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RESEARCH ARTICLE

KEY INFORMANT INSIGHTS IN MOLDOVA'S PREVENTION AND RESPONSE SYSTEM FOR TRAUMATIC BRAIN INJURIES

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Abstract

The purpose of the current study was to identify the existing practices and policies on TBI treatment and rehabilitation in the Republic of Moldova.

Methods: Qualitative face-to-face interviews were conducted with health care professionals from two major emergency hospitals in Chisinau Municipality in 2018. An interview guide was modeled according to a standard operation procedure with a set of concrete questions.

Results: Participants' underlines important issues in the health care management of TBI for different medical levels: pre-hospital care ambulance system and definitive care work, acute care focused on the existing frameworks for treatment and care of TBI patients in hospitals, rehabilitation care, treatment, prevention gaps, and country-level resources. The main gaps in the prevention and treatment of traumatic injuries were identified to be related to road accidents, alcohol-related injuries, home injuries, and long arriving times of ambulance, lack of medical equipment both at pre-hospital and acute care and low salaries of medical staff.

Conclusion: Our results suggested the need for health promotion and health education campaigns, police interventions, state support, acquiring financial support and modern equipment.

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Introduction:-

Injuries remain one of the leading causes of population morbidity and mortality throughout the world. Traumatic brain injury (TBI) has been identified as a critical public health and a socio-economic problem (Peeters W., 2015; Majdan M., 2016) due to the long-term effects of TBI (Scholten AC, 2014). TBI is frequently referred as the "silent epidemic", because of the complications from TBI, such as changes affecting thinking, sensation, language, or emotions, or may not be readily apparent. While recovery and rehabilitation are possible, most people with moderate to severe TBI face life challenges that will require them to adapt and adjust to accommodate TBI-related impairment. Research shows that rates of traumatic brain injury are increasing annually, with head trauma accounting for the majority of trauma deaths (Tagliaferr F., 2006, Hyder AA., 2007; Brazinova A., 2016). Despite the advances in early diagnosis and treatment of TBI, TBI will be a life-changing experience for many patients and their families, leading to economic and productivity burden for communities (Park E., 2008).

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Traumatic brain injury represents a major cause of long-term disabilities among survivors (Brooks JC., 2013; Langlois JA., 2006); influence the lives of those who suffer of that and their relatives (Ma VY., 2014) being associated with increased mortality (Brooks JC., 2013) and decreased life expectancy (Brooks JC., 2015).

In the United States, total combined rates for TBI-related emergency department (ED) visits, hospitalizations and deaths have increased over the past decade; about 1.7 million cases of TBI occur in the U.S. every year. Approximately 5.3 million people live with a disability caused by TBI in the U.S. alone (U.S. Department of Health and Human Services 2004). In Europe, there are an estimated 57,000 deaths and 1.5 million hospital admissions related to TBI annually (Coronado VG., 2011; Majdan M, 2016; Paden M., 2002; Haagsma JA. 2015; Sanyang E., 2017).

While the data infrastructure to measure rates of TBIs is available in the most high income countries, TBI-related data can be difficult to collect or even not available in low and middle income countries. In the Republic of Moldova, a lower-middle-income country with the highest mortality rate of the European Region, trauma is the fourth leading cause of population mortality (National Public Health Strategy, 2014-2020). Injury prevention is thus one of the new priority areas for public health surveillance in the Republic of Moldova, as mandated in the Law of state supervision of public health no.10-XVI, 2009. Regarding TBI, there are no official data currently reported in the country.

The aim of the current study was to identify the existing practices and policies on TBI treatment and rehabilitation in the Republic of Moldova. Such specific studies on TBI have not been conducted in the country before.

Materials and Methods:-

Study setting:

The study was conducted in Chisinau, the capital of Moldova, in 2018. Chisinau has a population of 685000, is the most economically prosperous locality in Moldova; and its largest transportation and healthcare hub (National Bureau of Statistics of the Republic of Moldova, 2017). The health system in Chisinau includes a mix of public medical institutions (republican, municipal, district and departmental), which are non-profit, self-financing institutions, contracted by the National Health Insurance Company for the provision of medical services under the compulsory health insurance. The public medical institutions at district and municipality level provide primary and outpatient health care services. Each district offers access to pre-hospital emergency medical care services. The tertiary public medical care institutions provide highly specialized medical assistance to the entire population of the Republic of Moldova (Government Decision, 2010). There are more than 60 small and large hospitals that provide different levels of trauma care in the country. Currently there is no established trauma care system in Chisinau and no hospital has been designated as a Level I trauma centre.

