

Pattern of Drowning Cases in Rural Area: A Retrospective Autopsy Study

A G Vijay Kumar¹, M G Shivaramu², U Kumar³

ABSTRACT

Introduction: Drowning is a type of asphyxia due to aspiration of fluid into air passages, caused by submersion in water or any other fluid.

Materials and Methods: In this study, all drowning cases autopsied during the period January 1st, 2011 to December 31st, 2014 were analyzed at the Department of Forensic Medicine and Toxicology, Adichunchanagiri Institute of Medical Sciences, BG Nagar, and Karnataka.

Results and Discussion: In the present study, maximum number of cases belongs to 21-30 years age group and male to female ratio is 2.3:1. Accidental drowning occurs in 12 cases and suicidal cases in 22 cases. Manner of death could not be assessed in 10 cases because body was completely decomposed and identity was not established by investigating officer.

KEY WORDS: Accidental, drowning, suicide.

Introduction

Drowning is a type of asphyxia due to aspiration of fluid into air passages, caused by submersion in water or any other fluid.

There are four types of drowning:

1. Wet (primary) drowning
2. Dry drowning
3. Secondary drowning (post-immersion syndrome, near drowning)
4. Immersion syndrome (hydrocution, submersion inhibition).^[1]

Worldwide drowning is the third leading cause of accidental death. In 1990, number of deaths due to drowning was 545,000 and 2013, it was estimated to have resulted in 368,000 deaths.^[2] This amounts to 7% of all accidental deaths, with major amount of these deaths occurring in low and middle-income countries.^[3]

According to National Crime Records Bureau, number of deaths due to drowning is estimated to be in 2010-28,001, 2011-29,708, 2012-27,558, 2013-30,041, and 2014-29,903.^[4]

Accidental deaths due to drowning are common. However, in India about 39,423 persons died due to suicidal drowning. Because of this drowning is one of the most common means to commit suicide. In 2014, 1276 peoples committed suicide by drowning in Maharashtra.

Homicidal drowning is rare and occurs in infants and children. In cases of drowning, if stones or other heavy objects are found tied to the body, then homicidal or suicidal drowning be suspected. However if such scenario is seen in cases of drowning in children, then it is usually suspected to be homicidal.

Materials and Methods

In this retrospective study, all drowning cases autopsied during the period January 1st, 2011 to December 31st, 2014 were analyzed at the Department of Forensic Medicine and Toxicology, Adichunchanagiri Institute of Medical Sciences, BG Nagar, and Karnataka.

Access this article online

Quick Response Code:



Website: www.jmsh.ac.in

¹Assistant Professor, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, Mandya, Karnataka, India, ²Principal and Professor, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, Mandya, Karnataka, India, ³Associate Professor, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, Mandya, Karnataka, India
Address for correspondence:

A G Vijay Kumar, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, BG Nagara, Mandya, Karnataka, India. Phone: +91-9916735739. E-mail: vijay.fmt@rediffmail.com

Inclusion criteria: The drowning cases which are autopsied in mortuary.

Exclusion criteria: Cases with doubtful history.

Results

Maximum number of cases seen in the age group: 21-30 years (Table 1).

Sex ratio: Male: female - 2.3:1 (Table 2).

Suicidal drowning constitutes 22 cases followed by accidental drowning 12 cases (Table 3).

Discussion

In this retrospective study, total autopsied cases during the period January 1st, 2011 to December 31st, 2014 was 453, out of which drowning constitute 44 cases.

Adichunchanagiri Institute of Medical Sciences is located in Mandya district; it is almost covered by Cauvery and Hemavathi channel water. Agriculture is the main profession in this area. In the present study, maximum number of cases belonged to 21-30 years age group and male to female ratio

was 2.3:1. Accidental drowning seen in 12 cases while suicidal cases in 22 cases. Manner of death could not be assessed in 10 cases because body was completely decomposed and identity was not established by investigating officer.

In the present study, males are more (31 cases) compared to females (13 cases). This because, males are more exposed to water sources such as irrigation, fishing and swimming.

According to a study by Kanchan and Monteiro, out of 40 drowning cases males were encountered in 82.5% of cases. Most of the cases were belonged to 2nd and 3rd decades (55%), followed by children (15%).^[5]

In the present study, suicidal drowning is more (22 cases) compared to accidental drowning (12 cases) because of familial and financial problems.

