



Original Article

One Year Profile of Unnatural Deaths in Pondicherry- A Retrospective Study

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Purpose: There is a paucity of information regarding the overall trend and factors associated with unnatural deaths and hardly any studies were found from south India on literature review. The main objectives of the study were: To ascertain the various aspects of unnatural deaths and find out probable associated factors. **Methods,** A one year retrospective study was carried with the sample frame being all the cases of unnatural deaths subjected to medico legal autopsies in the year 2009 at Government general hospital, Pondicherry. **Results:** Male: female ratio of unnatural deaths was found to be was 2.8: 1. Road traffic accidents formed the major cause of death overall and among males. Burning was found to be strongly associated with female gender. Snake bites were a minor cause and found only in the rural side. Marriage among males was found to be associated with greater risk of unnatural deaths. **Conclusions:** There is a high number of unnatural deaths among males in Pondicherry. The concern of road safety as a prime issue to be addressed is highlighted.

Key words: Unnatural Deaths, Pondicherry, Profile, Factors

1. INTRODUCTION

Many lives are lost to unnatural deaths, the world over, with the accidents involving vehicles accounting for a large proportion. The accident rate involving vehicles is greater in developing countries than in the developed. 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 24.3.¹ Tremendous advances

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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.² The burn fatalities in India are a major concern.³ India being a poor country with a high unemployment and illiteracy rate, the crime rate though not as high, still contributes its bit towards unnatural deaths. In this background the present study was carried out to find the magnitude and pattern of unnatural deaths in Pondicherry.

2. MATERIAL & METHODS

A retrospective assessment of data from the records of un natural deaths from Jan to Dec of 2009 were taken from the Govt general hospital, Pondicherry, with permission from the authorities and under the oath of confidentiality. Details including age, sex, address, marital status, medical opinion of cause of death post autopsy were taken and compiled for the purpose of the study. Since any unnatural death comes under the category of medico-legal, most of the reported cases of unnatural deaths come to the Government general hospital which is the major authorized centre for post mortem examination. Hence the sample would be a representative sample of the reported unnatural deaths of the overall region. All the data was compiled and analyzed by statistical tests for significance of difference in proportions. The p value of less than 0.05 was considered as statistically significant.

3. RESULTS

A total number of 1180 unnatural deaths were found recorded in 2009. The approximate rate of unnatural deaths arrived at by using the population denominator obtained by extrapolation of 2001 population from the growth rate calculated using 2001 and 2011 census was 130 per 1 lac population.⁴ The proportion of male unnatural deaths was higher. Male to female ratio of unnatural deaths was 2.8:1. Overall road traffic accidents (RTA) accounted for most, 27.28% of the

deaths and it was also the leading cause of death among the males. Unnatural deaths attributed to burns and hanging formed the other major chunk of the deaths. Burns contributed to the major proportion 41.8%, of unnatural deaths among the females. Segregating the deaths gender wise, the proportion of death by RTA, other injuries, murder, and 'no exact opinion of cause of death' were statistically significantly higher among the males. Proportion of burning and hanging deaths was significantly higher among the females as compared to males. Snake bite and electrocution contributed to the lowest proportion of unnatural deaths overall. [Table 1]

Table 1: Different causes of unnatural deaths gender wise and overall

CAUSE OF DEATH	Males	Female s	P value	Total (Males + Females)	OVER ALL PERCENTAGE
RTA	272(31.1%)	50(16.2%)	P<0.0001	322	27.28
BURNS	110(12.6%)	129(41.8%)	P<0.0001	239	20.25
HANGING	151(17.3%)	74(24.0%)	P=0.014	225	19.06
POISONING	36(4.1%)	11(3.5%)	p>0.05	47	3.98
OTHER INJURES	38(4.3%)	3(0.9%)	P<0.0001	41	3.47
SNAKE BITE	13(1.4%)	7(2.2%)	p>0.05	20	1.69
DROWNIN G	33(3.7%)	7(2.2%)	p>0.05	40	3.38
MURDER	24(2.7%)	3(0.9%)	p=0.027	27	2.28
ELECTROCUTION	9(1.0%)	4(1.2%)	p>0.05	13	1.1
NO EXACT OPINION AS TO C.O.D.	186(21.3%)	20(6.4%)	P<0.0001	206	17.45
TOTAL	872 (100%)	308(100%)		1180	100

The proportion of married males among the unnatural deaths was significantly higher than the proportion of married females. The analysis revealed a significantly higher percentage of hanging and RTA among the married males as compared to the unmarried males. [Figure 1]. There was however a significantly higher percentage of burning related deaths among the un

married males as compared to their married counterparts.

