITIatE TBI database, Georgia. The present hospital-based trauma database offered the perfect springboard to study trends, patterns, and outcomes of traumatic brain injuries so as to inform effective preventive, control and treatment measures. Hence, the knowledge of

Table 1. Hospital stay length based on demographic and epidemiologic factors.

| | | 0 to 1 day | 2-7 days | 8-15 days | >15 days | Total |
|---|---|---|---|---|---|---|
| | | N (%) | N (%) | N (%) | N (%) | |
| **Gender** | **Male** | 21 (53.8) | 22 (53.7) | 3 (42.9) | 8 (88.9) | **54 (56.2)** |
| | **Female** | 18 (46.2) | 19 (46.3) | 4 (57.1) | 1 (11.1) | **42 (43.8)** |
| **Age, p value 0.2** | **0-14** | 2 (5.1) | 0 (0) | 0 (0) | 0 (0) | **2 (2.1)** |
| | **15-24** | 8 (20.5) | 9 (22.0) | 2 (28.6) | 0 (0) | **19 (19.8)** |
| | **25-44** | 14 (35.9) | 16 (39.0) | 1 (14.3) | 7 (77.8) | **38 (39.6)** |
| | **45-64** | 9 (23.1) | 11 (26.8) | 3 (42.9) | 2 (22.2) | **25 (26.0)** |
| | **65 and above** | 6 (15.4) | 5 (12.2) | 1 (14.3) | 0 (0) | **12 (12.5)** |
| **Mechanism of injury, p value 0.05** | **Fall** | 25 (64.1) | 24 (58.5) | 4 (57.1) | 1 (11.1) | **54 (56.2)** |
| | **Road Traffic Injury (RTI)** | 11 (28.2) | 14 (34.1) | 3 (42.9) | 8 (88.9) | **36 (37.5)** |
| | **Assault** | 0 (0) | 2 (4.9) | 0 (0) | 0 (0) | **2 (2.1)** |
| | **Struck by/or against** | 2 (5.1) | 1 (2.4) | 0 (0) | 0 (0) | **3 (3.1)** |
| | **Other** | 1 (2.6) | 0 (0) | 0 (0) | 0 (0) | **1 (1.0)** |
| **Mode of arrival, p value 0.05** | **Ambulance** | 24 (61.5) | 25 (61.0) | 4 (57.1) | 7 (77.8) | **60 (62.5)** |
| | **Private/public vehicle** | 10 (25.6) | 3 (7.3) | 0 (0) | 0 (0) | **13 (13.5)** |
| | **Walk-in** | 3 (7.7) | 4 (9.8) | 0 (0) | 0 (0) | **7 (7.3)** |
| | **Police** | 1 (2.6) | 0 (0) | 0 (0) | 0 (0) | **1 (1.0)** |
| | **Other** | 1 (2.6) | 9 (20.0) | 3 (42.9) | 1 (11.1) | **14 (14.6)** |
| **Time interval between time of injury and time of attendance, p value 0.00** | **Less than 1 hour** | 24 (77.4) | 15 (45.5) | 1 (20.0) | 6 (66.7) | **46 (59.0)** |
| | **1-2 hours** | 4 (12.9) | 2 (6.1) | 1 (20) | 1 (11.1) | **8 (10.3)** |
| | **More than 2 hours** | 3 (9.7) | 16 (48.5) | 3 (60) | 2 (22.2) | **15 (19.2)** |
| | | **31 (39.7)** | **33 (42.3)** | **5 (6.4)** | **9 (11.5)** | **78 (100)** |

Table 2. TBI description for different age groups.

| | | Age Groups | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | 0-14 | 15-24 | 25-44 | 45-64 | 64 and above | |
| | | N (%) | N (%) | N (%) | N (%) | N (%) | |
| **Mechanisms of injury, p value 0.00** | **Fall** | 2 (100) | 9 (47.4) | 17 (44.7) | 16 (64) | 10 (83.3) | **54 (56.2)** |
| | **Road Traffic Injury (RTI)** | 0 (0) | 10 (52.6) | 18 (47.4) | 7 (28) | 1 (8.3) | **36 (37.5)** |
| | **Other** | 0 (0) | 0 (0) | 3 (8) | 2 (8) | 1 (8) | **6 (5,3)** |
| **Injury occurrence area, p value 0.1** | **Rural** | 1 (50) | 0 (0) | 2 (5.3) | 1 (4) | 0 (0) | **4 (4.2)** |
| | **Unknown** | 0 (0) | 0 (0) | 1 (2.6) | 1 (4) | 0 (0) | **2 (2.1)** |
| | **Urban** | 1 (50) | 19 (100) | 35 (92.1) | 23 (92) | 12 (100) | **90 (93.8)** |
| | | **2 (2.1)** | **19 (19.8)** | **38 (39.6)** | **25 (26)** | **12 (12.5)** | **96 (100)** |

TBI incidence and distribution in Georgia is fundamental for the identification of high-risk groups, improved healthcare resource allocation and targeting of interventions as demonstrated

by the results of this thesis. Furthermore, such epidemiological estimates can serve as a basis for comparison and evaluation of future population based on interventions tailored for these high-risk population groups.

There were similarities in trends and patterns between TBI epidemiology in Georgia and that of other countries. The study results showed that TBIs were more over-represented in men than in women indicating an increased risk of TBI incidence for men. This might be reflective of the men's societal roles in the Georgian society where they are more likely to be in the labor force and engaged in high-risk behaviors and activities, rather than their female counterparts. Therefore, the analysis of TBI-related hospitalizations revealed that most patients suffered from mild TBIs, which is similar to the findings of studies from other countries, both in HICs and LMICs. There is an increased risk of dementia, epilepsy and death associated with TBI-related hospitalizations. As regarding the mild TBI, accounting for most TBI-related hospitalizations, these may be further associated with post-traumatic symptoms, serious impairment, long-term morbidity and disability.

The study revealed that falls are the chief mechanisms for TBI in Georgia, followed by road traffic accidents which remain the leading cause of fatal TBI. This is similar to the findings from high-income countries where majority of TBI hospitalizations were fall-related. Conversely, findings from LMICs, particularly the Asian and African countries, reveal that road traffic accidents are the leading cause of TBI. This might be as a result of on-going infrastructural developments evidenced by the construction of high-rise buildings, implementation of effective road safety strategies, improvements in road infrastructure, and other human development indicators in the upper middle-income country. Furthermore, the peak of TBI incidence occurs in much younger age groups in LMICs, aged between 28 and 33 years, as indicated by this study, unlike in HICs where the changing epidemiological pattern shows a higher TBI incidence among the elderly population which are fall-related. In light of increasing fall-related TBI incidence among young adults in Georgia, there is a need to adopt preventive strategies which focus on reducing young people's exposure to environmental hazards and other activities that expose them to risk. One of the most striking findings was the under-representation of assault or violence – related injuries in the study sample. Violence against women is prevalent in Georgia, being ranked 94$^{th}$ out of 144 countries in the global gender gap index. In Georgia's socio-cultural context, family honor supersedes individual agency as intimate partner violence is considered a family issue unsuited for outside interference or publicity. Hence, stigmatization must have accounted for the under-reporting and misclassification of violence-related TBIs among the study population. The findings showed TBI severity and time of attendance can be associated with hospital stay length and TBI outcomes. Most of cases, in whom TBI proved fatal, suffered either moderate or severe TBIs and were brought in to the hospital by ambulance more than one-hour post-injury. Delays in seeking adequate and timely care for TBIs, especially mild TBIs, persist in LMICs due to self-care treatments, limited out-of-hospital services, lack of awareness and misunderstanding of the disease process. Thus, it is crucial to raise awareness on the dangers of help-seeking delays for TBIs, as well as the provision of organized trauma protocols to facilitate quick access to trauma facilities for all trauma cases.

The clinical results showed a comprehensive CT scan conducted on all TBI patients, which is an important aspect of TBI management and care. However, 5 out of 14 TBI patients (35.7%) who had to undergo a pre-scheduled surgery, were mainly young adults with mild TBI prognosis, thus the operation was not performed This findings highlight the need for a better financial access to more fundamental aspects of TBI care and management such as surgery, in order to reduce financial barriers to adequate TBI treatment and management. Also, appropriate steps need to be taken to ensure that public health policy and clinical practice in TBI management reflects evidence-based care guidelines in research and development. Certain patients' clinical variables such as GCS score, CT scan result, intracranial pressure monitoring were associated with the hospital stay length and TBI-related outcomes. The results indicated that patients with longer hospital stay length had abnormal CT scan results, moderate or severe GCS scores, and required mechanical ventilation, anti-seizure medication and/or surgery. TBI outcomes were fatal for moderately and severely patients (GCS<10). However, mortality rate was found to be associated with increasing age. These findings are congruous

with earlier studies, where older age was found to be an independent predictor of poor hospitalization outcomes and highest case fatality rates from TBI-related hospitalizations. Therefore, highly developed systems of personalized care, from pre-hospital to post-acute care, is strongly recommended for the effective treatment and management of TBI cases in Georgia, as well as the different stages of the TBI disease process should be considered.

## CONCLUSIONS

This study offers an insight into understanding the epidemiological features of TBI in Georgia on the example of one National Medical Center, as well as spotlights the significant trends and their implications within public health practice and recommendations for targeted preventive measures, control and treatment of TBI in Georgia.

## CONFLICT OF INTERESTS

The authors report no conflicts of interest in this work.

## ETHICAL APPROVAL

Study Protocol was approved by Medical Ethics Committee of National Center of Disease Control and Public Health (N2018-055; 24.12.2018).

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# STUDY OF INJURIES EPIDEMIOLOGICAL CHARACTERISTICS IN GEORGIA ON THE EXAMPLE OF ADJARA REGION

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***Keywords:*** *injury, epidemiology, hospitalization, Adjara Region, Georgia.*

***Introduction.*** *Injury is a significant public health concern that is a leading cause of mortality and disability worldwide. Injuries have a significant financial and quality-of-life impact on persons and communities. The absence of fundamental epidemiological data on the prevalence of injuries prevents developing countries from creating effective prevention programs. The goal of this study was to characterise the epidemiological features of injury in the Adjara region.* ***Material and methods.*** *The database and source of the data that we used in this article were provided from the Georgian National Center for Disease Control and Public Health's 2019 database, which contains all hospitalizations in the Adjara area and was utilized to find trauma cases that were treated at medical facilities. Based on the ICD-10 diagnosis codes S and T, as well as V-Y, cases were chosen. Version 23.0 of SPSS was used to analyze the data.* ***Results.*** *Between the ages of 0 and 103, there were a total number of 2,239 patients, inclusive 1,321 (59%) – males, and 918 (41%) – women, who were hospitalized for treatment of an injury. The incidence was highest among those aged 65 and over (n=510; 23%), followed by those aged 20-34 (n= 488; 20%). The most prevalent cause of injury was falling (n=1,324; 59%), followed by exposure to inanimate mechanical forces (n=244; 11%). The range of hospital stays was from 1 to 3,652 days, with a median and mode of 3 and 2 days.* ***Conclusions.*** *This study provides information for public health decision-making. In order to enhance the standard of treatment and focus efforts on avoiding more injuries, intervention strategies may be devised using our data to understand better the extent of the injuries and outcomes linked to traumatic injury hospitalizations.*

***Cuvinte cheie:*** *leziuni, epidemiologie, spitalizare, Regiunea Adjara, Georgia.*

**STUDIUL CARACTERISTICILOR EPIDEMIOLOGICE ALE LEZIUNILOR DIN GEORGIA AVÂND CA EXEMPLU REGIUNEA ADJARA**

***Introducere****. Leziunea reprezintă o problemă semnificativă de sănătate publică, fiind o cauză principală de mortalitate și dizabilitate la nivel mondial. Leziunile au un impact financiar semnificativ asupra calității vieții atât a persoanelor, cât și a comunităților. Absența datelor epidemiologice fundamentale privind prevalența leziunilor împiedică țările în curs de dezvoltare să creeze programe eficiente de prevenire. Scopul acestui studiu a fost de a descrie caracteristicile epidemiologice ale leziunilor din regiunea Adjara.* ***Material și metode.*** *Datele pentru anul 2019, folosite în acest articol, au fost furnizate de către Baza de date a Centrului Național Georgian pentru Controlul Bolilor și de Sănătate Publică. Acest centru înregistrează toate spitalizările din zona Adjara. Baza de date a fost utilizată pentru a selecta cazurile de traumă care au fost tratate la unitățile medicale. Prin intermediul Clasificatorului Internațional al Maladiilor – 10, cazurile au fost alese pe baza codurilor de diagnostic S, T și V-Y. Pentru analiza datelor a fost utilizată Versiunea 23.0 a SPSS.* ***Rezultate.*** *A existat un număr total de 2239 de pacienți, inclusiv 1321 (59%) – bărbați, 918 (41%) – femei, cu vârsta între 0 și 103 ani, care au fost internați pentru tratamentul unei răni/leziuni. Incidența a prevalat în rândul celor cu vârsta de 65 de ani și peste (n=510; 23%), fiind urmați de cei cu vârsta între 20 și 34 de ani (n=488; 20%). Cea mai răspândită cauză a leziunilor a fost căderea (n=1324; 59%), urmată de expunerea la forțe mecanice neînsuflețite (n=244; 11%). Intervalul de spitalizare a fost de la 1 la 3652 zile, cu o medie de 3 și 2 zile.* ***Concluzii.*** *Studiul oferă informații pentru luarea deciziilor în domeniul sănătății publice. Pentru a îmbunătăți standardul de tratament și pentru a concentra eforturile de evitare a mai multor răni, pot fi concepute strategii de intervenție aplicând datele obținute, care contribuie la o evaluare mai exactă a gravității leziunilor traumatice și, implicit, a rezultatelor preconizate a fi obținute în urma spitalizării.*

## INTRODUCTION

Georgia ranks fourth for fatalities due to injuries. Traffic-related injuries have a prominent position in the hierarchy of all injuries. The high number of fatalities and injuries on Georgia's roads is a serious concern (1). Several organizations in Georgia, including the National Statistics Office, the Ministry of Labour Health and Social Affairs, the National Centre for Disease Control and Public Health, the Emergency Medical Service of Georgia, and the Ministry of Internal Affairs of Georgia are responsible for compiling data on the number of fatalities and injuries that occur as a result of accidents and acts of violence in the country. The number of new cases was 7,384. In 2017, there was no significant change in prevalence and incidence in the regional distribution of "Some Other Impacts of Injuries, Poisoning and External Causes", except for Adjara and Samegrelo-Zemo Svaneti. In contrast, in 2017, there was a sharp decline compared to the previous year. According to a report submitted to the NCDC in 2017, 24,527 patients were hospitalized in Georgian hospital service facilities due to “some other effects of injuries, poisoning and external causes”. Structural analysis of the causes of injuries to hospitalized patients in 2017 revealed a 65% (14,680) fall in incidence, 14% (3,107) road accidents, burns and electric shock, and 9 (0.03%) accidental poisoning, 6 (0.02%) is due to suffocation/cessation of breathing, and 6.9% is due to other external cause. In 2017, Tbilisi was the leader in the regional distribution of hospitalized patients due to "some other effects of trauma, poisoning and external causes". I.e., Most of the injured as a result of external causes 51% - receive inpatient treatment in Tbilisi, 16% - in Imereti, 10% - in Adjara, 6.5% - in Kakheti, etc. (2).

In Georgia, as in other low- and middle-income countries, the most vulnerable group of road users are pedestrians (especially children and the elderly) and passengers of cars. Among the patients hospitalized due to a car accident in 2017, pedestrians and passenger cars are the leaders in all age categories. The number of deaths due to traffic accidents in Georgia has been decreasing from 2008 to 2014; however, in 2015, the rate increased by almost 18% compared to 2014, and in 2016 the tendency decreased again and in 2017, compared to 2016, the rate decreased by 12%. This positive dynamic is probably due to the legislative changes in the field of road safety in 2016, namely: the so-called roads. Neutralising "black spots", introducing a points system, the leading causes of road accidents and deaths - incorrect manoeuvring, speeding, driving under the influence of alcohol, tightening administration, contactless patrolling, etc. (1). Due to the fact that previous research of a comparable nature had not been carried out in the Adjara region, *the primary objective* of our study was to investigate and describe the characteristics of injury, the types of injury, and the consequences of injury in the Adjara region in order to gain an understanding of the appropriate path to take when planning preventive measures. As a result, the research offered decision-makers and other stakeholders’ access to baseline data, which will be of assistance in the development of future research, policy, and funding agendas.

## MATERIAL AND METHODS

The injured patients who were admitted to private and public hospitals in the Adjara region between the ages of 0-65 underwent a retrospective, descriptive examination by the researchers. Hospitals in the Autonomous Republic of Adjara, Georgia's political and administrative region, provided the data. The research was conducted between January 1 and December 31, 2019. The official National Center for Disease Control and Public Health database in Georgia served as the source of the data used in this article (NCDC). The kind of injury was recognized using class XX and the ICD-10 categories were identified using class XIX (S and T codes) (V-Y codes). A class XX code defining the source of the damage is appended to a class XIX code describing the kind of injury in the National database. Injuries to the head, upper extremities, lower extremities, thorax and neck, abdomen, lower back, lumbar spine and pelvis, and other/unspecified were divided into six groups based on their anatomical position. Length of stay (LOS) for hospitalizations was split into two categories: short LOS (1-3 days) and protracted LOS (more than 3 days). For statistical data analysis, version 23.0 of the SPSS program was utilized. The features of the injured individual and the injury were studied. Pearson's chi-square test was used to categorical data to evaluate if there is a statistically significant difference between variables. The duration of stay variable was dichotomized into three days and less than three days. The whole model includes demographic and clinically important patient information, such as the affected body area and kind of injury. In the final model, only variables with p-values of 0.05 were preserved. Statistical significance was considered for $p<0.05$.

