ประมวลข้อมูลการบาดเจ็บของผู้ป่วยที่ได้รับการดูแลจากแผนกฉุกเฉิน ของโรงพยาบาลรับ-ส่งต่อแห่งชาติจิกมี ดอจิ วังชุก ทิมพู-ภูฏาน*

Trauma Profile of Patients Receiving Care at the Emergency Department of Jigme Dorji Wangchuk National Referral Hospital (JDWNRH) Thimphu, Bhutan

บทความวิจัย
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บทคัดย่อ

การศึกษาเชิงสำรวจแบบภาคตัดขวางนี้มีวัตถุประสงค์เพื่ออธิบายประมวลข้อมูลการบาดเจ็บของผู้ป่วยที่ได้รับการดูแลจากแผนกฉุกเฉินของโรงพยาบาลรับ-ส่งต่อแห่งชาติจิกมี ดอจิ วังชุก ทิมพู-ภูฏาน ระหว่างเดือนกุมภาพันธ์ - มีนาคม 2554 กลุ่มตัวอย่างจำนวน 140 คน ร้อยละ 61.4 เป็นเพศชาย และร้อยละ 38.6 เป็นเพศหญิง มีอายุระหว่าง 1 ปี ถึง 100 ปี (mean =29.44, SD=18.55) สาเหตุของการบาดเจ็บที่พบบ่อย 3 อันดับแรก คือพลัดตกจากที่สูง ร้อยละ 35 อุบัติเหตุจราจรร้อยละ 27.1 และการถูกทำร้ายร้อยละ 23.6 สถานที่ที่ผู้ป่วยได้รับบาดเจ็บมากที่สุดคือที่บ้าน ร้อยละ 42.1 ชนิดของการบาดเจ็บที่พบมากที่สุดคือกระดูกหัก ร้อยละ 53.5 สำหรับความต้องการด้านจิตใจ ผู้ป่วย ร้อยละ 92 มีความกังวลใจเกี่ยวกับอาการปวด ด้านความต้องการทางสังคม ผู้ป่วย ร้อยละ 68.6 ต้องการให้ติดต่อกับครอบครัวและคนใกล้ชิดของพวกเขา ร้อยละ 38.2 ต้องการการดูแลด้านจิตวิญญาณด้วยวิธีการพื้นบ้านตามความเชื่อของตน ควรมีการศึกษาวิจัยให้ครบระยะเวลา 1 ปี เพื่อให้เกิดความชัดเจนเกี่ยวกับภาพของผู้ป่วยบาดเจ็บที่ได้รับการดูแลที่แผนกอุบัติเหตุ-ฉุกเฉิน แห่งนี้

คำสำคัญ : ประมวลข้อมูลการบาดเจ็บ แผนกฉุกเฉินของโรงพยาบาล ภูฏาน

Abstract

The purpose of this cross-sectional study is to describe the trauma profile of patients receiving care at the emergency department of JDWNRH, Thimphu, Bhutan, during the months of February to March, 2011. One hundred and forty patients participated in this study. There were 61.4% males and 38.6% females, ages ranged from 1 year to 100 years (mean=29.44, SD=18.55). The three most common causes of injury were fall (35%), road traffic injury (27.1%), and assault (23.6%). The most common place of injury was at home (42.1%), and the most common type of injury was fracture (53.5%). For psychological needs, 92% of patients were worried about their pains. Contact with someone (such as families and significant others) was important social needs expressed by 68.6% of the patients. The important social need was expressed by 68.6% of the patients, contact with families and significant others. Spiritual needs were based on traditional practices and beliefs for 38.2% of the patients. Future study for a period of one year was recommended to get a more complete picture of trauma patients receiving care at the emergency department.

keywords: trauma profile, emergency department, Bhutan.

