

# Epidemiological Study of Unnatural Death Pattern in Varanasi, India

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**Abstract:** Introduction: Unnatural deaths due to different cause of death have a serious psychological and social impact on the family and community. Aim of the study: The aim of this study is to find out how pattern of unnatural deaths affect incidence, age, sex, habitat, marital status, religion and manner of death in community, to ascertain the various aspects and find remedial measures. Material & Method: The present retrospective study has been conducted for the period of 5 consecutive years i.e. 2009 to 2013 based on autopsy record of the unnatural death cases resulting from various cause of deaths. During study period total no. of autopsy victims were 10195 these cases were brought to the Department of Forensic Medicine, IMS, BHU, Varanasi and have been analyzed retrospectively. Result: Unnatural death 8985 i.e. 88.13% of total autopsy. Road traffic injury 3963(44.11%) contribute most common cause. 21 to 30 year were most common age group affected 2793(31.09%). Male were outnumber 6164(68.60%) female 2821(31.40%). Rural outnumber 7778(86.57%) urban 467(8.24%). Hindu were major cause 7971(88.71%). Major cases in summer season 3517(39.14%). Conclusion: Strict implementation of traffic rules. Need satisfactory and interpersonal relationship between the young and the elders in the society. Need education and encouragement of moral values of the leaders of the society.

**Keywords:** Road traffic accidents, Unnatural Death Patterns, Suicidal, Accidental, Autopsy.

## 1. Introduction

Death may be natural (resulting from disease) or unnatural deliberate action of other (homicide), intentionally self inflicted (suicide), result of an environmental influence (accident) [1]. Unnatural deaths due to different cause of death have a serious psychological and social impact on the family and community. Crime rate in a social community is directly linked with the poverty and illiteracy rate. India being a developing country with a high unemployment and illiteracy rate, the crime rate though increasing disproportionate level, still contributes its bit towards unnatural deaths. Unnatural deaths are known to claim a substantial number of lives, in the world over, with the Vehicular accidents accounting most important case of deaths [2]. By 2020, death & disabilities resulting from road traffic accidents in comparison to other diseases will rise from current 9 to 3 spot & the developing nations will account for 90% of world traffic fatalities [3]. A large number of unnatural deaths are due to more or less risk factor, which may be in the form of failure of human factor, safety factor, mechanical devices, legal factor, or it may be the cost of industrializations etc. The magnitude of deaths due to burns is so large as India is the only country in the world where fire is classified among the fifteen leading causes of death in 1998 standing fourteenth in the list [4]. Now Uncontrolled Population is a burning problem in our country. It is increasing day by day without any development of socioeconomic condition. Due to increasing number of population our life becoming complexes and threatened. Due to poor socioeconomic condition development of communication, transport and technology and the number of crimes also becoming higher for the last few years. Unnatural death is one of the indicators of the level of social & mental health [5].

## 2. Aim of the Study

Aims of present study are to find out:

- The aim of this study is to find out how pattern of unnatural deaths affect incidence, age, sex, habitat, marital status, religion, manner of death in community.
- Find remedial measures to bring down the incidence.

## 3. Material and Methods

Present study is carried out at forensic medicine department, Institute of Medical Sciences, Banaras Hindu University, Varanasi. Relevant information and subjective data like age, sex, habitat, marital status and manner of death of various causes of death victims have been collected from medico legal autopsy register. Data are analyzed retrospective for periods of five years from 2009 to 2013 Cases were included in group of various cause of death on the basis of confirmation by investigating officer and corroborative finding at medico legal examination.

## 4. Results and Observations

**Table1:** Regarding incidence of death total unnatural death 8985 i.e. 88.13% of total autopsy and % in relation to population of Varanasi (3676841 according to census 2011) were 0.24%. **Table 2:** Show that distribution of unnatural death pattern road traffic injury 3963(44.11%) contribute most common cause followed by burn 1911(21.27%), Poisoning 896(9.97%) etc. **Table 3:** Showed age wise distribution of unnatural death that 21 to 30 year were most common age group affected 2793(31.09%) followed by 31 to 40 year 1798(20.01%) and more than 71 year were least affected. **Table 4:** Sex wise distribution of unnatural death pattern male were outnumber 6164(68.60%) female 2821(31.40%). **Table 5:** Habitat wise distribution of unnatural death rural outnumber 7778(86.57%) urban 467(8.24%). **Table 6:** According to religions Hindu were

major cause 7971(88.71%) followed by Muslim 272(3.03%) and Christian 11(0.12%). **Table 7:** Marital status wise distribution of unnatural death married people 2115(23.54%) i.e. male only 4(0.06%) and female 2111(74.83%), Unmarried group 877(9.76%) male 325(5.27%) and female 552(19.57%) but most of the cases were unknown 5993(66.70%). **Table 8:** Seasonal variation wise distribution of unnatural death major cases in summer season 3517(39.14%) followed by rainy season 2775(30.88%) and in winter season 2693(29.97%).

