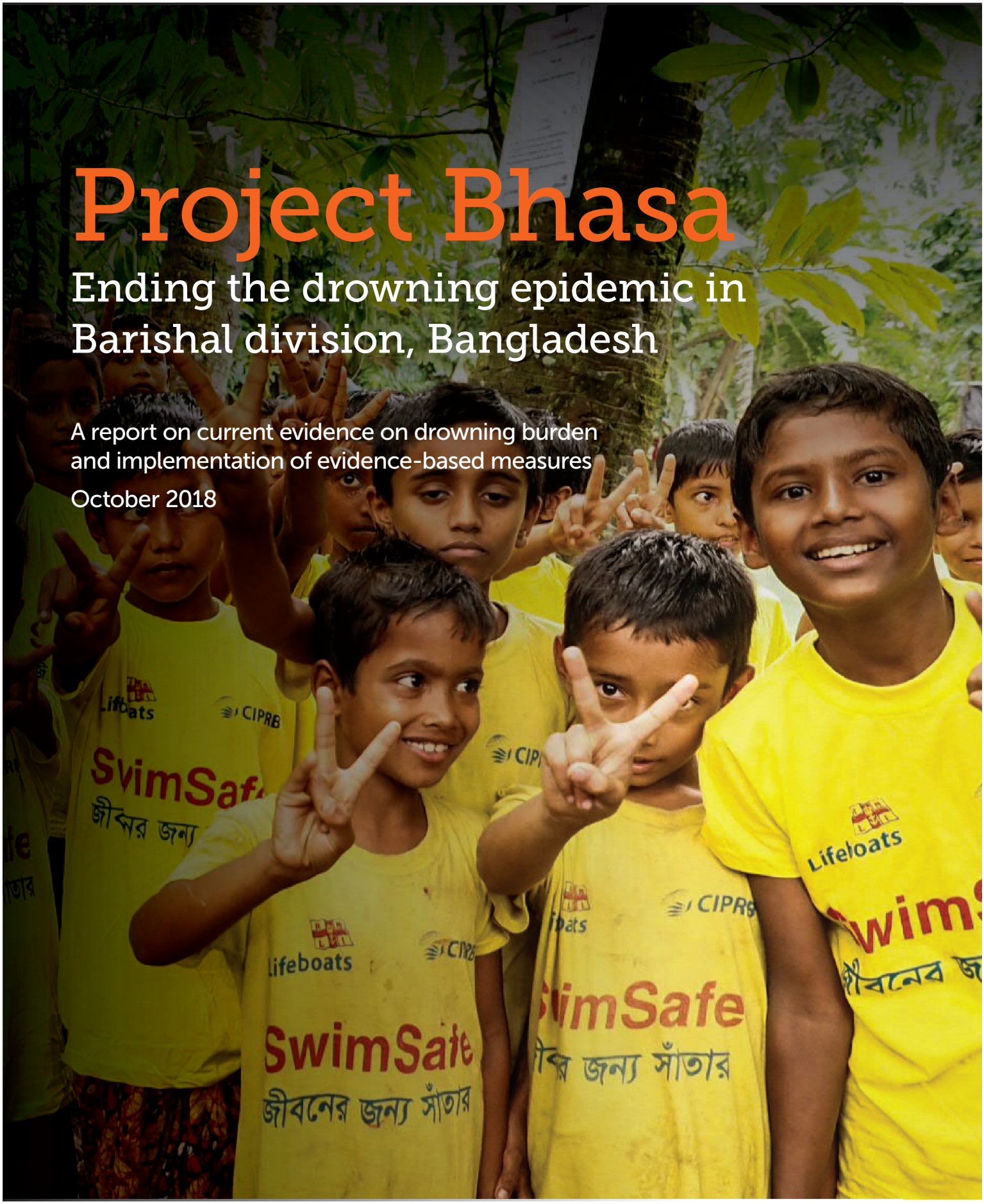


Project Bhasa

Ending the drowning epidemic in Barishal division, Bangladesh

A report on current evidence on drowning burden and implementation of evidence-based measures

October 2018

CIPRB

Lifeboats

The George Institute for Global Health

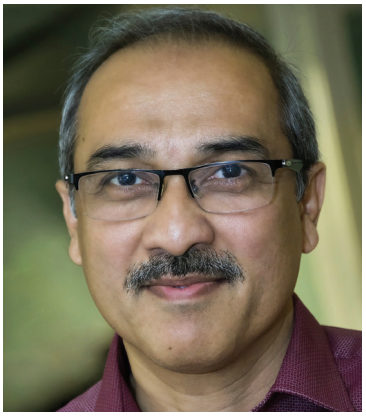
Contents

Contact:

Dr. Aminur Rahman
Project Director – Project Bhasa, a drowning prevention program
The Centre for Injury Prevention and Research, Bangladesh

aminur@ciprb.org
@BhasaFloat
www.facebook.com/Bhasa.Float

Foreword



Professor A.H.M. Enayet Hussain

Additional Director General
(Planning & Development)

Directorate General of Health
Services, Mohakhali, Dhaka.

