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Journal homepage: <https://www.ipinnovative.com/journals/IJFCM>**Original Research Article****Pattern of female deaths in Manipur: An autopsy-based cross-sectional study****Beingaichho Lynda Zohlupui¹, James DW Sungoh^{1,*}, Thounaojam Meera¹**¹Dept. of Forensic Medicine and Toxicology, Regional Institute of Medical Sciences, Imphal, Manipur, India**ARTICLE INFO***Article history:*

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ABSTRACT

The cause of death may be natural, unnatural or may be obscure. The present study is aimed at determining pattern of deaths among females in Manipur, India. This study was conducted in the Department of Forensic Medicine and Toxicology of a tertiary care teaching Institute in Imphal, Manipur, during the period of 6 years from January 2014 to December 2019. Out of the 1,387 cases brought for autopsy, 17.81% were females. The year 2014 showed the highest number of unnatural deaths. Asphyxia and blunt forces were the commonest forms of homicides with the highest number of victims in the age groups of >30-40 years. Road traffic accidents were the commonest cause of accidental deaths (91.3%). Hanging accounted for the commonest method of suicides (81.1%), with the highest incidence in the age group of >10-20 years. Respiratory diseases accounted for the highest cause of natural deaths (35.71%). The study reveals that amongst the unnatural deaths in females, road traffic accident was the commonest cause.

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1. Introduction

Death is an inevitable phenomenon. However, deaths that are not categorized by natural causes are termed as unnatural deaths. The incidence of unnatural deaths is a reflection of prevailing social setup and mental health status of the population, and medico-legal post-mortem examination is the most important tool for analysing unnatural deaths.¹ It is a known fact that discrimination and violence against women exist in societies, especially of developing countries. Married as well as unmarried women are often subjected to various forms of violence. Furthermore, dowry related bride burning is often reported from various parts of this country.² Hence, the present study has been carried out to analyze the pattern of female deaths in this part of the country, both due to natural and unnatural causes using autopsy database with an aim to determine commonest cause of female deaths in this part of the country.

2. Materials and Methods

This study was conducted in the Department of Forensic Medicine and Toxicology of a tertiary care teaching hospital at Imphal, Manipur during the period of six years from January 2014 to December 2019 on all the cases of female deaths brought for autopsy. It was carried out after obtaining approval of concerned institutional ethics committee. The post-mortem examination reports and police records as well as treatment record of the cases, if available, were examined. The findings were recorded and statistically analysed as regards to the yearly distribution of deaths, age distribution of female autopsy cases depending on the nature of death, pattern of death for both natural and unnatural deaths.

3. Results

In this study, out of the total of 1,387 cases brought for autopsy 247 were females, which represented 17.81% of the autopsies performed, as shown in Figure 1. The year 2014 showed the highest number of female deaths [Table 1]. Figure 2 shows the distribution of the natural (11.3%) and unnatural deaths (88.7%) during the last 6 years. Table 2

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shows yearly distribution of unnatural female deaths, and accidental deaths were the commonest nature of deaths (52.51%). The age group of >30-40 years showed the highest number of female deaths as shown in Table 3. Figure 3 shows that asphyxia and blunt forces were the commonest methods of homicides (40% each) and road traffic accidents (RTA) accounted for 91.3% of the total accidental deaths [Figure 4]. As evident from Figure 5, hanging was the commonest method of suicide (81.1%), and the maximum of victims were seen in the age group of >10-20 years (32.43%). Respiratory illness accounted for the highest cause of natural deaths (35.71%), and the highest number of natural deaths (35.71%) were observed in the age group of >40-50 years.