## RESULTS

During the research period, a total of 2,239 hospitalizations due to injuries were recorded. Males made up 59% (1,321) of patients, while females made up 41% (918), a ratio for a male to female of 1.4:1. Patients varied in age from 0 to 103 years, with a median and mean of 43 years. The age group with the largest proportion of patients was 65+ years, which accounted for 510 (22.8%) patients, followed by 15-29 years with 446 (19.9%) patients and 30-44 years with 431 (19.2%) patients.

The most frequent form of arrival to the hospital was emergency medical services (EMS) (56.6%), followed by private/public transport (42.2%), and then a referral from a medical institution (1.2%). Patients over the age of 65 constituted 30% of those evacuated by EMS, while those aged 20 to 34 constituted 22%. Patients arriving by private/public transport mainly were aged 0 to 19 years (26.1%). Unintentional injuries were reported for 80% of all injury-related hospital admissions, and they led in all age categories. Undetermined intent and other injuries occurred in 19% of the cases. Intentional injury was recorded in 1.3% of patients. There were 28 fatalities that took place among the injured people who were hospitalized. The remaining 2063 patients were discharged after receiving treatment (tab. 1).

Table 1. Characteristics of the population according to age group.

| Characteristics of the population | Age group | | | | | | p - value |
|---|---|---|---|---|---|---|---|
| | 0-19 | 20-34 | 35-49 | 50-64 | 65+ | **Total** | |
| | N (%) | N (%) | N (%) | N (%) | N (%) | **N (%)** | |
| **Gender** | | | | | | | |
| Male | 279 (71) | 343 (70) | 280 (67) | 231(54) | 188 (37) | **1321(59)** | **<0.001** |
| Female | 113 (29) | 145 (30) | 138 (33) | 200 (46) | 322 (63) | **918 (41)** | |
| **Mode of arrival** | | | | | | | |
| Walk-in | 247 (63) | 206 (42) | 173 (41) | 156 (36) | 163 (32) | **945 (42)** | |
| Referral from a medical facility | 10 (3) | 4 (1) | 4 (1) | 3 (1) | 5 (1) | **26 (1)** | **<0.001** |
| Emergency medical service | 135 (34) | 278 (57) | 241(58) | 272 (63) | 342 (67) | **1268 (57)** | |
| **Length of stay** | | | | | | | |
| 1-3 days | 210 (54) | 379 (78) | 291 (70) | 264 (61) | 208 (41) | **1352 (60)** | **<0.001** |
| 4 and more days | 182 (46) | 109 (22) | 127 (30) | 167 (39) | 302 (59) | **887 (40)** | |
| **Intent** | | | | | | | |
| Unintentional | 374 (95) | 382 (78) | 320 (77) | 314 (73) | 402 (78.8) | **1792 (80)** | |
| Assault | 0 | 15 (3) | 6 (1) | 5 (1) | 2 (0.5) | **28 (1)** | **<0.001** |
| Undetermined intent and other | 18 (5) | 91 (19) | 92 (22) | 112 (26) | 106 (20.7) | **419 (19)** | |
| **Outcome** | | | | | | | |
| Completed treatment | 346 (88) | 456 (93) | 396 (95) | 410 (95) | 455 (89) | **2063 (92)** | |
| Referral | 44 (11) | 28 (6) | 13 (3) | 19 (4) | 34 (7) | **138 (6)** | |
| Death | 0 | 1 (0.2) | 7 (1.7) | 2 (1) | 18 (3.5) | **28 (1.2)** | **<0.001** |
| Discontinued treatment | 2 (1) | 3 (0.8) | 2 (0.3) | 0 | 3 (0.5) | **10 (0.8)** | |

The most common mechanism of injury across all age groups was falling (n=1,324, 59%), followed by exposure to inanimate mechanical forces (n=244, 11%), and road traffic injuries (n=161, 7%) (tab. 2). The 65+ age group had the most falls (n=348, 68%), followed by the 20-34 age group (n=238, 49%), and the 50-64 age group (n=235, 55%). Falls were the major cause of injury-related hospitalizations in both men (n=760, 58%) and women (n=564, 61%).

Road traffic injuries (RTI) were among the third mechanisms of harm for all age groups, with mechanical forces coming in second. Nonetheless, these processes differed across groups depending on the age of the hospitalized patients. Following falls, the most common mechanisms for hospita-

lization for patients 0-19 years old were exposure to mechanical forces (n=39, 10%) and road traffic injuries (n=21, 5%); for patients 20-34 years old, the order was exposure to mechanical forces (n=81, 17%) and road traffic injuries (n=49, 10%); and for those aged 35-49 years old, the order was exposure to mechanical forces (n=56, 13%) and road traffic injuries (n=49, 10%). The order was exposure to mechanical forces (n=28, 5%) and road traffic injuries (n=12, 2%) for the geriatric age group, 65 years and older. Patients admitted to hospitals due to transportation injuries were mostly male, with a sex ratio of 1.55:1. Mechanical force exposure disproportionately harmed men, with a sex ratio of 2.2:1. The majority of instances (n=244, 11%) were caused by inanimate mechanical forces. The most frequent body areas injured were the head, lower limbs, and upper extremities, accounting for 45% (n=1,009), 20% (n=455), and 18% (401) of cases, respectively. However, among male patients, the most prevalent injury site was the head (n=583, 44%), followed by upper extremity (n=278, 21%) and lower extremity (n=236, 17%) injuries. The most prevalent injury site in females was the head (n=426, 46%), followed by the lower extremities (n=261, 28%) and the upper extremities (n=123, 13%). In terms of injured body region ratios, there were various disparities across patient age groups. The percentage of head injuries varied by age (20-34, 29 percent; 35-49, 21 percent; 50-46, 18 percent; 65+, 16 percent; 0-19, 16 percent). The proportion of patients who sustained injuries to their lower extremities ranged from 4% in the youngest group of patients up to 48% in the oldest group of patients who were 65 or older (0-19 years old: 4%; 20-34 years old: 11%; 35-49 years old: 14%; 50-64 years old: 20%; 65+ years old: 48%).

The average length of stay in the hospital was three days. Generally, 60% (n=1 352) of all injured patients were treated for three days or fewer. The oldest age category (65+) had the largest percentage of individuals spending four days or more (n=302, 59%) compared to those staying three days or less (n=208, 41%). Age groups 15-29 had the biggest percentage of individuals staying for three days or fewer (n=379, 78%). Depending on the age group, there were variances in the longer LOS between men and females. LOS in females varied by age group: 0-19 years 68%, equivalent to or less than three days, 20-34 years 83%, 35-49 years 77%, 50-64 years 66%, and 65+ years 39%. LOS for men ranged from 48% for those ages 0 to 19, 75% for those ages 20 to 34, 66% for those ages 35 to 49, 57% for those 50 to 64, and 44% for those 65 and beyond (tab. 2). LOS equal to or less than three days was 55% in fall-related patients, exposure to inanimate mechanical forces 75%, and transport accidents 62%. Injuries to the head, upper extremities, low extremities, unspecified, thorax/neck and abdomen, lower back, lumbar spine and pelvis required length of stay equal to or less than three days, with 61%, 16%, 10%, 9%, 3%, 2% accordingly.

## DISCUSSIONS

The Adjara region's 2019 injury hospitalisations were all analysed. According to the findings, men make up the vast majority of the injured patients, and those aged 65 and over had the most injuries. The variety of exposures, behavioural tendencies, and environmental risks that vary by age and gender may cause this prevalence. In our research, it was not able to determine these distinct causative elements. Previous research has demonstrated a higher rate of injuries in men than in women (3, 4). In our analysis, the most prevalent form of admission to the hospital was by emergency medical services, and the majority of patients were 65 or older. This result is probably attributable to the fact that emergency medical assistance in Georgia is provided free of charge, and calls to the Emergency Response Center, which the general public can reach by dialling the national number „112" are also provided free of charge from any fixed-line or mobile network in the country.

The majority of injuries were caused by falls, and the percentage of elderly patients with falls was much greater than in other age groups. These findings are consistent with earlier publications (5). These results align with earlier research and are probably caused by concomitant disorders like osteoporosis and the functional effect of ageing on physical endurance (5, 6). Our data also emphasises that a significant portion is related to road traffic injuries. RTI has been found to be one of the causes of injury. Unsurprisingly, road traffic injuries could be frequent because of the chance of situations when there are more chances for disputes between road users, such as when a car changes lanes or comes from behind, or when it is approaching an intersection or a roundabout (6). One of the causes of the rising number of traffic injuries in other LMICs is the expansion of the transportation infrastructure.

Table 2. Length of hospital stay.

| Variables | Length of stay | | |
|---|---|---|---|
| | ≤3 days (*n* = 1,352) | >3 days (*n*=887) | **p - value** |
| **Age** | | | |
| 0-19 | 210 (16) | 182 (21) | <0.001 |
| 20-34 | 379 (28) | 109 (12) | |
| 35-49 | 291 (22) | 127 (14) | |
| 50-64 | 264 (20) | 167 (19) | |
| 65+ | 208 (15) | 302 (34) | |
| **Gender** | | | |
| Male | 792 (59) | 529 (60) | <0.001 |
| Female | 560 (41) | 358 (40) | |
| **Mechanism of injury** | | | |
| Transport accidents | 100 (7) | 61 (7) | <0.001 |
| Fall | 722 (53) | 602 (68) | |
| Exposure to inanimate mechanical forces | 184 (14) | 60 (7) | |
| Assault | 21 (2) | 7 (1) | |
| Undetermined intent and other | 274 (20) | 145 (16) | |
| Unspecified | 51 (4) | 12 (1) | |
| **Injured body region** | | | |
| Injuries to the head (S00-S09) | 818 (61) | 191 (22) | <0.001 |
| Lower extremities (S70-S99) | 131 (10) | 365 (41) | |
| Upper extremities (S40-S69) | 211 (16) | 190 (21) | |
| Thorax/neck (S10-S29) | 43 (3) | 60 (7) | |
| Abdomen, lower back, lumbar spine and pelvis(S30-S39) | 26 (2) | 40 (5) | |
| Unspecified | 123 (9) | 41 (5) | |
| **Outcome** | | | |
| Completed treatment | 1,199 (88) | 864 (97) | <0.001 |
| Referral | 134 (10) | 4 (1) | |
| Death | 12 (1) | 16 (1.8) | |
| Discontinued treatment | 7 (1) | 3 (0.3) | |

The majority of injuries were to the head, based on the body region. Thousands of hospitalisations per year and billions of dollars in healthcare costs are attributed to head trauma, a severe public health issue. The whole direct and indirect costs of head injuries to society are the greatest in the United States alone, where it is the commanding cause of mortality and morbidity in people under the age of 44. According to scientific literature as well as research, patients who have head injuries are often seen in the emergency department. In addition, data demonstrate that head injuries represent the entire direct and indirect costs to society (7). As a result of TBI, more than 5 million Americans already experience long-term impairment, and more than 1.5 million people experience a new TBI every year (8). According to the outcomes of head injury, men predominate in general. This preponderance is likely caused by biological causes and gender-specific societal variations in activity and risk-taking. Although it was not feasible to identify these criteria for this study, it could be helpful in the future. The descriptive research in Iran reveals comparable results (6). According to the present study's results, the average duration of hospital stay was three days or fewer. This rate varied according to gender, age, injury mode, and injured body location. In men, the LOS rate is equivalent to or fewer than three days, which is more than another variable. Other research found similar results (9). However, there were differences in the longer length

of hospital Stay between males and females depending on the age group (7, 10, 11, 12). In addition, due to disparities in trauma care delivery systems and injury patterns, it is challenging to compare LOS across nations, and comparing our findings with those of other research reveals inconsistent findings (10).

## CONCLUSIONS

1. Despite these limitations, the study provides valuable information for public health decision -making, and the results of our research offer background data on hospitalizations for traumatic injury; also, it is the first study of its kind in the Adjara region, providing such type of information. In order to enhance the standard of treatment and focus efforts on avoiding more injuries, intervention strategies may be devised using our data to understand better the extent of the injuries and outcomes linked to traumatic injury hospitalizations.
2. Although these statistics can help determine which preventative strategies should be prioritized.

## CONFLICT OF INTERESTS

The authors report no conflicts of interest in this work.

## ETHICAL APPROVAL

Study Protocol was approved by Medical Ethics Committee of National Center of Disease Control and Public Health (N2022-034; 11.04.2022).

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# VIOLENCE AGAINST AMBULANCE WORKERS: COMPARATIVE STUDY OF THE STATIONS OF YEREVAN AND GYUMRI

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***Keywords:*** *violence, emotional suppression, emotional and physical manifestations, perception of violence.*

***Introduction.*** *According to the World Health Organization (WHO), violence is widespread in the world, about 1 million people dying from various forms of violence each year. Currently, violence in the workplace is increasing, especially in emergency department against medical personal. Purpose of the research: to study the perception of violence by medical workers in ambulance stations in the cities of Yerevan and Gyumri, to identify the types, causes and qualitative characteristics of the prevalence of violence against medical ambulance workers. Give a comparative description of the violence situation in Yerevan and Gyumri stations.*

***Material and methods.*** *Qualitative research was carried out among the medical staff of emergency stations of Yerevan and Gyumri cities using the in-depth interview method in 2021. The tool was the guide, the total number of participants was 61.*

***Results.*** *The survey found that violence against emergency workers was common: 42 out of the 61 participants reported about lifetime experience of any type of violent behavior of patients or their relatives. Among the types of violence, physical and psychological were mentioned most often.*

***Conclusions.*** *Violence is a common, frequent occurrence in the emergency department. Emergency medical personnel primarily perceive violence in its psychological and physical manifestations. Among the reasons are, in particular, the apparent delays of the emergency personnel, the nervous and mental overstrain of the abusers, and the use of alcohol.*

***Cuvinte cheie:*** *violență, suprimare emoțională, manifestări emoționale și fizice, percepția violenței.*

**VIOLENȚA ÎMPOTRIVA PERSONALULUI MEDICAL DE PE AMBULANȚĂ: STUDIU COMPARATIV AL STAȚIILOR DIN EREVAN ŞI GYUMRI**

***Introducere****. Potrivit Organizației Mondiale a Sănătății, violența este larg răspândită în lume, aproximativ 1 milion de oameni mor în fiecare an, din cauza diferitelor forme de violență. În prezent, violența la locul de muncă este un fenomen în creștere. Acest lucru este deosebit de evident în special în secțiile de urgență, unde violența împotriva personalului medical a devenit un fapt comun. Scopul cercetării: studierea percepției violenței de către lucrătorii medicali din stațiile de ambulanță din orașele Erevan și Gyumri, identificarea tipurilor, cauzelor și caracteristicilor calitative ale prevalenței violenței împotriva lucrătorilor medicali de pe ambulanță. Se oferă o descriere comparativă a situației despre violența din stațiile din Erevan și din Gyumri.*

***Material si metode.*** *Cercetarea calitativă a fost efectuată în rândul personalului medical al stațiilor de urgență din orașele Erevan și Gyumri folosindu-se metoda interviului aprofundat în 2021. Ca instrument a servit ghidul, lotul de participanți a fost constituit din 61 de respondenți.*

***Rezultate.*** *Sondajul a constatat că violența manifestată împotriva lucrătorilor din sfera serviciilor medicale de urgență a fost comună: 42 dintre cei 61 de participanți au raportat despre experiența de viață a oricărui tip de comportament violent al pacienților sau al rudelor acestora. Dintre tipurile de violență, cel mai des menționate au fost cele fizice și psihologice.*

***Concluzii.*** *Violența este un incident comun, cu care se confruntă frecvent personalul medical în unitățile de urgență. Personalul medical de urgență percepe violența, în primul rând, prin manifestările ei psihologice și fizice. Printre motivele declanșatoare ale actelor de violență se numără, în special, suspectarea personalului de urgență de o intervenție voit întârziată, suprasolicitarea nervoasă și psihică a agresorilor și consumul de alcool.*

## INTRODUCTION

Various manifestations of violence have always existed in human history. According to the WHO, about 1 million people die from violence each year and many are injured to varying degrees (1).

Violence is one of the leading causes of death among adults. It also overburdens the health care system, diverting financial resources to support and restore the lives of people who have been abused (2).

Wars, terrorism, riots, domestic and sexual violence are the most frequently spoken forms of violence in the mass media (3). And labor violence, especially against doctors, remains unnoticed by the public (4). Various manifestations of violence have been reinforced in the socio-cultural life of many countries. In the majority of cases the victims of violence are young, weak and unable to defend themselves (2).

Today, humanity must deny and exclude the manifestations of violence based on the ideas of humanism, the moral value systems of humanity. Religion, philosophy, human rights, communal-life systems prevent the use and spread of violence by complementing each other, but none of them completely solves the issue of violence (5).

Nowadays, incidents of violence are a frequent occurrence in the workplace, especially in the emergency service. Doctors, nurses, paramedics, and drivers are subjected to violence (6).

2018 In Italy, 70.6% of medical workers were subjected to verbal violence, 60.2% to psychological violence, 31.2% to physical violence (7).

A 2018 study by the Emergency Medicine Institute of America found that 47% of physicians surveyed had experienced physical abuse (8).

The Australian Emergency Medicine Science Direct reports that the incidence of violence among emergency medical workers is high, reaching up to 60-90% (9).

A 2015 survey of emergency workers at the Mayo Clinic in Rochester, Minnesota, USA and published in The Permanente Journal found that 55.8% of workers view violence as part of their job (6).

This phenomenon is a serious problem for health care, because as a result of violence, moral and psychological damage is caused, the daily work of the doctor is affected, the doctor-patient relationship is violated, as a result, both the doctor and the medical care can be affected. Provision of safe working conditions for the doctor is also violated, which requires the training of the medical staff and the formation of a critical attitude towards violence (6).

However, assessing the scale of the problem is difficult because information on incidents of violence against health workers is even more limited (10).

Among the growing expressions of violence, in contrast to domestic and sexual violence, which are more talked about because they are more visible, aggression and violence against doctors and health care workers still remain an unknown and unspoken issue for many people (11).