Everyday more than 50 people lose their lives to drowning in Bangladesh, and of these, 46 children. Public health gains made from the success of controlling communicable disease conditions through improved maternal and child care and immunisation programmes are being lost to drowning. Whether it is small children slipping unnoticed into a pond, river or well; adolescents playing in water; passengers on vessels that capsize; or residents of coastal communities struck by floods, the daily toll of this leading global killer continues its quiet rise.

Barishal division is criss-crossed by numerous rivers that earned it the nickname 'Dhan-Nodi-Khal, Ei tine Borishal' (rice, river and canal built Barishal). People of Barishal have very high exposure to water, consequently of 46 child drowning deaths in Bangladesh, 9 occur in Barishal, each day.

Project Bhasa (which means 'float' in Bengla) is a ground-breaking initiative to reduce drowning in the Barishal division. The project is developing a community owned, multi-sector and evidence-led strategy to target the most vulnerable people with appropriate and sustainable water safety measures.

Evidence shows that a range of interventions are effective at preventing drowning. This includes provision of safe places such as day care centres for pre-school children, and teaching school-age children basic swimming skills, among others. Some interventions, such as day care centres, provide benefits beyond drowning prevention to children and the community. The multi-sectoral nature of drowning prevention demands improved coordination across various agendas and sectors.

In the coming years, Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, by engaging various stakeholders will initiate countrywide injury prevention activities to reduce avoidable deaths, health, social and economic loss due to drowning.

Please support our work to help reduce this unnecessary and preventable cause of death. The more we work together to implement these evidence-based measures, the more lives can be saved. We urge all concerned policymakers, non-profit organizations, businesses/industry partners, parents, and concerned community members, nationally and globally, to adopt as many of the interventions and strategies as their resources will allow, and to protect those most at risk without delay.

Partners

Centre for Injury Prevention and Research, Bangladesh

The Centre for Injury Prevention and Research, Bangladesh (CIPRB) is a world leading injury prevention organisation based in Bangladesh. Through pioneering research and innovation, CIPRB saves lives by delivering quality programmes throughout Bangladesh, designed to combat injury-based fatalities and morbidities. Over the past decade, CIPRB has used evidence-based methods to investigate, design, and communicate successful, scalable drowning interventions across Bangladesh and the region to address drowning.

Royal National Lifeboat Institute,RNLI, United Kingdom

Anybody can drown, but nobody should. Founded in 1824, the RNLI is a charity dedicated to saving lives in and around water. Building on over 190 years of lifesaving experience in the UK and Ireland, the RNLI is now partnering with governments and organisations around the world to share technical expertise and help make drowning prevention a global priority.

The George Institute for Global Health

The George Institute for Global Health is a health and medical research institute whose mission is to improve the health of millions of people worldwide. The Injury Division seeks to identify and test cost-effective programs to reduce the global burden of injury, influence policy and scale up proven programs for sustainable change. Our work covers a range of topics from surveillance, observational studies and large scale pragmatic intervention trials through to program evaluation and policy research. Our global research extends from Australia across Asia and Africa, with major ongoing collaborations in India, China, Vietnam and Bangladesh.

Background to the report

It is estimated that 321,000 drowning deaths occur globally each year. That is a global drowning rate of one person every 80 seconds. More than 90% of drownings occur in low and middle income countries (LMICs). However, little is known about the impact of drowning on communities, both socially and economically.

In this document, we report on the findings of a household population-based cross-sectional survey to understand the burden and context of fatal drowning in the Barishal division of Bangladesh. We investigated drowning cases by demographic characteristics and features of the drowning event. We also report on the qualitative findings, which helped us understand the context, beliefs and behaviour that influence water safety practices in the Barishal division.

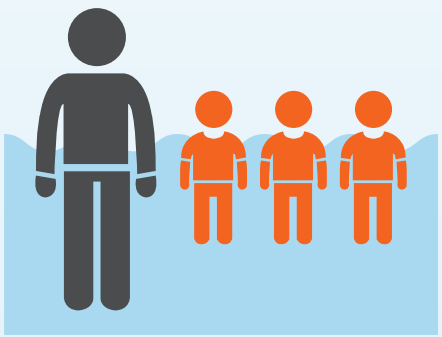
Around the world...

