

A four-year Retrospective Epidemiological Study on Hanging at A Tertiary Care Hospital of Western Maharashtra

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ABSTRACT

India is currently the fastest growing economy in the world. A fast-paced life also caters to the stress and strain, especially in metro cities. Hanging was noted as the preferred method of suicide in almost all countries in Eastern Europe and South Asia.

AIMS: To study prevalence and pattern of hanging in Western Maharashtra.

Settings and Design: Retrospective cross-section study.

METHODS AND MATERIAL: This retrospective cross-section study was carried out at Tertiary Care Hospital, Western Maharashtra from 1st Sept 2019 to 30th Sept 2023. Data was collected retrospectively and analysed statistically.

Statistical analysis used: Microsoft Excel version 2013

RESULTS: During the study period, 810 post-mortems were conducted, out of which 138 cases (17.04%) were hanging. Highest number i.e., 40.58% of cases reported within the age group of 21- 30 out of which 74.74% were males with a Male: Female ratio of 3:1. Males of 21 to 30 years showing the highest number of cases (36.89%). 67.39% were Urban population and

32.61% of cases were from rural. 47.83% of them were Typical Hanging where knot mark was present over the occiput, while 29.71% of cases were of Atypical Hanging, 100% suicidal with 01 case only of hyoid bone fracture.

CONCLUSIONS: This study reflects the alarming data of the vulnerable age and gender, the method of hanging adapted, and the geography involved.

KEY-WORDS: Typical hanging, Atypical hanging, Suicide

KEY MESSAGES: This current study reflects the vital age group, gender and geographical data of committing suicide by hanging in a "Typical Method".

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INTRODUCTION

India is currently the fastest-growing economy in the world. Although such a growing economy contributes to the development of the country and society, a fast-paced life also caters to the stress and strain of daily life, especially in metro cities. According to the World Health Organization (WHO) 2000-2019 estimates, almost 800000 people die every year due to suicide across the world.¹ In India, as per NCRB data for the year 2021, of the 1,64,033 persons who died by suicide, 57% were by hanging, out of which 1,18,970 were men and 45,026 were women.² Spicer and Miller³ in their study indicated hanging as the most lethal method of suicide, following firearms and drowning. Hanging was noted as the preferred method of suicide in almost all countries in Eastern Europe and South Asia.^{1,4} Occupational stresses including long work periods, in addition to other aspects such as social loneliness, the aging population, and poor access to healthcare facilities have also been suggested for the high burden of suicide.^{5,6} The aim of this current study is thus to highlight the current prevalence and pattern of hanging in today's fast-paced competitive society.

MATERIALS AND METHODS

This retrospective cross-section study was carried out at Tertiary Care Hospital, Western Maharashtra from 1st Sept 2019 to 30th Sept 2023. All medico-legal autopsy records of hanging during the study period were retrospectively reviewed while other cases of medico legal deaths were excluded from the study. The data were obtained from autopsy reports and inquest papers, tabulated systematically and analysed statistically through Microsoft Excel version 2013. Data were recorded as per the tables described below. Being a retrospective analytical

study ethical clearance from the institutional ethics committee is not applicable.

RESULTS

During the study period, a total of 810 post-mortems were conducted, out of which 138 cases were hanging, constituting 17.04% of total cases. The following variables were recorded retrospectively: Age, sex, address, position of knot mark over the neck, manner of death, and presence of any hyoid bone fracture.

Age wise distribution

The age wise distribution of the frequency of hanging is being described under table No 1 and Chart No 1. The maximum number of cases are being seen within the age group of 21- 30 (40.58%), followed by 31-40 (24.64%) and least number of cases are being seen in the age group of 61-70 (4.35%).

Table 1: Age wise distribution

Age	Frequency	Percentage
<20	14	10.14%
21-30	56	40.58%
31-40	34	24.64%
41-50	16	11.59%
51-60	12	9%
61-70	6	4.35%
>70	0	0.00%
TOTAL	138	100.00%

Chart No 1 reflects the pattern of the age wise distribution where the spike is seen in the most productive age group of 21 to 30 years (40.58%). The teenage age group of <20 years shows a trend of about 10.14% of cases. After 30 years, there is a decline trend of hanging gradually over the decades of each life.

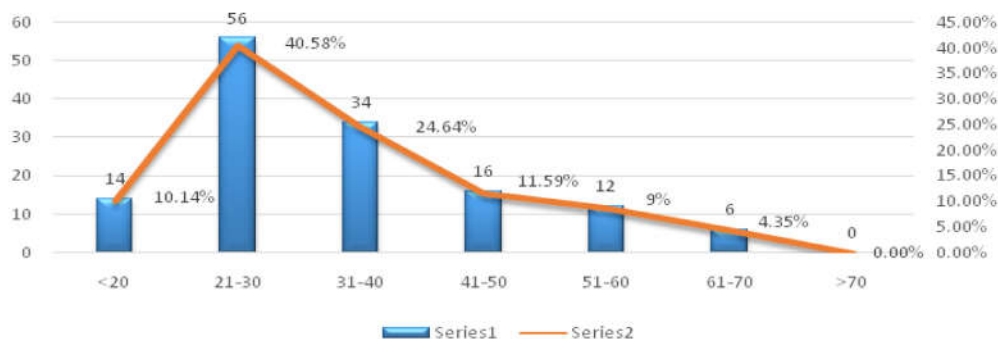


Fig. 1: Age wise Distribution

Sex wise distribution

Table 2 depicts the gender-wise distribution of cases where predominantly male genders are being seen with 74.64% of cases being reported with Male: Female ratio of 3:1.

