

GENDER BASED STUDY OF UNNATURAL DEATHS IN MARATHWADA REGION OF MAHARASHTRA

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ABSTRACT**BACKGROUND**

Unnatural deaths claim a substantial number of lives in developing countries like India.⁽¹⁾ Unnatural death of an individual is a great loss not only to the family and society, but also to the nation as whole. As the working population in the society are more exposed to the outdoor and hazardous activities, they are at greater risk of unnatural death.

MATERIALS AND METHODS

This is a record-based cross-sectional retrospective analysis of all medico-legal autopsies done in Department of Forensic Medicine and Toxicology at Dr. Shankarrao Chavan Government Medical College, Nanded, for a period of one year from January to December 2011. A total of 865 cases of unnatural deaths were retrospectively studied regarding age, sex, residence, district of residence, marital status, manner and cause of death, place where the primary incidence occurred and place of death.

RESULTS

The maximum number of cases of unnatural deaths were observed in active age group of life ranging from 11 to 40 years of age. The farmer, housewife and labourer group of population was the majority observed in the present study. Maximum 436 (50.40%) deaths of unnatural manner were observed to have occurred in home. Accident 405 (46.82%) cases followed by suicide 376 (43.46%) cases was the commonest means of death in studied subjects.

CONCLUSION

Increased urbanisation, tremendous boost in agriculture industry, immensely increased use of locomotives, reduced awareness of road safety measures, nail biting competition for progress in life, tremendous opportunities for females in outdoor work, deeply rooted customs of dowry in society, etc. and likewise never ending list has tremendously increased the risk of unnatural death in developing Indian population. It is the bad evil of socio-cultural behaviours and traditions like dowry, poverty, illiteracy, ever increasing population and day-by-day decreasing natural resources is pressurising the human population in developing country like India leading to disturbed pan of demand and supply. The unsatisfied demands are leading to more and more stress on life, which is causing increasing incidences and loss of valuable lives.

KEYWORDS

Unnatural Death, Age, Sex, Occupation, Residence, Cause of Death.

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BACKGROUND

Unnatural deaths claim a substantial number of lives in developing countries like India.⁽¹⁾ Unnatural death of an individual is a great loss not only to the family and society, but also to the nation as whole. As the working population in the society are more exposed to the outdoor and hazardous activities, they are at greater risk of unnatural death.

Death is unnatural when caused prematurely against the order of nature due to injury, accident, poison or other means.⁽²⁾

Medico-legal death is a term used to describe any violent, unclear or suspicious death that must be subjected to legal investigation, such deaths include unexpected, sudden or violent deaths.⁽³⁾ The essence of investigating such deaths include avoiding secret homicides, accurate death certification, demographic studies, determining cause of death and manner of death, establishing the identity of the deceased, determining time since death, collecting trace evidence and reconstruction of the crime scene.^(3,4)

In India, one person dies in less than every five minutes due to vehicular accidents and the accident rate i.e. number of accidents per hundred thousand populations is 24.3. Tremendous advances in the fields of agriculture, industrial technologies and medical pharmacology have been paralleled with remarkable changes in the trends of unnatural deaths in developing countries including India.⁽⁵⁾ The use of agricultural chemicals in attempting suicide is recently manifested as a problem in the field of emergency medical and psychiatric care in regions where agriculture is the primary industry.⁽⁶⁾

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The aim of this study is to determine and classify the pattern of medico-legal deaths seen in a teaching hospital setting in Nanded city of Marathwada region. Together with medical history, clinical information and investigation into the circumstances of deaths, autopsy represents the best source of information for determining the cause of death. A crucial preliminary key towards improvement of surveillance data is the precise determination of the cause(s) of death and contributing factors, which can be obtained only by full autopsy and complementary investigations.⁽⁷⁾ In view of this we have undertaken this study to evaluate the socio-demographic profile of unnatural deaths in this part of the country.

MATERIALS AND METHODS

This is a record-based cross-sectional retrospective analysis of all medico-legal autopsies done in Department of Forensic Medicine and Toxicology at Dr. Shankarrao Chavan Government Medical College, Nanded, for a period of one year from January to December 2011. A total of 865 cases of unnatural deaths were retrospectively studied, which were brought for medico-legal autopsy in this institute. The majority of the cases were from the Nanded district and remaining cases were from nearby districts which were referred to this Medical College.

The sources of information mainly included autopsy reports, inquest papers and death registration papers. The information was also gathered from the patients indoor case record as and when required. Only those cases where the manner of death was unnatural were included in the study. All the cases were scrutinised for collection of data regarding age, sex, residence, district of residence, marital status, manner and cause of death, place where the primary incidence occurred and place of death. All the data was compiled, coded and analysed.