321,000 Drowning deaths occur every year

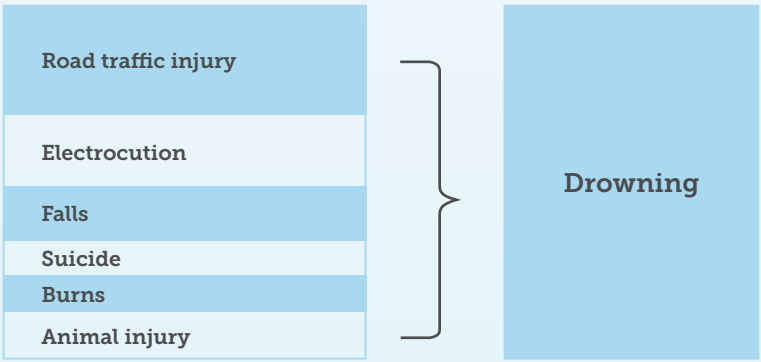
40% Of drowning deaths were among children aged less than 14 years old

Every 80 seconds, someone dies from drowning

Globally, drowning deaths among children under 18 years are **3X more**, than adults



Drowning is the leading cause of child death in Bangladesh



The Barishal division

The Barishal division is situated in the central southern region of Bangladesh where several large rivers converge. With a land mass of 13,644.85 km^2 and a population of over 8 million the Barishal division is one of the most vulnerable areas to disaster and climate change in Bangladesh; all of its six districts are affected by water related hazards and disasters.

Our work focuses on child injury drowning prevention in three communities of Taltoli, Betagi and Kalapra.

Intervention Areas

Project Bhasa

Our findings highlight the high burden of drowning in the Barishal division among children. We are implementing large-scale interventions for children that are enabled through community participation.

Working in collaboration with our partner organisations, one of the intervention we have embarked on is Project Bhasa, a ground-breaking initiative to reduce drowning in the Barishal Division of Bangladesh.

The project is developing a multi-sector and evidence-led strategy to target the most vulnerable people with appropriate and sustainable solutions.

a) Increasing supervision for children aged 1-5 years with 400 Anchal (crèche) centres.

b) Improving water safety survival skills in 30, 000 children aged 6–10 years.

c) Increasing awareness on water safety in school going children, aged 11–14 years.

d) Training 3000 community volunteers for rescue and first response, in the event of drowning.

Recognising the value of a collaborative approach, this initiative brings together three world-leading organisations and national stakeholders:

- The Royal National Lifeboat Institution, United Kingdom
- The Centre for Injury Prevention and Research, Bangladesh
- The George Institute for Global Health, Australia

PROJECT BHASA

Ending the drowning epidemic

EVIDENCE-BASED INTERVENTIONS

- Anchal
- SwimSafe
- First responder training

EDUCATION, AWARENESS AND ADVOCACY

- Interactive popular theatre
- Water safety awareness through schools
- Social autopsy
- Courtyard meetings

Supported by the community through Union and Village Injury Prevention Committees

Steps and timing

SEPT 2016

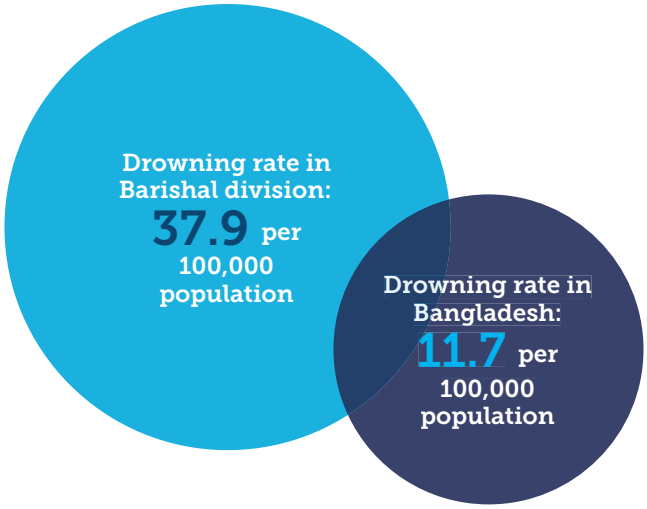
1. Need assessment household survey & understanding of context through in-depth focus group discussions
2. Stakeholder analysis & building leadership
3. Implementation of the interventions
4. Policy approach for scale up & sustainability

2018 - 2020

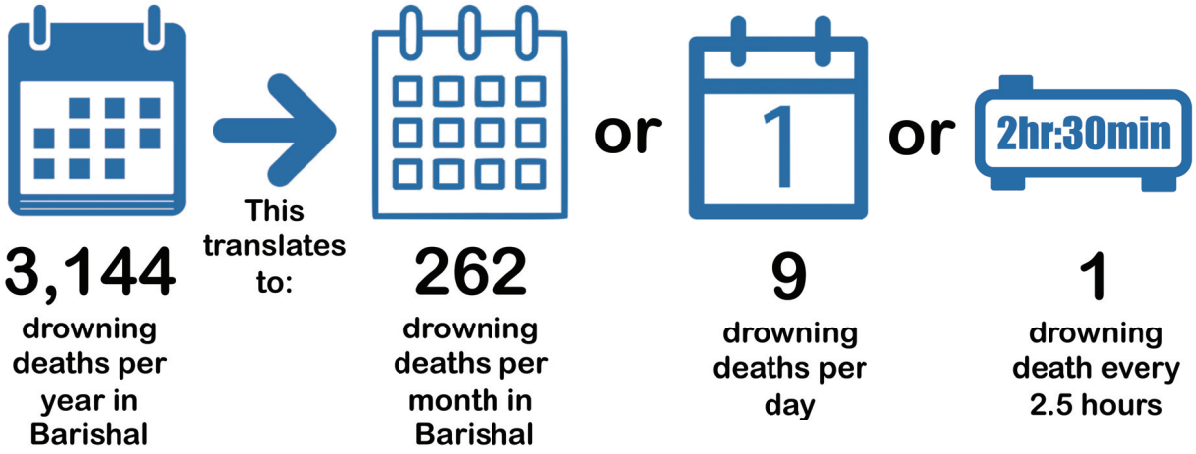
Magnitude of drowning burden in Barishal division