Table 2: Causes of unnatural deaths based on marital status

	MALES			FEMALES		
	MARRIED	UNMARRIED	P	MARRIED	UNMARRIED	P
BURNS	53	57	P<0.0001	85	44	P=0.012
POISONING	32	4	p>0.05	9	2	p>0.05
RTA	246	26	P=0.0183	38	12	p>0.05
MISC (OTHER INJURIES)	38	0	p>0.05	3	0	p>0.05
HANGING	141	10	P=0.0008	56	18	p>0.05
SNAKE BITE	10	3	p>0.05	4	3	p>0.05
MURDER	24	0	p>0.05	3	0	p>0.05
ELECTROCUTION	6	3	p>0.05	3	1	p>0.05
RESERVED	182	4	p>0.05	19	1	p>0.05
DROWNING	24	9	p>0.05	6	1	p>0.05
TOTAL	756	116	p>0.05	226	82	p>0.05

Table 3: Major causes of unnatural deaths age category wise

Age category	Rta	Burns	Hanging	Drowning	Poisoning
0 - 9	6	6	1	8	1
10 - 19	19	40	17	3	4
20 - 29	63	90	70	9	11
30 - 39	58	58	33	2	8
40 - 49	56	19	53	9	7
50 - 59	52	9	33	3	9
60 - 69	48	9	7	2	3
70 +	20	8	11	4	4
TOTAL	322	239	225	40	47

This was similar to the finding in the females wherein the unmarried females had a significantly higher proportion of burning related deaths compared to married females. [Table 2]. Maximum number of unnatural deaths was seen in the age group of 20-39 (43.5%). There were 511 (43.3%) suicidal deaths of which 349 (68.2%) were by people in the age group of

20 to 49 years and among these 171 (48.9%) were by people in the age group of 20 to 29 years. [Table 3].

The urban to rural divide of unnatural deaths is 1.63:1 [732:448]. The ratio of RTA, Burns and hanging urban to rural were 1.37:1, 1:2.66, 2.26:1. All the snake bite cases were from the rural areas. Hanging and RTA proportion was higher in the urban area while burns percentage was higher in the rural areas. [Figure 2]

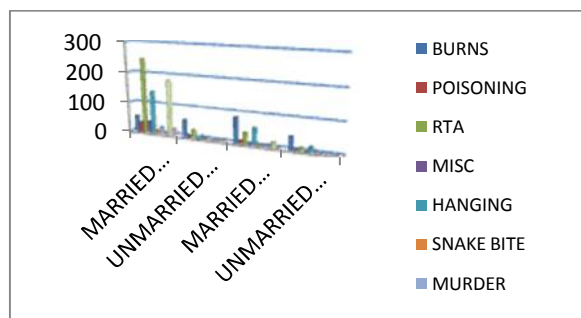


Fig 1: Relative distribution of causes of unnatural deaths gender wise and marital status wise

