

Original Article

Medical care-seeking behaviours among drowning casualties: Results from a national survey conducted in Bangladesh

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المخلص

أهداف البحث: على الرغم من الانتشار المتزايد للغرق، فإن سلوكيات البحث عن الرعاية الطبية بين ضحايا الغرق لا تزال غير مستكشفة في بنغلاديش. تهدف هذه الدراسة إلى استكشاف سلوكيات البحث عن الرعاية الطبية بين ضحايا الغرق في بنغلاديش.

طرق البحث: أجريت هذه الدراسة المقطعية المستندة إلى السكان باستخدام طريقة أخذ العينات الجماعية متعددة المراحل. تم تجميع المعلومات باستخدام استبانة منظمة من ٢٩٩,٢١٦ من سكان القرى والمدن.

النتائج: في هذا الاستطلاع، وجدنا ١٩١ من حالات الغرق؛ ٤٠.٨٤٪ (عدد=٧٨) كانت مميتة و ٥٩.١٦٪ (عدد=١١٣) كانت غير مميتة. كان بين حالات الغرق هذه، ٧١.٢٪ (عدد=١٣٦) تم تحويلهم إلى مقدمي الرعاية الصحية، بينما تلقت ٦٢.٨٪ (عدد= ١٢٠) من هذه الحالات الرعاية الطبية من مختلف مقدمي الخدمات الصحية. أظهر المزيد من التحليل أن ٦٦.٦٪ (عدد= ١١٦) كانوا من الأطفال و ٢٦.٦٪ (عدد=٤) من البالغين بحثوا عن الرعاية الصحية. سعى أكثر عدد ممكن ٧٨.٩٪ (عدد= ١٥٢/ ١٢٠) من سكان القرى للحصول على الرعاية الصحية بالمقارنة ب ٦١.٥٪ (عدد = ٣٩/ ٢٤) من سكان المدن. تلقى ٣١.٧٪ (عدد=٣٨) من بين ضحايا الغرق رعاية صحية من مقدمي الرعاية الصحية المؤهلين؛ بينما تلقى ٦٨.٣٪ (عدد=٨٢) رعاية صحية من مقدمي الرعاية الصحية غير المؤهلين. تلقى تقريباً ٥٩ (٤٩٪) من الضحايا رعاية من الصيدلية و ٣٤ (٢٨٪) من مستشفى معروف. كان معدل الدخول إلى المستشفى بسبب الغرق ١١.٧٪. تم إحضار ١٤ (١١.٧٪) من ضحايا الغرق إلى المستشفى بواسطة المركبات الآلية وغير الآلية. وسعى ما يقارب ٩٧ (٨٠.٨٪) من المرضى للرعاية الصحية وتمكنوا من البقاء على قيد الحياة.

الاستنتاجات: سعى عدد كبير من ضحايا الغرق إلى الحصول على رعاية طبية من مقدمي الرعاية الصحية المؤهلين وغير المؤهلين. هناك حاجة لوضع قواعد إرشادية بشأن توفير الرعاية الطبية لضحايا الغرق في بنغلاديش.

الكلمات المفتاحية: بنغلاديش؛ الغرق؛ الرعاية الطبية؛ الغرق غير المميت؛ سلوكيات البحث عن الرعاية الطبية

Abstract

Objective: Despite the high magnitude of drowning, medical care-seeking behaviours among drowning casualties remain unexplored in Bangladesh. This study aimed to explore this behaviour among drowning casualties in Bangladesh.

Methods: A population-based cross-sectional study was conducted using a multi-stage cluster sampling method. Data were collected using a structured questionnaire from 299,216 rural and urban residents.