At the country level, there is a tertiary level center that treats traumatized patients; either isolated cranio-cerebral trauma or polytraumatism. All specialized services are provided in this medical facility by high-level specialists. The Institute of Emergency Medicine has extensive diagnostic and treatment equipment for patients with craniocerebral trauma. Organized multidisciplinary teams provide the necessary medical help to traumatized people from their first attendance to the emergency service. The Aviasan service (Mobile Emergency Service- a special emergency service provided by the Republican Clinical Hospital for specialized emergency care) serves the whole country.

Design:

We conducted qualitative face-to-face interviews to identify the existing practices and policies on TBI treatment and rehabilitation in the country. Two major emergency hospitals were selected to participate in the study: the Emergency Medicine Institute (EMI) for adult population and the Municipal Hospital for Children "V. Ignatenco" (MHC). These hospitals were selected as they are of major importance in our country, being level II hospitals - able to initiate definitive care for all injured patients. The interview guide was modeled according to a standard operation procedure with a set of concrete questions which included 4 steps (fig.1).



Fig 1:- Standard operation procedure developed within the research.

This study was part of a larger study focusing on International Collaboration to increase Traumatic Brain Injury Surveillance in Europe, funded by the National Institutes of Health, United States, whose aim was to identify and describe current traumatic brain injury data collection practices and capacity from Armenia, Georgia and Moldova. The ethics committee of Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova approved the methods of this study (Decision nr. 44 from 15.03.2018).

Study participants and data collection:

As key-informants, we considered doctors, nurses and/or administrators who worked in the neurology/ neurosurgery and or emergency medicine specialty/department (22 neurologists’ employers within the neurology department and 15 neurosurgeons at EMI and 7 neurosurgeons at MCH). Informed consent was obtained from all of the key-informants interviewed which were given detailed information about the study. A total of seven key informant health care professionals from the two selected reference hospitals were interviewed after consent (Tab.1): 4 neurosurgeons, a neurologist, a nurse and a feldsher (intermediate-level health workers with skills similar to those of physician’s assistants or nurse practitioners in some countries). The interviews, carried out by a researcher trained in qualitative interviews and having no direct relationship with the participants, lasted between 30 minutes and one hour and half. With the key-informants’ permission, the interviews were audiotaped and the interviewer took notes during the interviews. The recorded information was used for transcription purposes only. The key-informants were encouraged to feel free to express their knowledge and experience with regards to the current situation on TBI in Moldova. The interview guide consisted of 16 open-ended questions: 6 focused on how pre-hospital system care, ambulance system and definitive care work; 2 for acute care focused on the existing frameworks for treatment and care of TBI patients in hospitals; 1 for rehabilitation care; 3 for identifying general gaps in treatment and prevention TBI; and 4 for country level TBI resources.

Table 1:- Medical professionals interviewed.

Interview No.	Hospital	Function
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1.	Emergency Medicine Institute (EMI)	Neurology physician, Chief of neurology department
2.	Emergency Medicine Institute (EMI)	Neurosurgeon physician, Neurosurgery department
3.	Emergency Medicine Institute (EMI)	Neurosurgeon physician, Neurosurgery department
4.	Emergency Medicine Institute (EMI)	Nurse manager, Neurosurgery department
5.	Emergency Medicine Institute (EMI)	Physician and feldsher ¹ , Emergency department
6.	Municipal Clinical Hospital for Children "V. Ignatenco" (MCH)	Neurosurgeon Physician, Neurosurgery department
7.	Municipal Clinical Hospital for Children "V. Ignatenco" (MCH)	Neurosurgeon, Emergency department, Neurosurgery departemnt

Results:-

We reviewed the transcripts of the 7 key informants, and analyzed the answers to the entire questions from the guide for each level: pre-hospital care, acute care, rehabilitation, treatment, prevention gaps and country level resources. In what follows, we provide a description of the state of each of the levels or care, followed by key informant responses, using quotes to highlight specific aspects that provide context and rich descriptions.

