

Prevalence and Epidemiological Profile of Medico-legal Cases of Suicidal Autopsy at a Tertiary Care Hospital of Central Nepal

Kashev Shrestha,¹ Arish Upreti,² Praful Gurung,³ Dhiraj Shah,¹ Natasha Shrestha,⁴ Hari Prasad Upadhyay⁵

¹Department of Forensic Medicine, ²Department of Community Medicine, College of Medical Sciences and Teaching Hospital, Bharatpur, Chitwan, Nepal, ³Department of Orthopaedic, Aapipal Hospital, Gorkha, Nepal, ⁴Department of Orthodontics & Dentofacial Orthopaedics, College of Medical Sciences and Teaching Hospital, Bharatpur, Chitwan, Nepal.

⁵Department of Statistics, Birendra Multiple Campus, Bharatpur, Chitwan, Nepal.

ABSTRACT

Background

A medico-legal case (MLC) arises from an unnatural incident causing physical harm, necessitating intervention and legal resolution. MLCs integrate medical and legal aspects, requiring both a physician's assessment and an investigation by law enforcement, often involving autopsy. The objective of this study was to find the prevalence and epidemiological profile of medico-legal autopsy cases of suicide at a tertiary care hospital of central Nepal.

Methods

A retrospective cross-sectional study conducted at College of Medical Sciences, Bharatpur, Chitwan, Nepal, between December, 2023 and February, 2024 on suicidal autopsy cases. Suicidal autopsy data of last three years (from 2077/78 to 2079/80) were collected from the Bharatpur hospital's autopsy record file. Descriptive statistical tools were used for data analysis. For, categorical variables frequency and percentage were calculated while mean and standard deviation were used for continuous variables. Data was entered and analyzed by using SPSS-20.

Results

The prevalence of Medico-legal cases of suicidal autopsy in Chitwan district in last three year is 29.16% (with 95% CI as 27.23% to 31.16%). The trend of suicidal autopsy in last three year is in increasing trend in this area. Majority (21.86%) of suicidal cases were in the age group 46-60 years. Male (64.11%) cases dominated female cases in Suicidal autopsy. Majority (34.42%) of suicidal attempt was at 6-12:00 noon and the most common method of suicidal attempt cases were by hanging (81.57%). Most of the case were in Monday and in occurred in Ashoj.

Conclusions

The trend of suicidal autopsy in the last three year is in increasing trend in central Nepal. Among the total autopsy cases, prevalence of suicidal autopsy is one third. The burden of suicidal cases is significantly high among male

Keywords: medico-legal case; suicidal; autopsy; hanging; Nepal.

INTRODUCTION

A medico-legal case (MLC) arises from an unnatural incident causing physical harm, necessitating intervention and legal resolution.¹ MLCs integrate medical and legal aspects, requiring both a physician's assessment and an investigation by law enforcement, often involving autopsy.² Autopsy, an

investigative dissection of a deceased body, is crucial for identifying unknown bodies, determining time since death, and ascertaining the cause of death, whether natural or unnatural, accidental, suicidal, or homicidal.³ Suicide is death caused by injuring oneself with the intent to die.² Suicide in globally is the fourth leading cause of death among 15–29-year-

Correspondence: Dr. Kashev Shrestha, Department of Forensic Medicine, College of Medical Sciences and Teaching Hospital, Bharatpur, Chitwan, Nepal. Email: shresthakashev@gmail.com. Phone: +977-9845237333.

Article received:2024-02-15. **Article accepted:**2024-03-18.

olds and occur in low- and middle-income countries.⁴ The most represented suicide mechanisms globally were hanging, jumping from a height, ingestion of pesticide, drug overdose, gunshot, stab wounds, suffocation, and traffic accident.⁵ Suicide in Nepal is in increasing trend and its higher in male than female.⁶ Presence of stressful life events like financial problems, break-up in relationship, violence, abuse, chronic pain, illness and suffering, conflict, disaster and existing psychiatric morbidity are some of the most common cause of suicide.^{7,8} Hanging, poisoning, drowning, blunt injury, burns, stab wounds and suffocation are common autopsy finding in Nepal.^{1,9} The objective of this study was to find the prevalence and epidemiological Profile of Medico-legal Autopsy Cases of Suicide at a Tertiary Care Hospital of Central Nepal.