Results: From the survey, we found 191 drowning cases: 40.84% (n = 78) were fatal and 59.16% (n = 113) were non-fatal. Among the drowning cases, 71.2% (n = 136) were referred to healthcare providers, while 62.8% (n = 120) received medical care from different health service providers. Further analysis showed that 66.6% (n = 116) of children and 26.6% (n = 4) of adults sought healthcare. As many as 78.9% (n = 120/152) of rural residents sought healthcare, as compared to 61.5% (n = 24/39) of urban residents. Among all drowning casualties, 31.7% (n = 38) received healthcare from a qualified healthcare provider, whereas 68.3% (n = 82) received it from non-qualified healthcare providers. About 59 (49%) casualties received care from a pharmacy and 34 (28%) from a recognised hospital. The hospital admission rate for drowning was 11.7%. About 14

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(11.7%) drowning casualties were brought to hospitals in motorised or non-motorised vehicles. As many as 97 (80.8%) patients sought healthcare attention and managed to survive.

Conclusion: A significant number of drowning casualties sought medical care from qualified and non-qualified healthcare providers. In Bangladesh, it is necessary to develop guidelines for providing medical care for drowning casualties.

Keywords: Bangladesh; Drowning; Medical care; Medical care-seeking behaviours; Non-fatal drowning

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Introduction

Drowning is a global problem that claims 295,000 deaths annually. Ninety percent occur in low- and middle-income countries (LMICs).^{1,2} Drowning is the third leading cause of unintentional death, after road traffic and injury from falls. It accounts for 7% of all deaths from injury worldwide.³ Drowning is an important but neglected global public health issue, which affects children and adults alike.^{4,5}

Bangladesh is a low-lying, riverine country, located in South Asia. It borders the Bay of Bengal. The country has a landmass of 147,570 square kilometres and is one of the most densely populated countries in the world, with a total population of 160 million. Daily life in Bangladesh includes being exposed to water sources, such as ponds, ditches, rivers, canals, and the ocean, which are used for daily household needs, agriculture, fishing, and transportation. Drowning is the single leading killer of children, claiming 14,500 lives annually.⁶ It is recognised as a public health problem and the leading cause of death among children in Bangladesh. Additionally, each year around 68,000 children also experience non-fatal drowning.⁷ Drowning is a major public health issue, particularly among the rural population in Bangladesh; 75% of deaths occur in natural water bodies, such as ponds, ditches, lakes, and rivers located less than 20 m away from residential communities.^{9–11} Drowning is also a major contributor to adult death in Bangladesh, causing about 8,000 deaths annually.⁸ In Bangladesh, drowning accounts for 42% of all deaths among children aged 1–4 years.^{9,10}

Several study findings suggested that proper medical care can reduce the consequences of any illness.^{12–15} In Bangladesh, there is a lack of emergency healthcare services. Drowning casualties are rarely treated by a professional emergency healthcare worker. A study conducted in Bangladesh shows that only 12.5% of drowning casualties sought treatment at the hospital for minor injuries, and 61% had no access to medical care before death.¹⁶ Drowning mostly occurs among the rural populations.¹⁷ Studies also show that rural people in

Bangladesh commonly follow indigenous and harmful practices for non-fatal drowning cases.^{7,8} The rural population of Bangladesh considers drowning the will of God and not preventable.¹⁹ In LMICs, because of a lack of formal emergency medical services, an estimated 80% of total deaths occur in pre-hospital settings.²⁰ Because of the high prevalence of drowning in Bangladesh, it is important to explore the health-seeking behaviour among the drowning casualties. Findings of this study will contribute to designing a national strategy for drowning casualty prevention in Bangladesh.

Materials and Methods

The “Bangladesh Health and Injury Survey (BHIS) 2016” is a nationwide cross-sectional survey with 299,216 people interviewed between March and June 2016.⁶ Both rural and urban populations were interviewed using multi-stage cluster sampling methods. The urban sample was drawn from city corporations and the district headquarters of the rural districts selected. A household member was defined as all living members in a house. The household members also included domestic helpers, guests living in the house for more than 6 months, and those who shared daily meals.

