

## Original Research Paper

# Unnatural Deaths Among Female Children and Adolescents in Western India

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### Abstract:

**Background & Aim:** Burns is the leading cause of death in married females, while unintentional injuries are more common in female children. The aim of this study was to determine the various causes of unnatural deaths among female children in a tertiary health center of western India. **Materials & Methodology:** The present autopsy based prospective study was conducted in a tertiary health center of Gujarat and the cases of death of female children, which were brought to us for autopsy examination during the one year period from January to December 2008 were analyzed. **Results:** The incidences of female children death were 3.5% of the total autopsies conducted during the one year period of this study. The most susceptible age group was between 16-19 years of age and burns (31.6% cases) were the leading cause of death followed by RTAs (26.6% cases). In majority of the cases, the manner of death was accidental (63.3%) and suicidal (31.6%) in nature. **Conclusion:** The present study revealed that the incidences of unnatural deaths in female children were found to increase with the age, especially in teenage girls and most of them suffered from an accidental injury due to burns and RTAs, which are preventable.

**Key Words:** Female Children Death, Burn, RTA, Autopsy.

### Introduction:

As per census 2011, India is having a population of around 1.21 billion people.<sup>1</sup> Though burns is the leading cause of death among adult women (15-44 years), but self inflicted injuries and road injuries are more common in the younger age group.<sup>2</sup> Deaths due to burns are significantly more in women due to cooking accidents or as a result of close partner and family violence. The causes of unnatural deaths among female children and adolescent are increasing and to arrive at a targeted prevention of mortality in this group, one should

be aware of the different unnatural causes of death in this population. Various studies have been conducted on unnatural deaths of adult females in different parts of India,<sup>3-5</sup> but the causes of female child deaths have not much been discussed, and hence this study was undertaken with the aim to highlight the unnatural causes of death in the female children and adolescents in the western part of India.

### Materials & Methodology:

The present observational study was conducted in a tertiary health center of western India at Vadodara, Gujarat. The data of cases, which were brought to the mortuary of department for the medico-legal postmortem examination during the period of one year from January to December 2008 were analyzed retrospectively, after taking approval from the Institutional Ethics Committee. A total 1712 medico-legal autopsies were conducted during this period and of them, 60 (3.5%) cases, which were coming under the category of female

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children (<19 years of age) were selected for detailed study. The female children were classified into 4 groups: 0-5 years, 6-10 years, 11-15 years and 16-19 years. The manner of death was decided after taking a detailed history, circumstantial evidences and post-mortem findings. In all the cases, various causes of death in female children and manner of death was determined after autopsy examination and relevant reports of investigations. The data were analyzed and compared with observations of other authors.

### Results:

The present autopsy based study was conducted during the one year period in which total 1712 medico-legal autopsies were performed and of them, 60 cases (3.5%) were female children (<19 years of age). The most vulnerable age group was 11-19 years (71.7%). Burns was the leading cause of death amongst the female children, consisting of 31.6% cases, followed by RTAs, accounting for 26.6% cases. As per history, circumstantial evidence and post-mortem findings, the manner of death was concluded and we noticed that in the majority of the female children, the manner of death was accidental, 38 cases (63.3%), followed by suicides, 19 cases (31.6%) and homicide, 1(1.7%) case. Natural deaths were also observed in two cases (3.3%). In the present study, correlation of age with the manner of death showed that accidental deaths due to RTAs or due to burns, poisoning, electrocution or snake bites were higher in children less than 5 years of age, and then amongst the 11 - 15 yrs & 16 - 19 yrs age groups. Incidence of suicide were surprisingly higher in 11-19 years age, especially in teenage girls, while homicides and natural deaths were less common as expected.