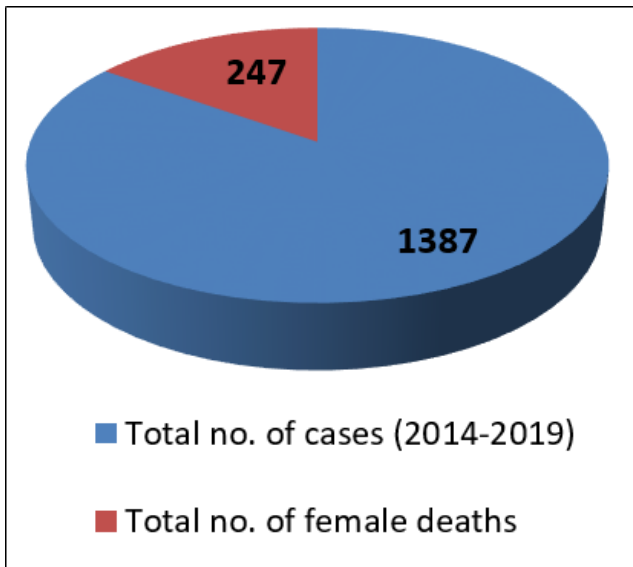


Fig. 1: No. of female deaths during 2014 to 2019

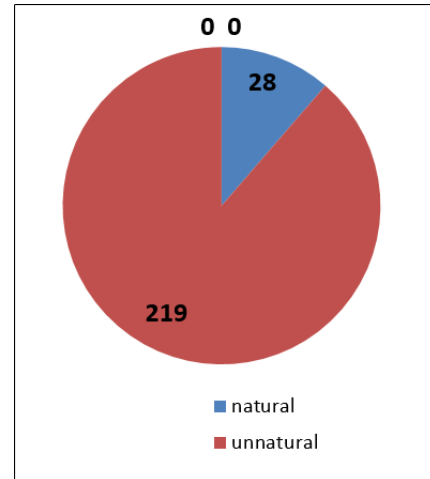


Fig. 2: Distribution of natural and unnatural deaths

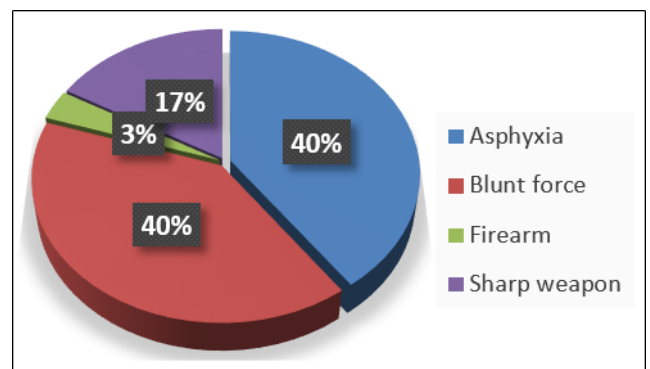


Fig. 3: Causative agents in homicide (n =30)

Table 1: No. of female deaths

| Year | No. of cases | Percentage |
|-------|--------------|------------|
| 2014 | 51 | 20.65 |
| 2015 | 34 | 13.77 |
| 2016 | 36 | 14.57 |
| 2017 | 42 | 17.00 |
| 2018 | 40 | 16.19 |
| 2019 | 44 | 17.81 |
| Total | 247 | 100 |

4. Discussion

Study of pattern of female deaths is of extreme importance as it may help in preventing such deaths and its devastating impact in the society. Female deaths accounted for 17.81% of the total autopsy cases in our study and the peak age of female deaths were observed in the fourth decade. Majority of female deaths were accidental (46.56%), followed by

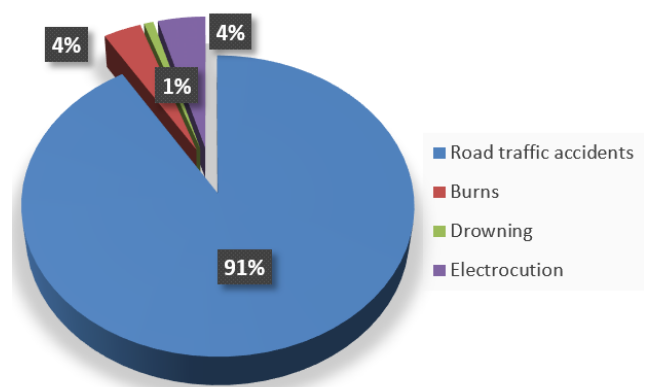


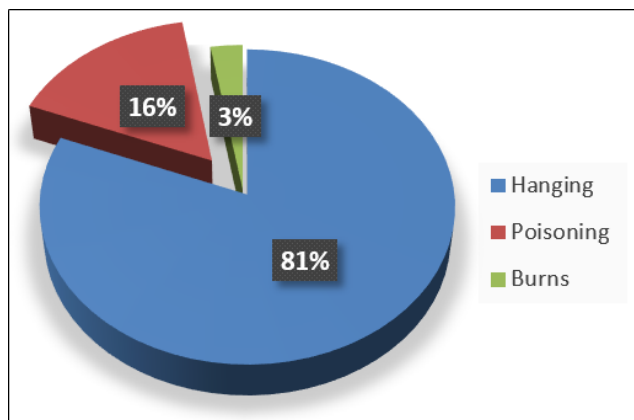
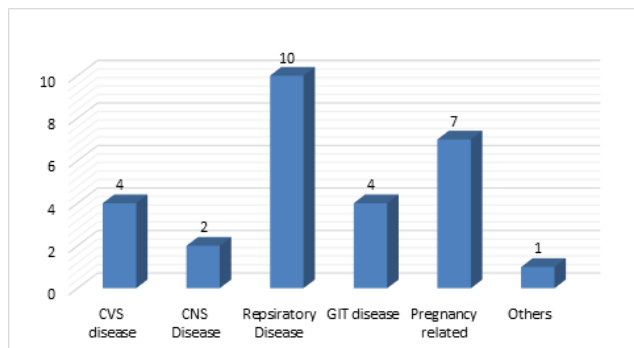
Fig. 4: Causative agents in accidents (n=115)