The same instrument that was used in the BHIS 2003 survey was adapted for this survey. The data were collected on tablets using a custom data entry program developed for the survey. Eighty field level staff were recruited for this study, of whom 64 were data collectors and 16 were supervisors. One supervisor was responsible for each team of 4 data collectors. Data collectors and supervisors were field staff of the Centre for Injury Prevention and Research in Bangladesh (CIPRB), and they had previous experience with conducting household surveys. Heads of household were preferred as the main respondent for the adult members of the household. Mothers were preferred as the main respondent for children. Both intentional and unintentional data were collected in this survey, as per the definition set for the study. Informed consent was obtained from all respondents before collecting information. In the main questionnaire, a separate section was developed to collect information on healthcare-seeking for all injuries. After collection, the data set was cleaned, sorted, and analysed by the CIPRB experts. No weights were used in the analysis because of probability-proportional-to-size (PPS) sample selection.

Out of 64 districts of Bangladesh, 16 were selected randomly. For the urban sample, all city corporations and the district headquarters of the rural districts were selected. From each rural district, one upazila (sub-district) was chosen randomly. Again, from each upazila 69 villages were chosen randomly. For rural areas, villages were served as a cluster. From city corporations and urban districts wards were selected randomly and considered a cluster. A sample of 70,000 households with a population of 350,000 was targeted for interview. The total population interviewed was 330,000. After cleaning and sorting data, 299,216 residents' data were available for analysis. There were a total of 198,374 adults (18 years and older) and 100,842 children (0–17 years of age). There were 149,995 males and 149,221 females and 106,233 urban residents and 192,983 rural residents.

The recall period was two years for mortality cases and six months for non-fatal injury cases. Results were explained as percentages according to the different types of healthcare providers. Types of healthcare were considered as dependent variables. Sex, place of living, age category, and monthly family income were considered as independent variables. Both crude and adjusted models of logistic regression were carried out to identify the factors influencing healthcare-seeking behaviour. Predictors of healthcare-seeking behaviour were estimated by calculating odds ratios (OR) and 95% confidence intervals (CI).

The methodology is already published elsewhere.²¹

Definitions

Drowning

Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Drowning outcomes are classified as death, morbidity, and no morbidity.

Qualified healthcare providers

Registered physicians and medical officers working at community-level government health facilities.

Unqualified healthcare providers

Health care providers without any medical degree or does not have any registration as a physician.

Results

In this nationwide survey, 191 drowning casualties were found. Among them, 61.8% (n = 118) were male and 38.2% (n = 73) were female; children constituted 92.1% (n = 176) and adults 7.9% (n = 15); 20.4% (n = 39) were from urban communities and 79.6% (n = 152) from rural communities. Fatal drowning cases constituted 40.8% (n = 78) and non-fatal drowning cases 59.1% (n = 113). Among all drowning casualties, 71.2% (n = 136) were referred to the health facilities. Of these casualties, 62.8% (n = 120) received healthcare from different health service providers or health facilities. Among them, 19.2% (n = 23) had fatal outcomes and 80.8% (n = 97) survived after receiving treatment from the facility.

Among the children, 66.6% (n = 116), and among adults 26.6% (n = 4), received healthcare. Healthcare-seeking behaviour among those below 10 years of age was found to be 4.5 times higher than among those aged 10 years and above (OR 4.5; 95% CI 1.9–11.0; P = 0.002).

Place of residence

Among the casualties living in rural areas, 63.1% (n = 96/152) sought healthcare, compared with 61.5% (n = 24/39) of those in urban residences. No significant differences were found for health-seeking behavior among the rural and urban populations in this study (OR 1.1; 95% CI 0.5 to 2.3, P = 0.3867) (Table 1).

Gender

Among all drowning casualties, 120 sought medical care in different health facilities. Among those who sought medical care, 67% (n = 79) of males and 56% (n = 41) of females sought medical care. For health-seeking, there was no significant difference between males and the females (OR = 1.572; 95% CI 0.9 to 2.9, P = 0.073). See Table 1.