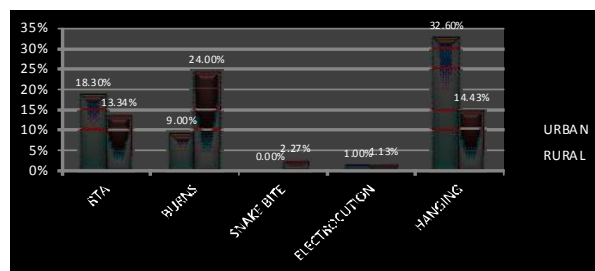


Fig 2: Proportion of unnatural deaths based on rural-urban distribution

4. DISCUSSION

Unnatural deaths form an important indicator of the health of societies. In the rapidly evolving scenario of unbridled urbanization and depletion of farm lands to the needs for real estate growth coupled with the enhanced pace of mechanization, burgeoning numbers of fast moving vehicles, unskilled or semi skilled drivers, drunken drivers and the woefully inadequate road system, there is a situation created of enhanced vulnerability to the possibility of unnatural deaths. In our study road traffic accidents formed the major cause of death. Ignorance and intentional violation of traffic rules, encroachment of the roads by shopkeepers, hawkers and stray animals play an important role in contributing to the increase of vehicular accidents. ⁵

These factors are again highlighted by the findings of this study. RTA has taken an almost epidemic form in the recent past. This is particularly true of our country where one person becomes victim of this man made dragon in less than every five minutes.⁶

A previous study from a union territory of Chandigarh in north India reported a total of 2835 cases of unnatural deaths over a 10 years period averaging 283.5 deaths per year. Our study over a one year period has 1180 reported unnatural deaths showing a far higher number. Considering the population, Pondicherry in 2001 had 735,332 people compared to 9.01 Lakh in Chandigarh. Looking at the 2011 census the numbers are 9.5 lac for Pondicherry and 10.5 lac for Chandigarh. So the overall population base is more or less the same. Thus the very high number of deaths in Pondicherry just over a one year period is alarming and needs to be looked at in more detail. We also need to take in account that the previous study was done five years prior to our current study and as such a contemporary study in north India might also help to see if there has been a matching increase in the unnatural deaths there.⁷

The greater number of male RTA is probably indicative of the fact that more males are driving vehicles than their female counterparts. This is especially true for the public transport systems where women auto drivers, lorry drivers or bus drivers are yet to be on the rolls for the job.

Burns as a cause of death was significantly greater among the females. Interestingly unmarried males also had a propensity for burning deaths. Cleansing powers of fire have been held in great reverence and fear in the Indian psyche. This extended to cleansing and blessing of human bonds and relationships over it. Even Shushruta's ancient medical treatise gave it the final sterilizing / cleaning authority. From this background,

setting oneself on fire may have been arrived at, as an Indian means of honorable death.⁸

The dowry system has for long been held as an important factor for female burning deaths. In our study, though the majority of female deaths were attributed to burning it was noted that among the un-married females the likelihood of unnatural burning related female death was significantly higher. This might point to the changing social structure with changing stress patterns including education, premarital relationships and other related issues which need to be probed further. At the same time the evils of dowry cannot be totally sidelined for now.⁹

Marriage seemed to confer some protection to females but not to the males as regards unnatural deaths. The married males had a greater chance of RTA and hanging indicating that the stress imposed by marital life and its responsibilities may be a factor to consider when looking at prevention programs for males.

It was seen in the present study that a very big percentage 17.4%, of unnatural deaths could not be categorized into any specific cause of death and opinion was reserved (no exact opinion) [Table 1]. The concept of "no exact opinion" usually implies "pending investigation" and is made more necessary presently by the gradual increase in the sophistication of toxicological and immunologic methods of investigation. This concept, however, poses some complications. One of these is the proper issuing of certified copies of death certificates when the certificate is not complete.¹⁰

Compared to the Western scenario uniform medico-legal guidelines and standard protocols which make medico-legal work less complicated in practice are not clearly laid down in India. Stark differences exist even amongst states as far as application of medico-legal guidelines is concerned. Consequently, no comprehensive unanimity exists in medico-legal work

in India.¹¹ This could reflect even with use of terminologies regarding deaths where a clear cause is yet to be established. Also the time delay in pinpointing a valid cause of death in such instances needs a more comprehensive evaluation.

5. CONCLUSIONS

- Much importance has to be given to RTA prevention strategies
- Marriage which was so far considered protective seems to be having a negative impact on possibility of unnatural deaths among the males.
- Burns still constitutes the major method adopted by women to end their lives.

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