Data from the European Organization for Occupational Safety and Health document that health care is the most common area of workplace violence (12).

The most frequent manifestations of violence against emergency medical personnel are psychological and physical types of violence (10).

Violence not only disrupts the normal rhythm of work, as a result of which health care delivery and doctor-patient, nurse-paramedics-patient relationships are affected, it also carries great risks. Consequences of violence acts against emergency medical workers causes work and psychological stress mechanisms among emergency medical workers, which have a serious impact on the human body and nervous system and causes the pathological condition. In emergency medical personnel perceive violence an integral part of the job (10).

In Italy in 2019, it was found that psychological and emotional violence is more common during the provision of emergency medical care (10).

Violence at the workplace can be considered a single case or small episodes of regularly repeated expressions of violence, which can cause serious damage to the physical and mental health of the healthcare worker. All of these are important occupational risk factors for emergency medical personnel (13, 14).

However, the volumes of expression and display of violence are increasing, especially towards

nurses, and the data for a summary assessment of the prevalence of this problem are not sufficient (15).

Doctors have an important role in the health care system to maintain and ensure public health. Violence against them is a serious problem not only for the individual doctor, but also for the organization and management of the work of the entire system and the creation of safe working conditions for doctors. Therefore, understanding the prevalence of violence and its causes is a critical health issue (16).

Violence is difficult to study also because different tools have been developed to characterize violence in the workplace, they are diverse and comparing with each other is problematic.

The instigator of violence is most often the patients, relatives and visitors of the patient.

Emotional abuse, physical violence, and sexual assault are common forms of violence. The term emotional abuse refers to psychological abuse, verbal rather than physical. Although physical violence has always been more visible, the prevalence of psychological violence has always been underestimated and only recently received due attention (10).

Research conducted in recent years confirms that violence by patients and their relatives is increasing. On the other hand, the lack of research and the incompleteness of information make it difficult to identify the true prevalence of violence. New scientific research directed at the given problem will create radical schemes of system solution (10).

The expression of violence is due to various reasons, both personal and situational factors (12).

Violence against emergency medical personnel by patients and their relatives and visitors is a common problem in both developed and developing countries (10). There are no clear statistics and statistical reliable data on this issue in Republic of Armenia (16).

*Purpose of the research:* to study the perception of violence by medical workers in ambulance stations in the cities of Yerevan and Gyumri, to identify the types, causes and qualitative characteristics of the prevalence of violence against medical ambulance workers. Give a comparative description of the violence situation in Yerevan and Gyumri stations.

*Hypothesis of the research: v*iolence against RA emergency medical workers is a widespread phenomenon. Psychological violence against emergency medical workers is the most common. There may be a difference between the manifestations of violence against emergency medical workers in Yerevan and Gyumri.

*Objectives:* Disclosing perceptions of violence by medical personnel. Refinement of the qualitative assessment of the prevalence of violence against medical personnel. Revealing the motives of the used violence. Analysis of differences between cases of violence against ambulance staff in Yerevan and Gyumri.

## MATERIAL AND METHODS

Qualitative research was carried out using the in-depth interview method among the medical staff of emergency stations in Yerevan and Gyumri in 2021. The cities of Yerevan and Gyumri were chosen for the research, because they are the two largest cities of RA in terms of population and size, and they are also the only ones where separate emergency stations operate. In all other regions and centers of regions there are no separate stations, they operate as a separate emergency department within other medical facilities.

The research was conducted in Yerevan city emergency number 1 central station and the only station in Gyumri city of Shirak region. Visits were made to the emergency stations of the mentioned cities over several days in order to include the medical staff working in shifts at the stations on different days.

The interview had a tendency to find out the attitude of emergency medical staff to violence, what kind of violence they were subjected to, for what reasons, and to understand the qualitative characteristics of its frequency. Thus, the study sought to cover two different cities of RA, to study the structure of violence, the qualitative characteristics of its prevalence in most cases, and also to highlight the reasons that may also differ by city, which may be due to the mentality, character and different habits of expression of the population.

The research was attended by senior, middle, and junior medical workers working in emergency stations: doctors, nurses, paramedics, drivers.

The audio-recorded interviews of the partici

pants were entered verbatim into MS Word, then transferred to MS Excel, through which keyword searches and inductive narrative analysis were performed. Clarification of common patterns of opinions as well as divergent opinions was done.

Table 1. Basic in-depth interview guides.

| | **Violence against ambulance workers. Comparative study of the stations of Yerevan and Gyumri** |
|---|---|
| **1** | What is violence in your work by your opinion and what are its manifestations? |
| **2** | What categories of workers do you believe are subjected to violence? What examples of violence against medical personnel can you provide us with? |
| **3** | What cases can you mention during your ambulance medical practice, what do you think were the reasons, What situation were they in?<br>*Or/*Can you provide some violence examples from your ambulance medical practice? How did these incident happen? |
| **4** | And who were the main instigators of the accident? |
| **5** | Do you think there is a connection between the severity of the patient's condition and the 'violence exerted by the patient or his relatives'?<br>*Or/*What types of situations do you think increase the risk for violence? What types of situations related to the patient? The community/environment? |
| **6** | What do you think is the cause of violence against doctors, distrust of the doctor, low level of education, lack of culture of managing emotions, etc.? |
| **7** | How is this phenomenon perceived by the population? Did the residents come to help? Can you provide some examples? |
| **8** | What are some of your ideas about how to reduce violence against ambulance medical staff? |

## RESULTS

Thus, the research produced the following results.

The majority of respondents perceived violence as an oppressive action directed against a person's will, rights, and desires.

“Violence is any action against a person's will and can be manifested in any situation and in any issue, in any field”.

A doctor at the central emergency station of Yerevan “Violence is the phenomenon of taking hold of a person's moral and psychological will, it is not only physical, psychological is also violence”.

- Nurse at Gyumri emergency station.

As a manifestation of violence, the majority of participants mentioned verbal, loud expression, pressure, beating, speak obscene words, violent acts especially against the will, rights, desire, application of force, coercion using the appropriate words.

Fewer participants mentioned the words push, pull, tie, hit, disrespect, attitude, torture, accuse, torment, threaten. There have also been unique and divergent opinions.

„And the psychological, it can be from the state of mind, from the mood, from the behavior, from the look, it is expressed from getting into contact, it can also be from the aura".

Driver of Gyumri emergency station 41 out of 61 survey participants mentioned physical violence as a type of violence. 33 of those who identified this form of violence as a type also mentioned psychological violence. Other participants mentioned different keywords related to violence, but did not use the words physical and psychological. (fig. 1).

Among the different ideas voiced as a manifestation or type of violence was the idea of violence against doctor’s rights, one participant noted.

“Violence against doctor’s rights is when you go to call, they say you are a doctor, you have to...”.

- Doctor of the central emergency station of Yerevan.

In the course of the question, such an opinion was encountered several times that an emergency doctor is more vulnerable than a doctor in a hospital.

“I don't forget the incident when we went, he greeted the doctor with curses, grabbed his hair and lifted him up. The patient was hysterical, neu

rotic, during that time the doctor said, I'm very bad, I called and asked for a second car, but by the time it arrived, he (the doctor) was already died".

- Nurse at Gyumri emergency station.

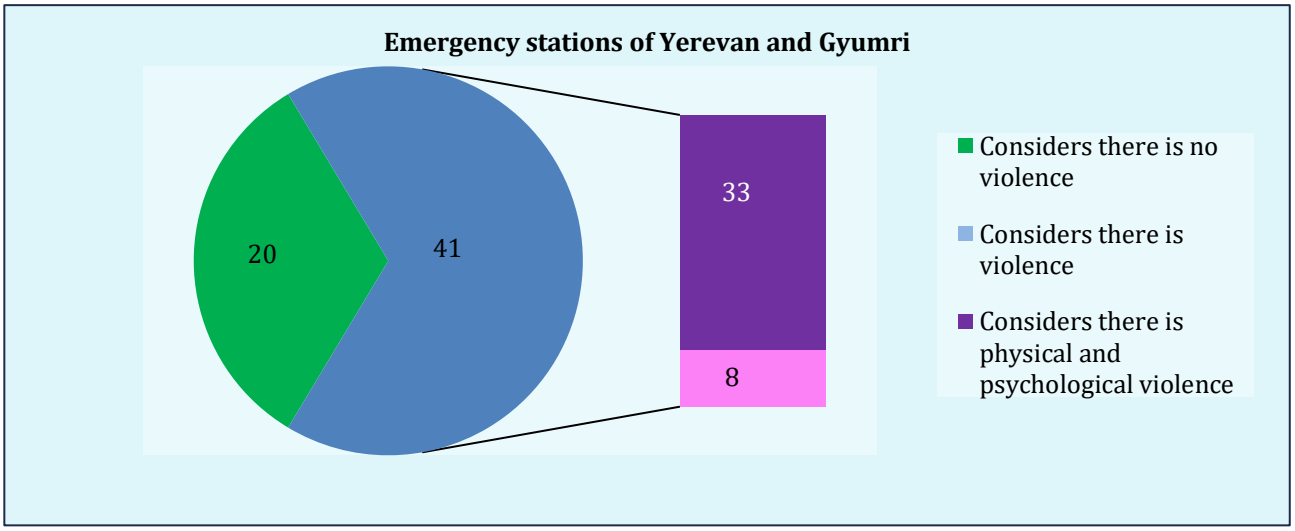


Figure 1. Perception of violence by the medical staff of Yerevan and Gyumri emergency stations, RA, 2021.

## DISCUSSIONS

Interpreting the answers, it follows that the medical staff mainly perceives violence and considers it as an unacceptable act by individuals or groups of people against other people. The perception of violence among the majority of participants is associated with actions of oppressing, grabbing, causing harm, and humiliating people. Medical workers understand violence as a negative phenomenon and criticize its use.

Medical workers consider physical and psychological types of violence. According to 67% of the participants (41 out of 61 participants) there is physical violence in the ambulance, and 54% (33 out of 61 participants) believe that there is both physical and psychological violence. This phenomenon probably stems from the fact that the medical staff mostly encounters these manifestations in their work practice. Physical violence is considered to be beating, pushing, hitting, pulling, and psychological violence is verbal insulting, humiliating, speaking loudly, shouting, cursing, etc.

A number of participants described acts of violence against themselves, but did not qualify as violence. This phenomenon may be related to the fact that they probably hide the violence against them, especially the psychological one, or that they do not really perceive these manifestations as violence, or that they witness these cases so often that it seems to be a common occurrence.

In response to the questions, sexual violence was never mentioned as a type of violence or a form of expression.

Summarizing the answers, 42 out of 61 participants consider violence against emergency medical personnel to be common, which is 68.8 percent of the respondents. Therefore, a qualitative assessment of the prevalence of violence can be given: violence is a common phenomenon among emergency personnel of Yerevan and Gyumri stations.

Most of the cases of violence occurred due to emotional stress of the patients or their relatives.

Many of the participants believed that there was a connection between the severity of the patient's condition and the violence that was displayed.

Physical violence against the medical workers of Gyumri emergency station is more common, and psychological violence is more common against the staff of Yerevan Emergency Medical Service. The reason for this phenomenon can be the bad socio-economic situation, mentality, behavioral habits, or the fact that Gyumri's emergency medical staff does not perceive psychological violence as violence.

## CONCLUSIONS

1. Thus, the research concludes. Violence against emergency medical personnel is common. The most common forms of violence are physical and psychological manifestations.
2. The causes of violence against emergency medical personnel are the apparent delays of emergency teams, alcohol intoxication of patients or relatives, unhealthy, unbalanced state of mind, nervous tension, mistrust of the doctor, poor socio-economic status of patients, low educational level, lack of emotion management culture.
3. The violence against the medical staff of emergency stations in Yerevan and Gyumri cities differs according to the types of manifestation.
4. Cases of physical violence against the medical staff of the emergency station in Gyumri prevail, and psychological violence against the emergency staff of Yerevan prevails.

## CONFLICT OF INTERESTS

Authors do not declare the conflict of interests.

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## ETHICAL APPROVAL

The positive answer of the Ethics Committee was confirmed according to the conclusion No. 8, 02.07.2020 of the Ethics Committee of Yerevan State Medical University.

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# ROAD SAFETY KNOWLEDGE AND ATTITUDES AMONG DRIVERS

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***Keywords:*** *drivers, road safety, road traffic injuries, risk factors.*

***Introduction.*** *Road traffic injuries are a significant issue for society in the twenty-first century, but public health experts frequently ignore them despite the fact that massive and coordinated efforts are required for their effective and long-term prevention. Human factors and poor driving performance are the most significant contributors to car accidents globally, as shown by a series of studies exploring the causes of traffic road accidents. Since road safety is a key concern in developing countries, our research focuses on the car driver behavioral risk factors in the Republic of Moldova.*

***Material and methods.*** *A cross-sectional quantitative descriptive using a questionnaire was applied online via a Google form document among car drivers, between January-March 2022. Microsoft Excel was used for the statistical analyses.*

***Results.*** *The questionnaire was completed by 257 respondents above 18 years, of which 61.9% were female and 38.1% were male, mostly with a category B license (73.5%) and majority from urban area (87.5%). More than half (55.6%) mention that drove a car daily and 30% of them have a drive experience of more than ten years. Respondents express great concern (71.2%) about the issue of traffic accidents, and 76.3% think that unsafe roads are a key contributing factor. At least once being involved as a driver in road accidents where medical care was needed was mentioned by 2.7% of respondents.*

***Conclusions.*** *Educational programs and awareness campaigns about road safety among drivers and other vulnerable road users should be systematically organized.*

***Cuvinte cheie:*** *şoferi, siguranţă rutieră, traume rutiere, factori de risc.*

**CUNOŞTINŢELE ŞI ATITUDINEA ŞOFERILOR PRIVIND SIGURANŢA RUTIERĂ**

***Introducere.*** *Traumatismele rutiere reprezintă o problemă semnificativă pentru întreaga societate în secolul XXI, problemă ignorată deseori de experţii în sănătate publică, în ciuda faptului că eforturi comune, eficiente de coordonare sunt necesare pentru prevenirea acestora pe termen lung. Factorii umani şi performanţa slabă de conducere a unei maşini sunt cei mai importanţi factori care contribuie la accidentele rutiere la nivel global, potrivit mai multor studii cu privire la cauzele accidentelor rutiere. Deoarece siguranţa rutieră constituie o preocupare cheie în ţările în curs de dezvoltare, cercetarea noastră se concentrează pe studierea factorilor de risc comportamental în rândul şoferilor din Republica Moldova.*

***Material şi metode.*** *Un studiu transversal, descriptiv, cantitativ a fost efectuat în perioada ianuarie- martie 2022, prin aplicarea online a unui chestionar creat prin instrumentul Google Forms în rândul şoferilor. Microsoft Excel a fost utilizat pentru analiza statistică a datelor.*

***Rezultate.*** *Chestionarul a fost completat de 257 de respondenţi cu vârsta mai mare de 18 ani, dintre care 61,9% femei şi 38,1% bărbaţi, majoritatea cu permis de conducere de categoria B (73,5%) şi majoritatea din mediul urban (87,5%). Mai mult de jumătate (55,6%) menţionează că au condus o maşină zilnic şi 30% dintre ei au o experienţă de conducere de peste zece ani. Respondenţii îşi exprimă marea îngrijorare (71,2%) cu privire la problema accidentelor rutiere, iar 76,3% consideră că drumurile nesigure constituie un factor cheie contributiv. Cel puţin 2,7% dintre respondenţi au raportat că o dată au fost implicaţi în calitate de şofer într-un accident rutier în care a fost nevoie de îngrijiri medicale.*

***Concluzii.*** *Se impune organizarea sistematică a programelor educaţionale şi a campaniilor de conştientizare privind siguranţa rutieră în rândul şoferilor şi al altor participanţi vulnerabili ai traficului rutier.*

## INTRODUCTION

Road traffic and the safety of the entire nation in the light of new challenges require thorough attention in studying and identifying the main niches in their prevention. Every year, the issue of road safety worsens and causes a lot of human suffering, furthermore medical care, healthcare costs a colossal amount of money (1, 2, 3, 4). The World Health Organization's Report on Road Safety estimates that 50 million people suffer from all forms of injuries and 1.35 million people die in traffic accidents each year (1). One in four young people experience a recurrence of a previous vehicle accident as a result of a road injury, which accounts for 23% of road accident mortality in adolescents between the ages of 18 and 24 (3, 5). Different risk factors are associated with risky driving, for ex. driving while impaired by alcohol increases the risk of an accident that results in death or serious injury; each 1% increase in average speed increases the risk of a fatal accident by 4%; a 3% increase in the risk of a serious accident; and failing to buckle up increases the risk of death among drivers in particular for front seat occupants by 50% (1). Younger drivers are more vulnerable to side effects when operating a vehicle than older drivers; 3 times as many people between the ages of 18 and 20 and 2 times as many between the ages of 21 and 24 die in motor vehicles as those between the ages of 25 and 65 (6). Previous studies on risk factors in road crashes and injuries highlight 3 major factors: the human factor and its behavior, the condition of the road and environmental factors, and factors conditioned by the vehicle (7-10). In the literature, numerous factors are described that contribute to the occurrence of road accidents (1, 11). According to the World Health Organization's Global Road Safety Report (1, 2), the main causes of road trauma are traffic violations, drunkenness, road conditions and environmental factors (ice, fog, technical vehicle malfunctions, time of year, street lighting status). Due to the fact that behavioral factors are among the most important one in road injuries, their identification and the development of cross-sectoral prevention measures can contribute to road safety. Speeding is almost universally recognized as the most significant. Adapting speed in different environmental conditions plays a colossal role. Studies show that of all the risk factors associated with road injuries, one third of accidents are related to excessive speed (2, 12), and the risk of causing serious or fatal injuries increases with increasing speed and decreases while reducing it. In terms of the number of deaths that were reported as a result of traffic accidents per million people in 2019, the Republic of Moldova ranked first among EU member states. At the national level, statistical data on the mortality of the population due to the type of injuries and poisonings, road accidents are placed second both per country and Chisinau municipality. In Chisinau municipality are registered the greatest number of accidents (4, 13). According to the National Public Security Inspectorate data reported for 2018-2020, the major causes of road crashes are inadequate speed, environmental conditions, road infrastructure, not respecting the traffic rules and the most affected group being around 50% among people aged 31-64. Government of the country has set a goal to significantly reduce deaths and injuries caused by road accidents for the next decade: joined the Decade of Actions for Road Safety, assuming responsibility for fulfilling the objective of reducing the number of road accidents by 50% by 2030, supports the "Zero Progressive Vision" Strategy, signs the Eastern Partnership Declaration on Road Safety - through which our country sets out to strengthen road safety management and to develop road safety measures. *The aim of this research* was to assess the behavioral risk factors among car drivers and to propose preventive measures to road safety.

