

Original Article

Profile of Medico-legal Cases Coming to Emergency ward of B. P. Koirala Institute of Health Sciences

AK Yadav¹, B Shah², SS Budhathoki³, S Chaudhuri³, BD Aryal¹, GB Malla¹

¹Department of General Practice & Emergency Medicine, ²Department of Forensic Medicine & Toxicology, ³School of Public Health & Community Medicine, BP Koirala Institute of Health Sciences, Dharan

Abstract

Background: Medico-legal case usually presents as an emergency case in any hospital. Profiling of these cases provides with evidence on the burden of the medico-legal cases and identifying ways to better manage these cases in the emergency ward of hospitals.

Objective: To study the profile of medico-legal cases coming to the emergency ward of B. P. Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal.

Material & Methods: We conducted a retrospective review of all medico-legal cases presenting in the emergency ward of BPKIHS from April 2015 to March 2016. The cases were profiled for socio-demography, injury and diagnosis from the medico-legal register at the emergency ward of BPKIHS.

Results: Medico-legal cases comprise almost 10% of all cases at the emergency ward of BPKIHS. A total of 3,715 cases were included in this study. Half (50.0%) of the cases fell in to the category of 25-59 years. Males were almost twice (62.7%) in number, compared to females (37.3%). The top three diagnoses among medico-legal cases are road traffic accidents (41.81%), physical assault (21.13%) and poisoning (20.08%). Other diagnoses were burns, fall injury, sexual assault, self inflicted injury, hanging, gunshot injury, stab injury, machinery injury, drug overdose, blast injury, brought dead, trauma by animal, electrical injury, snake bite and human bite.

Conclusions: There are significant numbers and wide varieties of medico-legal cases that present in the emergency ward of BPKIHS. Given the large number of cases presenting at BPKIHS, there is a potential for future research on medico-legal cases for academic and policy purpose.

Keywords: Medico-legal profile, Road traffic accidents, Injuries in Nepal.

Introduction

A case of injury or illness for which the attending doctor is required to provide an opinion for investigation by a law enforcement agency after assessment of the patient in accordance with the law of the land is commonly known as a medico-legal case.¹

Apart from medical emergencies, emergency ward also deals with the medico-legal cases more frequently than any other department of a general hospital. The medico-legal cases contribute to the workload of the clinician at the emergency ward. Emergency ward is a common entry point for such cases, as most cases require urgent medical attention as well.² It is essential to know the pattern and magnitude of medico-legal cases with respect to the types of cases, age and sex of cases, time of arrival in the

Address for correspondence

Dr. Ajay Kumar Yadav
Department of General Practice & Emergency Medicine
BP Koirala Institute of Health Sciences, Dharan
Email: ajay.yadav@bпкиhs.edu

emergency ward, months and seasons of arrival of cases in casualty; and analyze the data and find out suggestion for improvement of medico-legal work in emergency ward.¹⁻³ Profiling of Medico-legal case is an integral aspect for the Emergency ward for prevention of preventable causalities in future and to study the crime rate in the area.⁴ Several studies emphasise that profiling of medico-legal cases presenting at the emergency ward are essential to provide better care at the ward by knowing what kind of case load to expect and to prepare accordingly.^{1,4,5}

Medico-legal service in Nepal is still at its primitive phase. Limited number of forensic medicine expertise in the country puts the burden into all medical doctors who may or may not be trained adequately in managing a medico-legal case.⁶

B. P. Koirala Institute of Health Sciences, teaching hospital has been providing services for the medico-legal cases in Eastern Nepal since 1994.⁷ We can find profiles of different diseases diagnosed⁸ and different services being provided at BPKIHS⁹ in the literature. However, we could not find a profile of medico-legal cases at the Emergency Ward of BPKIHS in published peer reviewed literature so far. We, therefore, found it necessary to gather information on medico-legal cases towards providing scientific evidences for future programs and contribute for public health interventions in related fields.

Objective

This study is conducted to study the profile of medico-legal cases coming to the emergency ward of BPKIHS.