Table 2: Sex wise distribution

Sex	Frequency	Percentage	Ratio
Male	103	74.64%	3:1
Female	35	25.36%	
Total	138	100.00%	

Age and Gender stratification

The authors have done age and gender stratification and reported that the highest number of cases within the age group of 21 to 30 years also shows highest number of male fatalities by hanging with 38 cases out of 56 within that age group.

Table 3: Age and gender stratification

Age	Frequency	Percentage	Male	Percentage	Female	Percentage
<20	14	10.14%	7	7%	7	20%
21-30	56	40.58%	38	36.89%	18	51.43%
31-40	34	24.64%	28	27.18%	6	17.14%
41-50	16	11.59%	12	12%	4	11%
51-60	12	9%	12	12%	0	0.00%
61-70	6	4.35%	6	6%	0	0.00%
>70	0	0.00%	0	0.00%	0	0.00%
TOTAL	138	100.00%	103	100%	35	100%

Location

Maximum number of cases were reported from urban area (67.39%) with an Urban: Rural ratio of 2:1. Only 32.61% of cases were from rural area.

Table 4: Location wise distribution

Location	Frequency	Percentage	Ratio
Urban	93	67.39%	2:1
Rural	45	32.61%	
Total	138	100.00%	

Position of knot/ Typical or Atypical hanging

Out of 138 cases, 47.83% of them (total 66) were Typical hanging where knot mark was present over the occiput, while rest of the cases were of Atypical hanging where 29.71% knot mark was present over the left side of mandible and mastoid, 19.57% cases it was on right side of mandible and mastoid and only about 2% of cases it was below chin.

Chart 2: Reflects the pattern of the age and gender stratification where the spike is seen among the Male of 21 to 30 years age group. After 30 years, there is a

decline trend of hanging gradually over the decades of each life, yet with male predominance in the charts.

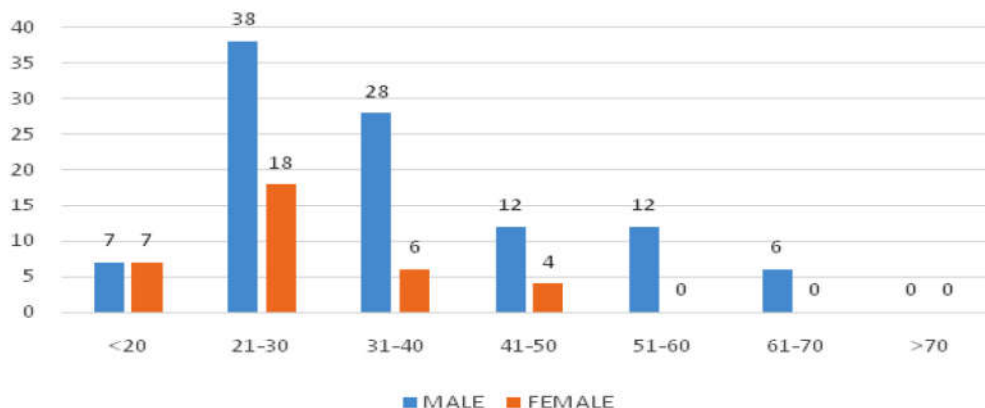


Fig. 2: Age and Gender Stratification

Table 5: Position of Knot Mark

Position of Knot	Frequency	Percentage
Occipital	66	47.83%
Left Angle of Mandible/Mastoid	41	29.71%
Right Angle of Mandible/Mastoid	27	19.57%
Any Other (Below the Chin)	4	2.90%
Total	138	100.00%

Manner of death

All 138 cases (100%) were of the suicidal manner of death. The manner of death has been determined based on the inquest report findings and post-mortem findings.

Hyoid Bone Fracture

Only 01 (0.72%) case had a finding of hyoid bone fracture, which was an outward fracture of the greater horn. However, post-mortem findings and inquest reports were corroborative of suicidal hanging.