## MATERIAL AND METHODS

This is a cross-sectional quantitative descriptive study that included the development and application of a questionnaire entitled ”Behavioral risk factors among drivers from the Republic of Moldova”. The study population was car drivers, which has driven a car at least once within the last 12 months. People who do not fulfil this inclusion criteria were not included in the research. Collected period was January – March 2022. The questionnaire was applied online via a Google form document and distributed through using social networks (Facebook, Messenger) and the *Nicolae Testemitanu* State University of Medicine and Pharmacy Internal Information System and the following variables were monitored: demographic (gender, age, individual’s life situation and living conditions, occupation, personal situation, education, place of living), driving

experience (type of vehicle, number of kilometers travelled per year, involvement in any road accidents, road behavior, safety devises used) and involvement in road accidents and collisions among drivers. For the data analysis it was used Microsoft Excel, and the secondary data – variables from the questionnaire. We also analyzed the behavioral risk factors among car drivers referring to speeding, seat belts use and child restraints, alcohol drinking, fatigue and environmental issues.

## RESULTS

The data collection instrument developed during the research was completed during the study period by 257 respondents, 19.8% aged 18-24, 36,6% aged 25-34, 25.3% aged 35-44, 14.8% aged 45-54 and 3.5% aged above 55. There were 61.9% females and 38.1% males. Medical professionals made up 43.20 of the participants, followed by students with 11.3% and teachers with 17.1%. The majority (91.1%) mentioned a higher level of education, and married status (69.6%), and live in either an urban or a rural area (87.5% and 12.5%, respectively) (tab.1).

In the Figure 1, we can observe that the category B license was held by the majority (73.5%), followed by subcategory B1 license (10.9%).

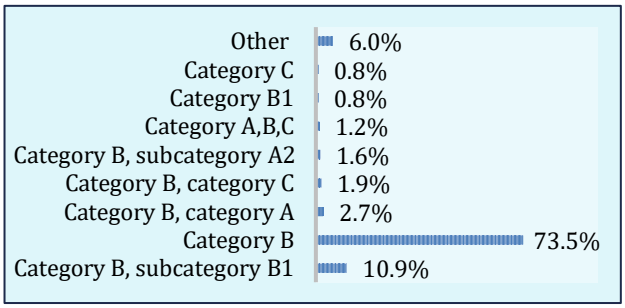


Figure.1. The types of driving license categories of the respondents.

Table 1. Demographic characteristics of the respondents (n=257).

| Group age, years old | N | % | Gender | N | % |
|---|---|---|---|---|---|
| 18-24 | 51 | 19.8% | Male | 98 | 38.1% |
| 25-34 | 94 | 36.6% | Female | 159 | 61.9% |
| 35-44 | 65 | 25.3% | Area | | |
| 45-54 | 38 | 14.8% | Urban | 225 | 87.5% |
| 55-64 | 6 | 2.3% | Rural | 32 | 12.5% |
| 65+ | 3 | 1.2% | | | |
| Level of education | | | Occupation | | |
| Secondary | 1 | 0.4% | Driver | 12 | 4.7% |
| High | 12 | 4.7% | Police | 5 | 1.9% |
| Colleges | 10 | 3.9% | Teacher | 44 | 17.1% |
| Bachelor | 234 | 91.1% | IT | 4 | 1.6% |
| Civil status | | | Medical professionals | 111 | 43.2% |
| Single | 23 | 8.9% | Lawyer | 5 | 1.9% |
| In a relationship | 37 | 14.4% | Constructor | 3 | 1.2% |
| Concubinage | 9 | 3.5% | Retired | 1 | 0.4% |
| Married | 179 | 69.6% | Household | 6 | 2.3% |
| Divorced | 6 | 2.3% | Student | 29 | 11.3% |
| Widower | 2 | 0.8% | Other | 37 | 14.4% |
| Other | 1 | 0.4% | | | |

In terms of how often they drove a car in the last year, we can observe that 55.6% of them did it daily and 20.2% did it 1-4 times per week (fig.2).

Respondents reported a driving experience of more than ten years in 30%, one to three years in 19% (fig. 3). At the same time, half of the drivers (54.5%) said that they drive up to 10 thousand kilometers annually (fig.4). Respondents express great concern (71.2%) and moderate concern (24.5%) about the issue of traffic accidents, and 76.3% think that unsafe roads are a key contributing factor. Based on the responses, we can deduce that national roads (70.04%) and important streets in cities (21%) are the places where the speed limit is violated mostly. Out of the total, 173

persons think the responsible bodies, such as the government, police, etc. are incompetent and uninterested in promoting road safety.

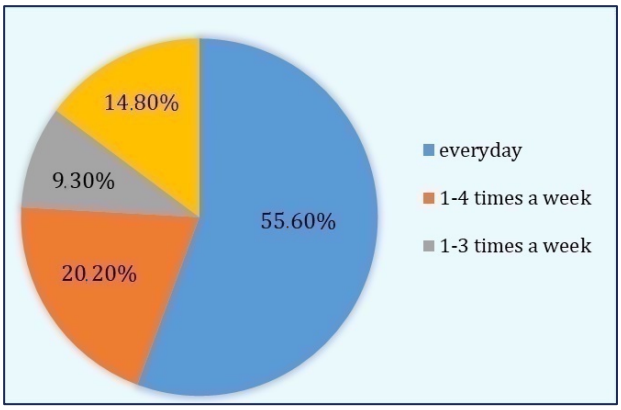


Figure. 2. The frequency of driving a car during the last year.

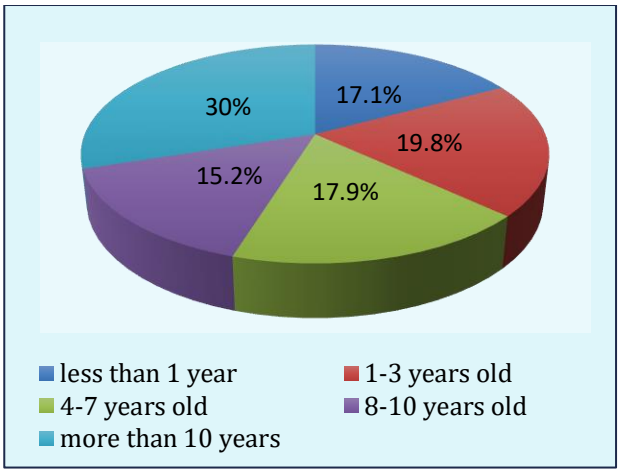


Figure. 3. Years of driving experience.

When asked about an "alcolock" that would prevent the car from starting if the driver was over the legal drink drive limit, 80.2% supported the idea, and for fatigue detection devices that would warn the driver to stop if they were too tired to drive – 62.6%. Regarding the existence of a "black box" in the car to identify the cause of an accident, only 49.4% respondents agreed. As for speed limiters installed on cars, 40.9% of respondents were pleased with this concept.

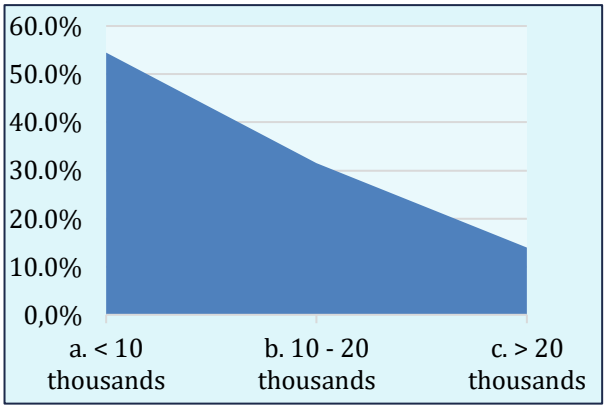


Figure. 4. Kilometers estimated by respondents to have been driven in the last 12 months.

In the last 12 months, 84.05% have never been subjected to a breathalyzer test while driving. As well, asked about drinking while driving (fig. 5), the most respondents answer was 0 units of alcohol/day (75.1%) and no drinking at all (78.6%).

Regarding road accidents in which they were involved as a driver without suffering any injury, they state that in the last 12 months (tab. 2), 87.9% were never involved, one involved in – 11.3% and twice in 0.8%. At least once they were involved as a driver in road accidents where medical care was needed – 2.7%, and never – 97.3%. Among those involved in an accident in the last 12 months, they reported another vehicle as a co-participant (45.7%) or without the involvement of another party (44.6%)

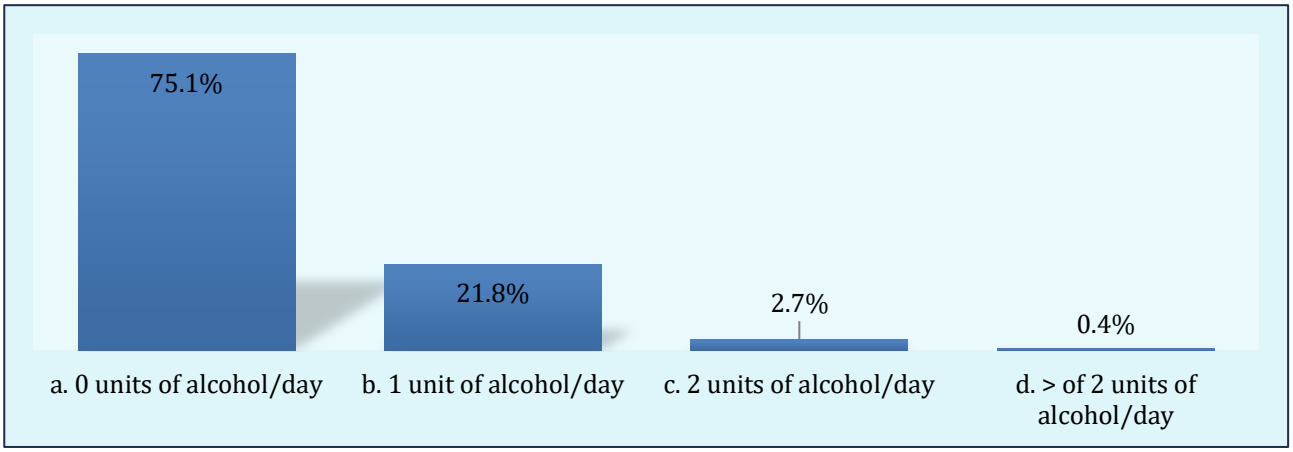


Figure. 5 Drinking alcohol while driving.

Table 2. Specific characteristics of the driver's behaviour.

| | N | % |
|---|---|---|
| **In the last 12 months, how many non-traumatic accidents requiring medical attention have you been involved in as a car driver? (n=257)?** | | |
| Never | 226 | 87.9% |
| Once | 29 | 11.3% |
| 2 and more times | 2 | 0.8% |
| **In the last 12 months, how many accidents where you involved in as a car driver in which someone, including yourself, was injured and received medical assistance? (n=257)** | | |
| Never | 250 | 97.3% |
| Once | 7 | 2.7% |
| **If in the last 12 months you were involved in a car crash, who/what were co-participants in? (n=92)** | | |
| Pedestrian | 5 | 5.5% |
| Another vehicle | 42 | 45.7% |
| Other non-motorized transport (electric scooters, hoverboards) | 4 | 4.3% |
| No other participant | 41 | 44.6% |
| **How often do you fasten your seat belt? (n=257)** | | |
| Rare | 9 | 3.5% |
| Occasionally | 15 | 5.8% |
| All the time | 233 | 90.7% |
| **How dangerous do you think it is to drive while taking a drug that carries a "warning: may affect your ability to drive"? (n=257)** | | |
| Very much | 112 | 43.6% |
| Quite enough | 102 | 39.7% |
| Not much | 17 | 6.6% |
| Not at all | 12 | 4.7% |
| Do not know | 14 | 5.4% |

The respondents had the opportunity to estimate in which situations there is a higher risk of injury (tab. 3). The lack of cycling tracks also bothered our respondents, who believe that cycling has a fairly large influence in road accidents with 51.8% and very large with 24.9%. At the same time, 52.1% consider public transport less dangerous in terms of the risk of accidents, and the biggest impact proved to be cars with 59.1% and motorcycles with 65.8%.

According to the national law, before departure and while traveling by car, the driver of the vehicle is obliged to wear the seat belt and to ensure that the passengers have also fastened their seat belts. In accordance with our findings, 90.7% of respondents are responsible and always fasten their seatbelts, however 5.8% only do so occasionally and 3.5% very rarely.

From the total respondents, 43.6% believe that driving while the driver is under drug treatment can influence driving, and another 6.6% believe that it does not influence much. A number of 5.4% do not know about the impact of drugs that carry a warning or contraindication while driving a car.

Table 3. The level of danger considered by the respondents regarding a possible risk of injury.

| | Walking | | Cycling | | Public transport | | Cars | | Motorcycles | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| **Not at all** | 25 | 9.7% | 3 | 1.2% | 12 | 4.7% | 3 | 1.2% | 4 | 1.6% |
| **Quite enough** | 75 | 29.2% | 133 | 51.% | 88 | 34.2% | 152 | 59.1% | 73 | 28.4% |
| **Very much** | 19 | 7.4% | 64 | 24.9% | 23 | 8.9% | 74 | 28.8% | 169 | 65.8% |
| **Not much** | 138 | 53.7% | 57 | 22.2% | 134 | 52.1% | 28 | 10.9% | 11 | 4.3% |

## DISCUSSIONS

This study underlines the extent of injuries caused by road accidents among drivers, as they are considered a vulnerable group participating in traffic (14, 15).

The results of this research help to understand the car's driver perceptions and attitudes while driving and concentrate to practical solutions for traffic safety. Previous studies state that there is progress in road safety and as a result in the reduction of injuries and deaths among people involved in motor vehicle accidents. At the same time, emerging from the increased interest of women in driving, there is a need to study the subject approached from a comparative aspect, namely if women are more vulnerable in relation to men. For example, according to Nneka, 2022 research – women have a 47% higher risk than men and five times higher risk of injury, yet they are less likely to receive effective post-crash care in the event of crash-related injury due to lack of health insurance. This is even more prevalent in Africa, where there is limited access to medical insurance (16).

Data from another study (17) shows that women are up to 37% more vulnerable to a car traffic injury. Same study results, mention that for certain types of injuries, the increased risk is even higher; for example, female drivers are 98.5% more likely to suffer leg injuries in a traffic crash. And this fact is due to the intention of women to drive small cars, used only for personal purposes, and men end up driving large cars, such as trucks, where the risk of suffering a tragic accident is much lower. Thus, the data reflected by our study (61.9% females and 38.1% males) leads us to direct preventive measures and cultivate the promotion of road safety with a stronger focus among female drivers.

Our study identified that 11.3% of the drivers were involved at least once in a crash, similar data was reported in study held among professional car drivers in Ethiopia, according which 16.3% (18). The same authors in their study (18) identify that 32.7% drive up to 10 thousand kilometers annually, while according to our study – half of the drivers (54.5%).

The characteristics of the driver identified in our study can tell us that in most of all the crash causes and related injuries are directly related to the behavioral factors, this being also identified in the specialized literature (4, 12, 19).

According to the European Commission data regarding traffic safety (20), the number of deaths caused by road accidents in 2021 increased by 5% compared to the previous year. The same source, mentions that car occupants (drivers and passengers) accounted for 43% of all road traffic deaths, while pedestrians accounted for 20%, two-wheeled vehicle (motorcycles and mopeds) drivers 18% and cyclists 10% of all deaths. Men caused three out of four road deaths (77%), which points to the much greater focus of women behind the wheel, even if for them there are more external factors that can influence it. While 12% of people killed on EU roads were aged between 18 and 24, this age group represents only 7% of the EU population. Thus, statistics show us that young people are more likely to be involved in a fatal road collision and pretty similar data was found by our study (19.8% aged between 18-24 and 36,6% aged between 25-34).

## CONCLUSIONS

1. There are many factors that contribute to the occurrence of road accidents, among which behavioral factors of the driver plays an essential role.
2. Behavioral aspects of the drivers in relation to road safety were underlined, this will help to create a driver profile and change their risky behavior.
3. There is a need to incorporate the identified results into various practice actions, to inform and educate the general public and vulnerable road users, and to develop appropriate measures to maintain road safety

## CONFLICT OF INTERESTS

All authors declare no competing interests.

## ETHICAL APPROVAL

This research is part of a larger research study entitled Road traffic injuries and the promotion of healthy road safety behaviors in the Republic of Moldova, for which the approval of the National Research Ethic Committee was obtained within the *Nicolae Testemitanu* State University of Medicine and Pharmacy, decision no 2 from 04.03.2020.