RESULTS AND OBSERVATIONS

Sr. No.	Age Group	Male (%)	Female (%)	Total (%)
1	00 to 10 yrs.	12 (01.38)	14 (01.61)	26 (03.00)
2	11 to 20 yrs.	68 (07.86)	69 (07.97)	137 (15.83)
3	21 to 30 yrs.	164 (18.95)	132 (15.26)	296 (34.21)
4	31 to 40 yrs.	133 (15.37)	59 (06.82)	192 (22.19)
5	41 to 50 yrs.	87 (10.05)	29 (03.35)	116 (13.41)
6	51 to 60 yrs.	31 (03.58)	14 (01.61)	45 (05.20)
7	60 and above	39 (04.50)	14 (01.61)	53 (06.21)

Table 1. Distribution of Cases as per Age and Sex (n = 865)

The age and sex wise distribution of all the cases was studied as shown in Table No. 1. The maximum number of cases of males 164 (18.95%) and 133 (15.37%) were observed in age group of 21 to 30 yrs. and 31 to 40 yrs. respectively, while for the females the age group of 21 to 30 showed 132

(15.26%) cases and age group of 11 to 20 showed 69 (07.97%) cases. As the age advanced in both the genders, the number of cases went on decreasing in number. The maximum number of cases of unnatural deaths were observed in active age group of life.

Residence	Tribal (%)	Rural (%)	Urban (%)	No Information (%)	Total (%)
Gender (Total No.)	48 (05.54)	511 (59.07)	281 (32.48)	25 (02.89)	865 (100)
Males	29 (3.38)	297 (34.33)	186 (21.50)	21 (2.42)	533 (61.61)
Females	19 (2.19)	214 (24.73)	95 (10.98)	04 (0.46)	332 (38.38)

Table 2. Distribution of Cases according to their Residence (n = 865)

In relation to residence, it was observed that maximum number of cases in males 297 (34.33%) as well as in females 214 (24.73%) were from rural area, followed by urban and tribal area.

District	Nanded (%)	Outsider (%)	Unknown (%)	Total
Gender (Total No.)	589 (68.09)	251 (29.01)	25 (02.89)	865 (100)
Males	369 (42.65)	143 (16.53)	21 (02.42)	533 (61.61)
Females	220 (25.06)	108 (12.48)	04 (00.46)	332 (38.38)

Table 3. Table showing the Distribution of Cases according to their District of Residence (n = 865)

The maximum number of cases 589 (68.09%) included in the study were from Nanded district, followed by 251 (29.01%) cases were from the nearby district and in 25 (02.89%) cases we could not trace out exact residence place.

Sr. No.	Occupation	Number of Cases (%)	Males	Females
1	Businessmen	19 (02.19)	19 (02.19)	00
2	Driver	18 (02.08)	18 (02.08)	00
3	Farmer	177 (20.46)	155 (17.91)	22 (02.54)
4	Self-employed business work	44 (05.08)	43 (04.97)	01 (00.11)
5	Housewife (Housework)	202 (23.35)	00	202 (23.35)
6	Labourer	187 (21.61)	151 (17.45)	36 (04.16)
7	Serviceman	47 (05.43)	41 (04.73)	06 (00.69)
8	Retired Serviceman	06 (00.69)	06 (00.69)	00
9	Student	82 (09.47)	52 (06.01)	30 (03.46)
10	Unemployed	50 (05.78)	24 (00.77)	26 (03.00)
11	Not Specified	33 (03.81)	24 (02.77)	09 (01.04)
12	Total	865 (100)	533 (61.61)	332 (38.38)

Table 4. Table showing the Distribution of Cases according to Occupation (n = 865)

Majority of male cases 155 (17.91%) were occupied in farming followed by 151 (17.45%) cases occupied in labour

work either dependent on farming or associated with farming. Next in occurrence were 52 (06.01%) cases of males taking education followed by 43 (04.97%) cases working in their self-employed business and 41 (04.73%) were servicemen either in Govt. or Private firm, while 24 (0.77%) cases were not employed. Least numbers of cases were observed in occupation group of businessmen, driving and retired servicemen.

Considering the female gender, maximum number of 202 (23.35%) females were occupied in housework followed by labourer 36 (04.16%) and farmer 22 (02.54%). The 30 (03.46%) cases of females were student by occupation and 26 (03.00%) females were unemployed. Least numbers of female cases were observed in occupation group of servicemen and self-employed business work. There was no single female case observed in occupation of businessmen, driver and retired servicemen. The female cases grouped in the occupation of housewife, farmer and labourer were observed to be doing their daily housework of cooking in addition to their work category.