In Bangladesh, the fatal drowning rate is estimated to be 5 times higher than other LMICs, based upon World Health Organization (WHO) Global Health Estimates. The Bangladesh Health and Injury Survey, 2016 reports a drowning mortality rate of 11.7/100,000, corresponding to a total of 19,247 deaths per year and 53 deaths each day.

In Barishal, fatal drowning rates of 37.9 per 100,000 population, and non-fatal drowning rates of 697.6 per 100,000 population were found in 2016. Among the non-fatal drowning cases, approximately 18% of individuals had more than one drowning event.



A total of 285 drowning deaths were reported in the Barishal division in the two year period prior to the household survey. A further 5,164 non-fatal drowning events were reported for the preceding one year period.



Who drowns?

Both fatal and non-fatal drowning cases were more common among men than women (Figure 1). Men had a fatal drowning rate of 48.2 per 100,000 population and a non-fatal drowning rate of 728.8 per 100,000 population. Women had a fatal drowning rate of 27.9 per 100,000 population and a non-fatal drowning rate of 665.6 per 100,000 population.

Figure 1. Distribution of fatal and non-fatal drowning cases among men and women

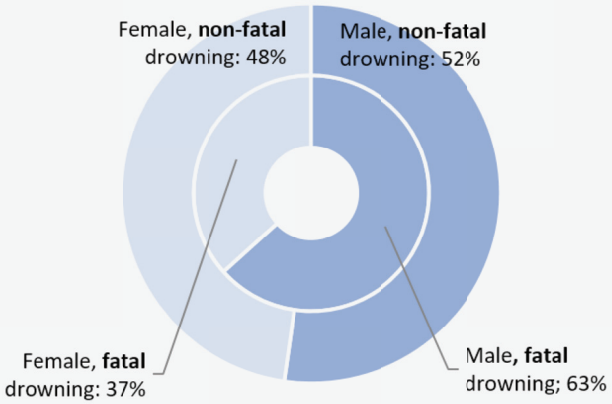
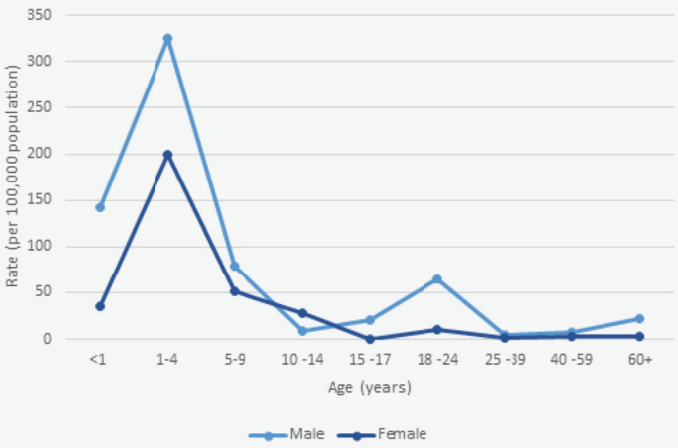


Figure 2. Rates of fatal drowning by age and sex



The highest rates of both fatal and non-fatal drowning occurred among children aged 1–4 years (Figure 2). In this age group, the fatal drowning rate was 262.2 per 100,000 population, and non-fatal drowning rate was 5810.8 per 100,000 population. The second highest rates of both fatal and non-fatal drowning occurred among children aged 5-9 years (65.1 and 1837.6 per 100,000 population, respectively).

Children aged 1- 10 years, particularly boys, are at the highest risk of drowning. Drowning prevention efforts need to be targeted to children.

When do drowning events occur?

Fatal and non-fatal drowning events are not restricted to rainy months, but are distributed throughout the year in Barishal division. A moderate peak in drowning events occurs in June to October, particularly for non-fatal drowning (Figure 3).