METHODS

The retrospective cross-sectional study conducted at College of Medical Sciences, Bharatpur, Chitwan, Nepal, between December, 2023 and February, 2024 focused on suicidal autopsy cases. Ethical approval was taken from Institutional review Committee of College of Medical Sciences, Bharatpur, Chitwan, Nepal (Ref No. COMSTH-IRC/2024-004). Administrative approval was taken from district police office of Bhratpur, Chitwan and suicidal autopsy data of last three years (from 2077/78 to 2079/80) were collected from the district police office autopsy record file of Bhratpur, Chitwan, Nepal. The prevalence of suicide-related autopsies, as indicated by a previous study in Pokhara by Baral et al., was 59.09%. By taking this as a prevalence with 95% confidence interval and a 5% margin of error, the sample size was $Z^2pq/e^2=1.962 * 0.59 * 0.41 / (0.05 * 0.05) = 372$. After taking 10% none response error, sample size was 410. However, the research was conducted among 613 autopsy cases related to suicide. Information was gathered using a self-structured questionnaire from hospital record files and descriptive statistical tools were used for data analysis. For categorical variables, frequency and percentage were calculated, while mean and standard deviation were used for continuous variables. The

analysis was performed using SPSS-20 software.

RESULTS

Among the total 2102 autopsy cases done in last three years. The prevalence of medico-legal cases of suicidal autopsy in Chitwan district in last three year is 29.16% (with 95% CI as 27.23% to 31.16%) (Table 1).

Prevalence of	Frequency (%)	95% CI	
		Lower	Upper
Suicidal autopsy	613 (29.16)	27.23	31.16
Others autopsy	1489 (70.84)		

This showed that the trend of suicidal autopsy is in increasing trend in this area (Figure 1).

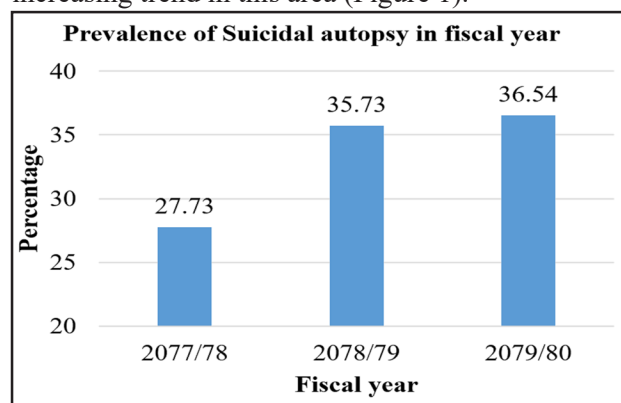


Figure 1. Prevalence of Suicidal cases in last three fiscal year. (n=613)

Out of 613 suicidal autopsy, majority (21.86%) of them were in the age group 46-60 years followed by 19.58% in the age group 36-45 years. In the gender, majority of them were male (64.11%). The prevalence was high among indigenous group (54.02%) and they

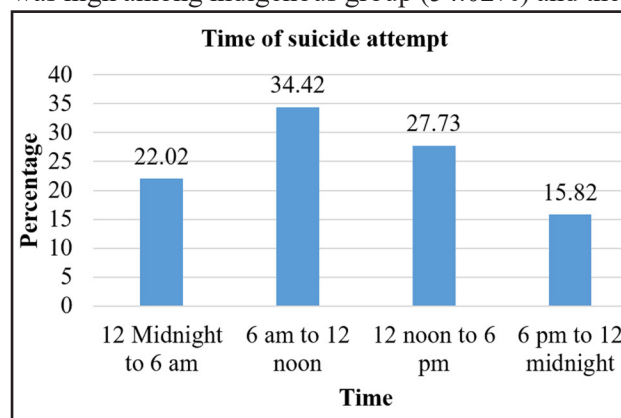


Figure 2. Time of suicide Attempt. (n=613)

were from Hindu religion (87.06%). The burden of suicidal attempt was high among agriculture respondents (33.28%) followed by Unemployment (19.90%) and least were drivers (0.16%) (Table 2).