Country Pre-Hospital Care Structure:

The most recent document regulating the emergency medical assistance is the Order 85 from 2009 of the Ministry of Health, Labor, and Social Protections on the Organization and Functioning of the Emergency Medical Assistance Service of the Republic of Moldova. Being in a continuous development, the pre-hospital emergency medical service has been separated from the Hospital Service and normative acts for the organization and endowment of the AMU Service have been developed in accordance with the requirements in the field adopted in the countries of the European Community. The Emergency Medical Assistance Service is a service of strategic importance at national level. As a result, since October 1, 2015, the EMAS has been restructured in the National Pre-Hospital Emergency Medical Assistance Center, according to the Government Decision no. 377 and the Order of the Ministry of Health, Labor, and Social Protections no. 537. The newly created center brings together all 5 emergency medical stations in the country: North, Centre, South, Chisinau and Autonomous Territorial Unit of Gagauzia, allowing urgent quality medical services.

Prior to 2018, there was a unique telephone number for medical emergencies (903), separated from police service (902) and firefighters (901). However, on March 29, 2018, the Single National Emergency Call Service (112) was introduced, thus ensuring a quick way of communicating with all emergency dispatchers (fire brigades, medical emergencies and police). According to current rules, the request has to be registered and presented to the emergency team; the team must arrive within 10 minutes and hand over the patient to the hospital in the healthcare facility. The biggest impediments in the emergency Service's activity include the poor state of roads, the means of transport, old equipment, and the shortage of qualified personnel.

Interviewees' views: When asked if there was a trauma system in place or a standard procedure for patient scene response and transfer, respondents reported varying impressions of the extent to which the system was systematic. Within EMI, two of the medical personnel said that there was a pre-hospital system in place (Interviews 1 and 5). The system works by having assessment and treatment steps in place when trauma cases are brought in.

"You can contact the emergency services in the Republic of Moldova by dialing: 903, soon which will be 112. The call is recorded; the ambulance comes to the accident place with a team of: doctor, feldser, if there is need even a reanimatological brigade comes in order to give first medical aid. There is an ABC procedure, all doctors know about. This is a medical care system awarded immediately at the accident place. The patient is transported only after being stabilized. "

The other three medical personnel at EMI said there was no system in place or were not sure whether there was such a system, due to the fact that they interact with the patient only after he/she reaches the hospital. At MCH, the response was that there is no pre-hospital care, but some institutions may provide basic first aid (Interviews 6 and 7).

Everyone mention the great work of emergency dispatcher. The ambulance system is coordinated through dealing 112, previously so called 903. The typical personnel sent out on the ambulance include an emergency doctor, feldsher, and inferior medical assistant.

“These details are usually coordinated by phone with the main physician, but when there will be 112 service, a multidisciplinary team will be involved, not only the doctor, but also the policeman, the fire-fighters, the exceptional situation, so that everyone will get to know about the accident in the same time, either there will be a small one or a mass accident, road accident or intoxication involving one or more people” (Interview 1).

Based on the obtained answers we identified confused the national trauma care system in the country, regarding the pre-hospital and hospital assistance:

“Ambulances system is organized separately, this have nothing with EMI. But basically people call to 903 and the dispatcher is sending the car” (Interview 2); “I cannot tell you...we only intervene to those patients who come here, with the patients coming to the department or in private. If it's an emergency call, then we go for consultation.” (Interview 3)

Depending on the severity of the incident, triage is set up and only well-equipped ambulance comes to provide the necessary medical aid (Interview 5, 6). In determining where the patient goes to receive care, typically the emergency physician decides (Interviews 3, 4, and 6). At the site where the traumatic injury took place, the emergency team determines to what specialized institution they will transport the patient, depending on the severity of the trauma (Interview 1). All municipal children addresses for medical care at the MCH and all those from the country districts- at the Mother and Child Institute (Interview 6, 7). Any traumatic brain injury is sent to EMI and if it is from the country- to the Institute of Neurology and Neurosurgery (Interview 1, 2, and 3). One physician mentioned that location depends on the rules established by the Ministry of Health, Labor, and Social Protection (interview 5). While another stated that, irrespective of the type of trauma, depending on the level of severity, the patient goes to EMI or to Institute of Neurology and Neurosurgery (INN) or to the “Timofei Moşneaga” Republican Clinical Hospital (Interview 4). The most common way to get to the hospital are ambulance or AVIASAN car services in severe cases. One of the physicians at EMI stated that patients may also arrive by helicopter depending on the severity of their injuries (Interview 2). Other ways mentioned: sanitary transport, occasionally car, with exceptional situations car, police, their own car, or relatives/individually. A transfer of patients between hospitals rarely occurs because of non-clear diagnostic, lack of necessary specialists or parents' preferences (Interview 3, 6, 7).