Figure 3. Monthly distribution of fatal and non-fatal drowning events

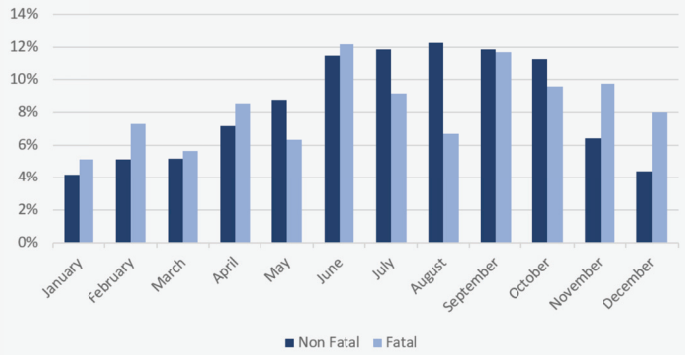
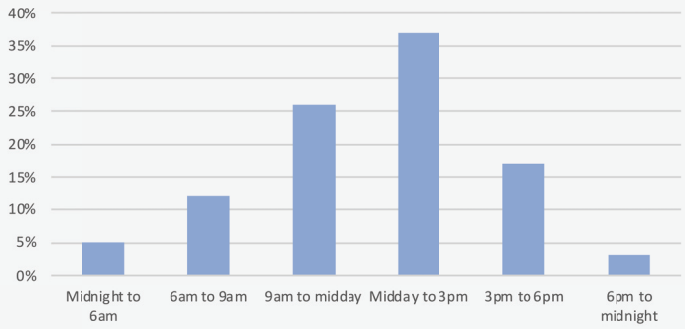


Figure 4. Fatal drowning events by time of day



The majority of fatal drowning events occur between midday and 3pm (37%), followed by 9am to midday (26%) and 3pm to 6pm (17%) (Figure 4).

> Children drown between 9 am to 3pm. Child supervision during these hours can help reduce drowning burden.

Where do drowning events occur?

Most drowning events occurred within 100 m of the households for all ages. Some of the age patterns for example, further away for 10-14 years (100- 200 m) and more than 2 km for 25-59 years are likely to be associated with everyday activities such as commuting to school or work (Figure 5).

Figure 5. Distance of waterbody from the household for fatal drownings by age

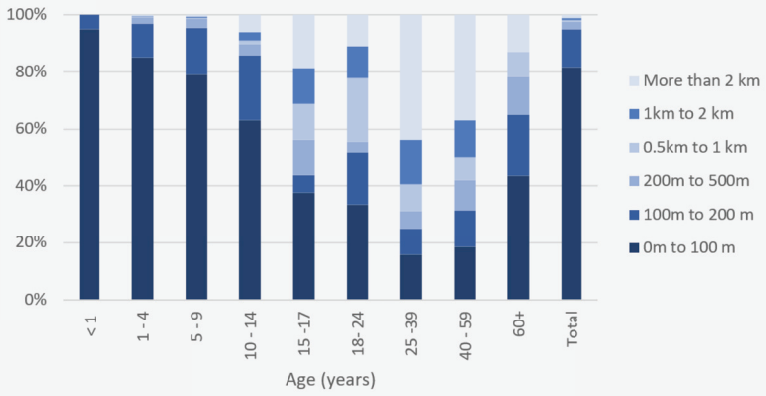
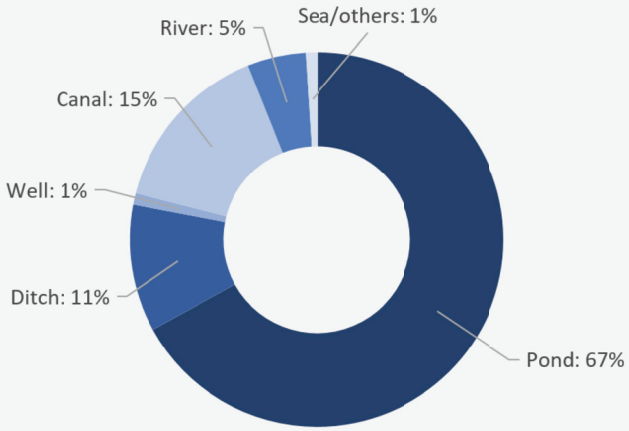


Figure 6. Type of body water where fatal drowning event occurred



The majority of downing deaths occurred in ponds (67%), followed by ditches filled with water (11%), canals (15%) and rivers (5%) (Figure 6).

Children drown around their homes in open waterbodies. Physical environment modification, restricting access to water can prove to be an effective intervention.

Young lives lost to water

Life stories

"It is really delightful to play in the water. The water rises quite high when splashed. Then while playing waves are created on the surface of the water. This is really amazing."
– Girl, age 12 years

"My daughter was 4 years old. I was busy with cooking like cutting fish, blending pepper. Suddenly we noticed her missing. We searched all around and finally went to the pond. When I got down in the pond water to search for her, I found her body at my feet. Then I picked her body out of the water. I took the body on my head and moved around. Then I removed the water from her stomach by giving pressure on her belly. But all efforts failed."
– Mother, age 35 years

"There is no hospital or community clinic close by, only a pharmacy is close to us. If it was closer it would be very good so we could have taken my grandson to the hospital. He might be alive if it took less time."
– Grandfather, fisherman and farmer, age 61 years

To obtain a deeper understanding of the water-related hazards we spent time speaking with a range of people in the community. Our study showed the close and cultural connection people in the Barishal Division have with water and demonstrate the need for interventions to be designed with this understanding in mind.