Place of healthcare seeking

Drowning casualties received healthcare in a hospital, pharmacy, private practice, or at home. About 49.2% (n = 59) received healthcare at a pharmacy, 27.5% (n = 33) at a hospital or clinic, 5% (n = 6) from a general practitioner and 1% (n = 1) in primary care facility; in 17.5% (n = 21) of cases, the health service providers came to the casualty's house.

Healthcare provider

Of all drowning casualties who received healthcare, 32.5% (n = 39) received healthcare from a qualified healthcare provider, such as from a General Practitioner or in community-level government health facilities; 67.5% (n = 81) received healthcare from un-qualified healthcare

Table 1: Factors contributing to seeking medical care from healthcare providers.

Taking treatment from healthcare providers				Logistic regression			
Factors	Number	Yes	%	Crude		Adjusted	
				OR (95% CI)	P-value	OR (95% CI)	P-value
Sex of the person							
Male	118	79	67	1.6 (0.9–2.9)	0.07	0.6 (0.3–1.3)	0.206
Female	73	41	56	1			
Place of living							
Rural	152	96	63	1.1 (0.5–2.2)	0.42	1.2 (0.5–2.8)	0.691
Urban	39	24	62	1			
Age category							
0–9 years	108	56	52	4.5 (1.9–11.0)	0.0002	0.3 (0.1–0.9)	0.046
10+	28	9	32	1			
Monthly income							
Less than 6500	90	63	70	4.4 (1.3–15.1)	0.009	0.5 (0.3–1.1)	0.086
Over 6500	86	47	55	1			

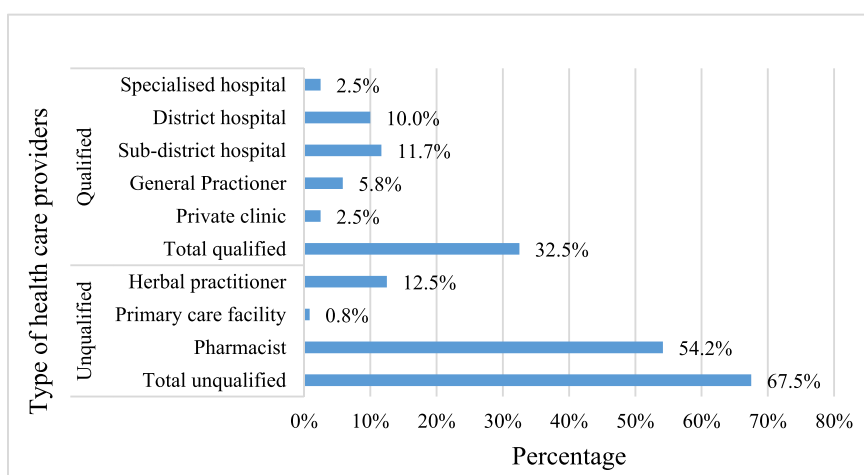


Figure 1: Distribution of patients seeking healthcare from different healthcare providers.

professionals such as pharmacist, herbal practitioner and primary care facility (Figure 1).

Hospital admission

Among the drowning casualties, 11.7% ($n = 14$) were admitted to a primary-, secondary-, or tertiary-level hospital, and of them 42.8% ($n = 6$) died. The mean duration of hospital stay for these drowning casualties was 1 day.

The vehicle used to carry the casualties to health facilities

About 11.67% ($n = 14$) of drowning casualties were carried to the hospital in vehicles, such as ambulances, motorised/non-motorised vehicles, or boats. Of these, 50% ($n = 7$) used motorised vehicles, such as a car, bus, and three-wheelers; only 21.4% ($n = 3$) used an ambulance.

Cost for the treatment

The average expense for the management of the drowning casualty was 5568 taka (information from 16 fatal drowning cases). Individual expenses ranged from 100 to 49,900 (SD + 12,344.43) taka.