Table 2. Sociodemographic information of suicidal autopsy cases. (n=613)	
Sociodemographic variables	Frequency (%)
Age (Years)	
<16	36 (5.87)
16-25	114 (18.60)
26-35	102 (16.64)
36-45	120 (19.58)
46-60	134 (21.86)
>60	105 (17.13)
Unknown	2 (0.33)
Gender	
Male	393 (64.11)
Female	219 (35.73)
Unknown	1 (0.16)
Ethnicity (2079/80) (n=224)	
Brahmin	31 (13.84)
Chhetri	31 (13.84)
Indigenous group	121 (54.02)
Dalit	37 (16.52)
Madhesi	2 (0.89)
Others	2(0.89)
Religion (2079/80) (n=224)	
Hindu	195 (87.05)
Buddhist	26 (11.61)
Christian	0 (0.00)
Islam	0 (0.00)
Others	3 (1.34)
Occupation	
Agriculture	204 (33.28)
Unemployment	122 (19.90)
Labor	62 (10.11)
Employee	24 (3.92)
Business man	12 (1.96)
Drivers	1 (0.16)
Housewife	89 (14.52)
Students	48 (7.83)
Foreign employment	22 (3.59)
Unknown	29 (4.73)

Figure 2 showed the time of suicide attempt. Majority (34.42%) of suicidal attempt was done at 6-12:00 noon followed 27.73% at 12:00-18:00 while 22.02% at 24:00-06:00 (Figure 2).

Table 3. Information related to methods of suicide and causes. (n=613)	
Variables	Frequency (%)
Methods of suicide	
Hanging	500 (81.57)
Poisoning	103 (16.80)
Jumping (fall)	7 (1.14)
Burn	3 (0.49)
Causes	
Quarrelling among family members	123 (20.065)
Breakup in love	16 (2.610)
Hyperactive	218 (35.563)
Poverty	20 (3.263)
Business related issue	6 (0.979)
Chronic disease	6 (0.979)
Unsuccessful	41 (6.688)
Dominate from family	21 (3.426)
Loneliness	123 (20.065)
Others	55 (8.972)

Regarding the method of suicide, 81.57% cases were by hanging, followed by taking poison (16.80%). Following table showed the information related to the suicidal attempt in weeks and months. Finding showed that 16.94% suicidal attempt was

Table 5. Information related to week and month related suicidal case. (n=613)	
Variables	Frequency (%)
Weeks	
Sunday	89 (14.5)
Monday	104 (16.94)
Tuesday	83 (13.52)
Wednesday	88 (14.5)
Thursday	70 (11.4)
Friday	103 (16.78)
Saturday	76 (12.38)
Months	
Baisakh	47 (7.67)
Jestha	78 (12.72)
Asadh	45 (7.34)
Shrawan	54 (8.81)
Bhadra	51 (8.32)
Ashoj	73 (11.91)
Kartik	44 (7.18)
Mangshir	33 (5.38)
Poush	36 (5.87)
Magh	39 (6.36)
Falgun	69 (11.26)
Chaitra	44 (7.18)

done in Monday followed by 16.78% on Friday and least were Saturday (12.28%). Similarly, in monthly distribution majority suicidal attempt on Ashoj and least in Asad (Table 5).

DISCUSSION

In this research, an analysis of suicidal autopsy cases conducted over the past three years indicated that the prevalence of such autopsies was 29.16% (with a 95% confidence interval ranging from 27.23% to 31.16%). While the study conducted in Sri Lanka by Kitulwatte et al., reported that 32% were suicides.¹⁰ Likewise Rajoo's study mentioned that 24.83% suicidal.¹¹ Similarly, CK Pawar et al., mentioned the prevalence of suicidal autopsy was 30%.¹² All of these above mentioned study are contrary with current study conducted by Baral in Nepal showed that the prevalence of suicidal cases was 59.09%.¹ Thounaojam Meera et al., had found that suicidal cases was 3.75%.¹³ The majority of cases present for autopsy was (21.86%) belonged to the age group of 46-60 years, while 19.58% in the 36-45 age group. In contrast, Baral's study indicated that the highest number of autopsy cases within the age group context was 21-30 years age group, accounting for 39.35% followed by the 31-40 years age group.¹ Similarly, Tanuja R. Brahmkar and Sachin K. Sharma found that the maximum number of assault cases occurred in the 21-30 years age group (33.1%), followed by the 31-40 years age group (28.4%). A study conducted by Manju et al., also showed a distribution of cases with the highest proportion in the age group of 20-30 years (29.7%), followed by 30-40 years (19.3%), mirroring the current study's age group distribution.¹⁴ Dileep Kumar R et al., found that the maximum number of cases belonged to the age group of 21-30 years (53 cases), followed by 31-40 years (35 cases), which is consistent with the current study.¹⁵ In a retrospective study conducted by Trangadia et al., in a tertiary care hospital in Gujarat, India, it was observed that maximum number of cases were in the age group