Community perspectives about drowning and variations in understanding were obtained through focus group discussions and interviews with community members including household heads, grandparents, parents, children, people working in the fishing industry, water transport users and providers. The objective of these discussions was to understand beliefs and experiences of drowning and disaster with a focus on exploring risk factors, protective measures and help seeking behaviours.

Community beliefs, knowledge and practices

Discussions uncovered four main factors that contributed to drowning. These were:

1) Lack of knowledge and understanding of the hazards.
2) Unrestricted access to water and insufficient supervision of children, especially those aged one to under five years.
3) Poor swimming and survival skills, especially for women, girls and children.
4) Inadequate first response to drowning, including lack of resuscitation skills and barriers to accessing healthcare.

Beliefs

In our meetings several different causes of drowning were discussed, however there was a commonly held view that drowning is ultimately in the hands of fate or Allah. This strongly held belief in coping with loss coupled with minimal resources resulted in passive perspectives on interventions to reduce drowning.

"Allah has fixed our life for a certain period. We live up to that time."
– Father, 53 years

"Some of us are poor. We don't have capacity to build a boundary for the pond or to make a gate."
– Father, 53 years

Risks for children

Children aged one to four years are at highest risk of drowning as they enjoy playing near water but have not yet developed the physical skills to survive if they fall into water when unsupervised. Water play for older children aged over eight years is typically unsupervised, these children may be taught how to swim using banana tree branches and flotation alternatives such as bamboo or big plastic bottles.

"These children have addiction with the water.... Three months ago two children were larking. Then little one slipped and fell down whilst playing then another two children fell rescuing him."
– Mother, 32 years

Child rearing is primarily the responsibility of mothers, together with household chores. It is also recognised that this is particularly challenging for mothers with young children, and those with more than two children. The challenge is compounded during harvest season when some mothers are required to leave children unsupervised to work in the paddy fields. Participants mentioned restraining children with ropes or chains to keep them safe.

"At his early age, he was so naughty, when his mother worked then there was no one looking after him. That's why I tied him up beside his mother with a rope. So he can't go too far."
– Father, 36 years

Gender issues

Discussions with community members identified that gender is related to drowning risk, swimming ability and confidence. Boys learn to swim before girls and are generally stronger swimmers than girls. Swimming training is normally provided by an older relative of the same gender, which means swimming ability can be generational.

Boys interact with water differently than girls do; boys have more confidence in and around water leading to an increased risk of drowning. While boys will play with their peers in ponds or accompany their male relatives to fish at rivers, girls are found assisting their mothers with household chores and washing in ponds as their primary interaction with water. Their lack of exposure results in fear of the water, which in turn results in panic when girls fall into the water, thus perceived to increase drowning risk.

"The boys can swim well. The boys are strong enough and they have more courage than the girls."
– Girl, 10 years

Women face additional risks when swimming due to their long hair and traditional clothing which often becomes entangled around them in the water.

"It is very hard to swim as well as to survive in water wearing a Sari."
– Male, age unknown

Children play near the water unsupervised in a village in Barishal

Disaster preparedness and resilience

Life stories during the floods

"A man in the north was totally puzzled and could not decide which way to go with his old father. He was thinking whether he will save himself or will he take his father? He tied up his father with a tree so that even if he dies at least his dead body will be found. Later on his father died tied up to that tree. Later he was buried in the morning."
– Male, agricultural worker, 65 years

"My grandson was seven months old. We put a quilt and pillow in a big metallic utensil and put him in there and said, 'We are old. We cannot go to the marshy land, we cannot take him. Let him float on water. If Allah grants him life line then somehow he will survive and if he has no life line, then he will not be in this world anymore."
– Grandmother, age unknown

Focus group discussions and interviews with community members demonstrate the wide range of variation in people's understanding about the impact of water-related disaster and how prepared people are.

Impact of disaster

Drowning and illness due to poor sanitation post-disaster are major contributors to disaster-related morbidity and mortality. Despite this, community members were primarily concerned about the consequences of disaster on agriculture, with erosion and loss of crops and livestock having a devastating impact on communities. Theft, looting and loss of livestock for farmers were significant concerns, and the need to protect property and livestock prevented timely evacuation. The structural weakness of existing dwellings impacted their ability to remain structurally sound during a disaster event. Drowning and poor sanitation post-disaster was not a major concern of people interviewed indicating a lower awareness of these risks.