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Background and significance of the study

Trauma is a major cause of premature death and disability worldwide. Trauma and injuries account for a significant portion of the world's burden of disease. Every year 5.8 million people die from injuries and millions more are disabled.[1] It is expected that trauma will be the third leading cause of disease burden in the world by the year 2020.[2]

In Bhutan trauma is a growing concern and there was a threefold rise in injuries over a period of nine years from 2002-2009.[3,4] Response to this national health problem requires a range of activities from better surveillance to more in-depth research and primary prevention, but most are lacking.

There were no studies conducted on trauma in Bhutan and cannot totally rely or depend on research from other settings as it might not hold true for Bhutan due to its unique geographic location, cultures and beliefs. A good understanding of the patients' characteristics and causes of injuries was found to be necessary in designing for prevention of trauma, nursing care, and fulfilling the patients' needs.

Conceptual Framework

The conceptual framework of this study was derived from the World Health Organization's definition of health and literature review. A profile of health is a set of data and information regarding health of the person, therefore the trauma profile is composed of physical health, psychological health, social health and spiritual health.

Research design

This study is an exploratory descriptive cross-sectional study, to describe the trauma profile of patients receiving care at Jigme Dorji Wangchuk National Referral Hospital (JDWNRH) in Thimphu, Bhutan. This type of design could also be used to describe a situation or nature of the phenomenon.[5]

Research questions

1. What are the personal characteristics of trauma patients receiving care at the emergency department?

2. What are the injury characteristics of trauma patients receiving care at the emergency department?

3. What are the needs of trauma patients receiving care at the emergency department?

Population and Sample

The population consists of patients receiving care due to any types of trauma from the emergency department of the National Referral Hospital in Thimphu, Bhutan. The sample included 140 patients recruited for the study.

Inclusion criteria

(1) All trauma patients receiving care at Emergency Department at JDWNRH.

(2) Patients who were willing to participate in the study, and in case of unconscious cases, patients' close relatives who were willing to participate in the study were recruited as well.

Exclusion criteria

(1) Patients who were unconscious and had no relative who could provide the patient's information.

(2) Children without parents or guardian.

(3) Mentally unstable patients without guardian.

(4) Minor cases who by-passed the initial

assessment or received care and treatment at OPD were not recruited in this study.

Instrumentations

The instrument developed for data collection was divided into four sections. Section 1 focused on personal characteristics such as age, gender, occupation, education, ethnicity, religion and marital status. Section 2 investigated injury characteristics including date and time of injury, time of arrival at the emergency room, mode of transportation, length of journey, type of injury including its causes, mechanism and intent. A Revised Trauma Score (RTS), composed of Glasgow Coma Score (GCS), systolic blood pressure, and respiratory rate, was used to measure the severity of injury by health care team, with the total score ranged of 0-12. RTS was classified into three levels as: severe (RTS score = 0-8); moderate (RTS score = 9-11); and mild (RTS score = 12). Pain was measured and classified into four levels according to the Numeric Rating Scale and the FLACC Behavioral Scale. Both instruments had score range from 0-10: a score of 0 indicated no pain; 1-3 was mild pain; 4-6 was moderate pain; and 7-10 was severe pain. Section 3 evaluated treatments and outcomes of care by reviewing patient's records. Section 4 had questions and open-ended questions to measure psychological, social and spiritual needs which had eleven items.

Validity

The developed instrument was reviewed by five experts for content validity, and a content validity index (CVI) was 0.89 by using the formula suggested by Waltz, Strickland, Lenz.[6]

Protection of participants

Protection of human subjects was given due consideration. Participants were duly respected and protected from possible exploitation and harm. They were given the right to refuse or end the interview at any time. Only those willing participants took part after signing the consent form. Results of this study are presented in numbers and percentages to maintain patient confidentiality.