DISCUSSION

Suicide remains a raging socio-economic problem, especially in today's competitive society. Hanging being one of the commonest methods, has been seen to be affecting both sexes across all age groups. In the present study, out of 810 post-mortem cases over four years, 17.04% were hanging out of which the maximum number of cases were seen within the age group of 21 to 30 years (40.48%) followed by the age group of 31 to 40 years (24.64%). The cumulative percentage of 21 to 40 years was 65.21%. The lowest percentage was among the 61 to 70 years (4.35%). Such high incidence of hanging among the age group of 21 to 30 and 31 to 40 years are also discussed by Kandade PS, Zanjad NP (60.92%),⁷ Sharma BR (73.0%),⁸ Bhosale SH *et al.* (64.5%),⁹ Zanjad NP *et al.* (61.24%),¹⁰ Osama Madni *et al.* (64.66%),¹¹ Azmak D (40.2%).¹² Such a high percentage among the most productive age group reflects that economic and social performance pressure and demanding responsibilities lead to high-stress levels and drive a person to commit an untoward act.

In this present study, predominantly males (74.64%) were seen with Male: Female ratio of 3:1. The authors also did Age and Gender stratification where the maximum number of cases were seen among males of age group 21 to 30 years (36.89%) followed by 31 to 40 years (27.18%) with male preponderance across all age groups.

The findings are in accordance with Sharma BR (Male: female 2:1) (8) Azmak D (Male: female 3.95:1) (12), Nikolic S *et al.* (Male: female 03.16:1),¹³ Odabasi AB *et al.* (Male: female 2.49:1)¹⁴ and Valerie J. Callanan Mark S (77.3% males and 22.7% females).¹⁵

Bhosale *et al.*⁹ reported that females outnumbered males within the 10-19 years age group contrary to male preponderance among all other age groups. However, the authors in this study reported male preponderance across all age groups.

Goceoglu UU and Balci Y¹⁶ in their study reported 76% to be males with 42 years as the mean affected age which differs from our study where even though male preponderance is seen, the highest number of cases were seen among 21 to 30 years age. Kanchan T and Menezes RG¹⁷ in their study reported male predominance with the highest (29.8%) number within the age group of 20 to 29 years which is in accordance with this study.

A maximum number of cases were reported from urban areas (67.39%) with an Urban: Rural ratio of 2:1 and 32.61% of cases were from the rural area which is in accordance with a study by Rawat V, Rodrigues EJ (72.28% urban and 27.72% rural).¹⁸ However, Tirpude B.H *et al.* found that 90.32% of cases were from rural areas and 9.68% were from urban areas.¹⁹

The 20s and the 30s are the maximum output age group, especially in urban areas where all genders and predominantly males of Indian society are out and about either to pursue a career or to earn bread and butter for family and at times maintain a high lifestyle. Especially in today's urbanized society, where pursuing a good and high-flying lifestyle seems to be the goal for every other person, such peer pressure and societal norms and in ability to cope with the competition seem to drive them to commit extreme acts.

Of all the cases, 47.83% were Typical Hanging while the rest of the cases were Atypical Hanging with a 29.71% knot mark present over the left side of the mandible and mastoid, 19.57% of cases, on the right side of the mandible and mastoid and only about 2% of cases it was below the chin. This finding is unique as typical hangings were reported only 15% by Pednekar AY *et al.*,²⁰ 5.94% by Rawat V, Rodrigues EJ (18) 16.40% by Bhausahab *et al.*,²¹ 11% by Sonkar VK *et al.*²² These authors reported a maximum number of cases as atypical hangings.

All 138 cases (100%) were of the suicidal manner of death in this study which is in accordance with Rawat V and Rodrigues, E.J.,¹⁸ Tirpude B.H *et al.*,²¹ Bastia BK and Kar N.²³

The authors found only 1 case (0.72%) of hyoid bone fracture which is consistent with other authors who reported very less cases of hyoid bone fracture. Rawat V and, Rodrigues E.J. reported 2.97%,¹⁹ Pednekar AY et al reported 3%.²⁰ In contrast to that, Tirpude B.H et al¹⁹ reported 64.51% of cases of hyoid bone fracture.

CONCLUSION

This current study reflects the vital age group, gender and geographical data of committing suicide by hanging in a “Typical Method”. The prime youth (more so for males) ranging between 21 to 40 years are the most active age group who are chasing after their career, responsibilities, and chosen lifestyle; which may or may not be achieved. Failure is not always taken in a sporty manner by all and inability to cope with such becomes a prime driving force towards committing an untoward act. Easy access to the internet delivers readily available articles on “Typical and Atypical Methods of Hanging” and online topics on various methods on “how to commit suicide” are floating all around. This study certainly reflects the fact that the affected 21 to 30

years and 31 to 40 years male population of urban areas used the typical hanging method to commit suicide. The authors feel it’s high time to start having deliberations on various internet contents before flashing them to the world, especially when various OTT platforms showcase uncensored versions of many incidences and methods. Especially, in today’s competitive and growing economy, where everyone is part and parcel of the rat race, many are not able to cope with such peer pressure and shouldering responsibilities of families and loved ones. It is high time to start deliberating on mental health and not overlook any symptoms of a “cry for help” from a loved one or a peer. This study reflects the alarming data of the vulnerable age and gender, the method of hanging adapted and the geography involved. It is high time to start taking preventive and remedial measures at all societal levels in order to contribute towards a mentally healthy society.

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