Material & Methods

A retrospective review of medical records was done to include all medico-legal cases presenting in the emergency ward of BPKIHS in one year (April 2015 - March 2016). We excluded any cases with incomplete records found at medico-legal register. The review included 3,715 cases. Socio-demographic profile, injury profile and diagnoses were recorded from the medico-legal register. All personal identification of the cases was removed from the analysis. Data were presented using frequency and percentages.

The study was conducted after taking ethical clearance from the Institutional Review Committee of BPKIHS.

Results

A total of 3,715 cases was included in this study. Half (50.0%) of the cases fell into the category of 25-59 years. Males were almost twice (62.7%) in number, compared to females (37.3%). Most cases came from Saptari (45.2%), followed by Sunsari (29.1). The socio-demographic characteristics of medico-legal cases can be seen in table 1.

Table 1: Socio-demographic profile of the medico-legal cases (n= 3,715)

Characteristics		Frequency	Percentage
Age (years)	0- 14	134	3.6
	15- 24	1377	37.1
	25- 59	1859	50.0
	60 and above	345	9.3
Sex	Male	2330	62.7
	Female	1385	37.3
Ethnic Group	Janajati (Hill & Terai)	1459	39.3
	Brahmin/Chhetri (Hill)	832	22.4
	Madhesi	992	26.7
	Dalit	311	8.4
	Muslim	93	2.5
	Others	21	0.6
	Unknown	7	0.2
	Saptari	1680	45.2
District	Sunsari	1081	29.1
	Morang	285	7.7
	Dhankuta	133	3.6
	Jhapa	122	3.3
	Siraha	97	2.6
	Udayapur	58	1.6
	Others	259	6.9

Road traffic accidents (41.8%) comprised of the most number of medico-legal cases at B. P. Koirala Institute of Health Sciences, followed by physical assault (21.1%) and poisoning (20.1%). The detailed list of diagnosis of the medico-legal can be found in table 2.

Table 2: Categories of the medico-legal cases (n= 3,715)

Type	Diagnosis	Frequency	Percentage
Accidental	Road Traffic Accident	1554	41.8
	Burns	139	3.7
	Fall Injury	125	3.4
	Machinery Injury	22	0.6
	Trauma by animal	8	0.2
	Electrical Injury	7	0.2

Type	Diagnosis	Frequency	Percentage
Self Inflicted	Poisoning	746	20.1
	Cut injury	78	2.1
	Hanging	48	1.3
	Drug overdose	20	0.5
	Gunshot injury	38	1.0
Inflicted by others	Sexual Assault	81	2.2
	Stab Injury	24	0.6
	Physical Assault (Excluding Gun shot)	785	21.1
	Blast Injury	17	0.5
Unknown	Human bite	2	0.1
	Brought dead	14	0.4
	Snake bite	7	0.2

Among the top three diagnoses, age group 25- 59 years comprised of the highest proportion in road traffic accident (52.5%), physical assault (51.5%) and poisoning (45.8). The proportion of males was higher for road traffic accident (71.2%) and physical assault (67.5%). However, the proportion of females (52.3%) was higher for poisoning. The detail diagnosis according to age and sex is listed in table 3.

Table 3: Diagnosis of medico-legal case according to age and sex

Diagnosis	Age (years)				Sex		Total n (%)
	0-14 n (%)	15-24 n (%)	25-59 n (%)	≥ 60 n (%)	Male n (%)	Female n (%)	
Road Traffic Accident	67 (4.3)	518 (33.33)	816 (52.5)	153 (9.8)	1107 (71.2)	447 (28.8)	1554 (100)
Physical Assault	11 (1.4)	300 (38.2)	404 (51.5)	70 (8.9)	530 (67.5)	255 (32.5)	785 (100)
Poisoning	14 (1.9)	329 (44.1)	342 (45.8)	61 (8.2)	356 (47.7)	390 (52.3)	746 (100)