Acute Care:

Existing frameworks of these two hospitals are based on national requirements formulated by the Ministry of Health, Labor, and Social Protection; each collaborator knows each action should be taken according to these norms, even though sometimes they are very old. However, at MCH, one physician also mentioned that protocols are determined by a surgeon who is head of the department (Interview 6).

The doctors in these institutions are governed by certain protocols approved by the Ministry of Health, Labor, and Social Protection which are designed and modeled for the needs of the health system in the country. At each institution level, institutional protocols that regulate the activity of specialists in the field for each case of traumatic pathology are created. TBI has a special place because it has increased heterogeneity, high mortality and a high degree of disability. That is why the institutional protocols together with the national ones allow both the increase of the degree of medical services provided to the patients and provide protection for each of the specialists involved in the treatment of TBI.

The majority of physicians described a similar general framework of how TBI patients move through the hospital, with differences being in the number of possible investigations and access to necessary specialists. Firstly the patient goes through the emergency department, receives specialist's assistance and access to the necessary investigations and if necessary – is hospitalized. If not, the patient is treated ambulatory by a family doctor. The patient arriving at EMI automatically has access to all investigations and necessary medical equipment as well as INN, which is not all possible in districts, due to less equipment access.

While for patients from MCH, CT scans are done at the INN through a council decision or at the nearby medical centers with which the hospital has contracts (Interview 6, 7).

INN is a tertiary institution providing the highest level of treatment for TBI patients. The institution has the high-performance diagnostics services as well as the specialists in the treatment of isolated TBI, also the new treatment methodologies and protocols for TBI. The specialists of this institute have extensive personal and professional experience in the field of injury and treatment. The institution has the state-of-the-art technologies that allow the minimally invasive emergency interventions within the TBI. Both, the extensive use of neuro-navigation, operator microscope, intra operative diagnostic ultrasound imaging allow for a higher level medical act with a more early restoration and higher degree of survival. Also here the patients in the first post-operative days in the neurosurgery services are subjected to neuro recuperation, both motoric and sensory, which is very important as early as these patients.

Country rehabilitation structure:

According to the latest review of the health system in the Republic of Moldova (Țurcanu G., 2012), the rehabilitation services are underdeveloped in the country and the needs of the population far exceed the existing capacities. There are two neurological rehabilitation centers, physiotherapy departments in hospitals and family doctors' centers, a sanatorium for the rehabilitation of children in Sergeyevka (a Black Sea sanatorium in Ukraine), "Nufărul Alb" sanatorium in Cahul - specializing in the treatment and rehabilitation of patients with locomotor disorders, the Vadul-Voda sanatorium for the rehabilitation of patients with cardiovascular diseases and the Calarasi sanatorium for a wider spectrum of diseases. The service package only covers physiotherapy and physical rehabilitation services including physical therapy and massage in primary and specialized health care. Although neurological rehabilitation is contracted by National Health Insurance Company, the availability of services is limited for patients in need.

Interviewees' views: When interviewees were asked about rehabilitation services, they found them lacking and difficult to access. Two of the respondents stated they did not exist at all (Interview 5, 6). Three personnel at EMI stated that there are no real rehabilitation services (Interviews 1, 2, and 5). They mentioned some rehabilitation services at the MCH „Sfânta Treime” and INN (Interviews 1, 3, 4), ambulatory rehabilitation service at Republican Experimental Center Prosthesis, Orthopedics and Rehabilitation (Interview 1), Mother and Child Institute (Interview 6) and private clinics (Interview 1,7) for rehabilitation services. Interviewees stated that a recovery procedure should be required in hospitals (Interview 7) so as to help patients have a quick rehabilitation after trauma. The existing services at the ambulatory level, including massage, kinetotherapy, physio-procedures, are practically in most of the clinics, but due to the a busy schedule and the large number of appeals, patient's seek help from private organizations or outside the country (Interview 1, 7).

Definitive care:

There were 2 hospitals mentioned - the Hospital of Palliative Care No. 4 (Interview 1) and Hospice Angelus Moldova (Interview 7). Palliative care is at an early stage of development in the Republic of Moldova. Until recently, assistance of this type was offered in a fragmentary way only by enthusiastic NGOs and in particular on the basis of donor support (Țurcanu G., 2012). The country is at the stage of development a comprehensive legal framework in palliative care services, but important efforts are needed to implement the approved strategies on this issue.