Sr. No.	Marital Status	No. of Cases (%)	Males	Females
1	Unmarried	188 (21.73)	126 (14.56)	62 (07.16)
2	Married	623 (72.02)	376 (43.46)	247 (28.55)
3	Widower/Widow	20 (02.31)	04 (00.46)	16 (01.84)
4	Divorced	02 (00.23)	00	02 (00.23)
5	Not Specified	32 (03.69)	27 (03.12)	05 (05.57)
6	Total	865 (100)	533 (61.61)	332 (38.38)

Table 5. Table showing Distribution of Cases according to Marital Status (n = 865)

According to their marital status, total cases were divided into five groups as shown in Table No. 5. It was observed that maximum cases in the males 376 (43.46%) as well as females 247 (28.55%) were married followed by unmarried category having 126 (14.56%) male cases and 62 (07.16%) female cases. There was considerable difference of cases observed in the category of widower/widow, where 16 (01.84%) female cases were observed to be widow and only 04 (0.46%) male cases were widower. Same scenario was observed in divorced category where 02 (0.23%) cases were observed from female gender, while male gender had no case of divorced category. Social disparity of importance given to the males as compared to females is clearly noticeable from this finding even in the 21st century.

Sr. No.	Site of Primary Occurrence of Incidence	No. of Cases (%)	Males	Females
1	Private House	436 (50.40)	181 (20.92)	255 (29.47)
2	Residential Institution	02 (00.23)	01 (00.11)	01 (00.11)
3	Medical Service Area	03 (00.34)	02 (00.23)	01 (00.11)
4	Street, Highway, Road	222 (25.66)	179 (50.40)	43 (04.97)
5	Railway Line, Station	27 (03.21)	26 (03.00)	01 (00.11)
6	Trade/Service Area	07 (00.80)	07 (00.80)	00
7	Industrial/Construction Area	08 (00.92)	07 (00.80)	01 (00.11)
8	Farm/Place of Primary Production	69 (07.97)	51 (05.98)	18 (02.08)
9	Sea, Lake, River, Dam, etc.	42 (04.85)	33 (03.81)	09 (01.01)
10	Sports/Athletic Area	02 (00.23)	02 (00.23)	00
11	School/Institute	02 (00.23)	01 (00.11)	01 (00.11)
12	Public Admin Area	04 (00.46)	04 (00.80)	00
13	Open Land/Beach, etc.	08 (00.92)	08 (00.92)	00
14	Other	10 (01.15)	09 (01.01)	01 (00.11)
15	Unknown	23 (02.65)	22 (02.54)	01 (00.11)
16	Total	865 (100)	533 (61.61)	332 (38.38)

Table 6. Table showing Distribution of Cases according to Site of Primary Occurrence of Incidence (n = 865)

The site of primary occurrence of incidence was studied as shown in Table No. 6. It was observed that in both the genders, maximum number of cases 181 (20.92%) in males and 255 (29.47%) in females had private house as the site of the primary occurrence of incidence followed by 179 (50.40%) of male cases and 43 (4.97%) female cases were observed from group of street highway and road. Other sites observed in decreasing order of frequency for male gender were 51 (05.98%) cases from farm/place of primary production, 33 (03.81%) cases from sea, lake, river, dam, etc., 26 (03.00%) cases from Railway Line Station while in female gender order of decreasing numbers of cases was like 18 (02.08%) cases from Farm/Place of Primary Production and 09 (01.01%) cases from Sea, Lake, River, Dam, etc. For both the sexes, it was observed that the secluded place of home and farm was ideal site for suicidal choice, while highway and streets was common place for accidents.

Sr. No.	Place of Death Occurrence	No. of Cases (%)	Males	Females
1	At Injury Site	178 (02.08)	146 (16.87)	32 (03.69)
2	At Home	00	00	00
3	In Ambulance/Transmit to Hospital	78 (09.01)	53 (06.12)	25 (03.98)
4	In Hospital/Health Facility	604 (69.82)	329 (38.03)	275 (31.79)
5	Other	02 (00.23)	02	00
6	Unknown	03 (00.34)	03	00
7	Total	865 (100)	533 (61.61)	332 (38.38)

Table 7. Table showing Distribution of Cases according to Place of Death Occurrence (n = 865)

The cases were studied according to the site of death as shown in Table No. 7. It was observed that maximum number of male cases 329 (38.03%) as well as females 275 (31.79%) died in the hospital followed by 146 (16.87%) males and 32 (03.69%) females died at the injury site or site of primary occurrence of incidence. Considerable number of male cases 53 (06.12%) and 25 (03.98%) female cases died in the ambulance during transportation to hospital facility.