Insufficient support for the most vulnerable

Vulnerability to drowning is greatest among the elderly, children and women who cannot move quickly, hold onto objects when caught in flood waters, swim against currents, climb to safe areas above flood waters, or carry belongings overhead when crossing flood waters. Community members explained that women's clothing can become heavy when wet and long hair caught on objects prevents escape from flood waters. Men felt that women were a liability as they were not able to plan rationally or maintain calm during high pressure disaster situations. These views show there is insufficient support for elderly, children and women who are the most vulnerable.

"During this time [women] are considered a burden by other members of the family. They cannot move quickly."
– Female social worker, 35 years

"Women are at risk because they wear many clothes and they have long hair. Their hair might be untied and get stuck or twisted.... They don't have that much strength, so they cannot free themselves."
– Male businessmen and fisherman, age unknown

Community preparedness and practices

Community members are skeptical about the urgency of signals as previous warning signals have been given for seemingly minor events. Warning signals are interpreted in different ways and community members have their own thresholds for deciding when to evacuate. Power is often lost during weather events and not all households owned a TV or radio, therefore loudspeaker announcements in villages were considered to be most the effective warning signal, which are primarily coordinated by NGOs.

Many drowning deaths were reported to be caused by people evacuating their households after not responding to early warnings. Community members felt evacuation was an inconvenience due to looting that frequently occurs when households are left unattended and the challenges with transporting less-mobile people.

"People don't want to go. As long as possible they try to stay in their own place..... That's why the problem increases and people get hurt more by drowning."

– Male small business owner, 60 years

Barriers to disaster response and improving resilience

Disaster preparedness was predominately managed by community members. Education provided by NGOs in community settings is useful, however it is sporadic and lack of resources limited the extent individuals were able implement the practices taught.

A number of cyclone shelters had been built in community settings, but many have poor structural quality, are over-crowded and potentially unsafe places for women. Despite this, the shelters are frequently used by the most vulnerable members of the community at the time of disaster, however they can be difficult to access due to unsafe roads and long distances between shelters.

Government post-disaster relief was only available over short periods of time post-event and in some cases, was also provided sporadically by NGOs. There is a need to ensure equal distribution of relief post-disaster, and prevent bribery and nepotism.

"We stay at home because if we leave the house our things will be stolen. We have nothing else other than these things in the house. That's why we try to stay at the house as long as we can."

– Male agricultural worker, 33 years

Disaster risk mapping in Barishal

Water transport challenges

Life stories

"I was going by this side from Dhaka and when I was near Padma River, it started to rain. Suddenly the storm broke out when we entered into the river. People started to cry. Water was coming into the boat and people were panicking but the shipman was driving straight without stopping anywhere. After a while it calmed down and everyone was relaxed. Even I was scared at that time."

– Male passenger, buys and sells fish, 60 years

"During the Eid the pressure of passengers is high. We carry more passengers because everyone has to go home. Suppose in my launch I can cake 300 passengers but during the Eid it is 500. Then from the other wharf they shout out to take them. [If there is a] storm and passengers are hasty, the launch can sink but if passengers remain steady then usually no accident happens."

– Male launch operator, 39 years

Barishal river port is the second largest river port of Bangladesh. Water transport is the most common means of commute to Dhaka, and also other districts of Barishal including Bhola, Barguna and Lakshimipur.

Perceptions of risk

Ferries are considered to be the safest vessels and most cost-effective way to travel. Machine boats and trawlers are considered less safe, although people are willing to use them as they are a faster way to reach one's destination compared to a ferry, and there are more of these vessels available.

"Ferry is much safer than trawler, speed boat is much riskier... but ferry isn't always available. Again, there are trawlers, but these are much riskier."

– Fisherman, occasionally takes passengers, 55 years

One of the issues is poorly maintained vessels, with lack of shelter and inadequate safety barriers, which is especially problematic for children.

Transport providers restrict their travel during uncertain weather conditions, which may contribute to passengers taking risks due to uncoordinated services and the uncertainty around availability of alternate transport. However passengers are also likely to take risks when the weather is fine.

Financial pressures also contribute to risk taking behaviour, and the need to provide for family can outweigh fears and safety concerns for both providers and passengers.

"When they are facing financial instability, they go with their boats even after knowing there is some risk. To feed themselves and their kids they go out for work. We are afraid but we still have to go."

– Fisherman, occasionally takes passengers, 55 years

Overcrowding

One of the major issues is overcrowding of vessels, especially during holiday periods and in rainy seasons when flooding, high tide and storms are more prevalent. Transport providers blamed passengers for unsafe behaviours. In particular, high risk behaviour is reported among children and passengers whilst boarding and disembarking, jumping on or off the vessels rather than waiting in a queue and/or using the docking platform.

"It [drowning] happens because of the passengers' fault; it happens because of the carelessness of the passengers. It's because of their negligence and lack of safety."

– Male ferry driver, 45 years

"I have not seen anyone on this landing station to oversee the responsibility of the rules [regarding boarding capacity]."