General Gaps in Treatment and Prevention:

Interviewees perceived the biggest gaps in the prevention and treatment of traumatic injuries to be related to road accidents, traumas, and alcohol-related injuries (Interviews 1, 3, and 5), accidents at home, the lack of health promotion activities at school and kindergarten (Interview 3, 6, 7), and the long arriving time of ambulances (Interview 4). Three physicians mentioned that the population largely contributes to the gap by being unaware of their surroundings and trying to assist in situations where they do not have proper medical knowledge (Interviews 2, 4, 7). It was mentioned the problem of low access to medical equipment (Interviews 6 and 7) and poor financial support from all interviewees. Another gap stated by, were the uninsured persons and possible inconvenience with NHIC (Interview 2). Although, population attitude toward the quickness of ambulance availability and different simulation alarms is still a value to achieve (Interview 4, 5).

Several promising opportunities to reduce the burden of TBIs were mentioned including: informative campaigns, stricter laws, police interventions, support from the Ministry of Labor, Health, and Social Protections, Ministry of Education and Research Education. The EMI hospital have possibility to offer the full treatment to reduce the burden of TBIs (Interview 1, 4, 5), while MCH is less privileged in this respect, both of them arguing for a need for financial support and modern equipment.

When asked about additional resources that would be beneficial to the hospital, there were conflicting responses amongst EMI personnel. One physician mentioned that they need the possibility to evacuate patients and more rehabilitation services, but staff and equipment are sufficient (Interview 1). Another physician mentioned that they do need new equipment, drugs, and supplies (Interview 2). A third physician mentioned that they have everything they need (Interview 3). A nurse mentioned that rehabilitation services and higher pay salary for nurses is necessary, but other staff is sufficient (interview 4). An emergency physician stated that medical staff is insufficient because of poor salaries (Interview 5). The MCH physicians stated that new tools, more funds, more nurses, and better access to training are needed (Interviews 6 and 7).

Interviewees also mentioned the importance of continuing medical education of the staff involved in this field. At the moment, the medical staff has little opportunities to take TBI-related courses, internships, or educational excursions. When they do take part, it is through personal initiative and paid individually, which is very expensive.

Country level TBI Resources:

The lead agency that regulates the treatment of TBI patients is the Ministry of Health, Labor, and Social Protections, this being the central specialized body of the public administration that ensures the implementation of governmental policy in the following fields of activity: health, labor, social protection, demography. The lead agencies in charge of regulation of research funds are the Ministry of Health, Labor, and Social Protection (Interviews 1, 4, and 6), the National Health Insurance Company (Interviews 1, 2, 3, and 5) and the Ministry of Education, Culture, and Research (Interview 1, 7). In Moldova, the most popular medical doctor association for neurosurgeons is the Association of Neurosurgeons of Moldova; they meet once a month for professional discussions on neurosurgical themes and make continuous development. The majority of the interviewees are members (Interviews 1, 2, 3, 6, and 7). Many of the interviewees stated that there were no existing policies or legal frameworks that regulate the treatment and care specific for TBIs, one of the doctors (Interview 6) mentioning that that consultation of the international policies and European standards is a need. We identified 14 national policies related to researched questions (Tab.2).

Table 2:- Moldova's country policy framework on TBI.

No.	National policies	Questions level
1.	National Clinical Protocol "Palliative Care for Children," order no. 329 of 28.04.2016	Pre-hospital care
2.	National Standard of Palliative Care, order no. 884 of 30.12.2010	
3.	National Clinical Protocol "Cranio-cerebral Traumas for Children," order no. 507 of 22.06.2015	Acute care (In-patient)
4.	National Clinical Protocol "Bone Marrow Trauma in Children," order no. 950 of 05.12.2016	
5.	Algorithms for providing medical support in pediatric emergencies, order no. 1231din 31.10.2013	
6.	Algorithms for providing medical support in pediatric emergencies. Open fractures at children	
7.	Standard Clinical Protocol of Pediatric Emergencies, Inter-hospital transfer of pediatric patients, minutes no. 1 of 26.03.2010	
8.	Standards or organization, operation, and practice within emergency primary units, order no. 424 of 02.06.2017	
9.	National Clinical Protocol "Traumatic Luxation's," order no. 578 of 15.07.2011	
10.	National Clinical Protocol "Newborn Fractures," order no. 410 of 19.05.2011	
11.	Order of the Ministry of Health on the organization and functioning of the Emergency Medical Assistance Service of the Republic of Moldova (No. 85,	