Diagnosis	Age (years)				Sex		Total n (%)
	0-14 n (%)	15-24 n (%)	25-59 n (%)	≥ 60 n (%)	Male n (%)	Female n (%)	
Burns	8 (5.8)	45 (32.4)	72 (51.8)	14 (10.1)	57 (41.0)	82 (59.0)	139 (100)
Fall Injury	3 (2.4)	41 (32.8)	62 (49.6)	19 (15.2)	92 (73.6)	33 (26.4)	125 (100)
Sexual Assault	17 (21.0)	32 (39.5)	27 (33.3)	5 (6.2)	0 (0.0)	81 (100)	81 (100)
Cut injury	2 (2.6)	32 (41.0)	41 (52.6)	3 (3.8)	52 (66.7)	26 (33.3)	78 (100)
Hanging	2 (4.2)	16 (33.3)	25 (52.1)	5 (10.4)	25 (52.1)	23 (47.9)	48 (100)
Gun shot	2 (5.3)	13 (34.2)	18 (47.4)	5 (13.2)	34 (89.5)	4 (10.5)	38 (100)
Others*	8 (6.6)	51 (42.1)	52 (43.0)	10 (8.3)	77 (63.6)	44 (36.4)	121(100)

**Stab Injury (24), Machinery Injury (22), Drug overdose (20), Blast Injury (17), Brought dead (14), Trauma by animal (8), Electrical Injury (7), Snake bite (7) & Human bite (2)*

Discussion

Medico-legal cases comprise about 10.5% (3,717 cases) of all emergency ward visits (35,324 cases) at the B. P. Koirala Institute of Health Sciences, Dharan, Nepal.⁷ A productive age group of (25-59) years comprised of half of the medico-legal cases in this study. This is in line with other studies as well.^{2-4,10,11} The productive age group is also prone to be involved in medico-legal issues. The proportion of males is higher among the cases, which is also in line with other studies.^{2-4,10,11}

While the institute is located in Sunsari district,¹² a high proportion of medico-legal cases visiting the emergency ward in this institute is from Saptari district. There are other government hospitals also present in east Nepal which are mandated by the Government of Nepal to conduct medico-legal investigation.⁶

This could be an issue for further discussion, whether medico-legal cases are actually higher in Saptari or there are other reasons why this number is high in this institute.

Road traffic accidents are among the highest contributors to the number of medico-legal cases in this study. This is in line with two studies from Nepal^{13,14} and studies from India.^{1-4,10} However, in some centers, road traffic accidents are not among the top diagnosis among the medico-legal cases.¹¹ The reason for these differences could be due to differences in the location of the hospital in urban or rural area and the catchment area of the hospital.

Physical assault is higher among males. Males are physically more active and are involved in outdoor activities. This may also expose them to more interactions and possibly more physical assault. This could further be explored.

Poisoning (52.3%) is higher in females. A study from west Nepal also reports higher incidence of poisoning among females among the medico-legal cases.¹⁵ Agriculture is the major occupation in Nepal and pesticide use is common among these households in Nepal. Poisons are more accessible to women, as rat poisons and pesticides are in small stock at home for agriculture and household use. Burns (59.0%) is another diagnosis that is higher among females. This could be due to household accidents in the kitchen among women. The use of sari among women is considered a risk for catching fire in the kitchen.

Sexual assault is exclusively reported only among females. About 2% of the cases reporting as sexual assault can be considered a significant number socially, as there are 81 reported cases in a year. As sexual assault also is linked to the male dominance of the society¹⁶ and carries a stigma along with it is very commonly under reported. Thus, we can expect that there could have been higher number of sexual assaults than is reported at the hospital.

While keeping fire arms is illegal by civilians in Nepal, gunshot injuries are reported during political movements. The 38 gunshot injury cases in this study came during the politically motivated civil unrest, followed by earthquake in 2015. There were gunshot injury cases reported in other hospitals as well during that time.¹⁷ While it may not seem like common cases for medico-legal issues, fall injuries, burns, injury by animals, trauma by machines, electrical injury, snake bite and human bite fall under medico-legal category in Nepal. Some of these are seen in India as well. These cases bring accusations of intentional harm by another person for personal and social reasons.