## 5. Discussion

### 5.1 Incidence

Total unnatural death 88.13% of total autopsy and % in relation to population of Varanasi (3676841 according to census 2011) were 0.24%. Unnatural death is one of the major indicators of the level of social and mental wellbeing. Responsibility for prevention of unnatural deaths in our society does not rest only on the law enforcement. Public health and other human service agencies must assist in preventing unnatural deaths as they have done to prevent other major causes of morbidity and mortality. Other study [9] finds that unnatural death 85.14%. As just observed, most countries have a legal procedure for investigating deaths which are not obvious natural disease [11].

### 5.2 Pattern of Death

Show that distribution of unnatural death pattern road traffic injury 44.11% contributes most common cause which coincides with the 36% of study conducted in Chandigarh, northern India [6]. In a study conducted in cases of deaths due to road traffic accidents, G. Govekar et al [8] observed comparable findings. They observed that in road traffic accident deaths are more common. The search for acceleration and speed has led to the development of high velocity motorized vehicles which have become integral part of new system of our modern life. RV Kachare et al [7] in their study observed that burn (29.41%) were the commonest cause of death.

### 5.3 Age

According to age wise distribution of unnatural death that most dynamic age group 21 to 30 year were most common age group affected 31.09%. Public health departments, public authorities and other human service agencies also must assist with honest effort in searching the primary cause of unnatural deaths and their prevention. Other study also find about similar result [10]. Other study [12] most of the cases were between 21-40 years.

### 5.4. Gender

In our study sex wise distribution of unnatural death pattern male were outnumber 68.60% female 31.40%. Other study [9] also find about similar result that male to female ratio 1.68:1.

### 5.5. Habitat

In our study habitat wise distribution of unnatural death shows that rural habitat outnumber 86.57% urban habitat 8.24%. This difference is due to more rural population in varanasi area.

### 5.6. Religions

In our study Hindu were major contribution 88.71% followed by Muslim 3.03% and Christian 0.12%. In other study Hindus were more 87.26% than Muslims 12.74% i.e. ratio being 6.84:1[9]. This difference is due to difference in religions population in varanasi area.

### 5.7. Marital Status

In our study find that marital status wise distribution of unnatural death married people 23.54% i.e. male only 0.06% and female 74.83%, Unmarried group 9.76%, male 5.27% and female 19.57% but most of the cases were unknown 66.70%. Other study also find that married 80.06% were outnumber unmarried 19.94% [9].

### 5.8. Seasonal Variation

In our study seasonal variation wise distribution of unnatural deaths that major cases in summer season 39.14% followed by rainy season 30.88% and in winter season 29.97%.

## 6. Conclusion

- **Strict implementation of traffic rules**, with special attention to be paid to: Drunken drivers, Unskilled or semiskilled drivers, Use of mobile phones and smoking while driving, Use of high beam lights and music system at high volume, while driving within the city limits. Need to educate the general public about the road safety measures. Encroachment of roads by shopkeepers and hawkers should be dealt with strictly. Parking at unauthorized places should be penalized heavily. Stray animals should be removed from the roads and placed in govt. cattle sheds.
- Various socio-economic factors responsible for the high incidence of suicidal poisoning need a practical and early redressed on the Govt.-front, by **properly and honestly framing** the policies and implementing the same in such a manner that their benefits reach the needy. The prevailing evil of dowry system in this part of the world, despite the existing stringent laws (Sec. 498A, 304B Indian Penal Code) to curb the menace, has shown an upward trend. There has also been some feminist movement in the society and at present, one finds women's organizations struggling for their rights and protesting against the atrocities on them. But the movement has not yet been much successful in correcting the wrongs at the grass root level and needs to be further strengthened.
- The N.G.Os and Social Organizations can contribute their bit by building a satisfactory **interpersonal relationship** between the young and the elders in the society.
- The real emphasis about **education and encouragement of moral values of the leaders** of the society will reduce the unnatural deaths due to homicidal violence. Strict

punishments and actively speedy disposal of criminal cases so that justice reflects good message to the society at large so that people have gain faith in the law and resolve their disputes by lawful manner.

## 7. Future Scope

Based upon the present study following point may need in future planning regarding prevention of unnatural deaths pattern:-To plan effective preventive strategies regarding unnatural death especially road traffic accident as it was most common cause of death.

## 8. Acknowledgement

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## 9. Conflict of Interest

Nil

## 10. Source of Funding

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## 11. Ethical Clearance

The present study was approved by "Institutional Ethical Committee" of Institute of Medical Sciences, Banaras Hindu University, Varanasi. All the information has been taken under consideration of medical ethical committee.