Data Collection Procedures

Approval was obtained from the Institutional Review Board of Khon Kaen University and also from the Research Ethical Board of Health in Bhutan. The researcher also obtained permission from the hospital director, nursing superintendent, heads of departments and units in charges to collect data. The purpose of the study, and how the outcome of the study could help to improve nursing services in future, was explained to participants prior to data collection. Data were collected 10-20 minutes after the initial assessment and treatment were provided to the patients. Most of the data for parts I, II, and III was obtained from patients' charts, and any missing or additional items were obtained from the patients or patients relatives. Psychological needs, social needs and spiritual needs were obtained from the patients who were able to be interviewed using open ended questions. In this study infants, toddler and pre-school children were not interviewed due to their developmental capability.

Data analysis

The Statistical Package of Social Science was used for all descriptive statistics. Frequency, percentage and cross tabulation was applied to describe demographic data, injury data. Mean and standard deviation

were applied to describe age. Content analysis was done for all qualitative data and presented in sentence, words or phrases to answer research questions.

Research results

Ages of the trauma patients ranged from 1 year to 100 years (mean=29.44, SD=18.556). The sample consisted of males (61.4%) and females (38.6%), and 70.2% of the patient's were under the age of 40 years. Injury rate was higher among students (51.5%) followed by non-educated groups (35.6%) and others (12.9%). Low income groups comprised 63% of the injured victims. Religious beliefs in the sample population were as follows: 65.7% were Buddhists; 18.6% were Hindus; 15% were Christians; and 0.7% were Muslims. Some amount of alcohol was used by 32% of the patients.

The highest number of injuries (42.1%) occurred at home; 26.4% were road traffic injuries; (RTI); 15% occurred at the work place; 9.3% occurred at highways/streets, and 7.1% occurred during recreational activities. The National Referral Hospital received 41.4% of the patients from other hospitals and Basic Health Units, and the reminder (58.6%) came directly from the site of injury, mostly from the nearby capital city. Duration of time taken to reach the hospital ranged from 10 minutes to more than 48 hours. The majority of the patient (37.1%) reached the hospital in a taxi.

The most common site of injury was upper limb (33.6%), followed by head (25%), lower limb (22.1%), ocular (8.6%), chest (6.4%), genital (3.6%), and abdomen (0.7%). The most common cause of injury (35% of all injuries) was due to fall, followed by road traffic injuries (27.1%), assault (23.6%), burn cases (7.1%), cuts and foreign bodies (5%), and animal bite (2.2%). Fall injuries included stumbling/slipping (40.8%), fall from a height above 4 meters (30.6%), fall from a height below 4 meters (20.4%), and fall from a tree (8.2%). Assault injuries were classified as domestic violence (61%), assault by gangs (21%), gunshot wound (6%), rape (6%), and stabbing (6%).

Sixty one percent of patients had more than one injury. Fractures were the most common form of injuries (53.5% of the total injuries), of these 10.7% were open fractures, 74.7% were closed fractures, and 14.6% were both closed and open fractures. Bleeding was one of the common signs of injury, observed in 37.9% of the patients. Injury severity was dominant in males, as shown in table 1.

Pain ranked first (92%) according to the psychological need assessment. with of the patients complaining of some degree of pain was expressed by (95.7%, n=134) of the patients. Consultations taken for trauma patients included services of Orthopedics (61%), General Surgery (6.5%), Pediatrics (5.1%), Neurosurgery (7.2%), Gynecology (2.1%), and others (18.1%), including Forensics, Dental, and Ophthalmic. The most common form of diagnostic treatment was X-ray (55.7%). Out of the sample of 140 patients 68.6% were treated and discharged, 24.3% were admitted to general wards, 5% were admitted to ICU, and 2.1% were reported deaths. Table 2 shows patients classified according to severity of injury, cause of injury, sites of injury, mechanism of injury and outcomes of care.

Patients' needs

In this study the physiological needs of the patients were assessed based on patients' personal information and injury information. Needs of the pa-

tients were based on type and severity of injury, and where the patients came from. The psychological, social, and spiritual needs were assessed by using open-ended questions. Psychological needs expressed by patients were related to pain, family, children, nature of injury, and severity of injury. Social needs for those patients referred from others health care facilities included help and support from families, friends and relatives during their stay in capital. Contact of families and significant others and sharing of information were important social needs expressed by 68.6% of the patients.

