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A survey of drowning cases from district Rohtak, Haryana, India.

Saini E[1], Khanagwal VP[2]*, and Singh R[1].

[1]Maharshi Dayanand University, Rohtak, Haryana-124001, India.
[2]Department of Forensic Medicine, Pt. B. D. Sharma University of Health Sciences, Rohtak, Haryana-124001

ABSTRACT

Timely and factual literature has reported drowning as one of the leading causes of death in diverse geographical areas of the world. Already published work has also pointed out that databasing of drowning which may be useful enough to understand types and trends of drowning of any particular region. Further utility of this useful information may also contribute to conduct forensic research and law enforcement agencies to solve drowning related mysteries. Objective of the present study has compiled and concluded the data of drowning cases happened during 2013 to 2014 in the Rohtak district of Haryana. Raw data was collected from the Department of Forensic Medicine, Pt. B.D. Sharma University of Health Sciences, Rohtak. Observations of the study were then tabularized covering different parameters viz. age group, gender and most affected area. Results have revealed some significant differences amongst the selected parameters of observations. Mostly young males have been found associated with drowning cases. Investigation of the present survey has revealed important points to discuss which may be useful for the forensic medicolegal research studies.

Keywords: Drowning, forensic, medicolegal, water bodies.

Corresponding author

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INTRODUCTION

Drowning may be one of the leading causes of death in areas having large number of water bodies, however the availability of limited informative data may be a matter of concern for the interested researchers and medico-legal experts. In 2012, the World Health Organization (WHO) reported an estimate of 3,72,000 human drowning cases worldwide. According to data provided by Statistics Canada, the drowning has also been reported the 4th most common cause of death in Canada from 1991 to 2000. Patterns of drowning have been found varying according to the geographic area [1]. Earlier studies have analyzed drowning to determine their relationship with age, race, alcohol, pre-existing disease and other factors [2-4]. A study covering twelve years (1988–2000) has revealed that 50 children younger than 5 years drowned in private swimming pools in the Western Australia [5].

Literature survey of drowning cases from India has also disclosed some informative data. In a report based on all India survey published by Bureau of Police Research & Development (BPR&D) concluded that 20.7% cases of deaths which was also highest in number (27,079) happened due to drowning in the year 1969 [6]. In India, the drowning was also reported to be one of the most common causes of death [7]. A total number of 536 cases of drowning were reported in the State of Punjab in 2005-06 [8].A survey covering five years (2006 to 2010) from Himachal Pradesh has confirmed 514 cases of drowning [9]. In 2013, all India survey made by the National Crime Record Bureau (NCRB) reported 8.0% deaths due to drowning. It was also added that on an average 82 persons lost their lives due to drowning every day in India. In addition to this, Madhya Pradesh state was noticed with highest number of deaths (4890) due to drowning while data from Haryana revealed only 589 cases of drowning [10]. A study reported 28 cases of drowning in year 2011 from Rohtak district which was 11.6% of a total of 240 drowning cases analyzed in the Forensic Science Laboratory, Madhuban (Haryana) [11].

This study has generated some more database of drowning cases happened in Rohtak district in year 2013-14. Some important parameters have been included in this study. Observations of this study have shown important piece of information for the scientific and administrative societies.

MATERIALS AND METHODS

Study area

Rohtak is known as the "Heart of Haryana" located 70 kilometers northwest of the national capital of India, New Delhi. Total geographical area of the district is 1745 square kilometers which is administratively divided into five blocks namely Kalanaur, Lakhan Majra, Meham, Sampla and Rohtak. Haryana has significant climatic changes especially during rainy season (monsoon season), where heavy rain fall affects level of water bodies that increases chances of drowning cases [11]. The district area of Rohtak falls in Yamuna sub-basin irrigated by main and branches of Jawahar Lal Nehru feeder and Bhalaut canals which turns this area probable spot for drowning.

Collection and interpretation of data

Data of drowning cases happened from January 2013 to December 2014 in Rohtak district was collected from the Department of Forensic Medicine, Pt. B.D. Sharma University of Health Sciences, Rohtak (Haryana). A total of 136 post-mortems of drowned deceased were conducted during 2013-14. Crucial parameters defining monthly, gender and age group divergence in the drowning cases were set and conclusions were drawn after comparing present findings with some already published record [5, 7-10].

RESULTS AND DISCUSSION

It is evident from Table-1 that a total of 136 cases of drowning were reported, of which 58 and 78 cases were reported in year 2013 and 2014 respectively. There was significant increase of 20 (14.70%) cases in year 2014. Study of gender based observation shows 109 (80.15%) drowning deaths in males whereas only 27 (19.85%) amongst females with a significant ratio difference of 4:1. Yearly gender based data revealed that 49 (84.5%) male and 9(15.5%) female cases were registered in year 2013 whereas a varied gender based percentage was observed in year 2014 where 60 (77%) male and 18 (23%) drowned. Interesting to note here

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was gender based ratio difference i.e. 5.4:1 (male/female) and 3.3:1 in year 2013 and 2014 respectively. Fig.-1 reveals that maximum numbers of drowning cases i.e 26 (19.11%) were recorded in the month of June while only 4 (3%) cases were reported in the December collectively during 2013-14. It is evident from Fig.-2 that most affected age group due to drowning was elderly- adult (26-40 years) comprising 56 (41.17%) cases of drowning in 2013-14. Number affecting middle age group (41-60 years) remained 30, while least count noticed was 5 (3.67%) in older age group (above 60 years). Data also revealed 16 cases of drowning amongst children age 0-14 years during 2013-14. Area-wise a significant disparity has been observed in the occurrence of drowning cases (Table-2). Areas of Meham, Sampla and Sadar Rohtak were highly engaged with drowning. Maximum numbers i.e. 35 (25.73%) of cases were registered at Police Station Urban Estate, Rohtak, especially from village ponds and Jawahar Lal Nehru canal followed by Sadar police station, Rohtak having 27 (19.85%) registered cases. Cases from other related localities were few in numbers as mentioned in Table-2.