## 12. Tables

**Table1:** Incidence of pattern of death

<i>Pattern of death</i>	<i>No. of cases</i>	<i>%</i>	<i>% in relation to population</i>
Natural death	1210	11.87	0.03
Unnatural death	8985	88.13	0.24
Total no. of autopsy conducted in 5 year 2009 to 2013 of various pattern of death	10195		0.28
Population of Varanasi			36,76,841

**Table 2:** Distribution of pattern of unnatural death

<i>Sr. No.</i>	<i>Pattern of death</i>	<i>Total victims</i>	<i>% of total victims</i>
1.	Road traffic injury	3963	44.11
2.	Burn	1911	21.27
3.	Poison	896	9.97
4.	Railway injury	687	7.65
5.	Hanging	457	5.09
6.	Drowning	354	3.94
7.	Firearm injury	153	1.70

8.	electrocution	147	1.64
9.	Fall from height	127	1.41
10.	Unknown	96	1.07
11.	Suffocation	52	0.58
12.	Neck injury	26	0.29
13.	Strangulation	24	0.27
14.	still born	19	0.21
15.	Hypothermia	14	0.16
16.	Infected wound	14	0.16
17.	Heat stroke	8	0.09
18.	Lightning	8	0.09
19.	Prematurity	6	0.07
20.	Bomb blast injury	5	0.06
21.	Chemical burn	5	0.06
22.	Maternal cause of medical negligence	4	0.04
23.	Snack bite	3	0.03
24.	Bull attack	2	0.02
25.	Dead born	2	0.02
26.	Scorpion sting	1	0.01
27.	Surgical cause of negligence	1	0.01
	Total	8985	100.00

**Table 3:** Age wise distribution of unnatural death

<i>Age ( in year)</i>	<i>No. of cases</i>	<i>% of cases</i>
0-10	359	4
20-21	1371	15.26
21-30	2793	31.09
31-40	1798	20.01
41-50	1194	13.29
51-60	804	8.95
61-70	498	5.54
>71	168	1.87
Total	8985	100

**Table 4:** Distribution of Unnatural Deaths according to gender

<i>Sex</i>	<i>Total cases</i>	<i>% of total cases</i>
Male	6164	68.60%
Female	2821	31.40%
Total	8985	100.00%

**Table 5:** Distribution of unnatural deaths according to habitat

<i>Habitat</i>	<i>Total cases</i>	<i>% of total cases</i>
Rural	7778	86.57
Urban	467	5.2
Unknown	740	8.24
Total	8985	100

**Table 6:** Distribution of unnatural deaths according to religions

<i>Religions</i>	<i>Total cases</i>	<i>% of total cases</i>
Hindu	7971	88.71
Muslim	272	3.03
Christian	11	0.12
Unknown	731	8.14
Total	8985	100

**Table 7:** Distribution of unnatural death in relation to marital status

Marital Status	Male		Female		Total	
	No. of cases	% of cases	No. of cases	% of cases	No. of cases	% of cases
Married	4	0.06	2111	74.83	2115	23.54
Unmarried	325	5.27	552	19.57	877	9.76
Unknown	5835	94.66	158	5.6	5993	66.7
Total	6164	100	2821	100	8985	100

**Table 8:** Distribution of unnatural deaths according to seasonal variation

Season	Total No. of cases	% of cases
Summer (March-June)	3517	39.14
Rainy (July-October)	2775	30.88
Winter (Nov.-February)	2693	29.97
Total	8985	100

## References

- [1] Gautam Biswas; thanatology; review of forensic medicine and toxicology; 2nd edition; 2013; Jaypee brothers medical publishers(p) LTD; PP:110.
- [2] Aryappan A and Jayadev CJ. Society in India; Social Science Publication; 1985.
- [3] UN Report.
- [4] Batra. A. K.; Burn Mortality; Recent Trends and Sociocultural determinants in rural India. Burns; 2003; (29): 270-275.
- [5] Ahmed M. Rahman M. and Hossain M. Pattern of unnatural death in two districts. TAJ. 1992; 5: 65-66. 4.
- [6] Sharma BR et al unnatural death in northern India profile, JIAFM, 2004; 26(4), 140-146.
- [7] R.V Kachare, Chavan & et.al; "Analytical study of medico legal deaths in rural region Beed district of Maharashtra"; Journal of Medico legal Association of Maharashtra; Dec 2003, Vol.15, No.1-2, Page, 14-17.
- [8] Ganesh Govekar, Gaurang Patel & et.al.; "Trends of road traffic accident in Surat city"; Journal of Indian Academy of Forensic Medicine: 2009, 31(4) Page, 326-330.
- [9] Dr. MEBansude et al; trends of unnatural deaths in latur district of maharashtra; Journal of Forensic Medicine, Science and Law; Vol 21, Number 2.
- [10] Gannur Dayanand G et al; profile of medico legal autopsies in bijapur; Vol. 2, Issue 1 V Care For Life Sciences Journal; PP:27-35.
- [11] K. Park; Park's Text book of preventive and social Medicine; Bharot n/s Banarsidas publishers, 20th Edition, 2009; P-353.
- [12] Md. Belayet Hossain Khan et al; Study on Unnatural Death Patterns in Dhaka City; AKMMC J 2011; 2(2): 18-20.

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