Spirituality was mainly based on religion and local beliefs. Spiritual needs were based on traditional practices and beliefs for 38.2% of the patient. Understanding patients' beliefs and practices while providing nursing care helped to meet some of the spiritual needs. Some patients (34%) expressed dietary restrictions were important part of their spiritual beliefs.

Table 1: Frequencies and percentage of trauma patients classified by gender and severity of injury (n=140)

		Revised Trauma Score			
		Severe (0-8)	Moderate (9-11)	Mild (12)	
Gender		n (%)	n (%)	n (%)	Total
	Male	3 (60.0)	10 (72.4)	73 (60.3)	86 (61.4)
	Female	2 (40.0)	4 (28.6)	48 (39.7)	54 (38.6)
Total		5 (100.0)	14 (100.0)	121 (100.0)	140 (100.0)

Table 2: Frequency and percentage of trauma patients classified by severity of injury, cause of injury, site of injury, mechanism of injury and outcome of care (n=140)

Severity of injury (RTS) n (%)	Cause of injury n (%)	Site of injury n (%)	Mechanism of injury n (%)	Outcome of care n (%)
Severe (0-8) 5 (3.6%)	RTI =4 (80.0) Burn=1 (20.0)	Ocular & head =2 (40.0) Head=2 (40.0) Whole body=1 (20.0)	Blunt=3 (60.0) Blunt & Penetrating=1 (20.0) Burns=1 (20.0)	Died=3 (60.0) Admitted to ICU =2 (40)
Moderate (9-11) 14 (10.0)	RTI=6 (43.0) Fall=7 (50.0) Burn=1 (7.0)	Ocular=1 (7.1) Head=8 (57.2) Abdomen=1 (7.1) Upper limb=2 (14.3)	Blunt=10 (71.5) Blunt & Penetrating =1 (7.1) Burns=3 (21.4)	Admitted to general ward=9 (64.3) Admitted to ICU=5 (35.7)
Mild 121 (86.4)	RTI=28 (23.1) Animal bite=3 (2.5) Assault=33 (27.3) Fall=42 (34.7) Burn=8 (6.6) Others=7 (5.8)	Lower limb=2 (14.3) Ocular=9 (7.4) Head=2 (19.9) Chest=9 (7.4) Genitalia=5 (4.1) Upper limb=45 (37.2) Lower Limb=29 (24.0)	Blunt=90 (74.4) Penetrating=4(3.3) Blunt & Penetrating =21 (17.3) Burns=6 (5.0)	Treated and discharged=96 (79.3) Admitted to general Ward=25 (20.7)

Discussions

Injury rate was higher in males than in females, and similar results were found in previous research.[7] This is because most females stay at home and take care of family while most men work outside of the home to earn a living for the family. 70.2% of the trauma victims were under the age of 40 years. Trauma is considered the disease of the young, usually between the ages of 15-34 years, and similar results were reported by previous studies.[7,8,9] This study supports the previous findings and is logical since 56% of the total population is under the age of twenty five in Bhutan.[10]

Incidence of trauma was found to be highest among low education level and non educated groups as they were unaware of the safety rules and regulations. Health education on injury prevention should focus on patients who are at risks. Similar findings in Thailand (Khon Kaen Province) and in eastern Nepal have been reported where injury rates among laborers, students and farmers topped the list.[8,11] People at the lower income levels were the most frequent victims of trauma and injuries. World Health Organization reported that 90% of the injury-related deaths occurred in low income countries.[12] People had to take up jobs which were risky such as construction of roads, bridges, hydropower plants, industries, logging, and diggings of tunnels to earn a living and support their families. Poor working conditions and limited access to high quality

health care facilities were some of the factors related to injury and poverty.[12]

The study found that 32% of the patients had history of drinking alcohol. Road traffic accidents, domestic violence and work place injuries were found related to alcohol in previous study, so trauma was described as a symptom of alcoholism.[13] In Bhutan alcohol is freely available. Moreover people drink alcohol during winter to keep themselves warm. It is a social norm that offering and drinking alcohol occurs during social gatherings and religious functions, and under the intoxication injuries can be anticipated. Laws and regulations need regular review and modification to ensure safety. In addition, prohibition of consumption of alcohol during driving or at public places needs to be enforced.