In the present study, death due to accidental drowning occurred in 10 children's. Accidental drowning is more common among females and children who live near open water sources, such as ditches, ponds, irrigation channels, or pools.

Factors associated with an increased risk of drowning are:

1. Middle and lower socioeconomic status;
2. lack of higher education;
3. Children's left unsupervised around water;
4. Entering the water under alcohol influence;
5. Diseases like hydrophobia, epilepsy;
6. Visiting tourist places without guides.

Drowning is the most common cause of accidental death in Australian children. In Western Australia, 81 children drowned between 1987 and 1996, 54% of these drowning occurred in backyard swimming pools. In WA, between 1975 and 1986, an average of 13.5 children drowned annually. Private swimming pool drowning increased as a percentage total of all drowning from 38% in 1986 to 56% in 1996.^[6]

According to a study done by Ahmed MK, Data are presented on deaths of children due to drowning derived from a longitudinal, population-based surveillance system in operation in a rural area of Bangladesh in 1983-1995. Deaths due to drowning ranged from about 10% to 25% of child deaths during 1983-1995.^[7]

Table 1: Age wise distribution of cases

Age (years)	Number of cases
11-20	10
21-30	21
31-40	08
41-50	05
Total	44

Table 2: Sex wise distribution of cases

Sex	Number of cases
Male	31
Female	13
Total cases	44

Table 3: Manner wise distribution of cases

Manner	Number of cases
Suicidal	22
Accidental	12
Unknown	10
Total cases	44

Conclusion

From this study, it is evident that suicidal drowning is more common in males and accidental drowning is more in females and children. Standard protocols should be installed to avoid accidental drowning.

WHO preventive measures are:

1. Installing barriers at the river side
2. Supervision of children's at the river and pool side
3. Teaching school-age children basic swimming, water safety and safe rescue skills
4. Setting and enforcing safe boating, shipping and ferry regulations
5. Developing a national water safety strategy to raise awareness of safety around water.

References

1. Reddy KS. The Essentials of Forensic Medicine and Toxicology. 29th ed. Hyderabad: K Sugna Devi; 2010. p. 141-4.
2. GBD 2013 Mortality and Causes of Death, Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013:

A systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2014;385:117-171.

3. "Drowning". World Health Organization. Available from: <http://www.who.int/mediacentre/factsheets/fs347/en/>. [Last cited on 2010 Dec 30].
4. Accidental Deaths in India. Available from: <http://www.ncrb.nic.in/CD-ADSI-2012/accidental-deaths-11.pdf>. [Last cited 2013 Oct 21].
5. Kanchan T, Monteiro FN. An analysis of accidental drowning fatalities in Manipal, South India. *Inj Prev* 2012;18:A132.
6. Linda W. Child accident prevention foundation of Australia preventing preschool aged drowning. *WA Child Inj Prev* 1989;1:14-20.
7. Ahmed MK, Rahman M, van Ginneken J. Epidemiology of child deaths due to drowning in Matlab, Bangladesh. *Int J Epidemiol* 1999;28:306-11.

Financial Support: None; **Conflict of Interest:** None

How to cite this article: Kumar AGV, Shivaramu MG, Kumar U. Pattern of drowning cases in rural area: A retrospective autopsy study. *J Med Sci Health* 2015;1(3):18-20.

Date of submission: 05-09-2015

Date of peer review: 24-09-2015

Date of acceptance: 29-09-2015

Date of publishing: 10-10-2015

KEEP IN TOUCH WITH UPDATES IN THE JOURNAL

RSS (Rich Site Summary) often called 'Really Simple Syndication' is a mechanism used to distribute news content without depending on the browser or email client. In general it means time savings because, thanks to RSS, you stay ahead of what's new without having to browse every site you normally visit. It alerts you about the updates without you logging into the website. Major browsers such as Mozilla Firefox and Internet Explorer include RSS support by default. Popular reader services such as Feedly provide synchronization between desktop RSS readers and mobile devices. Once you have this software installed, add <http://jms.ac.in/index.php?format=feed> as one of your feed.