Sr. No.	Cause of Death	No. of Cases (%)	Males (%)	Females (%)
1	Alcohol Intoxication	15 (01.73)	15 (01.73)	00
2	Medical Intervention	02 (00.23)	01 (00.11)	01 (00.11)
3	Choking, Hanging, Strangulation, Smothering	40 (04.62)	33 (03.81)	07 (00.80)
4	Drowning	45 (05.20)	34 (03.93)	11 (01.27)
5	Blunt Trauma Chest and Abdomen	28 (03.23)	21 (02.42)	07 (00.80)
6	Electrocution	20 (02.31)	14 (01.61)	06 (00.69)
7	Head Injury	154 (17.80)	125 (14.45)	29 (03.35)
8	Injury to Spine and Neck	16 (01.84)	15 (01.73)	01 (00.11)
9	Multiorgan Injury	106 (12.25)	93 (10.75)	13 (01.50)
10	Poisoning	160 (18.61)	107 (12.36)	53 (06.12)
11	Burns, Scalds, Electric Burns	241 (26.70)	50 (05.78)	191 (22.08)
12	Snake Bite	25 (02.89)	15 (01.73)	10 (01.15)
14	Infection Following Injury	13 (01.50)	10 (01.15)	3 (03.46)
15	Total	865 (100)	533 (61.61)	332 (38.38)

Table 8. Table showing Distribution of Cases according to Medical Cause of Death (n = 865)

The cases were studied as per the cause of death as shown in Table No. 8. The maximum male cases 125 (14.45%) were observed to have died because of head injury followed by 107 (12.36%) cases died due to poisoning, 93 (10.75%) cases died due to multi-organ injury, 50 (05.78%) cases died due to burns, scalds and electric burns, 34 (03.93%) cases died due to drowning, 33 (03.81%) died due to asphyxia comprising choking, hanging, strangulation and smothering, 21 (02.42%) cases died due to blunt trauma to chest and abdomen, 14 (01.61%) cases died due to electrocution, 15 (01.73%) cases each died due to snake bite and injury to neck and spine, while 10 (01.15%) cases were observed to have died due to infection following injury.

While considering female gender, maximum number of cases 191 (22.08%) died due to burns, scalds and electric burns followed by 53 (06.12%) died due to poisoning, 29 (03.35%) cases died due to head injury, 13 (01.50%) cases died due to multi-organ injury, 11 (01.27%) cases died due to drowning, 10 (01.15%) cases died due to snake bite, 07 (0.80%) cases each died due to asphyxia and blunt trauma to chest and abdomen, 06 (0.69%) cases died due to electrocution, 3 (03.46%) cases died due to infection following injury, only 01 (0.11%) case was observed to have died due to injury to neck and spine, while no female was observed to have died due to alcohol intoxication. From both the sexes 01 (0.11%) case each was observed to have died due to medical intervention.

Sr. No.	Manner of Death	No. of Cases (%)	Males	Females
01	Accidental	405 (46.82)	286 (33.06)	119 (13.75)
02	Suicidal/Self Harm	376 (43.46)	188 (21.73)	188 (46.82)
03	Homicidal Assault	42 (04.85)	27 (03.12)	15 (01.73)
04	Pending Investigations	12 (01.38)	06 (00.69)	06 (00.69)
05	Unspecified	30 (03.46)	26 (03.00)	04 (00.46)
06	Total	865 (100)	533 (61.61)	332 (38.38)

Table 9. Table showing Distribution of Cases according to Apparent Intent (Manner) of Death (n = 865)

Depending upon manner of death, the cases were divided into five groups as shown in Table No. 9. It was observed that maximum number of cases in males 286 (33.06%) died by accidental manner followed by 188 (21.73%) cases died by suicidal manner, 27 (03.12%) cases were of homicidal manner, in 26 (03.00%) cases manner of death was not specified and in 06 (0.69%) cases manner of death was not ascertained.

Considering the female cases, it was observed that maximum number of cases 119 (13.75%) died by accidental manner followed by 188 (21.73%) cases died by suicidal manner, 15 (01.73%) cases died by homicidal manner, in 04 (00.46%) cases manner of death was not specified and in 06 (0.69%) cases manner of death was not ascertained.