	March 30, 2009)	
12.	Standard Clinical Protocol "Triage in Emergency Primary Units," order no. 441 of 07.06.2017	
13.	National Clinical Protocol "Medical Rehabilitation of the patient with cranio-cerebral trauma," order no. 513 of 13.04.2018	Rehabilitation
14.	National Clinical Protocol "Medical Rehabilitation of the patient with vertebra-medullary trauma," order no. 946 of 2015	

Discussions:-

Injuries are a global health priority (WHO; Chandran A., 2010). Injuries are leading causes of mortality in the world, with more than five million deaths each year (Teri A., 2016; Sanyang E., 2017). Inadequate public health infrastructure, including trauma care, in low and middle-income countries has an important role in death and disability from injuries (Paden M, 2004; WHO, 2009; Mock C, 2010; Peek-Asa C., 2015). Traumatic brain injury is a critical public health and socio-economic problem throughout the world, making monitoring of incidence, prevalence and outcome of TBI necessary (Peeters W., 2015). This report is one of the first in Moldova to clarify how the TBI prevention and treatment framework is organized. The study took a unique approach, by exploring different aspects of traumatic brain injury care from the perspective of professionals.

Old fashioned national policies and poor organization of trauma care delivery at the hospitals were identified as the main factors contributing to a non-systematic approach to trauma care provision. Lack of necessary equipment at EDs was identified as one of the main barriers to providing effective trauma care, also absence of specialists, lack of protocols and guidelines for trauma care and inappropriate human resource planning (including recruiting and training). Improvements in the organization of trauma care could significantly improve decreasing the number of deaths and disabilities caused by injuries (Mock CL.J., 2004; Mock CJ.C., 2010). Another important area that needs to be strengthened is the training of professional staff, both formal (during basic and postgraduate) and continuing education. It has been shown that continuing education courses improve the process and outcome of care at hospitals (Mock CJ.C., 2010).

The findings of this study highlighted significant gaps in prevention and treatment of traumatic. The study results show that prevention and rehabilitation of TBI in Moldova remain a challenge despite the acknowledgement of the importance for population health. A study group of the European Brain Council also noted that brain disorders constitute a major health and economic challenge for Europe (Olesen J., 2012). Emergency departments have a significant opportunity to survey injuries in the hospital setting, and to provide injury-prevention interventions (Marlene D. Melzer-Lange, 2013).

Over the last decade, several therapeutic strategies have been introduced for the management of adult traumatic brain injury, such as prevention and improving the treatment (Farhad K., 2013). The Republic of Moldova still has much to implement to apply new evidence and respond to the needs of its population.

Study limitations:

The study included a limited number of medical staff from two emergency hospitals. Despite this, answer the aim of this study and created a vision for us for TBI prevention and treatment in the Country. Future research will explore available quantitative data of TBI to establish rates and trends and enhance our understanding of the current state of TBI prevention and intervention. This will allow for the development of a more systematic, multidisciplinary and robust response system for the benefit of population wellbeing.

Conclusions:-

In the Republic of Moldova in any emergencies cases call to 112 and the necessary healthcare is provided on the place, depending on the level of severity the patients goes to the nearest hospital, EMI, INN or Republican Clinical Hospital. Varies responses were given related to all injuries, however hospital system including certain steps for medical care in different trauma. The legal framework at hospitals is based on national regulations, medical personnel know about the procedures that should be taken in different injuries.

Emergency dispatcher is very well set up, a typical personnel consisting of an emergency doctor, feldsher and an inferior medical assistant. Ambulance cars in the country are well equipped with all-needed supplies and equipment.

The common ways to get to hospital are: ambulance, sanitary transport, occasionally car, with exceptional situations car, police, their own car, or relatives/individually. There are few hospitals equipped with all the necessary equipment, not to mention district hospitals, lack thereof or long time access influences needed medical assistance. Rehabilitation services represent a more sensitive part, there are several procedures in hospitals, but with a large number of requests and a small number of beds, patients apply in private or outside the country, but the costs being obviously higher.

The biggest gaps in the country regarding prevention and treatment of traumatic injuries include road accidents, traumas, alcohol use, accidents at home, health promotion activities at school, kindergarten, long arriving time of ambulance, population medical assistance until the arrival of the ambulance, lack of equipment and small salaries. Possible opportunities to reduce the burden of TBI were mentioned: health promotion and health education campaigns, police interventions, state support, acquiring financial support and modern equipment.