of 21-30 years (32.10%).¹⁶ Regarding gender distribution, male cases dominated female cases, accounting for 64.11%. This finding is consistent with the findings of Baral,¹ this study was conducted by taking the data of past two years, observed a similar dominance of male cases in female autopsy instances. This observation is consistent with the report by Ngbea et al., from Nigeria.¹⁷ Studies conducted elsewhere have also reported a higher representation of males in medico-legal cases in tertiary care hospitals, aligning with the current study's results. Yadav et al., s study in Dharan, Nepal, on the profile of medico-legal cases in emergency departments also highlighted a higher incidence of male cases (62.7%) compared to females (37.3%).¹⁸ Similarly, Dileep Kumar R et al's study in Kerala, India,¹⁵ and another study in South Kerala both revealed a similar pattern, with male cases outnumbering.¹⁴ In a retrospective study conducted by Trangadia et al in a tertiary care hospital in Gujarat, India, it was observed that male cases predominated over female cases, accounting for 72.77% and 27.23%.¹⁶ Regarding the causes of death were of suicide, this study found that 81.57% cases were by hanging, followed by taking poison (16.80%). While the study conducted by Marri et al mentioned that, the causes of death were hanging (37.5%), drowning (12.5%), burn (0.93%), electrocution (4.67%), and bullet (1.87%).¹⁹ A study done by Chughtai et al., observed that the causes of death in their institution were blunt injury (14.06%), sharp force (6.25%), drowning (4.68%), and firearm (51.56%).³ Aziz et al., reported that 58% of deaths were due to blunt force, consistent with the current study except for deaths due to firearm injury.²⁰ Bansude et al., in their study observed that the cause of death by trauma was 38.09%, burn injury 26.73%, asphyxia 9.8%, and poisoning was 21.21%, where the death due to trauma is consistent with the current study.²¹ Sharma et al., found death due to burn injury as a cause of death was 7%, hanging 5%, which

differs from the current study as death due to hanging cases are higher in number than those due to injury cases.²² Romana Malik et al, in their study, reported that the causes of death were distributed as follows: 40% due to Road Traffic Accidents (RTA), 31% from blunt injuries, 19% from sharp injuries, 2% from sexual assault, 4% from poisoning, and 4% from firearm cases.¹⁹ In a study conducted in Ethiopia by Solano, the causes of death in forensic science were found to be due to strangulation (7.5%), suffocation (0.8%), others (0.5%), hanging (88%), poisoning (10%), bullet (0.7%), drowning (8.5%), electric current injury, and burn (0.8%).²³ This report differs significantly from the findings of the current study, as blunt injury cases were more prevalent, followed by hanging and then other causes. Majority (34.42%) of suicidal attempt was done at 6-12:00 noon followed 27.73% at 12:00-18:00 while 22.02% at 24:00-06:00. While

study conducted by Manju et al., showed that more cases were reported during 12 noon to 6pm followed by 6pm to 12 midnight.¹⁹ This research finding showed that 16.94% suicidal attempt was done in Monday followed by 16.78% on Friday and least were Saturday (12.28%) while in monthly distribution majority suicidal attempt was on Ashoj and least in Asad.

CONCLUSIONS

The trend of suicidal autopsy in the last three year is in increasing trend in central Nepal. Among the total autopsy cases, prevalence of suicidal autopsy is one third. The burden of suicidal cases is significantly high among male and most of them were in the age group 46-60 years. The most common method of suicidal attempt was hanging. Majority of cases were in morning, Monday in week and Asoj in month.

Conflict of interest: None

REFERENCES

1. Baral MP. Profile of autopsy cases in central level hospital of Nepal. A retrospective study of two years. *Asian Journal of Medical Sciences*. 2020;11(3):47-50.
2. Klein H, Washington TA. Evidence of syndemic effects influencing older transgender persons' likelihood of contemplating suicide: results from a large national study. *Aging & Mental Health*. 2023:1-11.
3. Chughtai BR, Iqbal M, Afraz N. Study of medico-legal autopsies at tehsil level. *Journal of Rawalpindi Medical College*. 2013;17(2).
4. Osisanwo A, Shyllon O. "We Only Came Home to Find His Body Dangling": Voices and Practs in Selected Nigerian Newspapers Reportage on Suicide. *Qeios*. 2023.
5. Imran N, Tariq F, Bhatti I, Tariq SS, Ali R, EhsanUllah H. PATTERN OF SUICIDE DEATHS: A RETROSPECTIVE 5-YEAR AUTOPSY SAMPLE ANALYSIS IN PAKISTAN. *Journal of Pakistan Psychiatric Society*. 2022;19(04).
6. Marahatta K, Samuel R, Sharma P, Dixit L, Shrestha BR. Suicide burden and prevention in Nepal: the need for a national strategy. *WHO South-East Asia journal of public health*. 2017;6(1):45-9.
7. Pandey AR, Paudel S, Belbase P. High suicide rates among Nepalese population: need for action. 2022.
8. Arafat SY, Menon V, Varadharajan N, Kar SK. Psychological autopsy studies of suicide in South East Asia. *Indian journal of psychological medicine*. 2022;44(1):4-9.
9. Vijapura MT, Momin SG, Patani K. Epidemiological Profile of Medico-Legal Autopsy Cases Reported at a Tertiary Care Center. 1 Medicolegal Aspects during Mass Casualty Due to Road Traffic Accidents in the Era of Covid: A Tertiary Care Institutional Experience 1 Ambrish Kumar, Amit Chaudhary