Table 2: Yearly distribution of unnatural female deaths (n=219)

| Year | Homicide | Accident | Suicide | Total (Percentage) |
|-------|----------|----------|---------|--------------------|
| 2014 | 10 | 22 | 15 | 47 (21.46%) |
| 2015 | 6 | 12 | 10 | 28 (12.79%) |
| 2016 | 2 | 22 | 8 | 32 (14.61%) |
| 2017 | 4 | 18 | 14 | 36 (16.44%) |
| 2018 | 2 | 22 | 12 | 36 (16.44%) |
| 2019 | 6 | 19 | 15 | 40 (18.26%) |
| Total | 30 | 115 | 74 | 219 (100%) |

Table 3: Age distribution of female deaths (n =247)

| Age | Homicide (n=30) | Accident (n=115) | Suicide (n=74) | Natural (n=28) | Total (n=247) |
|-------------|-----------------|------------------|----------------|----------------|---------------|
| 0-10 | 3 (10%) | 10 (8.7%) | 0 | 2 (7.1%) | 15 |
| >10-20 | 4 (13.3%) | 13 (11.3%) | 24 (32.4%) | 1 (3.6%) | 42 |
| >20-30 | 2 (6.7%) | 15 (13%) | 16 (21.6%) | 8 (28.6%) | 41 |
| >30-40 | 9 (30%) | 15 (13%) | 20 (27%) | 5 (17.8%) | 49 |
| >40-50 | 1 (3.3%) | 16 (13.9%) | 13 (17.6%) | 10 (35.7%) | 40 |
| >50-60 | 3 (10%) | 17 (14.8%) | 1 (1.35%) | 1 (3.6%) | 22 |
| >60-70 | 7 (23.3%) | 22 (19.1%) | 0 | 1 (3.6%) | 30 |
| >70 & above | 1 (3.3%) | 7 (6.1%) | 0 | 0 | 8 |

**Fig. 5:** Methods of executing suicides (n=74)**Fig. 6:** Showing the causes of natural deaths (n=28)

suicide (29.96%) and homicide (12.15%) which is in accordance with the study by Hussaini et al.^{3,4} Asphyxia and blunt forces contributed for the commonest methods of homicide (40%) and was observed to be highest in the age group of >30-40. However, in contrast to our findings, younger age groups were more vulnerable to homicides in studies by other workers.^{5,6}

In the present study, it was observed that accidental deaths were the commonest cause of female deaths (46.56%) with RTA constituting 91.3% of the total accidental deaths. Similarly, in studies by other authors^{6,7} accidental deaths due to road traffic accidents were also the most predominant causes of medico-legal female deaths. Similar to the global scenario, drinking and driving, speeding, and failing to use motorcycle helmets, seat-belts, and child restraints were the risk factors.

Majority of deaths by suicide in our study was hanging (81.1%), followed by poisoning (16.22%). This could be due to easy availability of ligature material and agriculture poisons, where agriculture is the most important source of livelihood in the state. Similar findings were also reported by Sane and Ananda⁸ where hanging was the commonest cause of suicide (71.8%, n=61), followed by poisoning (11.8%, n=10). However, in a study by Prajapati,⁹ poisoning (35.51%) was the commonest cause of suicidal deaths followed by hanging (31.16%) and burns (27.54%). Interestingly, suicide by burn was also observed in our study (2.7%), however, in comparison with other studies,^{10,11} it was found to be much lesser, this could be due to non-existence of a dowry system, which is the root cause of bride burning in other parts of the country.² Among the cases of suicides in our study, the majority were in the age group of >10-20 years, which was similar with the study done

by Ijomone et al.⁶ However, in a study by Nath et al.,¹¹ maximum cases (37.96%) were seen in the age group of 21- 30 years. This age group was mostly affected as they fall into the marriageable age in India and marital discord, quarrels and dowry demands may cause depression leading to suicidal deaths.

Compared to unnatural causes of deaths, natural deaths contributed only 2.02% of the total autopsy cases. It was observed in our study that respiratory illness (35.71%) was the commonest cause of natural deaths, whereas in a study by Nwafor and Akhiwu,¹² cardiovascular related pathologies accounted for the commonest (41.8%) cause of natural deaths, which could be due to difference in study population, dietary and geographical variance. Pregnancy related deaths in our study were found to be 25%, whereas in a study by Nwafor and Akhiwu¹² it was 29.6%, which was higher than our study.

5. Conclusion

The study thus revealed that unnatural deaths accounted for the highest cause of female medico-legal deaths in which road traffic accidents are the main cause of deaths. Further, female of the age group >10-20 years showed the highest number of suicide where hanging is the commonest method of suicide, which highlights the importance of timely rendering counselling services where such deaths may be prevented.

6. Source of Funding

Nil.

7. Conflicts of Interest

The authors declare no conflict of interest.

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