Ministry of Health, Labor, and Social Protections is the lead agency regulating the treatment of TBI patients and National Medical Insurance Company - the lead agency in charge of regulation of research funds. Therewith, the majority of the interviewees stated there were no existing policies or legal frameworks that regulate the treatment and care specific for TBIs. In Moldova, the most popular medical doctor association for neurosurgeons is the Association of Neurosurgeons of Moldova; they meet once a month for professional discussions on neurosurgical themes and make continuous development.

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Conflict of Interest:

All the authors of this manuscript have no competing interest.

References:-

1. Government Decision no. 379 of 07.05.2010 regarding the Program for development of hospital care for 2010-2012 lex.justice.md. 2010. <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=334577> (accessed 2018).
2. Brazinova A, Rehorcikova V, Taylor MS, Buckova V, Majdan M, Psota M, Peeters W, Feigin V, Theadom A, Holkovic L, Synnot A. „Epidemiology of Traumatic Brain Injury in Europe:A Living Systematic Review.” J Neurotrauma. 2016 Aug 25. doi: 10.1089/neu.2015.4126., 2016.
3. Brooks JC, Strauss DJ, Shavelle RM, Paculdo DR, Hammond FM, Harrison-Felix CL. „Long-term disability and survival in traumatic brain injury: results from the National Institute on Disability and Rehabilitation Research Model Systems.” Arch Phys Med Rehabil. 2013 Nov;94(11):2203-9. doi: 10.1016/j.apmr.2013.07.005. Epub 2013 Jul 16., 2013.
4. Brooks JC., Shavelle RM., Strauss DJ., Hammond FM., Harrison-Felix CL.. „Long-Term Survival After Traumatic Brain Injury Part II: Life Expectancy.” Arch Phys Med Rehabil. 2015 Jun;96(6):1000-5. doi: 10.1016/j.apmr.2015.02.002., 2015.
5. Coronado VG, Xu L, Basavaraju SV, McGuire LC, Wald MM, Faul MD, Guzman BR, Hemphill JD. „Surveillance for traumatic brain injury-related deaths--United States, 1997-2007.” MMWR Surveill Summ. 2011 May 6;60(5):1-32., 2011.
6. Hyder AA., Wunderlich CA, Puvanachandra P, Gururaj G, Kobusingye OC. „The impact of traumatic brain injuries: a global perspective.” NeuroRehabilitation. 2007;22(5):341-53., 2007.
7. Langlois JA, Rutland-Brown W, Wald MM. „The epidemiology and impact of traumatic brain injury: a brief overview.” J Head Trauma Rehabil. 2006 Sep-Oct;21(5):375-8., 2006.
8. Ma VY, Chan L, Carruthers KJ. „Incidence, prevalence, costs, and impact on disability of common conditions requiring rehabilitation in the United States: stroke, spinal cord injury, traumatic brain injury, multiple sclerosis,