Table 1: Comparison of gender wise total number of drowning cases during 2013-14

Year	Male	Female	Total
2013	49 (84.5%)	09 (15.5%)	**58**
2014	60 (77%)	18 (23%)	**78**
Cases	**109**	**27**	**136**
Percentage	(80.15%)	(19.85%)	**100%**
Ratio	**4:1**		

Table 2: Localities involved in drowning during 2013-14

Sr. No.	Areas wise from district Rohtak	In 2013	In 2014	Total
1	City Rohtak	05	03	08
2	G.R.P. Bahadurgarh	01	-	01
3	G.R.P Rohtak	01	-	01
4	Ismaila, Rohtak	01	-	01
5	Kalanaur	03	02	05
6	Lahli, Rohtak	01	-	01
7	Lakhan Majra	06	05	11
8	MDU campus	01	-	01
9	Meham	09	08	17
10	Sampla	10	08	18
11	Sadar Rohtak	06	21	27
12	Shivaji colony	05	03	08
13	Urban Estate, Rohtak	09	26	35
14	PGIMS Rohtak	-	02	02

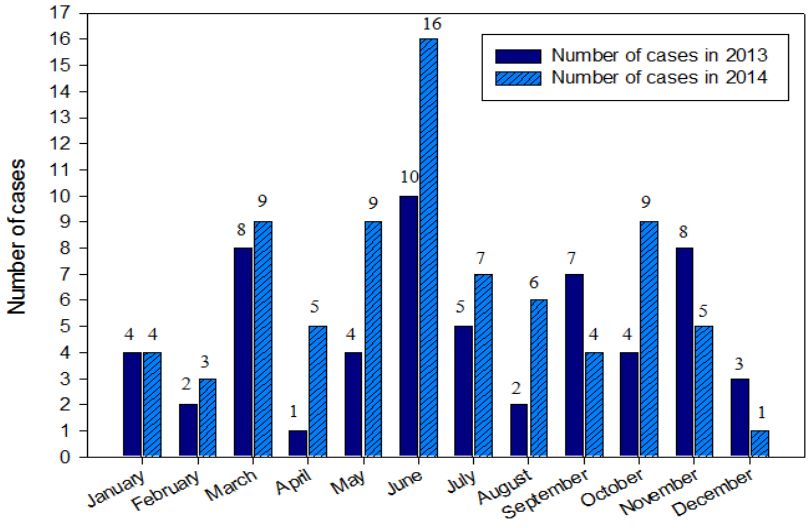

Figure 1: Monthly comparison of drowning cases during 2013-14

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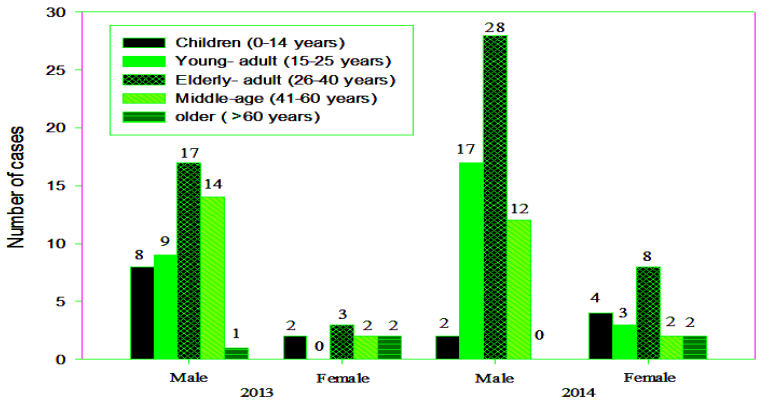

Figure 2: Age group comparison of drowning cases during 2013-14

In 1971, a data published by BPR&D has reported a significant figure of 325 and 609 cases of drowning in 1968 and 1969 respectively from Haryana.[6]. A study conducted from Madhuban (Karnal) Forensic Science Laboratory recorded 240 cases of drowning from various districts of Haryana in the year 2011. The record revealed 28 cases of drowning from district Rohtak. [11] Present survey has observed increase in number of drowning cases viz. 58 and 78 in year 2013 and 2014 respectively. Gender based data of drowning from same region was not available in the literature.

CONCLUSION

Observation of the present study has shown gradual increase in drowning incidences in the successive years. Gender base and age group difference is also significant and remains somewhat similar to the data reported earlier. Eventually, the database of this study has provided a good piece of useful information for the researchers and academicians. Surveillance of this study may be utilized by the forensic students to extend their research field and medicolegal investigators involved in the analysis of drowning cases. The findings of the study could be useful to develop existing infrastructures to enhance drowning intervention programs in this particular area.

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