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Original Research Article

Analysis of suicide hanging deaths in South Bangalore: A three-year retrospective study

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ABSTRACT

Introduction: Hanging is the most frequently encountered asphyxial death in forensic medicine practice. It is the second most common method employed to commit suicide in India. Easy availability and presence of wide range of ligature materials at home itself makes hanging a preferred method of committing suicide. This study was done at Kempegowda Institute of Medical Sciences & hospital Bangalore with an aim to evaluate suicidal hangings through perusal of postmortem reports retrospectively during the study period between Jan 2011 to Dec 2013.

Materials and Methods: During the 3-year study period the study population had a total of 519 decedents ranging between age 11 years to 77 years. Victims of both sexes comprised the study population. Suicidal hangings with reference to age, sex, socioeconomic status of the decedents, educational qualification, motive, time, type of suspension and position of knot were studied to evaluate the relationship between different parameters.

Results: 62.63% of the decedents were males. The most common age group affected were in their third decade of life, who made 43.35 population 66.1% of victims died in complete suspension and remainder 33.0952% of victims had typical knot placement while 47.6% had atypical knot placement. 58.38% of victims belonged to lower socioeconomic strata of which a majority shared an educational qualification up to pre-university weighing a percentage of 26%. The motive in majority of the deaths remained unknown (38.15%), family disputes ranked second with a percentage of 36.03.

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1. Introduction

Worldwide, hanging is one of the most used suicide methods and hanging is the second most common method employed to commit suicide in India.¹ Hanging is a type of violent mechanical asphyxial death which is caused by complete or partial suspension of body by the ligature material, encircling the neck and force of constriction being at least part of the weight of body. When no part of the body touches the ground, such a suspension is referred to as complete hanging. And when some part of the body is in contact with

the ground after hanging, it is referred to as partial hanging. While complete hangings are mostly suicidal in manner, partial hanging is regarded as 'almost always' suicidal.² When the ligature is applied around the neck, the knot is positioned at the nape of neck just below the occiput in the midline, such a hanging is called typical hanging and when it is situated at any place away from the nape of neck in the midline it is referred to as atypical hanging.³

1.1. Magnitude of the problem

The global suicide rate is 16 per 100,000 population. It is estimated that on average, one person commits suicide

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every 40 seconds somewhere in the world. About 1.8% of worldwide deaths are suicidal in manner. A review of data of 56 countries found that hanging was the most common method in most of the countries. According to WHO data, highest incidence of hanging was found to be 90.6% in Kuwait (1995–2001) and 83.1% in Lithuania (1998–2004) among the total number of suicide cases. Suicidal hanging also happens to be the most preferred method in neighboring countries to India such as Bangladesh and Pakistan from at least a decade.⁴ National Crime Records Bureau (NCRB) in 2012 reported that, about 46,000 suicides occurred in India, of which 26% of the victims preferred hanging as the method of suicide. In 2018 NCRB reported 51.5% of deaths due to suicidal hanging out of the total number of suicides (73,826 persons). Further, in 2019 NCRB reported that out of the 74,629 victims of suicide, hanging deaths formed 53.6% of the total. Familial disappointments, marital problems financial losses, poverty, disgust with life, physical and mental sufferings, love failures, failures in many other aspects, jealousy, work and educational stress/fear were found to be the known reasons for committing suicide by hanging.^{5–7} Easy availability and presence of wide range of ligature materials at home, also makes hanging a preferred method of committing suicide.⁸ We observed that majority of the cases coming to KIMS hospital Bangalore for postmortem examinations were deaths due to hanging. Hence, we decided to carry out a three-year retrospective study to evaluate suicidal hanging death rates and different other parameters such as age, sex, socio-economic status, educational qualification, motive, time, type of suspension and position of knot in suicidal hangings to understand their relationship and to make some constructive suggestions towards its prevention. The observations thus made are represented in this paper by us.

2. Materials and Methods

The study material consisted of 1656 medicolegal autopsies conducted in the department of forensic medicine and toxicology, Kempegowda Institute of Medical Sciences, Bangalore, Karnataka between January 1st 2011 to December 31st 2013 making it a period of three years. Of these, 552 cases (33.3%) were deaths due to hanging. Among them 519 hanging deaths were suicidal in manner (94.02%). These suicidal hanging deaths were studied retrospectively after obtaining clearance from the institutional ethical clearance committee.

2.1. Criteria for selection & Exclusion of cases

1. All victims of suicidal hangings were only selected, who were either brought dead or died in the hospital after admission.

2. All victims of accidental and homicidal hanging deaths were excluded.

2.2. Material

1. Suicidal Hanging decedents subjected to medico legal autopsy.
2. Documents received from investigating officers, postmortem examination reports.
3. Hospital records in cases which were admitted in some or same hospital before death.
4. Autopsy table and instruments.