One study in India, conducted in children and another study with the general population in rural and urban settings in Uganda reported the highest number of injury occurred at home.[14,15] The finding of this study were consistent with the previously mentioned studies where the majority (42.2%) of the injuries occurred at home followed by road traffic injuries. Injury at home was related to the lack of awareness amongst the people to make the home a safe place to live. In winter the weather is dry and accidents with fire are common as traditional houses are prone to fire. The ground and drains are covered with ice which is equally hazardous. Education on prevention of injuries needs to be focused on finding possible solutions to risk factors at home and at the workplace. Modifying the environment, construction of safer homes and creating a safer work place should be long term goals.

The majority of patients arrived at the hospital in a taxi (37.1%) or by ambulance (30%). Use of taxies is largely due to their easy availability nearby at the time of injury. Taxi drivers therefore should have basic first aid knowledge and skills to handle trauma patients and transfer them safely to hospitals. The time taken to reach the hospital ranged from 10 minutes to more than 48 hours, which is very high compared to previous studies in Thailand, Iran and India.[7,11,14] There are no facilities to airlift the patients. The difficult mountain terrain is another reason for the long duration of time taken to reach the referral center. In some cases patients were first treated by the local healer and when pain and swelling increased they were brought to hospital, which added more time. Sometimes periphery hospitals had to resuscitate and physiologically stabilize patients to prepare to travel by ambulance, requiring up two days before they reached the tertiary care center.

The most common cause of injury was fall followed by road traffic injury and assault. These results were inconsistent with other studies, where road traffic accidents were the highest causes of injuries in Thailand, Iran, and Uganda.[7,11,15] The most common vehicle causing traffic accidents was car, compared to motorcycles in Thailand.[11] There were only 5% of cases with motorcycle accidents, and this was possible because of cold weather and the two- wheeler populations in the country is less compared to other vehicles. The strict traffic rules and compulsory use of helmet could be the other reasons. However, the trend of road traffic injuries in Bhutan is on rise due to human errors. People driving without a valid driving license, drunk driving and speeding were the main causes of road traffic accidents.[16]

The most common site of injury was the limbs 5.7%, and this result is consistent with the findings from New Delhi, India.17. In Bhutan injury of the extremities was highest. This can be due to the geographical location of the country, where fall from a height is common

and injury results in fractures where limbs are used to support while landing. Injury severity was dominant in males, which was consistent with other studies.[7,8]

In cases involving a fall or RTI the patients presented with fractures, wounds, lacerations, bruises, and other multiple injuries. In this study 75.7% of the injuries were recorded as unintentional and 24.3% as intentional. Domestic violence is a growing concern and its effects are far-reaching resulting in physical, emotional, mental, social, and spiritual deficits in women and children who experience it.[18] Domestic violence also impacts families, community, and society as a whole. Repetitive domestic violence, stress and injury adversely affect women's psychological balance and well being, which in turn influences short and long term health.[18]

Patient needs

Trauma and injuries occur suddenly and patients' needs are based on type, nature and severity of injury. Trauma is a stressful situation and volumes have been published describing post-traumatic conditions, however psychological care at the onset of trauma is frequently lacking. Such psychological care might have led to preventable post traumatic disorder symptoms. In this study 92% of trauma patients mention that cause of worry were the pain, but staff was more concerned about the hemodynamic stability and respiratory distress and paid less attention to pain control. As observed temperature, pulse rate, respiration and blood pressure were recorded but there was no place to record pain score, and pain assessment tools were not used. It was found that proper and adequate pain management in trauma patients' increases comfort reduces stress and has been shown to reduce morbidity and improve long term health outcomes.[19] Control of pain was the most important factor observed in trauma patients to meet their psychological needs and to reduce the risk of post-traumatic disorder.