Table-1: Age Wise Distribution of Causes of Death in Female Children

Causes of Death	Age of the Victim				Total
	0-5 yrs	6-10 yrs	11-15 yrs	16-19 yrs	
Burns	02 (3.3%)	00 (0%)	05 (8.3%)	12 (20.0%)	19 (31.6%)
Poisoning	00 (0%)	00 (0%)	03 (5.0%)	08 (13.3%)	11 (18.3%)
RTA	07 (11.6%)	02 (3.3%)	06 (10.0%)	01 (1.7%)	16 (26.6%)
Hanging	00 (0%)	00 (0%)	02 (3.3%)	03 (5.0%)	05 (8.3%)
Snake Bite	01 (1.7%)	01 (1.7%)	01 (1.7%)	00 (0%)	03 (5.0%)
Electrocution	02 (3.3%)	00 (0%)	01 (1.7%)	00 (0%)	03 (5.0%)
Pathology	01 (1.7%)	01 (1.7%)	00 (0%)	00 (0%)	02 (3.3%)
Assault	00 (0%)	00 (0%)	01 (1.7%)	00 (0%)	01 (1.7%)
<b>Total</b>	<b>13 (21.7%)</b>	<b>04 (6.7%)</b>	<b>19 (31.7%)</b>	<b>24 (40%)</b>	<b>60 (100%)</b>

Table-2: Age Wise Distribution of Manner of Death in Female Children

Manner of Death	Age of the Victim				Total
	0-5 yrs	5-10 yrs	11-15 yrs	16-19 yrs	
Accidental Death	12 (20.0%)	03 (5.0%)	14 (23.3%)	09 (15.0%)	38 (63.3%)
Suicidal Death	00 (0%)	00 (0%)	06 (10.0%)	13 (21.7%)	19 (31.6%)
Homicidal Death	00 (0%)	00 (0%)	01 (1.7%)	00 (0%)	01 (1.7%)
Natural Death	01 (1.7%)	01 (1.7%)	00 (0%)	00 (0%)	02 (3.3%)
<b>Total</b>	<b>13 (21.7%)</b>	<b>04 (6.7%)</b>	<b>21 (35.0%)</b>	<b>22 (36.6%)</b>	<b>60 (100%)</b>

### Discussion:

The present study was conducted at a tertiary health center of western India and it showed that the most vulnerable group of female children belonged to the age group of 11-19 years of age (71.7%), followed by the children of less than 5 years of age (21.7%). Debata et al<sup>6</sup> analyzed the postmortem data in the northern part of India and found almost similar data. In the present study, burns was the main contributor of unnatural death amongst the female children and RTAs were the second commonest cause, which is similar to the observations of Debata et al<sup>6</sup> and Kanchan et al.<sup>7,8</sup>

Holakouie-Naieni<sup>9</sup> found RTA as the number one cause of death in their study done in Iran on unnatural deaths among children and adolescents, followed by deaths due to burns. Analysis of various causes of deaths in contrast with age shows that in lower age groups (0-15 yrs), RTA is the leading cause of death, as compared to the burns and other causes.

The data showed that the incidence of burns, poisoning and hanging are higher in the teenage groups, as compared to the other age group; with maximum during the age of 16-19 years. The first systematic review of community-based surveys on child injuries was conducted by Pant, et al<sup>10</sup> in the countries of the South East Asia Region to summarize evidence from child injury.

In this study, the analysis of the cases was also done according to the manner of death and it was observed that in the majority of the female children, the manner of death was accidental (63.3%), followed by suicides (31.6%), which is in agreement with the observations of other authors.<sup>6,8,11</sup> Though, the children are more vulnerable to accidental injuries, but the incidence of suicides (31.6%) are also not negligible and distressing among this particular age group. It might be due to the increasing tendency of self harm among teenagers and young adolescents. Suicide rates of self harm are still high in western countries and about 5-9% of adolescents have a history of self harm within the previous years.<sup>12</sup> The correlation of age with the manner of death shows that different types of accidental deaths due to RTAs or due to burns, poisoning, electrocution or snake bites are more commonly involved in the younger girls, while incidences of suicide were surprisingly higher in 11-19 years age, especially in teenage girls and homicides and natural deaths were less common.

### Conclusion:

The observations of present study revealed that the incidence of unnatural deaths in female children were found to increase with the age, especially in teenage girls, and most of them suffered from an accidental injury due to burns and RTAs, which are preventable. This study may be helpful to reduce the targeted prevention of mortality and morbidity by unnatural means in female children.

**Conflict of Interest :** None

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