Monthly household income and healthcare sought

In this study, affected families with a monthly income of up to 6500 taka per month sought healthcare more than 4.4 times (OR 4.4; 1.3 to 15.1, $P = 0.009$) than those with a monthly income of over 6500 taka.

Post mortem examinations

Out of 23 fatal drowning cases, postmortem examinations were conducted for 3 (13.04%) of the drowning casualties.

Discussion

Each year in Bangladesh, drowning causes over 17,000 child and 8000 adult deaths; in addition, over 100,000 people

suffer from non-fatal drowning.^{8,10,22} The overall national burden of drowning is very high, and its devastating consequences should be prevented. Taking proper decisions about receiving appropriate healthcare is important for reducing the consequences of drowning. In this study, 71.2% of casualties received healthcare following a drowning incident. Village doctors or pharmacists were found to be the first choice for care. Registered doctors or community healthcare providers were the 2nd choice. Another community-based study conducted in Bangladesh suggested similar findings for accepting healthcare from similar care providers. For example, among children with burn injuries, 60% of parents took their children to unqualified medical professionals²³; about 36% of burn patients received treatment from a hospital or from registered healthcare providers.²⁴ Among those injured on construction sites, 65.1% sought healthcare from a qualified healthcare provider.²⁵ In Bangladesh, other studies suggested that the village doctor or pharmacist was the first choice because of their availability and easy access to the community. In the rural communities of Bangladesh, medicine sellers are considered physicians, because they prescribe medicine without a registered doctor's prescription. A study from Bangladesh showed that the reasons for not taking healthcare from a qualified healthcare provider were distance and the cost of treatment.²⁶

Drowning is always sudden and unexpected. The majority of deaths occur in natural water bodies.⁸ As a result, drowning casualties require emergency medical support. In this study, 69.7% of fatal cases did not receive any healthcare from a healthcare provider before death. As is the case in many developing countries, emergency medical help is particularly absent in rural communities of Bangladesh.^{27,28} Rural inhabitants do not consider receiving medical care following drowning. Emergency medical services are considered a basic human right in many high-income countries. In high-income countries, first responder programmes are part of existing education or community-based programmes, and they are found to be an effective part of the chain of survival.^{27,29–31} To tackle this heavy burden of drowning fatalities, a community-based first responder volunteer system can be developed.

In this study, no significant differences in healthcare-seeking behaviours were found between male and female casualties. This study differed from a study conducted in Matlab (sub-district of Bangladesh), which suggested that boys received more medical care than girls, and girls were more likely to be treated using traditional methods.¹⁸

Limitations of the study

Data for this study was extracted from the Bangladesh Health and Injury Survey 2016, which covered all types of injuries and socio-demographic factors of the population. Due to the management of a large volume of data collection, in-depth information on health-seeking among the drowning casualties was not collected. A qualitative study was not conducted as a part of this research. A qualitative study can help develop insights and identify additional cues.

Conclusion

Annually, a significant number of unwanted and preventable drowning deaths occur among the Bangladeshi population. Although there is a need for an established emergency medical system in both rural and urban areas of Bangladesh, a significant number of drowning casualties sought healthcare from both non-professional and professional healthcare providers. Furthermore, in-depth research is needed to explore health-seeking behaviours among the drowning casualties in Bangladesh. On-site management of drowning casualties is important, and it can be developed through community-based first responders. Policymakers can use these survey findings for the development of a drowning prevention strategy to reduce the number of drowning casualties in Bangladesh.

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Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval

Ethical clearance for the “Bangladesh Health and Injury Survey 2016” was obtained from the ethical committee of the Centre for Injury Prevention and Research, Bangladesh (CIPRB), in 2016. If needed, the corresponding author will provide the scanned copy of the ethical approval.

Authors contributions

MJH, FR, SRM, and AR were involved in the conceptualisation, study design, field implementation, and quality control. MJH, SRM, and SH analysed and interpreted the data. MJH, SH, AB, and AR were involved in the developed the manuscript. All authors have critically

reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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