2.3. Method

A detailed proforma was prepared for recording the particulars such as history, age, sex, socio-economic status, educational qualification, motive, time, type of suspension and position of knot after reviewing police statements, interviews with the relatives of the decedents and post mortem examination reports. Cases in which a parameter could not be identified were grouped under the heading 'Unknown'. The information thus collected, was analyzed using appropriate statistical tools (namely Microsoft Excel and IBM SPSS).

3. Results

During this study period, a total of 1656 cases were brought for post-mortem examination out of which 552 (33.3%) deaths were due to Hanging. Of them, 519 Hanging deaths were suicidal in manner (94.02%). The different variables studied were age, sex, socio-economic status, educational qualification, motive, time, type of suspension and position of knot. The highest number of victims 225 (43.35%) belonged to age group of 21-30 years, where mean of age among this group was 26 years. (Table 1) Males dominated females in number of deaths. 325 victims were males (62.62%) and 194 victims were females (37.38%). (Table 2) Among the victims 58.38% belonged to lower socio-economic stratum. (Table 3) Majority of the victims (25.8%) were having an educational qualification up to preuniversity. Shared statistics of 24.85% and 24.08% were victims holding education up to higher primary and basic degree respectively. (Table 4) The most common motive could not be determined and hence categorized as unknown weighing 38.15%, however the second most common motive was found to be a serious family dispute accounting to 36.03%. (Table 5) Majority of the victims committed suicide between 12AM to 6AM which amounted to 40.66% of the total cases. (Table 6) While estimating the suicidal hanging deaths based on type of suspension, we observed that majority of the victims died in complete suspension (66.09%) while the remainder 33.9% died in partial suspension. (Table 7) When we estimated suicidal hanging deaths with respect to the position of knot, we

observed that 52.4% of the victims fell under typical hanging category and 47.6% fell under atypical hanging category. (Table 8)

Table 1: Age wise distribution of decedents

S. No	Age Group (Years)	No. of Deaths	Percentage (%)
1.	11-20	90	17.34
2.	21-30	225	43.35
1.	31-40	101	19.46
4.	41-50	60	11.56
5.	51-60	28	5.39
6.	61-70	11	2.11
7.	71-80	4	0.77

Table 2: Sex wise distribution of decedents

Sex	No. of Deaths	Percentage (%)
Male	325	62.63
Female	194	37.37

Table 3: Socio economic strata of decedents

S No.	Socioeconomic status	No. of Deaths	Percentage (%)
1.	Upper	48	9.24
2.	Middle	168	32.26
3.	Lower	303	58.38

Table 4: Educational background of decedents

S. No.	Educational Qualification	No. of Deaths	Percentage (%)
1.	Masters degree	56	10.78
2.	Basic Degree	125	24.08
3.	Up to preuniversity	134	25.8
4.	Up to Higher Primary	129	24.85
5.	Unknown	75	14.45

Table 5: Motive for suicidal hanging

S. No.	Motive	No. of Deaths	Percentage (%)
1	Family Dispute	187	36.03
2	Unemployment	103	19.84
3	Failures in Life	22	4.23
4	Physical disability/disease	7	1.34
5	Mental Illness (Including borderline)	2	0.38
6	Unknown	198	38.15

Table 6: Time of committing Suicide by Hanging

S. No.	Time	No. of Deaths	Percentage (%)
1	12AM-6AM	211	40.66
2	6AM-12PM	48	9.24
3	12PM-6PM	168	32.36
4	6PM-12AM	92	17.74

Table 7: Suicidal hanging deaths based on type of suspension

S.No.	Type of Suspension	No. of Deaths	Percentage (%)
1.	Complete	343	66.1
2.	Partial	176	33.9

Table 8: Suicidal hanging deaths based on position of knot

S. No.	Position of Knot	No. of Deaths	Percentage (%)
1.	Typical	272	52.4
2.	Atypical	247	47.6

4. Discussion

Understanding a complex phenomenon like suicide in a country as diverse as India through studies of varying strengths and limitations is quite a challenge with the added burden of under-reported suicides. In this section we attempt to compare our findings with studies made by other researchers on the same topic to arrive at an appropriate conclusion. Majority of the decedents in our study belonged to 21-30 years age group (43.35%) which correlates with findings made by Murkey et al, Kitulwate et al., Shrivastava et al, Jagtap et al. and Goswami et al.⁸⁻¹² However it did not correlate with the findings made by Rao.¹³ This difference could be due to a greater number of autopsies studied by Rao in his three-year study period which amounted to 968, while we observed only 519 suicidal hangings. Males predominated females in number of deaths (62.62%) as usual and correlated with researchers Kitulwate et al, Shrivastava et al, Jagtap et al. and Goswami et al.⁸⁻¹² with marginal difference in the percentage such as 86.6%, 67.5%, 76.7% and 60% respectively. However, it did not correlate with this finding made by Rao.¹³ This non-correlation could be due to the higher number of autopsies studied and regional difference of the studied population.