With these varieties of cases and a significant proportion of cases visiting the emergency ward of B. P. Koirala Institute of Health Sciences, the attending doctors need to be updated with medico-legal importance and correct way of management of such cases. The medical officers need to be trained and oriented to the management of such cases.⁶

Conclusion

There are a variety of medico-legal cases presenting at the B. P. Koirala Institute of Health Sciences. There may be a need for further research to identify ways to identify burden of these medico-legal cases add to the case load at the emergency ward. Emergency department of BPKIHS may be a good place for future studies involving medico-legal cases.

References

1. Garg V, Verma SK. Profile of medicolegal cases at Adesh Institute of Medical Sciences and Research, Bathinda. *J Indian Acad Forensic Med.* 2007;32(2):150-2.
2. Saxena A, Kumar V, Chaudhary SR, Singh J, Awasthi S. Pattern of medico-legal cases in the casualty department of a teaching hospital, Bareilly, Uttar-Pradesh. *J Indian Acad Forensic Med.* 2015;37(4):338-41.
3. R DK, C ST, Parate SV, N HM. Retrospective study of profile of medico-legal cases in Tumkur Region, Karnataka. *Int J Biomed Adv Res.* 2014;5(1):79-80.
4. Malik Y, Chawla R, Sharma G, Malik P, Singh R, Tripathi A. Profile of medico-legal cases in casualty of a rural medical college of Haryana. *J Indian Acad Forensic Med.* 2013;35(4):367-8.
5. Marri MZ, Baloch U. Frequency and pattern of medico legal cases reported at Sandeman Civil Hospital Quetta Balochistan- one year study. *Med Forum Mon.* 2012;23(9):50-4.

6. Subedi ND, Deo S. Status of medico legal service in Nepal: Problems along with suggestions. *J Coll Med Sci.* 2014;10(1):49-54.
7. B. P. Koirala Institute of Health Sciences. Forensic Medicine and Toxicology. Emergency Hospital [Internet]. 2015 Available from <http://www.bpkihs.edu/?faculty/faculty-of-medicine/forensic-medicine.html>. [accessed 2015 Dec 31].
8. Agrawal N, Sagtani RA, Budhathoki SS, Pokharel HP. Clinico-epidemiological profile of molar pregnancies in a tertiary care centre of Eastern Nepal: a retrospective review of medical records. *Gynecol Oncol Res Pract.* 2015;2(1):1-7.
9. Koirala A, Khatiwada P, Giri A, Kandel P, Regmi M, Upreti D. The demographics of molar pregnancies in BPKIHS. *Kathmandu Univ Med J.* 2011;9(36):298-300.
10. Raju K, Hemanth Raj MN. Profile of medico-legal cases at tertiary care centre. *Int J Recent Trends Sci Technol.* 2015;15(May):68-70.
11. Hussaini SN, Kulkarni CS, Batra AK. Profile of medico-legal cases coming to casualty of Government Medical College, Akola. *J Forensic Med Sci Law.* 2013; 22(2):1-5.
12. B. P. Koirala Institute of Health Sciences. Introduction [Internet]. 2015 Available from: <http://bpkihs.edu/introduction.html>. [accessed 2015 Dec 31].
13. Prasad BK, Prasad C. Road traffic accident (R.T.A.) as major killer: a report on medico-legal autopsies in Bharatpur hospital. *Kathmandu Univ Med J.* 2003;1(1):34-5.
14. Timsinha S, Kar SM, Baral MP, Ranjitkar M. Profile of Pattern of Medico-legal Cases in the Casualty of a Teaching Hospital of Western Region of Nepal. *J Indian Acad Forensic Med.* 2015;37(1):46-9.
15. Mishra A, Shukla SK, Yadav MK, Gupta AK. Epidemiological study of medicolegal organophosphorus poisoning in Central Region of Nepal. *J Forensic Res.* 2012;3(9):1000167.
16. Sapkota D, Bhattarai S, Baral D, Pokharel PK. Domestic violence and its associated factors among married women of a village development committee of rural Nepal. *BMC Res Notes. BioMed Central;* 2016;9(1):178.
17. Joshi A. Management of gun shot injury in a tertiary hospital. *J Soc Surg Nepal.* 2015; 18(3):56.