- 2 The Study of 'Preparation Guidelines' Towards Phetchabun Government Officers and Health Massage Establishments 4. 2023:24.
10. Kitulwatte I, Edirisinghe P, Pratheepa Mendis H, Wijesinghe PR, Fernando A, Abeyrathna A. Study on the pattern of unnatural deaths of women brought for medico-legal autopsy. 2017.
 11. Dere RC, Rajoo CK. Study of unnatural deaths in females a medicolegal study at rural medical college, Loni. Journal of Indian academy of forensic medicine. 2011;33(3):211-3. Pawar C, Bhullar D, Oberoi S, Aggarwal K. Profile of unnatural deaths in females a retrospective study. Journal of Indian academy of forensic medicine. 2014;36(2):122-4.
 12. Meera T, Nandeibam P, Fimate L, Maring SK, Sangma M. Spectrum of unnatural female deaths in Manipur: A postmortem study. Journal of Medical Society. 2015;29(2):88-91.
 13. Manju L, Beevi P. A study on medico legal cases attended in a tertiary care hospital in south Kerala. Int J Health Sci Res. 2018;8(11):257-60.
 14. Kumar D, Siddaramanna T, Parate S, Hemanthraj M. Retrospective Study of Profile of medico-legal cases in Tumkur region, Karnataka. Int J Biomed Adv Res. 2015;6(4):339-40.
 15. Trangadia MM, Mehta RA, Rada NH, Gupta B. Profile of medico-legal cases in tertiary care hospital in Jamnagar, Gujarat: Retrospective study of one year. J Res Med Den Sci. 2014;2(4):57-62.
 16. Ngbea J, JegedeOO VR, Ojo B, AkporIO N. Medico-legal autopsies in Benue state university teaching hospital, Makurdi north central Nigeria: A 5 year review. Int J Health Sci. 2017;5:641-5.
 17. Yadav AK, Shah B, Budhathoki S, Chaudhuri S, Aryal B, Malla G. Profile of Medico-legal Cases Coming to Emergency ward of BP Koirala Institute of Health Sciences. Journal of BP Koirala Institute of Health Sciences. 2018;1(2):50-6.
 19. Malik R, Atif I, Rashid F, Abbas M. An analysis of 3105 medico legal cases at tertiary care hospital, Rawalpindi. Pakistan journal of medical sciences. 2017;33(4):926.
 20. Aziz F, Azhar T, Baluch NA. Manners and modalities of unnatural deaths in Multan. Pak J Med Health Sci. 2017;11(4):1472-74.
 21. Bansude M, Kachare R, Dode C, Kumre V. Trends of unnatural deaths in latur district of Maharashtra. Journal of Forensic Medicine, Science and Law. 2012;21(2).
 22. Sharma DK, Meena PR, Punia RK, Pathak D. Comparative trends of accidental to intentional mortalities over one-year period at a tertiary care centre. International Journal of Research in Medical Sciences. 2018;6(5):1574-8.
 23. Solano E, Mayedo Y, Seyoumk M. A one-year retrospective study on the pattern of death found at autopsy at Forensic Pathology Department, Menelik II Hospital in Addis Ababa, Ethiopia. East and Central African Journal of Surgery. 2017;22(1):98-106.

Citation: Shrestha K, Upreti A, Gurung P, Shah D, Shrestha N, Upadhyay HP. Prevalence and Epidemiological Profile of Medico-legal Cases of Suicidal Autopsy at a Tertiary Care Hospital of Central Nepal. JCMS Nepal. 2024; 20(1): 12-7.