When we compared the socioeconomic and educational background in which we observed majority belonged to lower socioeconomic stratum (58.38%) and higher primary schooling, similar findings were made by Shrivastava et al, Jagtap et al and Murkey et al.,² but it did not correlate with the study made by Dekal V et al.¹⁴ This non-correlation could be explained due to change of time as Dekal V et al conducted their study in the same place as ours between 2004-2006 for a period of two years. A majority of the victims committed suicide between 12AM to 6AM which

correlated with the observations made by Dekal V et al. Based on the type of suspension, our study revealed that maximum number of decedents died in complete suspension (66.09%) and this finding correlated with observations made by Rao, Kitulwatte et al, Shrivastava et al and Goswami et al. Based on the position of knot our study showed majority of decedents were victims to typical hanging (52.4%) which correlated with observations made by Jagtap et al, Goswami et al, Kumaret al.¹⁵ and Kitulwatte et al and Rao. However, it did not correlate with observations made Shrivastava et al.¹⁰ This non-correlation could be due to regional difference of the studied population by Shrivastava et al.¹⁰

5. Conclusion

Males predominantly seem to be victims to suicidal hangings. People in their third decade of life, lower socio-economic strata, and those with family disputes appear to be more vulnerable to suicides by hanging. The time to commit suicide was in the mid-night for the majority and we believe that the reason is in-hand with the psychology of accumulating courage during the daytime. It would be inappropriate to say that people with low education are more vulnerable to suicidal hanging as we have noticed that there was no significant percentage gap between basic degree holders and pre-university students. In-fact we believe that education status has contributed only towards the most common method of hanging which being a complete & typical type. We thereby conclude that in order to reduce the number of suicides by hanging, regular suicide risk assessments in therapy services must be provided to these vulnerable group of people if and when identified.

6. Source of Funding

Nil.

7. Conflict of Interest

Nil.

References

1. Rane A, Abhijit N. Suicide in India: a systematic review. *Shanghai Arch Psychiatry*. 2014;26(2):69–80.
2. Gordon I, Shapiro HA, Berson SD. Asphyxial Deaths. In: Forensic Medicine A Guide to Principles. London: Churchill Livingstone; 1988. p. 110.
3. Reddy KSN, Asphyxia. Mechanical Asphyxia. In: Editor MOP, editor. The Essentials of Forensic Medicine and Toxicology. India: Jaypee

- Brothers Medical Publishers; 2019. p. 337–8.
4. Ajdacic-Gross V, Weiss MG, Ring M, Hepp U, Bopp M, Gutzwiller F. Methods of suicide: international suicide patterns derived from the WHO mortality database. *Bull World Health Organ*. 2008;86:657–736.
5. National crime records bureau [Internet]. New Delhi, India: Ministry of home affairs; Crime in India [c2012]. Available from: <http://ncrb.gov.in>.
6. National crime records bureau [Internet]. New Delhi, India: Ministry of home affairs; Crime in India [c2018]. Available from: <http://ncrb.gov.in>.
7. National crime records bureau [Internet]. New Delhi, India: Ministry of home affairs; Crime in India [c2019]. Available from: <http://ncrb.gov.in>.
8. Murkey PN, Ambedkar R, Tirpude BH, Khan S, Khandekar IL, Zopate P, et al. Autopsy based study of cases of hanging with respect to marital status and place of hanging at tertiary care centre in Central India. *Indian J Forensic Community Med*. 2017;4(1):64–7.
9. Kitulwatte I, Edirisinghe P, Senarathne UD, Mendis HK, Wijesinghe P, Fernando A. Profile of suicidal hanging presented to a tertiary care hospital: a descriptive study. *J Forensic Med*. 2019;10(2):14–24.
10. Shrivastava M, Thakur PS, Pateria D, Singh BK, Soni SK. Autopsy based one year prospective study of death due to hanging. *Indian J Forensic Community Med*. 2018;5(4):240–4.
11. Jagtap NS, Patekar MB, Pawale DA. Autopsy based retrospective study of hanging cases in Kolhapur district Maharashtra. *Indian J Forensic Community Med*. 2020;7(2):72–6.
12. Goswami RB, Dutta A. Retrospective Observational Study of Death in Partial Hanging Cases in Raigarh, C.G.) Region. *Indian J Forensic Med Pathol*. 2019;12(2):119–23.
13. Rao D. An autopsy study of death due to Suicidal Hanging in 264 cases. *Egypt J Forensic Sci*. 2016;6:248–54.
14. Dekal V, Shruthi P. Analysis of Sociodemographic Profile of Asphyxial Deaths due to Hanging in Urban Region of Karnataka. *Indian J Forensic Med Toxicol*. 2017;11(1):115–8.
15. Kumar N, Sahoo N, Panda B, Dutta A. Demographic Profile of Hanging Cases Autopsied in Rims, Ranchi. *Glob J Res Anal*. 2016;5(3):119–21.

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