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# ROAD INJURIES AMONG POPULATION OF THE REPUBLIC OF MOLDOVA - DATA, TRENDS AND PREVENTIVE MEASURES

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***Keywords:*** *accidents, road injury, preventive measures, adult population, registry.*

***Introduction.*** *The latest WHO report on the prevention of road injuries emphasizes the need to improve road safety management, especially in developing countries, the analysis of traffic accidents, as well as the application of good practices adapted to local conditions. The Republic of Moldova has a fragmented road injury reporting system, so the purpose of this study was to study the trends and general aspects of road injuries in the country's population.*

***Material and methods.*** *A cross-sectional, descriptive research was carried out during 2007-2020, which studied the main indicators of morbidity and mortality rates due to injuries and road injuries among the adult population of the Republic of Moldova, based on the official statistical data of the National Agency for Public Health and the National Bureau of Statistics from the Republic of Moldova*

***Results.*** *The study's findings revealed that in terms of the general prevalence of the population, traumatic injuries, poisoning, and other consequences of external sources rank 8th across the republic and 6th in Chisinau. The mortality indicators of the population according to the main causes of death, rank injuries and poisonings are on the 4th place, and injuries caused by road accidents on the 2nd place both in the republic and in the capital city. There is a slight downward trend in the mortality indicators of the population due to traffic accidents.*

***Conclusions.*** *The obtained data pointed out the importance of road behavior improvement among the entire society, whereas the specialists from various fields should be permanently involved in activities of raising awareness among all road traffic participants.*

***Cuvinte cheie:*** *accident, traumă rutieră, măsuri de prevenție, populația adultă, registru.*

## TRAUMATISMELE RUTIERE ÎN RÂNDUL POPULAȚIEI DIN REPUBLICA MOLDOVA: DATE, TENDINȚE ȘI MĂSURI DE PREVENIRE

***Introducere****. Ultimul raport al OMS, vizând prevenirea traumelor rutiere, subliniază necesitatea îmbunătățirii managementului siguranței rutiere, în special în țările în curs de dezvoltare, a analizei accidentelor în trafic și a aplicării bunelor practici adaptate la condițiile locale. Republica Moldova are un sistem fragmentat de raportare a traumelor rutiere, astfel că scopul acestui studiu a fost studierea tendințelor și a aspectelor generale ale traumelor rutiere în rândul populației țării.*

***Material şi metode.*** *A fost realizat un studiul transversal, descriptiv, în baza datelor statistice oficiale ale Agenției Naționale pentru Sănătate Publică și ale Biroului Național de Statistică din Republica Moldova, pentru perioada 2007-2020, cercetându-se principalii indicatori ai morbidității și ai mortalității prin traume, în general și traume rutiere, în special, în rândul populației adulte din Republica Moldova,.*

***Rezultate.*** *Rezultatele cercetării au evidențiat că leziunile traumatice, intoxicările și alte consecințe ale cauzelor externe se clasează pe locul VIII în Republică și pe locul IV în mun. Chișinău, conform prevalenței generale în rândul populației. Indicatorii mortalității populației, după principalele cauze de deces, situează traumele și intoxicările pe locul IV, iar traumele cauzate de accidentele rutiere ocupă locul II atât în republică, cât și în municipiu. Se atestă o ușoară tendință de micșorare a indicatorilor mortalității populației prin accidente de circulație.*

***Concluzii.*** *Datele obținute relevă necesitatea ameliorării comportamentului rutier al întregii societăți și a implicării continue a specialiștilor din diverse ramuri în activități de sensibilizare a tuturor participanților în trafic.*

## INTRODUCTION

Over the past decade, various interventions have been implemented worldwide to reduce the most serious road traffic crashes, however, road traffic injuries remain an important public health issue and one of the leading causes of death due to the injury severity, especially among young people of working age. In the Republic of Moldova, road traffic injuries rank as the 8th leading cause of death and, according to the latest prognoses, are at risk of taking the 5th place by 2030 (1 - 5). Road traffic accidents are the leading cause of hospital admissions among adolescents aged 18–24 years, accounting for 23% of road traffic deaths, thus, young people make up about a quarter of all road traffic deaths (6). According to the World Health Organization report on road safety, it has been mentioned that the road safety issue is getting worse every year, causing huge financial losses in medical treatment, healthcare and all types of human suffering (4, 7, 8).

According to the UN Sustainable Development Goals 3.6 of the 2030 Agenda, a recent resolution adopted by the UN General Assembly in 2020 sets out the ambitious goal of preventing at least 50% of deaths and injuries caused by road traffic accidents by 2030 (9). The Global Plan correlates with the Stockholm Declaration, which emphasizes the importance of a holistic approach to road safety and calls for continuous improvement in road and vehicle design; improvement of laws and their enforcement; providing timely and life-saving emergency care to the injured. The progress achieved over the last decade on 2011-2020 road safety action has laid the foundation for an accelerated tendency in the coming years. Achievements include placing road safety on the global health and development agenda, widely disseminating the scientific trends on good practices, strengthening partnerships and networks, as well as mobilizing adequate resources.

This new Decade of Action provides an opportunity to benefit from the successes and failures over the past years, as well as build up strategies to save more lives. According to the goals set by the EU and at the UN level, the Republic of Moldova declared that it supports the sustainable development goals and will reflect the issue of road safety in its national policy. In this context, it is noteworthy that road traffic injuries are predictable and preventable. Globally, numerous policies and intervention projects have contributed to significant decrease in road traffic accidents all over many high- and middle-income countries. However, this requires interdisciplinary and intersectoral collaboration. All the countries should comply with the multidisciplinary approach to both injury prevention and road traffic injury prevention, which will directly facilitate achieving of the objectives proposed in official documents (10). *The purpose of this study* was to study and evaluate the rates of morbidity and mortality from injuries in general and road traffic accidents over the past 14 years, as well as to identify the preventive measures to be used within the Republic of Moldova.

## MATERIAL AND METHODS

A descriptive retrospective study was conducted over a 14-year period (2007-2020) to study the main indicators of morbidity and mortality due to road traffic injuries among the adult population of the Republic of Moldova. The analysis was carried out on the basis of official statistics provided by the Health Data Management Department of the National Public Health Agency and the National Bureau of Statistics of the Republic of Moldova. Mixed research methods were used to process and describe the collected data, such as descriptive analysis, epidemiological and statistical methods, and comparative analysis according to different evaluation criteria. The data were interpreted using Excel and IBM SPSS Statistics 20.

## RESULTS

The digital health data registry compiled all the statistical yearbooks of the health system of the National Public Health Agency, which include all types of injuries categorized as traumatic injuries, poisoning and other external consequences. According to the analysis, traumatic injuries, poisoning and other external consequences are ranked the 8th (332.2 cases per 10 thousand population) among the overall morbidity of the population of the republic and 4th in Chisinau (836.3 cases per 10 thousand population) during 2007-2020. Among adults, for the same period, these rank the 6th in Chisinau (669.4 cases per 10 thousand population) and the 8th across the Republic (295.7 cases per 10 thousand population), as shown in Figure 1.

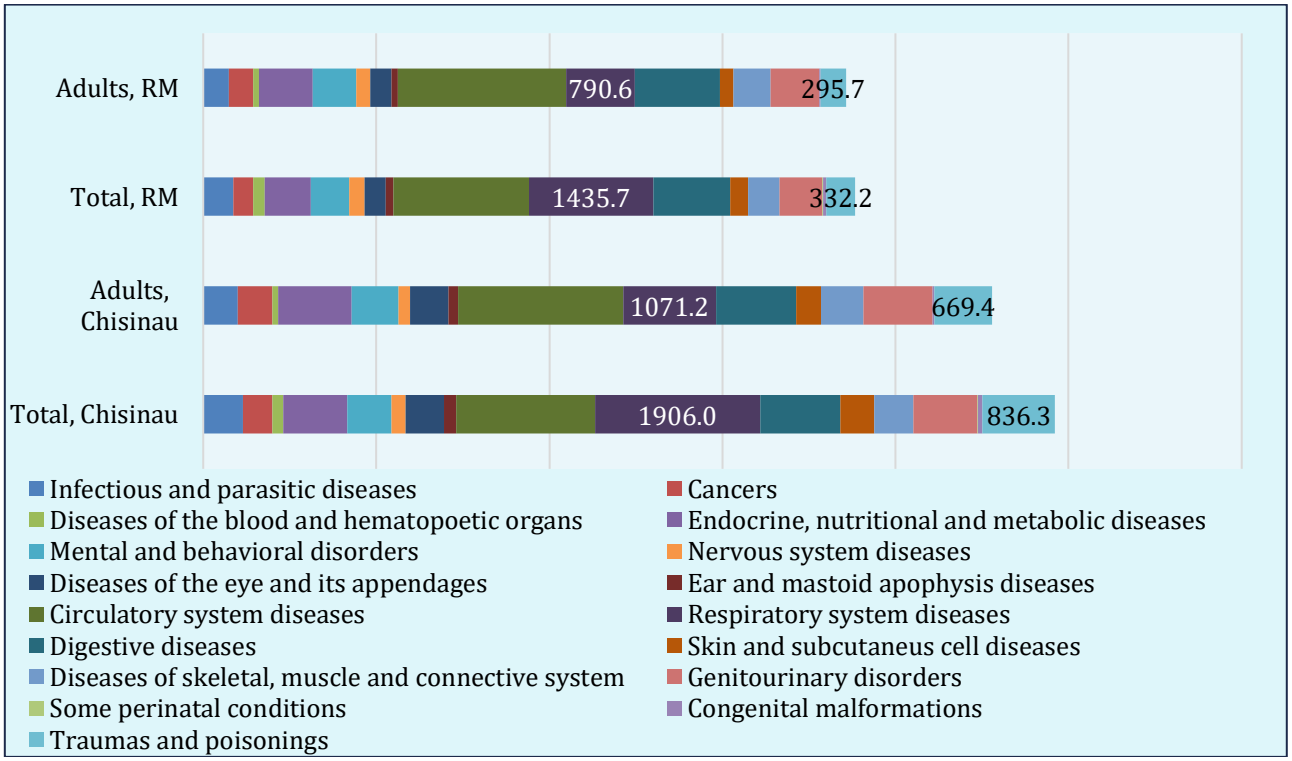


Figure 1. General morbidity per 10 thousand people, the mean for 2007-2020 per total number of adult population in both Chisinau and the Republic of Moldova.

According to the incidence dynamics of injuries, poisonings and other consequences of external causes, a sharp decrease in the number of cases per 10 thousand population was registered in Chisinau and across the Republic of Moldova in the period 2007-2020 (fig. 2). Thus, there is a 3.3-fold decrease (from 929.4 cases per 10 thousand inhabitants in 2007 to 277.6 cases per 10 thousand inhabitants in 2020) of the general population in Chisinau and a 4.2-fold decrease among the adult population (from 789.6 cases per 10 thousand population up to 188 cases per 10 thousand inhabitants). In the Republic of Moldova, there is a total of 2.4-fold decrease in the population (from 385.5 cases per 10 thousand inhabitants in 2007 to 160.7 cases per 10 thousand inhabitants in 2020) and 2.6 times among adults (from 361.4 cases per 10 thousand inhabitants up to 134.3 cases per 10 thousand inhabitants).

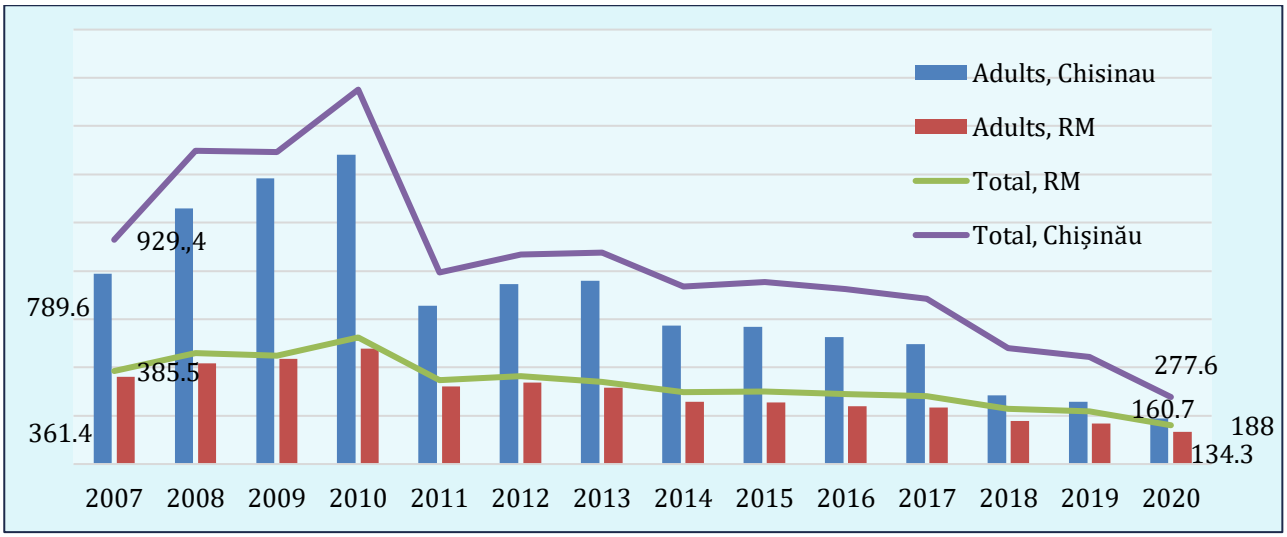


Figure 2. Prevalence of injuries, poisonings and other consequences of external causes in Chisinau and the Republic of Moldova during 2007-2020, per 10 thousand people.

The incidence rates of traumatic injuries, poisonings and other consequences of external causes in both Chisinau and the Republic of Moldova for the same period (fig. 3) also show a similar significantly decreasing tendency in both the republic and among adults.

The injury incidence rates also indicate (fig. 4) a downward trend in the number of cases over the study period. Data for the last 14 years (2007-2020) in Chisinau show a 3.3-fold decrease in the general population (from 9022.2 per 100,000 population to 2689.3 cases, respectively) and a 4.2-fold decrease among the adult population (from 7605.4 cases per 100 thousand population up to 1797.6 cases).

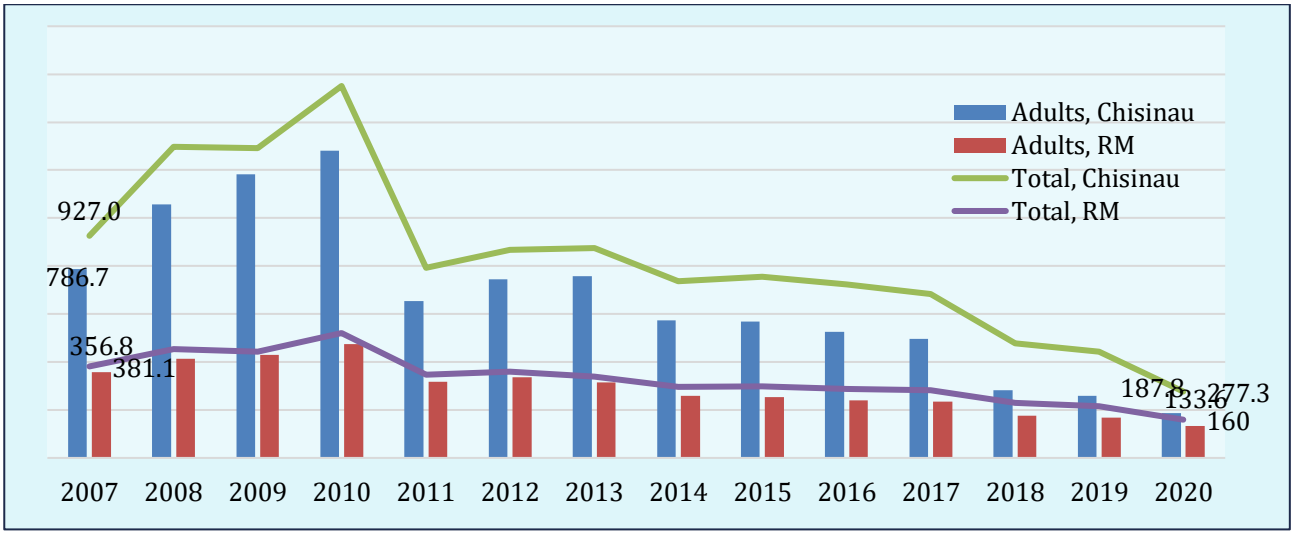


Figure 3. Incidence of injuries, poisonings and other consequences of external causes, in both Chisinau and the Republic of Moldova, the mean for 2007-2020 per 10,000 inhabitants.

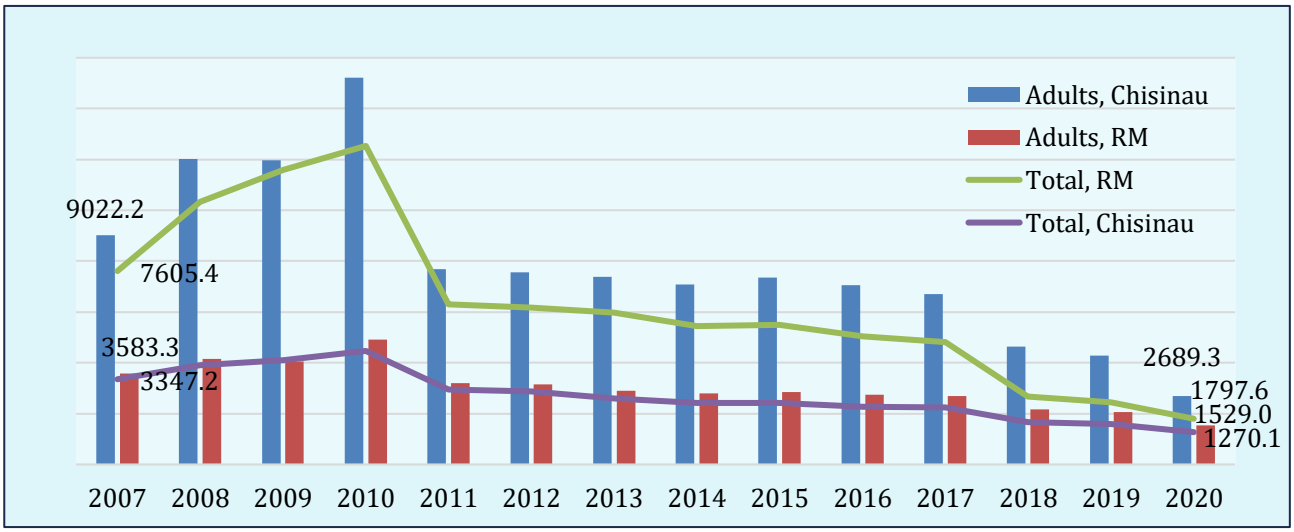


Figure 4. Injury incidence in Chisinau and RM during, the mean for 2007-2020 per 100 thousand inhabitants.