The most important social need during time of emergency care was sharing of information with relatives and significant others and it was found that patients were more relaxed when they could communicate and share information. Similar findings have been reported in the previous research with ward patients.[20] Concern for patients by nurses has been found to reduce stress on patients as they feel someone is there to help them.[9] It was found that some people needed help but were not sure how to get it, and some even forgot that they were injured and needed to inform their relatives. So it is very important to find out patients' social needs instead of just focusing on physical health.

The Bhutanese health care system is rooted in its practices and is based on different religions, thoughts, beliefs, traditional healers and traditional medicines, so the spiritual needs were linked with each of these components. It was frequently observed during this study that suffering (trauma and injuries), peoples' beliefs and spirituality are interconnected. *Even the most physical suffering is not strictly physical at all. It doesn't end in physical realm where it began. It soaks into the heart and spreads. Suffering is finally connected to the versatile and permanent self, the sprit. Suffering is a spiritual matter.*[20] This was true in this study: that the spirituality and suffering (trauma and injury) had interconnection, even if it was dormant prior to injury. People realized the importance of spirituality and started relating the happenings with it. Usually the spiritual needs were perceived by injured (trauma) patients as a way to find meaning in the midst of suffering and illness, need to affirm relationships to self, others (relatives, families and friends), God, nature, and the need for

the realization of transcendent values such as hope and creativity, compassion, faith, peace, trust, courage and love.[21] Therefore people are more comfortable when their spiritual values are respected and incorporated during treatment.

Implications to nursing practice

Findings showed that unintentional injuries in Bhutan account for (75%) of all injuries, and most of them were preventable. Falls were recorded as the most common cause of injury, followed by road traffic injuries. Prevention of falls and RTIs should be addressed though health education of the risk groups. Assault was the third leading cause of injury in this study (as shown in table 2), and 61% of assaults were related to domestic violence. Nurses who interact with the patients in the health settings are in a position to prevent domestic and teenage violence and to mitigate the long term health consequences of violence that already occurred. Being aware of the problems of domestic violence in the community enables nurses to promote clients' health in sensitive and proactive ways. The most common mode of transportation used by trauma victims to reach the hospital was a taxi (37.1%), as it was the most readily available. Providing basic first aid materials to taxi drivers and training them on first aid management should be looked into to improve care at the site of injury. Assessment of psychological needs, social needs and spiritual needs in children and adolescents requires more time and special techniques to interview and obtain data. In this study only adults and elderly patients provided information on psychological, social and spiritual needs, and response rate was only 36.4%. Public health education awareness campaigns should be initiated regarding the hazards of injury and on its prevention as 75% of the injury were unintentional and most of them were preventable. Health education should be included in school curricula and awareness spread through mass media and by social workers and health personnel. Modification of environment and infrastructure safety are longer-term investments for sustainable safety. Nurses need to provide the highest quality of nursing care to the trauma patients, but work and practices or knowledge gaps may prevent them from providing care that can reduce adverse events. Assessing the health profile of trauma patients on the wards and hospital is one way to raise awareness in nurses when caring for patients. The nurses in the emergency department need training on assessment of patients' needs.

Suggestions

It is recommended to conduct a similar study for a period of one year in order to capture the true picture of trauma profile in the country. Further studies on different ethnic groups should be done to compare injury prevalence among the groups. All ethnic groups were not represented in this study due to duration of the research period. The psychological, social and spiritual needs of the children and adolescent were not covered in this study, so future research should be conducted to provide holistic care.

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