- osteoarthritis, rheumatoid arthritis, limb loss, and back pa.” Arch Phys Med Rehabil. 2014 May;95(5):986-995.e1. doi: 10.1016/j.apmr.2013.10.032. Epub 2014 Jan 21., 2014.
9. Maas AI, Stocchetti N, Bullock R. „Moderate and severe traumatic brain injury in adults.” Lancet Neurol. 2008 Aug;7(8):728-41. doi: 10.1016/S1474-4422(08)70164-9., 2008.
 10. Majdan M., D.Plancikova, A.Brazinova, M. Rusnak, D. Nieboer, V. Feigin,A. Maas. „Epidemiology of traumatic brain injuries in Europe:a cross-sectional analysis.” Lancet Public Health; 1: e76–83, 2016: [https://www.thelancet.com/pdfs/journals/lanpub/PIIS2468-2667\(16\)30017-2.pdf](https://www.thelancet.com/pdfs/journals/lanpub/PIIS2468-2667(16)30017-2.pdf).
 11. Marlene D. Melzer-Lange, Mark R.Zonfrillo, Michael A.Gittelman. „Injury Prevention: Opportunities in the Emergency Department.” Pediatric Clinics of North America, 2013: Volume 60, Issue 5, Pages 1241-1253.
 12. Mock C, Juillard C, Joshipura M, Goosen J. Strengthening care for the injured: success stories and lessons learned from around the world. . Geneva: World Health Organization, 2010.
 13. Mock C, Lormand JD, Goosen J, Joshipura M, Peden M. Guidelines for essential trauma care. Geneva: WHO, 2004.
 14. „Monitorul oficial.” Hotărârea Guvernului nr.384. 2010. <http://lex.justice.md/md/334620/>.
 15. „Monitorul oficial.” Legea privind supravegherea de stat a sănătății publice. 2009. <http://lex.justice.md/md/334620/>.
 16. National Bureau of Statistics of the Republic of Moldova. <http://www.statistica.md/newsview.php?l=en&id=5523&idc=168>.
 17. Olesen J., Gustavsson A, Svensson M, Wittchen HU, Jönsson B. „The economic cost of brain disorders in Europe.” Eur J Neurol. 2012 Jan;19(1):155-62. doi: 10.1111/j.1468-1331.2011.03590.x., 2012.
 18. Paden M, McGee K, Krug E. Injury: a leading cause of the global burden of disease. WHO, Geneva, 2002.
 19. Park E., Joshua D. Bell, Andrew J. Baker. „Traumatic brain injury: Can the consequences be stopped?” CMAJ, April 22, 2008 178 (9) 1163-1170;., 2008: DOI: <https://doi.org/10.1503/cmaj.080282>.
 20. Peden M, Scurfield R, Sleet D, Mohan D, Hyder A A, Jarawan E. World report on road traffic injury prevention. . Geneva: WHO, 2004.
 21. Peek-Asa C., Hyder A. „Injury prevention and control: the public health approach.” În Oxford Textbook of Global Public Health (6 ed.) Injury prevention and control: the public health approach. 10.1093/med/9780199661756.003.0222, 2015.
 22. Peeters W., Ruben van den Brande, Suzanne Polinder, Alexandra Brazinova, Ewout W. SteyerbergHester, F. Lingsma, Andrew I. R. Maas. „Epidemiology of traumatic brain injury in Europe.” Acta Neurochirurgica, 2015: Volume 157, Issue 10, pp 1683–1696.
 23. Peeters W1, van den Brande R1, Polinder S2, Brazinova A3, Steyerberg EW2, Lingsma HF, Maas AI. „Epidemiology of traumatic brain injury in Europe.” Acta Neurochir (Wien). 2015 Oct;157(10):1683-96. doi: 10.1007/s00701-015-2512-7. Epub 2015 Aug 14., 2015.
 24. Rus D., Chereches RM.,Peek-Asa C., Marton-Vasarhely EO., Oprescu F., Brinzaniuc A., Mocean F. „Paediatric head injuries treated in a children’s emergency department from Cluj-Napoca, Romania.” Int J Inj Contr Saf Promot. 2016 June ; 23(2): 206–213. doi:10.1080/17457300.2013.872671.
 25. Sanyang E., Peek-Asa C., Bass P., Tracy L. Young, Jagne A., Njie B. „Injury factors associated with discharge status from emergency room at two major trauma hospitals in The Gambia, Africa.” Injury.48(7): 1451–1458. doi:10.1016/j.injury.2017.03.048., 2017.
 26. Scholten AC, Haagsma JA, Panneman MJ, van Beeck EF, Polinder S. „Traumatic brain injury in the Netherlands: incidence, costs and disability-adjusted life years.” PLoS One. 2014 Oct 24;9(10):e110905. doi: 10.1371/journal.pone.0110905. eCollection 2014., 2014.
 27. Tagliaferr F, iC. Compagnone, M. Korsic, F. Servadei, J. Kraus. „A systematic review of brain injury epidemiology in Europe.” Acta Neurochirurgica, 2006: Volume 148, Issue 3, pp 255–268.
 28. Teri A. Reynolds, Barclay Stewart, Isobel Drewett, Stacy Salerno, Hendry Sawe, Tamitza Toroyan, Charles Mock. „The Impact of Trauma Care Systems in Low and Middle Income Countries.” Annual Review of Public Health 37(1), 2016.
 29. Țurcanu G., Domete S., Buga M., Richardson E. Revizuirea sistemului de sănătate în Republica Moldova. http://www.old2.ms.gov.md/sites/default/files/revizuirea_sistemului_de_sanatate_din_republica_moldova_hit_2_012.pdf, 2012.
 30. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC). „Traumatic Brain Injury (TBI): Incidence and Distribution. Emergency Department Visits, Hospitalizations and Deaths 2002–2006.” 2004.
 31. WHO. Retrieved from Global Health Observatory (GHO) data:<http://www.who.int/gho/about/en/>.
 32. WHO. World Health Organization. Global status report on road safety: time for action. Geneva, 2009.