In terms of mortality indicators for the main causes of death, the mean value for 2007-2020 (fig. 5) on injuries and poisonings is ranked 4th (with 81.3 cases per 100 thousand population in the Republic of Moldova and 54.5 cases per 100 thousand population in Chisinau).

According to population mortality indices and depending on the types of injuries and poisonings (fig. 6), injuries caused by road traffic accidents rank 2nd both across the republic (11.6 cases per 100 thousand population) and in the capital city (8.3 cases in Chisinau).

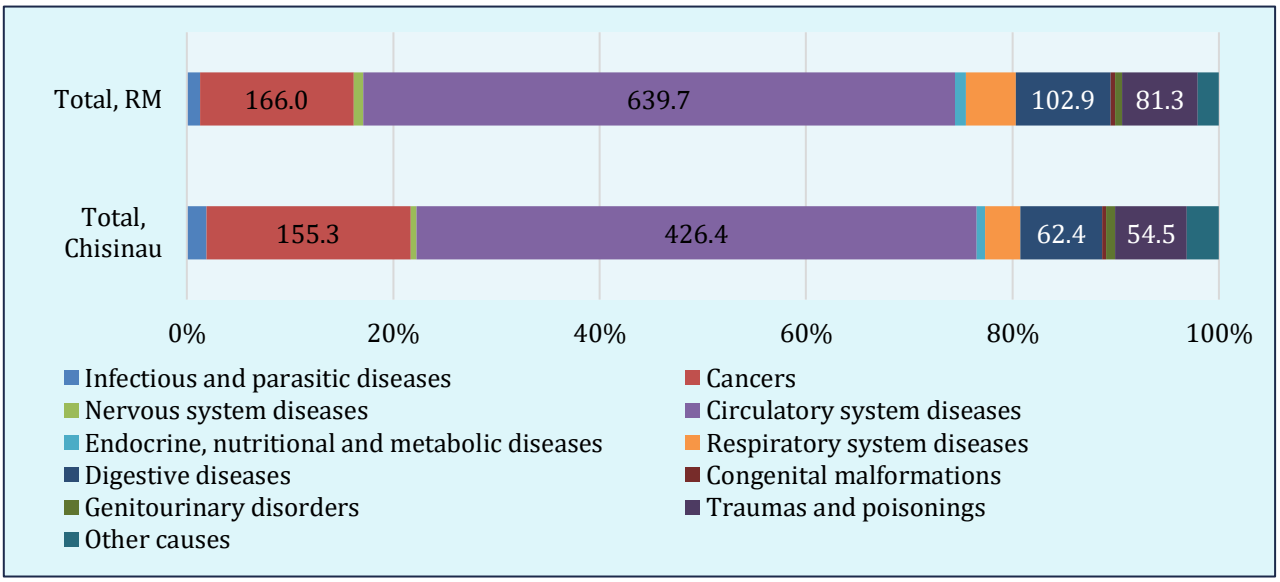


Figure 5. Mortality rate by main causes of death per 100,000 inhabitants in both Chisinau and the Republic, the mean value for 2007-2020.

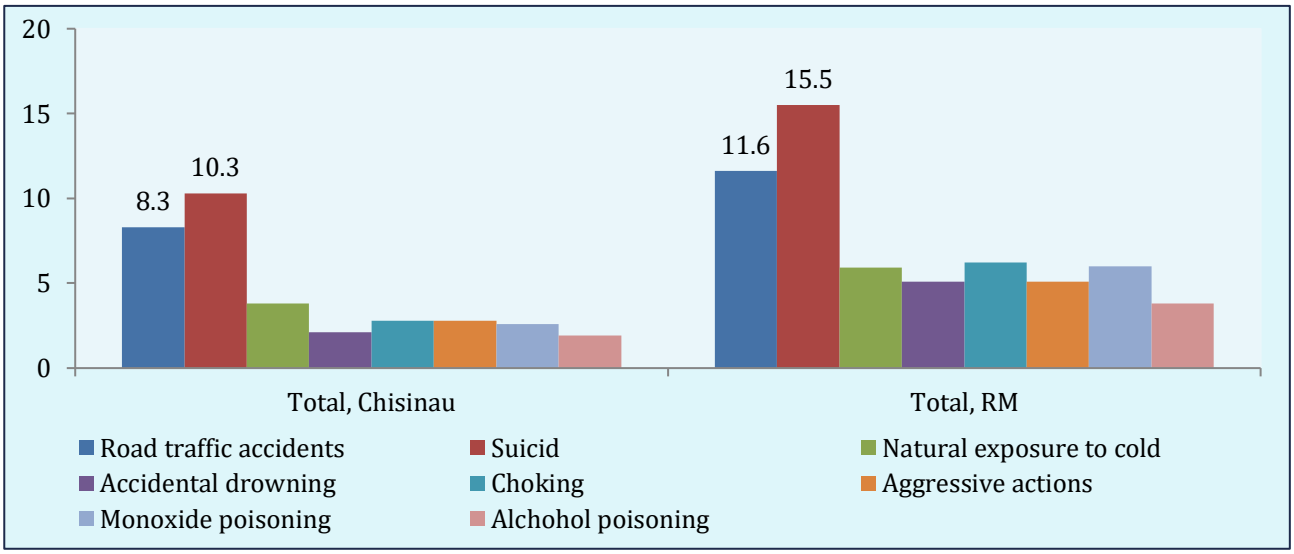


Figure 6. Mortality rates by types of injuries and poisonings both in Chisinau and in the Republic of Moldova, the mean for 2007-2020 per 100,000 inhabitants.

As regarding the mortality rates (fig. 7) due to road traffic accidents, there is an obvious downward trend for both Chisinau and the Republic of Moldova during the period of 2007-2020, viz. from 16.5 cases per 100 thousand inhabitants to 8.2 cases in the Republic of Moldova (a 2-fold decrease) and from 14.5 cases to 5.7 cases in the capital city (a 2.5-fold decrease), respectively.

## DISCUSSIONS

This research highlights the goal and the importance of studying general injuries, as well as those resulting due to road traffic accidents. These are due to common factors, injuries, poisoning and other consequences of external causes in the general morbidity of the population, ranking 8th in the republic and 6th in Chisinau. At the same time, injuries due to road traffic accidents are the main causes of death and rank second both in the republic and in the capital city. However, there is a tendency to reduce the mortality rates of the population as a result of road traffic accidents during the period under study. The specialized literature points out that the most common casualties of road

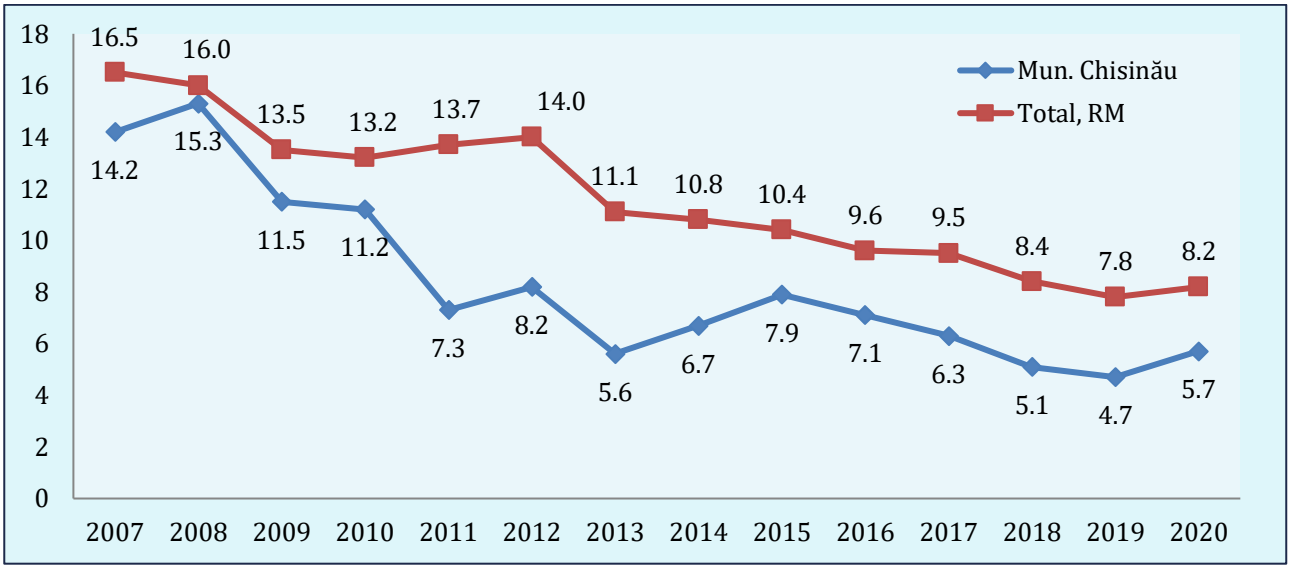


Figure 7. Mortality due to traffic accidents in both Chisinau and the Republic of Moldova for 2007 - 2020 years per 100 thousand inhabitants.

traffic injuries leading to death are middle-aged people, most of them being males under the influence of alcohol (3, 5, 8). A recent study (11) found a slight downward trend in the total number of fatal accidents and the number of people injured in road traffic accidents. It should be noted that the Republic of Moldova is characterized by high mortality rates due to traffic accidents, the most vulnerable group being men aged 20-29 and 50-59 years. Children and people over 50 years are more likely to become involved in road traffic crashes, whereas the age group of 15-39 years showed a higher risk of fatal outcome while driving or being a passenger of a vehicle. The presents study highlights the need for providing effective measures to reduce deaths following road traffic accidents (12, 13).

Previous studies have mentioned the importance of preventing road traffic crashes and reducing the number of road traffic accidents (3, 4, 14). Every year, a number of countries worldwide, as well as our country organize international projects and campaigns to encourage and raise awareness on citizen's responsible behavior by providing relevant and important information for drivers, motorcyclists, pedestrians or cyclists, which have contributed to a decrease in road traffic accidents and their related injuries. Therefore, our country should focus on reducing accidents and developing good data recording systems. Root-cause investigation and analysis should be carried out in order to find appropriate preventive measures. There is also no standard package of interventions suitable for all countries (14, 15, 16).

Interventions that have proven effective in one country may not be effective in others and need to be adapted to local conditions. There are several best practices that can be followed regardless of a country's income, including the use of health education and health promotion: reducing exposure to risk through transport and land use policies; marking the road network to prevent traffic accidents; improving the road visibility; promoting car designs to protect against accidents; establishing and enforcing compliance with key road safety rules; providing post-accident health assistance.

## CONCLUSIONS

1. The dynamics of road traffic accidents over the study period showed a slightly decreasing trend towards the total number of road traffic accidents resulting in casualties and people injured as a result of road traffic accidents.
2. During the study period, the mortality rates for the main causes of death due to injuries and poisonings are ranked the 4$^{th}$, while injuries caused by road traffic accidents rank 2$^{nd}$ among all types of injuries and poisonings.

3. The obtained data indicate the importance of developing several campaigns for the prevention of road traffic injuries, as well as the strengthening of the multidisciplinary efforts of all the participants from various authority bodies and competent structures.

## CONFLICT OF INTERESTS

The authors report no conflicts of interest in this work.

## ETHICAL APPROVAL

This study was approved by the Ethics Committee of the *Nicolae Testemitanu* State University of Medicine and Pharmacy, decision no. 2 of 03/04/2020.

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# PARENTS' KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING HOUSEHOLD INJURY OF CHILDREN UNDER 5 YEARS OLD

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***Keywords:*** *home-related injuries, children aged 0-5 years old, safety.*

***Introduction.*** *Around 950,000 children and teenagers die each year as a result of injuries and violence throughout the world. The most common cause of death for children under the age of five is trauma that occurs in the home environment. Aim of the study: To assess the knowledge, attitudes and practices of parents with children aged 0-5 years old regarding unintentional injuries among home environment.* ***Materials and methods.*** *Parents of children under five years old were asked to complete a survey between October and December 2021, which was distributed online via social media. The questionnaire contained 43 items and was analysed using Microsoft Excel.* ***Results.*** *The questionnaire was completed by 300 parents with children up to 5 years old, mostly aged between 26-35 years old (72%), with high education (79.3%), of them 96% females, majority from urban areas (79.7%), with medium socio-economic status. Nearly 75% of respondents believe their child could get hurt at home, most commonly through an injury (42.7%), followed by ingesting foreign objects (22%). Falls were the primary cause of the majority of the child's accidents over the last year (60%) despite them being uncommon (54.7%) and infrequent (22%) in nature. Most often (54.7%), parents said that they see and hear their child all the time, but occasionally leave them for a short time. When their child suffered an injury at home, only 33.3% of parents sought medical attention.* ***Conclusion.*** *The results of this study will allow for a greater focus on young children's safety in the household. By identifying and emphasizing the knowledge, attitudes, and practices of parents with children 0–5 years old, we will be able to notify the necessary authorities and advise particular measures to prevent home accidents.*

***Cuvinte cheie:*** *leziuni la domiciliu, copii între 0-5 ani, siguranță.*

## CUNOȘTINȚELE, ATITUDINILE ȘI PRACTICILE PĂRINȚILOR CU PRIVIRE LA TRAUMATISMELE CASNICE LA COPIII SUB 5 ANI

***Introducere*** *Aproximativ 950.000 de copii și adolescenți decedează în fiecare an în întreaga lume ca urmare a traumelor și a violenței. Cea mai frecventă cauză de deces pentru copiii sub cinci ani sunt traumele care au loc în mediul casnic. Scopul studiului:* ***e****valuarea cunoștințelor, atitudinilor și practicilor părinților care au copii cu vârstele cuprinse între 0-5 ani în ceea ce privește leziunile neintenționate în mediul casnic.* ***Material și metode.*** *Părinții copiilor sub 5 ani au completat un chestionar în perioada octombrie - decembrie 2021, care a fost distribuit online prin rețelele sociale. Chestionarul a conținut 43 de itemi și a fost analizat folosind Microsoft Excel.* ***Rezultate.*** *Chestionarul a fost completat de 300 de părinți. Majoritatea părinților aveau vârstele cuprinse între 26-35 de ani (72%), cu studii superioare – 79,3%, dintre care 96% de femei, majoritatea din mediul urban (79,7%), cu statut socio-economic mediu. Aproape 75% considerau, că în condițiile casnice copii lor ar putea fi afectați cel mai frecvent din cauza unei răni (42,7%), urmată de ingerarea de obiecte străine (22%). În ultimul an, conform itemilor din chestionar, căderile au fost cauza principală a traumelor copiilor (60%), în 54,7% căderile au fost înregistrate mai puțin frecvent și în 22% de cazuri - rar. De cele mai multe ori (54,7%) părinții au menționat că copiii sunt permanent supravegheați, totuși, ocazional, se întâmplă să-i lase fără supraveghere pe o durată scurtă de timp. Când copilul lor a suferit o traumă acasă, doar 33,3% dintre părinți au solicitat îngrijiri medicale.*

***Concluzie.*** *Rezultatele acestui studiu accentuează importanța siguranței copiilor în mediul casnic. Prin identificarea și evidențierea cunoștințelor, atitudinilor și practicilor părinților cu copii sub 5 ani, vom putea sesiza instituțiile necesare să întreprindă măsuri speciale pentru prevenirea traumatismelor casnice.*

## INTRODUCTION

Childhood is the most precious period of life and should not be affected by the suffering caused by trauma and accidents. Worldwide, household accidents are the leading cause of preventable disabilities and morbidity among children. Falls, burns, choking, and fires are among the most common causes (1, 2). Globally, more than 2,000 children die every day from unintentional injuries, according to the World Child Injury Prevention Report, but most of these are preventable. Children between the ages of 0 and 5 are most likely to be injured at home (1), since children spend most of their time there and they are more susceptible to various types of injury (3, 4). Household trauma is a significant medical and social problem, which is becoming increasingly important today. The World Health Organization estimated that 424 000 people of all ages died in 2004 as a result of falls, and more than 95% of young children's deaths occur in low- and middle-income countries, where most injuries are home accidents (1, 4). Every year, more than 40,000 children from the Republic of Moldova end up in hospitals as a result of home accidents. In the Republic of Moldova, injuries and accidents are the third leading cause of death in children under the age of 5 (4).

*Purpose of the study*: to assess the knowledge, attitudes and practices of parents of children aged 0 to 5 years regarding unintentional injuries at home.

## MATERIAL AND METHODS

A cross-sectional study was conducted for a period of 3 months, viz. October-December 2021. An online questionnaire was submitted via social networks, which included 43 questions regarding the assessment of parents' knowledge, attitudes and practices related to household injuries and their first aid. Before completing the questionnaire, parents filled out an informed consent to be enrolled within the present study. This, in turn, included personal data about the participants and the study (name of the study, objectives, risks, and data privacy). The questionnaire included questions related to the socio-demographic indicators of parents, the frequency of household injuries, as well as the first aid provided. The survey validity was tested on a sample of 20 randomly selected individuals, and their results were not included in the final analysis. The preliminary questions were corrected, and subsequently the necessary changes were made for the purpose of its final validation. The inclusion criteria were considered parents with children under the age of 5. People who did not comply the study criteria were not included within the study.