DISCUSSION

We studied the relation of age and sex to that of unnatural deaths where we observed that the most productive age of life ranging from second to fourth decade and male gender are at higher risk of unnatural deaths. Out of total 865 cases studied, it was observed that 625 (72.25%) cases were from 11 to 40 years of age and out of total 865 cases 533 (61.61%) were males, while 332 (38.38%) cases were females. The observations in our studies are in accordance with several other studies.^(1,2,3,5,8,9,10)

The majority of cases in our study were residing in rural area. Our Institute is situated in semi-urban area as well as main drainage of patients to this Institute is from surrounding villages of Nanded city and nearby district's remote areas. Findings in our study match with the study of Gannur D G, Nuchhi U C, Yoganarasimha K,⁽⁸⁾ but does not match with that of Sharma B R, Singh V P, Sharma R and Sumedha.⁽⁹⁾

In our study majority of the cases in males were farmer 155 (17.91%) and labourer 151 (17.45%), while in females they were housewives 202 (23.35%) and labourer 36 (04.16%) by occupation. Another important group of cases in both the gender category were from student 82 (09.47%) and unemployed group 50 (05.78%). The day-to-day work related stress, uncertainty of production in agriculture industry, increased demands in life, nail biting competition in studies and unemployment are the possible reasons behind this occurrence.

Considering marital status, majority cases were married in males 376 (43.46%) as well as females 247 (28.55%) followed by unmarried group. The number of widower males 04 (00.46) in comparison to widow females 16 (01.84%) was quite less; also there was no divorced case of male observed as compared to females where 02 (00.23%) cases were observed. The observation clearly suggests the gender inequality in our population. The male remarriage after divorce or death of their spouse, but this opportunity of remarriage is not available to females, hence they remain lonely after their spousal demise which leads to lonely depressive life and increased chances of unnatural death.

The primary site of occurrence of incidence in both the genders 436 (50.40%) cases was their own home followed by street, highway and road 222 (25.66%) cases, then farm or place of primary production having 69 (07.97%) cases and sea, lake, river, dam, etc. was the site of occurrence in 42 (04.85%) cases. From this we conclude that the secluded home was not a safe place. The increasing number of nuclear families and decreasing family values are main culprits behind this occurrence.

The majority of the cases 604 (69.82%) death occurred in the hospital followed by 178 (02.08%) cases died at primary site of occurrence of incidence, while 78 (09.01%) cases death occurred during transportation to hospital which suggests that even in this fast era of transportation many valuable lives can be saved by increasing health facilities in remote areas of our country.

Head injury 125 (14.45%) cases followed by poisoning 107 (12.36%) and multi-organ injury 93 (10.75%) cases were the observed cause of death in majority of males, while burns, scalds and electric injury 191 (22.08%) cases followed by poisoning 53 (06.12%) cases and head injury 29 (03.35%) cases were the majority cause of death in females. Combined in both genders asphyxia due to hanging, strangulation,

smothering and drowning was the cause of death in 85 (09.82%) cases followed by 25 (02.89%) cases died due to snake bite. In males it was outdoor activities and road traffic accidents, while for females it was easy availability of inflammable material in home to squash the anger were responsible for this measure. The poisoning was the preferred choice to death by people in rural population, because of easy availability of poison as well as carelessness about poisoning hazards. None of the cases in females was recorded to have died due to alcohol intoxication, suggests that even today females are not inclined to alcohol consumption. The findings in our study are similar to the other studies.^(1,2,3,5,9)

Accidental deaths 286 (33.06%) cases were common in males, while suicidal deaths 188 (46.82%) cases were common in females. Second in occurrence in males were suicidal deaths 286 (33.06%) cases, while in females it was accidental death 119 (13.75%) cases. Overall, the accidental and suicidal death in combination had majority of burden of cases. Stressful life and increased demand are responsible factors as stated before. Our study findings correlate with the other studies.^(1,5,7,8,9,10)

CONCLUSION

Increased urbanisation, tremendous boost in agriculture industry, immensely increased use of locomotives, reduced awareness of road safety measures, nail biting competition for progress in life, tremendous opportunities for females in outdoor work, deeply rooted customs of dowry in society, etc. and likewise never ending list has tremendously increased the risk of unnatural death in developing Indian population. It is the bad evil of socio-cultural behaviours and traditions like dowry, poverty, illiteracy added by ever increasing population and day-by-day decreasing natural resources are pressurising the human population in developing country like India leading to disturbed pan of demand and supply. The unsatisfied demands are leading to more and more stress on life, which is causing increasing incidences of loss of valuable lives.

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