## RESULTS

The study involved 300 parents aged between 25 and 55. Of the total number of parents who participated in the study, 72% were aged between 26-35, 14.3% of parents were under the age of 25 and 13.3% were aged 36-45 years old; 79.3% of respondents have higher education, 13.7% – specialized secondary education, 4.7% – secondary education and 2.3% – high school education. Parents included in the study had an average socioeconomic level in 90.7% of cases, a high socioeconomic level in 6.0%, and a low socioeconomic level in 3.3% (tab. 1).

Parents mentioned that their children were injured due to several factors, thus, over the past year, 81.7% of parents indicated to injuries as a result of a fall, 14.7% of parents reported injuries by stings and cuts, 4.3% – burns and 3% – poisoning. As regarding the frequency of home-related injuries over the last year, parents reported frequent cases in 5.3%, rare cases in 54.7%, accidental cases in 22%, and very rare cases in 54.6%.

More than half (50.6%) of affected children were aged 0 to 2 years, 26.5% were aged 3 to 4 years, and 22.9% were aged ≥4 years. The most affected ones, as a result of household traumas, are the boys, making up 62.4% of cases.

Based on the parental responses, a significant number of parents (27%) of one-year-olds, if compared to parents of children aged 2-4 years, believe that various dangerous objects in the house can be possible risk of injury. At the same time, 36.3% of parents indicated that these do not pose a possible injury hazard, and 17% of parents do not know that dangerous objects, such as sharp objects, chemicals or buttons, may pose a possible threat to children (tab. 2).

However, if referring to the level of education, age and awareness of parents about the possible risks of injury to their children, it was determined that the younger the parents are, the

greater is the number of parents who are aware of the increased risk of injury in the household environment. Accordingly, a greater percentage of parents, aged 26-35 years, who had a higher educational level (59.7%), considered a lower risk of traumatization (29.3%) of children within the household settings (tab. 3).

Table 1. Distribution of parents based on socio-demographic indices.

| Characteristics | Absolute Number of Parents | % (n=300) |
|---|---|---|
| ***Parents' age (years)*** | | |
| <25 | 43 | 14.3 |
| 26-35 | 216 | 72 |
| 36-45 | 40 | 13.3 |
| 46-55 | 1 | 0.3 |
| ***Education*** | | |
| Secondary Education | 14 | 4.7 |
| High School Education | 7 | 2.3 |
| Specialized Secondary Ed. | 41 | 13.7 |
| Higher Education | 238 | 79.3 |
| ***Socio-economic level*** | | |
| High | 18 | 6.0 |
| Average | 272 | 90.7 |
| Low | 10 | 3.3 |
| ***Living settings*** | | |
| Rural | 61 | 20.3 |
| Urban | 239 | 79.7 |
| ***Number of children*** | | |
| **1** | 246 | 82.4 |
| **2** | 49 | 16.3 |
| **3** | 5 | 1.3 |

Table 2. Distribution of parental responses based on the possible risk of injury to children with dangerous objects (cutters, chemicals, buttons).

| Variables | Child age, years, (n, %) | | | | Total |
|---|---|---|---|---|---|
| | 1 year | 2 years | 3years | 4 years | |
| **Yes** | 81 (27) | 23 (7.7) | 5 (1.7) | 3 (1) | **112 (37.4)** |
| **No** | 106 (36.3) | 17 (5.6) | 3 (1) | 1 (0.3) | **127 (42.3)** |
| **Unknown** | 51 (17) | 8 (2.7) | 2 (0.7) | | **61 (20.3)** |
| **Total** | **238 (79.3)** | **48 (16)** | **10 (3.4)** | **4 (1.3)** | **300** |

Over the past year, 82.3% of the total number of children included in the study had an injury. Accordingly, 33.1% of these children needed medical care, 32% of children received treatment at home, and only 11.3% of children did not require any medical care. The condition of the child after injury was regarded as severe by 1.7% of the parents surveyed. Most of the injured children (31%) were only examined, after which they were discharged and no treatment or further medical follow up were required (tab. 4).

## DISCUSSIONS

Current research highlights the importance of studying household injuries among children, especially among those under the age of 5, as well as reveals the worldwide data (1, 4). Injuries occurring in home settings are an important health problem among the population under study, which requires their urgent prevention, especially in the Republic of Moldova, where the data need to be studied in detail. The findings also show that the increasing parental aware-

ness of home safety will reduce the prevalence and improve injury prevention among children under 5 years old (5, 6).

Table 3. Frequency of possible risk of injury in children according to the parental responses, depending on the level of their education and age.

| Level of Education | Parents' age, years, (n, %) | | | | Total |
|---|---|---|---|---|---|
| | < 25 years | 26-35 years | 36-45 years | 46-55 years | |
| **Secondary Education** | **3 (1)** | **9 (3)** | **2 (0.7)** | | **14 (4.7)** |
| Very high | | 1 (0.3) | | | 1 (0.3) |
| Very low | | 4 (1.3) | 1 (0.3) | | 5 (1.7) |
| High | 1 (0.3) | | 1 (0.3) | | 2 (0.7) |
| Low | 2 (0.7) | 4 (1,3) | | | 6 (2) |
| **High School Education** | **1 (0.3)** | **6 (2)** | | | **7 (2.3)** |
| Very low | | 1 (0.3) | | | 1 (0.3) |
| Low | 1 (0.3) | 5 (1.7) | | | 6 (2) |
| **Specialized Secondary Ed.** | **12 (4)** | **22 (7.3)** | **6 (2)** | **1 (0.3)** | **41 (13.7)** |
| Very high | 1 (0.3) | 1 (0.3) | | | 2 (0.7) |
| Very low | 4 (1.3) | 1 (0.3) | 4 (1.3) | | 9 (3) |
| High | 3 (1) | 8 (2.7) | | 1 (0.3) | 12 (4) |
| low | 4 (1.3) | 12 (4) | 2 (0.7) | | 18 (6) |
| **Higher Education** | **27 (9)** | **179 (59.7)** | **32 (10.7)** | | **238 (79.3)** |
| Very high | 2 (0.7) | 5 (1.7) | 1 (0.3) | | 8 (2.7) |
| Very low | 5 (1.7) | 48 (16) | 8 (2.7) | | 61 (20.3) |
| High | 7 (2.3) | 38 (12.7) | 4 (1.3) | | 49 (16.3) |
| Low | 13 (4.3) | 88 (29.3) | 19 (6.3) | | 120 (40) |
| **Total** | **43 (14.3)** | **216 (72)** | **40 (13.3)** | **1 (0.3)** | **300** |

Table 4. Need of treatment and medical follow-up of injured children depending on their condition after injury.

| Child's condition after injury/ Need of treatment and follow-up | Child age, years, (n, %) | | | | |
|---|---|---|---|---|---|
| | 0-1 year | 1-2 years | 2-3 years | 3-4 years | Total |
| **Acceptable** | **32 (11)** | **5 (1.7)** | **-** | **-** | **37 (12.7)** |
| Other variants | 10 (3.4) | 2 (0.7) | - | - | 12 (4.1) |
| Examined and discharged, no treatment | 9 (3.1) | 2 (0.7) | - | - | 11 (3.8) |
| Treated, discharged and followed up | 10 (3.4) | - | - | - | 10 (3.4) |
| Treated, discharged, no follow up | 1 (0.3) | - | - | - | 1 (0.3) |
| Treated and admitted to the same hospital | 2 (0.7) | 1 (0.3) | - | - | 3 (1) |
| **Good** | **194 (66.7)** | **41 (14.1)** | **10 (3.4)** | **4 (1.4)** | **249 (85.6)** |
| Other variants | 104 (35.7) | 15 (5.1) | 5 (1.7) | 1 (0.3) | 125 (42.9) |
| Examined and discharged, no treatment | 57 (19.6) | 20 (6.9) | 2 (0.7) | - | 79 (27.) |
| Treated, discharged and followed up | 21 (7.2) | 4 (1.4) | 2 (0.7) | 1 (0.3) | 28 (9.6) |
| Treated, discharged, no follow up | 9 (3.1) | 1 (0.3) | 1 (0.3) | 2 (0.7) | 13 (4.5) |
| Treated and admitted to the same hospital | 3(1) | 1 (0.3) | - | - | 4 (1.4) |
| **Bad** | **4 (1.4)** | **1 (0.3)** | **-** | **-** | **5 (1.7)** |
| Treated, discharged and followed up | 2 (0.7) | - | - | - | 2 (0.7) |
| Treated, discharged, no follow up | 1 (0.3) | - | - | - | 1 (0.3) |
| Treated and admitted to the same hospital | 1 (0.3) | 1 (0.3) | - | - | 2 (0.7) |
| **Total** | **230 (79)** | **47 (16.2)** | **10 (3.4)** | **4 (1.4)** | **291** |

The study results show that male children (62.4%) were most often involved in household traumas. Sex differences have also been identified by other authors (7), whose studies found a higher rate of injured boys (57.5%) compared to girls.

The majority of parents (81.7%) reported that their children had been injured by a fall within the last year, thus, children aged between 0 and 2 years old were the most likely to be injured (50.6%), followed by children aged ≥3 years (26.5%). Moreover, the authors of another study (8) determined that 35% of injuries were related to falls among the same age group.

Most parents use some form of protective equipment to help create a safe environment for their children (9), however, one third of parents under study (27%) believe that various hazardous things kept at home may pose a possible risk of injury to their children. We believe that childcare should be monitored in order to increase parents' responsibility. However, to reduce possible injuries, a change in the risky behaviour of children is also required. As a result of an injury, a third of children (33.1%) needed medical care, and about a third (32%) were treated at home. It is noteworthy that proper prehospital care, as well as the timely first aid given by parents, are of great importance in preventing the worsening conditions of children injured at home (10, 11).

A growing number of studies highlight the fact that parental education, information and increasing capacities might contribute significantly to children's safety at home (11, 12).

## CONCLUSIONS

1. The study revealed both the awareness level and attitude of parents of children aged 0-5 years to household injuries, as well as their severity and the importance of their prevention.
2. In order to prevent household injuries in children under the age 5, it is important to raise parental awareness of possible risks occurring in home environment.
3. Responsible authorities should develop safety measures to involve parents, grandparents and other carers to reduce the impact of household traumas within our society.

## CONFLICT OF INTERESTS

The authors report no conflicts of interest in this work.

## ETHICAL APPROVAL

This study is part of a larger research study entitled "iCREATE: Increasing Research Capacity in Eastern Europe", which was approved by the Ethics Committee of the *Nicolae Testemitanu* State University of Medicine and Pharmacy, decision no. 43 dated 03/15/2018.

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# STUDY OF DRIVER'S ATTITUDES TOWARDS ROAD SAFETY IN GEORGIA

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***Keywords:*** *road traffic injury, driving behavior, traffic safety, Georgia.*

***Introduction.*** *Road traffic injuries are a global public health challenges and a leading cause of death and disability. This study examines the relationships between road traffic accident involvement, driving behaviors, and drivers' attitudes towards traffic safety in Georgia.*

***Material and methods.*** *Behavior of two hundred Georgian drivers were reported using a self-administered questionnaire. The criteria for inclusion in the study were residency of Georgia and at least one year of driving experience.*

***Results.*** *A total of 200 Georgian drivers were interviewed. 59% of study participants felt that the road safety had not improved at all over the past ten years. 94% of respondents were involved in a road traffic accident as a driver. 99% of male drivers and 84% of female drivers have been fined for speeding in the last three years. 95% of males and 51% of females have experienced driving under the influence of alcohol once, and 2% of males and 43% of females have never driven under the influence of alcohol.*

***Conclusions.*** *The study demonstrated that alcohol consumption, the use of mobile phones while driving and high speed are very common among drivers in Georgia.*

***Cuvinte cheie:*** *leziune rutieră, comportament de conducere, siguranță în trafic, Georgia.*

**STUDIUL ATITUDINILOR ŞOFERULUI FAȚĂ DE SIGURANȚA RUTIERĂ DIN GEORGIA**

***Introducere****. Leziunile cauzate de traficul rutier afectează sănătatea publică, soldându-se cu dizabilități și reprezentând o cauză principală de deces la nivel global. Acest studiu examinează relațiile dintre implicarea în accidentele rutiere, comportamentele de conducere și atitudinile șoferilor față de siguranța traficului în Georgia.*

***Material si metode.*** *A fost analizat comportamentul a două sute de șoferi georgieni folosindu-se un chestionar autoadministrat. Criteriile de includere în studiu au fost: rezidența în Georgia și cel puțin un an de experiență de conducere.*

***Rezultate.*** *Din numărul total de șoferi georgieni intervievați, 59% au considerat că siguranța rutieră nu s-a îmbunătățit deloc în ultimii zece ani; 94% dintre respondenți au fost implicați într-un accident rutier în calitate de șofer; 99% dintre bărbații șoferi și 84% dintre femeile șoferițe au fost amendați în ultimii trei ani pentru depășire de viteză.; 95% dintre bărbați și 51% dintre femei au condus sub influența alcoolului cel puțin o dată, iar 2% dintre bărbați și 43% dintre femei nu au condus niciodată sub influența alcoolului.*

***Concluzii.*** *Studiul a demonstrat că utilizarea telefoanelor mobile la volan, consumul de alcool, și viteza sporită sunt fenomene frecvent atestate în rândul șoferilor din Georgia.*

## INTRODUCTION

Road traffic injuries (RTIs) are one of the leading causes of death and disability worldwide. According to WHO, about 1.24 million people die on the roads annually and 20-50 million are injured without a fatal outcome. Globally, RTIs are considered the leading cause of death in people aged 5 to 29 years and are among the top three causes of death among people aged 15 to 44 years (1, 2). More than 85% of the global road traffic injury related deaths occur in low and middle-income countries (LMICs) (3, 4). The cost of road traffic deaths and injuries has a significant impact on society. Despite a number of successful preventive measures taken by various states, RTIs in modern realities still remain a problem that threatens human life and health. Several determining factors influence the occurrence of RTIs. The researchers categorized these factors into human error, road environment and vehicle conditions (5, 6). Human behavior is the most common contributing factor to RTIs (7, 8). Accordingly, there is an urgent need to investigate the impact of human behavior on road safety.

RTI in Georgia is one of the major challenges to public health and the leading causes of injury-related deaths in Georgia (9). According to annual reports published by the Ministry of Internal Affairs of Georgia, the number of traffic violations is increasing, especially such gross violations such as driving in the opposite traffic lane, breaking the rules of overtaking, speeding and others. In order to provide effective interventions for the prevention of road traffic accidents, it is necessary to have information about risk factors and analyze them.

*The aim of the study* was to investigate the attitude of drivers to the traffic rules and regulations.

## MATERIAL AND METHODS

Behavior of two hundred Georgian drivers were reported using a self-administered questionnaire. One of the Tbilisi corporations, which employs 5,000 people, was selected for the study. Sample size was calculated using Epi info for a 95% confidence interval (Confidence Level = 95%). The criteria for inclusion in the study were residency of Georgia and at least one year of driving experience. The study participants completed an online questionnaire consisting of 22 questions, and they mainly related to age, gender, education, driving experience, risk awareness and assessments of the traffic situation in Georgia. The study period was May and June of 2022. As part of the Master's thesis practice, ethical approval of the questionnaire was secured prior to piloting in Tbilisi.

Statistical data analyses have been conducted using SPSS software version 23.0. Differences in categorical variables were tested with chi-square tests of independence. Statistical significance was considered for $p<0.05$.

## RESULTS

Out of the 200 respondents who participated in the survey, 74% (n=148) were males, while 26% (n=52) were females. The modal age group was 26-31 years with 63% (n=126), followed by 32-55 years (24%; n=49) and 18-25 years (13%; n=25). 100% of drivers participating in the study held a category B driver's license. 51% of interviewed drivers were people employed in the service sector, 20% – lawyers, 23% – drivers, 2-2% – economists and agronomists. The vast majority of respondents (93%) had a driving experience of more than 3-4 years, 6% reported more than 5 years of driving experience, and 1% only 1-2 years.

According to 61% of drivers surveyed, Georgian roads are not safe to drive. 59% of study participants felt that the road safety had not improved at all over the past ten years. 39.7% believed that it had not changed much. According to only 1%, the situation has improved significantly. 94% of respondents stated that they were involved in a road traffic accident as a driver. 87.5% of respondents were not injured as a result of a road accident, 8% were injured only once, and 4.5% - three times or more. 99% of male drivers and 84% of female drivers have been fined for speeding in the last three years. Over the past three years, 95% of males and 51% of females have experienced driving under the influence of alcohol once, and 2% of males and 43% of females have never driven under the influence of alcohol (fig. 1). 39% of drivers surveyed have used a mobile phone while driving vehicle four or more times in the last three years, 48% at least once, and only 12% have never used a phone while driving (tab. 1).

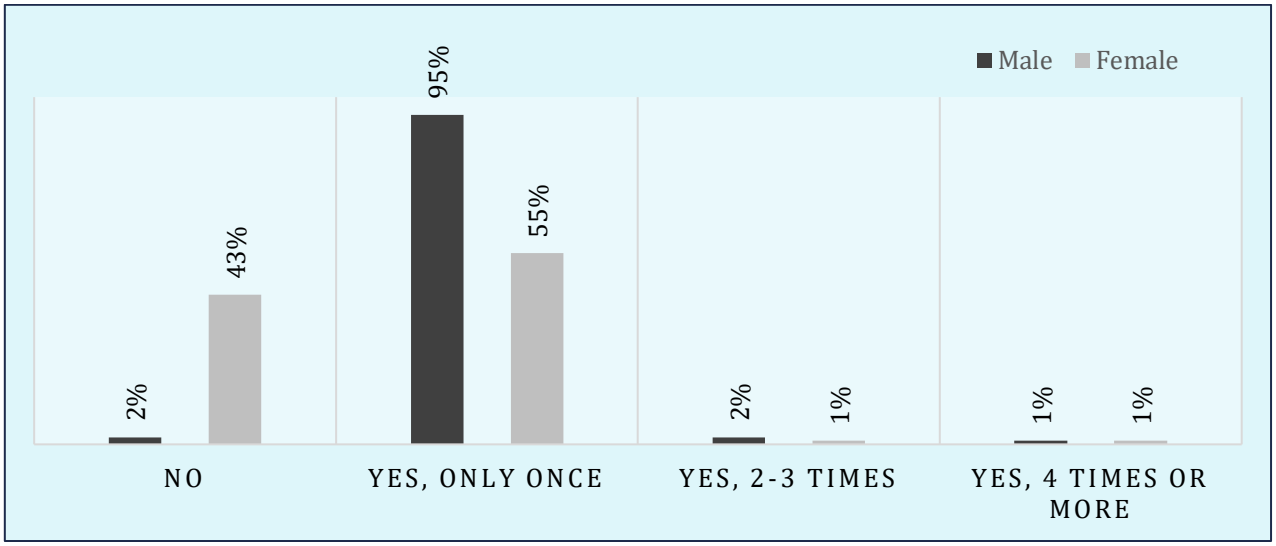


Figure 1. Distribution of experience of drunk driving in the last three years by gender.

Table 1. Reported driver behavior by gender.

| | | Male | Female | p value |
|---|---|---|---|---|
| | | n (%) | n (%) | |
| **Do you wear a seat belt when sitting in the front passenger seat?** | Yes, sometimes | 145 (98) | 25 (48) | <0.001 |
| | Yes, always | 3 (2) | 27 (52) | |
| **Have you been fined for speeding in the last three years?** | Never | 1 (1) | 8 (15) | <0.001 |
| | Yes, once | 110 (74) | 41 (79) | |
| | Yes, twice or more | 37 (25) | 3 (6) | |
| **Have you driven under the influence of alcohol in the last three years? If yes, how many times?** | Never | 3 (2) | 22 (43) | <0.001 |
| | Yes, once | 140 (95) | 26 (51) | |
| | Yes, twice or more | 5 (3) | 3 (6) | |
| **Have you used a mobile phone (i.e., called and texted) while driving in the last three years?** | Never | 3 (2) | 22 (42) | <0.001 |
| | Yes, once | 87 (59) | 8 (15) | |
| | Yes, two or three times | 1 (1) | 1 (2) | |
| | Yes, four times or more | 56 (38) | 21 (40) | |

According to 36% of respondents, the main cause of road traffic accidents in Georgia is unsafe roads, according to 33% – speeding, and according to 31% – drunk driving. 2% of males and 51% of females always fasten their seat belt while sitting in the front passenger seat.

## DISCUSSIONS

The fact that 95% of drivers surveyed were involved in road traffic accidents indicates that drivers' attitudes and assessment of risky behavior are underestimated in the country, which is consistent with other studies in developing countries (10, 11). 96% (n=191) of the drivers surveyed had been fined at least once for speeding while driving, 87% (n=174) of drivers had drunk driving experience, and 88% (n=175) used a mobile phone while driving. Our study provides useful insights for future in-depth explorations. This study showed difference of risky driving behavior between male and female drivers, males demonstrating more riskier driving behavior than females. This is in line with previous studies from developing countries (12, 13). These studies have mainly focused on the effect of driver characteristics on driver risk assessment. Differences in the characteristics of drivers affect their risk assessment. The effect of driver gender on risk assessment has been confirmed in studies. The present results clearly show that the majority of drivers were aware of risky driving behavior, although their knowledge was not always applied in practice. Similar findings were reported in early studies (14, 15, 16).

*Limitations*

A limitation of the study is that the sample is represented by working people (individuals who drive for work and are healthy enough to drive) and may not be representative of the broad population (young, older and non-working individuals).

## CONCLUSIONS

1. The results of our study demonstrated that alcohol consumption, the use of mobile phones while driving and speeding are very common among drivers in Georgia.
2. Our study can help stakeholders understand the urgency of the problem in Georgia and a need for continuing large-scale studies to better understand the prevalence of risk factors.

## CONFLICT OF INTERESTS

The author declares that he has no competing interests.

## ETHICAL APPROVAL

The Georgian National Centre for Disease Control and Public Health Institutional Review Board approved the study protocol in accordance with Georgian legislation and the ethical standards as stated in the Declaration of Helsinki.

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## EVENTS/ANNIVERSARIES – ÉVÉNEMENTS/ANNIVERSAIRES

# PROFESORUL ION BAHNAREL LA 70 DE ANI

*Trebuie să încerci necontenit să urci foarte sus, dacă vrei să poți să vezi foarte departe...*

*(Constantin Brâncuși)*

Jubileul de 70 de ani de la naşterea profesorului universitar şi doctorului habilitat în ştiinţe medicale Ion Bahnarel constituie un eveniment important pentru întreaga comunitate academică din domeniul sănătăţii publice, al cărui parcurs, în mare măsură, a fost influenţat în cel mai benefic mod de activitatea prodigioasă a acestei personalităţi distinse. Domnul Ion Bahnarel a contribuit considerabil prin activitatea sa la dezvoltarea concepţiei de pregătire a specialiştilor şi la consolidarea acţiunilor orientate spre bunăstarea şi sănătatea oamenilor.

Născut la 6 ianuarie 1953, în satul Proboteşti, raionul Herţa, regiunea Cernăuţi, Ucraina, îşi face studiile în şcoala de 8 ani din satul natal, apoi în şcoala-internat politehnică din or. Herţa, iar în 1970 susţine cu succes examenele de admitere la Facultatea de Medicină preventivă a Institutului de Stat de Medicină din Chişinău, pe care o absolveşte cu brio în 1976. După absolvirea facultăţii, devine medic igienist, pasionat fiind de problemele sănătăţii umane în relaţia cu factorii ce o influenţează. Pe parcursul întregii sale activităţi a izbutit să îmbine fructuos activitatea practică cu cea ştiinţifică.

Sub mentoratul profesorului Ion Bahnarel au fost susţinute 9 teze de doctor, iar altele 5 sunt în curs de realizare. A publicat 435 de lucrări ştiinţifice şi metodico-didactice, inclusiv 31 de monografii, 12 manuale şi ghiduri.

Profesorul Ion Bahnarel este implicat şi exercită cu deosebită responsabilitate multe funcţii obşteşti, dintre care cele mai importante sunt: consultant ştiinţific, director şi executor la o serie de proicte şi programe internaţionale sub egida Comisiei Europene, OMS, UNICEF, USAID, AIEA, UNDP, FAO etc. Este preşedinte al Societăţii Igieniştilor din Republica Moldova, al Comisiei de atestare a medicilor igienişti, epidemiologi şi microbiologi, al Comisiei de etică universitară a USMF „Nicolae Testemiţanu" şi membru al Consiliului de experţi al Ministerului Sănătăţii.

Rezultatul muncii sale şi devotamentul au fost apreciate cu numeroase distincţii guvernamentale şi titluri onorifice: Om Emerit al Republicii Moldova, Laureat al Premiului Academiei de Ştiinţe a Moldovei, Diploma de gradul I a Guvernului Republicii Moldova, Ordinul „Gloria muncii", Laureat al Premiului Naţional, Ordinul de Onoare din partea Preşedintelui Republicii Modova etc.

Este firesc ca acest moment aniversar să reprezinte un motiv de gratitudine şi de bucurie pentru toţi cei care de-a lungul timpului au fost sau sunt alături de Domnul Profesor, apreciindu-i munca, valorile şi virtuţile.

**Mulţi ani prosperi, Domnule Ion BAHNAREL!!**

Cu profund şi deosebit respect, consiliul de redacţie al revistei *One Health & Risk Management*

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- **Cuvinte cheie**: 3-5 cuvinte

În rezumat nu vor fi incluse tabele, grafice și note bibliografice; informații care nu sunt prezentate în studiu.

**Figuri.** Textul inclus în figuri trebuie să fie scris cu font Cambria, dimensiune 10 puncte. Fiecare figură trebuie să fie însoțită de titlu și legendă. Ele vor fi numerotate cu cifre arabe și vor fi menționate în text în paranteze (*ex:* fig. 1). Titlul (*ex:* Figura 1) și legenda figurii trebuie să fie scrisă centrat, sub figură.

**Tabele**. Textul inclus în tabele trebuie să fie scris cu font Cambria, dimensiune 10 puncte. Fiecare tabel trebuie să fie însoțită de titlu. Tabelele vor fi inserate în text, fără a depăși lățimea unei pagini. Ele vor fi numerotate cu cifre arabe și vor fi menționate în text în paranteze (*ex:* tab. 1). Titlul tabelului va fi poziționat deasupra tabelului centrat (*ex:* Tabelul 1).

**Referințele** trebuie să fie numerotate în ordinea apariției în text. Citarea sursei de referință va fi conform stilului *AMA*, plasată la sfârșitul articolului și va include doar referințele citate în text (menționând numărul de referință în paranteză rotundă). Dacă aceeași referință este citată de mai multe ori, ea va fi trecută în text cu același număr ca la prima citare. Numărul total de referințe nu va depăși 50 de surse. Acuratețea datelor ține de responsabilitatea autorului.

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## EXIGENCES POUR LES AUTEURS

**Normes de rédaction**
La préparation des manuscrits (rédigés en anglais et français) sera conforme aux instructions publiées dans *Uniform Requirements for Manuscripts Submitted to Biomedical Journals (1994) Lancet 1996, 348, V2 ; 1-4* (www.icmje.org). Les manuscrits doivent être en police Cambria, taille 11 points, espacés à l'intervalle 1,0, alignement justifié, champs 2 cm de tous les côtés. Toutes les pages doivent être numérotées consécutivement (dans le coin inférieur droit) et inclure une numérotation continue des pages. Les abréviations doivent être expliquées lors de la première apparition dans le texte et ne doivent pas être utilisées de manière excessive. Les manuscrits ne doivent pas dépasser (sans mentionner le titre, l'affiliation, le résumé et la bibliographie) le vo-lume suivant: pour articles de synthèse/rapports – 4500 mots; pour les articles de recherche – 3000 mots; pour les opinions d'experts – 2500 mots; présentation de cas et photos de la pratique clinique/de laboratoire – 1700 mots; notes expérimentales et cliniques – 1300 mots; commentaires et présentations de livres – 2000 mots; articles pédagogiques – 4000 mots. Le volume des tableaux et des figures ne doit pas dépasser ⅓ du volume du manuscrit. La revue se réserve le droit d'apporter toute autre modification de formatage. Les manuscrits rejetés ne sont pas retournés.

**Tous les manuscrits à publier doivent être accompagnés par deux résumés: dans la langue originale et en anglais.**

**Titre et auteurs**
Le titre doit être le plus court que possible (maximum – 120 signes avec espaces), éloquent pour le contenu du manuscrit. Les noms des auteurs seront écrits complets: prénom, nom (*ex:* Albert LEBRUN). Quant à l'affiliation, on devra indiquer: Section/ Département/Chaire, Université/Hôpital, Ville, Pays – pour chaque auteur. Les données de l'auteur correspondant et les coordonnées – adresse e-mail (*ex:* auteur correspondant: Albert Lebrun, e-mail: albert.lebrun@gmail.com*)* seront obligatoires ci-dessous.

**Structure du manuscrit**
Le manuscrit comprendra les sous-titres suivants (avec lettres majuscules):

- **RÉSUMÉ** (voir les exigences ci-dessous)
- **INTRODUCTION** (reflétera l'actualité et la présentation générale du problème étudié, le but et l'hypothèse de l'étude)
- **METHODES**
- **RESULTATS**
- **DISCUSSIONS**
- **CONCLUSIONS**
- **CONFLIT D'INTERETS**
- **REMERCIEMENTS ET FINANCEMENT**
- **APPROBATION ÉTHIQUE** (préciser la présence ou l'absence d'avis favorable du comité d'éthique: no, date, institution et consentement éclairé)
- **REFERENCES**

Le **résumé** contiendra 1600 signes avec espaces:

- **Introduction**
- **Méthodes**
- **Résultats**
- **Conclusions**
- **Mots clés**: 3-5mots.

Le résumé ne comprendra pas des tableaux, graphiques et des notes bibliographiques; des informations non présentées dans l'étude.

**Figures.** Le texte inclus dans les figures doit être écrit avec police Cambria, taille 10 points. Chaque figure doit être accompagné par un titre et une légende. Ceux-ci seront numérotés avec des chiffres arabes et mentionnés dans le texte entre parenthèses (*ex:* fig. 1). Le titre (*ex:* Figure 1) et la légende de la figure doivent être centrés, au-dessous de la figure.

**Tableaux.** Le texte inclus dans les tableaux doit être écrit avec police Cambria, taille 10 points. Chaque tableau doit être accompagné par un titre. Les tableaux seront numérotés avec des chiffres arabes, mentionnés dans le texte entre parenthèses (*ex:* tab. 1), et seront insérés dans le texte, sans dépasser la largeur d'une page. Le titre du tableau sera placé au-dessus du tableau, centré (*ex:* Tableau 1).

Les **références** doivent être numérotées dans l'ordre où elles apparaissent dans le texte. La citation de la source de référence sera de style *AMA*, placée à la fin de l'article et n'inclura que des références citées dans le texte (mentionnant le numéro de référence entre parenthèses rondes). Si la même référence est citée plusieurs fois, elle sera transmise dans le texte avec le même numéro que celui de la première citation. Le nombre total de références ne dépassera pas 50 sources. La responsabilité pour l'exactitude des données est à la charge de l'auteur. Il faut indiquer dans le manuscrit seulement les références vraiment consultées par les auteurs. Les composants des sources de référence doivent être rédigés strictement selon les exigences.

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## ТРЕБОВАНИЯ ДЛЯ АВТОРОВ

**Правила составления**

Подготовка рукописи (разработанной на английском и французском языках) будет осуществляться в соответствии с инструкциями, опубликованными в: *Uniform Requirements for Manuscripts Submitted to Biomedical Journals (1994) Lancet 1996, 348, V2; 1-4* (www.icmje.org). Авторы должны использовать шрифт Cambria, размер 11 точек, с интервалом 1,0, выравнивание по ширине, поля 2 см со всех сторон. Все страницы должны быть пронуме-рованы последовательно (в правом нижнем углу) и включать непрерывную нумерацию страниц. Сокращения должны быть объяснены при первом появлении в тексте и не должны использоваться чрезмерно. Объем рукописей не должен превышать (без названия, принадлеж-ности, резюме и литературы): для обзорных статей/рефератов – 4500 слов; для научных ста-тей – 3000 слов; для экспертных заключений – 2500 слов; для презентации случаев из клини-ческой/лабораторной практики – 1700 слов; для экспериментальных и клинических заметок – 1300 слов; для рецензий и презентаций книг – 2000 слов; для учебных статей – 4000 слов. Объем таблиц и рисунков не должен превышать ⅓ от объема рукописи. Журнал оставляет за собой право вносить любые другие изменения форматирования. Отклоненные рукописи не возвращаются.

**Все рукописи, представленные для публикации, должны сопровождаться двумя резюме: на языке оригинала статьи и на английском языке.**

**Название и авторы**

Название должно быть как можно короче (максимум – 120 знаков с пробелами), но дос-таточно информативным для содержания рукописи. Фамилии авторов будут написаны полностью: имя, фамилия (*например:* Иван ИВАНОВ). Принадлежность будет включать: Отделение/ Департамент/Кафедра, Университет /Больница, Город, Страна для каждого автора. Данные соответствующего автора и контактная инфор-мация – адрес электронной почты (*например:* контактная информация: Иван Иванов. e-mail: ivan.ivanov@gmail.com) будут обязательно ниже.

**Структура Рукописи**

Рукопись будет включать в себя следующие подзаголовки (они должны быть заглавными):

- **РЕЗЮМЕ** (см. требования ниже)
- **ВВЕДЕНИЕ** (будет отражать актуаль-ность и общее представление изучаемой проблемы, цель и гипотезу исследования)
- **МАТЕРИАЛЫ И МЕТОДЫ**
- **РЕЗУЛЬТАТЫ**
- **ДИСКУССИИ**
- **ВЫВОДЫ**
- **КОНФЛИКТ ИНТЕРЕСОВ**
- **БЛАГОДАРНОСТИ И ФИНАНСИРОВАНИЕ**
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- **ЛИТЕРАТУРА**

**Резюме** должно содержать 1600 знаков с пробелами и будет включать в себя следующие подзаголовки:

- **Введение**
- **Материалы и методы**
- **Результаты**
- **Выводы**
- **Ключевые слова:** 3-5 слов

Резюме не должно включать таблицы, диаграммы и библиографические заметки, инфор-мацию, не представленную в исследовании.

**Рисунки** (графики, диаграммы). Текст, включенный в рисунки, должен быть написан в Cambria, размер 10 пунктов. Каждый рисунок должен сопровождаться заголовком и описанием. Название (*например:* Рисунок 1) и описание рисунка должны быть вписаны по центру, в низу рисунка. Они должны быть пронумерованы арабскими цифрами и указаны в тексте в скобках (*например:* рис. 1).

**Таблицы.** Текст, включенный в таблицы, должен быть написан в Cambria, размер 10 пунктов. Каждая таблица должна сопровождаться заголовком. Они должны вставляться в текст, не превышая ширину страницы. Должны быть пронумерованы арабскими цифрами и указаны в тексте в скобках (*например:* таб. 1). Название таблицы должно располагаться над таблицей в центре (*например:* Таблица 1).

**Литература.** Источники должны быть пронумерованы в порядке их появления в тексте. Ссылки на источники должны быть в стиле *AMA*, помещены в конце статьи и включать только источники, цитируемые в тексте (упоминание номера источника в круглых скобках). Если один и тот же источник цитируется несколько раз, он будет передан в тексте с тем же номером, что и первый раз. Общее количество источников не должно превышать 50. Ответственность за точ-ность данных лежит на авторе. Будут цитиро-ваться только те источники, с которыми ознакомились авторы рукописи. Компоненты справочных источников должны быть написаны строго в соответствии с требованиями.

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