– Male passenger, 42 years

Safety equipment, regulations and maintenance

A major issue is lack of safety enforcement and equipment, such as life jackets and buoys. From observation of small and large vessels, safety equipment on board was frequently absent, particularly on

smaller vessels, and though present on larger vessels the equipment was insufficient. Transport providers also identified absence and maintenance of basic infrastructure such as lights, as a major concern during night passages.

"I was just thinking if we sink, then what will happen, there was no drum or rope in the boat."
– Female passenger, 20 years

"After the evening we row the boat by seeing the shop light, shops close after 10pm and for the rest time we rent a light and need to give 200 taka monthly. From the government there was the arrangement of two lights beside the wharf, [but] for many days it remains useless [and] no one came to fix it."
– Male boatman, age unknown

These issues signal the need for better regulation and enforcement of vessel maintenance, adequate safety equipment, wharf access in poor weather conditions, proper disembarking and adherence to maximum cargo and passenger capacity. There needs to be concentrated efforts during periods of high risk, for example during Eid, when overcrowding of vessels is a given.

Survival skills and rescue

Transport providers identified the need for training and equipment to respond to incidents, building capacity for survival and rescue skills are critical for averting transport related drowning deaths. Further, first response systems need to be developed and implemented, particularly during high risk season and festivities.

"If I go in the water to save the drowned then I will also drown and die because they will grapple me so that they can come out from water. In that case I will not able to rescue them."
– Female student, 17 years

Overcrowded boats with no safety rail are common in Barishal

Fishing Industry

Life stories

"Is it possible to swim wearing five-yard-long 'sari'? On several occasions, I fell in the water.... Falling in water has now become a normal thing..... We females don't have an association. We eat if we can earn money or starve if we cannot earn money..... I have no alternative. My family is poverty-stricken, I have to maintain this family. If I had money, I could go to the water with a life jacket..... If you give us a strongly built boat, then I will be able to catch fish easily without fear."

– Widow, 40 years

Fishing is largely an unorganised sector, with high exposure to drowning risk in the Barishal region. The fishing boats mostly carry men, however women and children also catch and sell fish. It is common to observe wooden fishing boats with little or no safety equipment on board, with fishermen as young as eight. Most fishermen have grown up fishing, they know how to swim and are confident that they can rescue each other.

Negative self-perception among fisherman

Fishermen have little pride in their occupation; this is related to lack of education and earning potential. Instability in work and finances, exacerbates low self-confidence amongst fishermen and thus they have accepted the fact that they may lose their lives at any point, which contributes to risk-taking behaviour.

"The fishermen know swimming immediately when they get out of their mother's womb."

– Fisherman, 48 years

"If we don't have food in our houses, we don't have any alternative but to catch fish."

– Fisherman, 35 years

Power relations and livelihood before safety

Sustaining livelihoods is deemed more important than implementing safe practices and avoiding potentially dangerous circumstances such as bad weather. Fishermen will take risks to avoid losing their net in a storm. Furthermore, there is strong belief that more fish can be caught in bad weather. This is reinforced by power relations between boat owners and fishermen as fishermen risk losing their jobs if they do not go out at the owner's command.

"During flood and storm more fish can be caught. That's why we go even though the [warning] signal is given"

– Fisherman, 35 years

"If my boat drowns in water during storm, then all the capital will be finished in a second. And if any fisherman dies then it will reduce my reputation"

– Lender, 45 years

"Pressure comes from the owner and we also think that if we can catch some fish then we will get some money. That's why we go."

– Fisherman, age unknown

Higher risks for women

There is a vast difference in the experience and perceptions of women compared to men working in the fishing industry. Women working in this industry face larger risks in that they most often cannot swim and their traditional clothing restricts movement in the water. Women have less legal and financial security in the industry as they do not belong to an association or have formal employment. For safety, women tend to fish in small groups; however women were observed to keep their young children with them while working, which also puts children at risk.

Fishermen prepare for rough weather

Female Fishermen in Barishal

Methods and analysis

We used a public health evidence based approach to conduct this study. Our interventions are guided by the evidence obtained thorugh a large household survey, and understanding of context thorough qualitative research.

Methods

- To document the burden in the population, a cross-sectional household survey was conducted in all districts of the Barishal division which has six districts and 39 sub-districts. The survey was conducted from October 2016 –February 2017, using a multi- stage stratified sample.
- Trained data collectors used pre-tested structured questionnaires to collect information from household heads, mothers or any adult above 18 years by face-to-face interviews. An electronic data capture system, the REDCap application, was used on tablets for data collection.
- Information on all mortality, followed by all cause injury mortality was collected. Injury was defined in accordance with International Classification of Disease (ICD), Version 10, Chapter XX recording intent and mechanism of injury.
- The operational definition of injury used was any external harm resulting from an assault, fall, burn, mechanical injury, poisoning, transportation, suffocation, or drowning related event resulting in the loss of one or more days of normal daily activities, school or work. Drowning ws described as the process of experienceing respiratory impairment from submersion in liquid. Drowning deaths were included if the cause was any of the following external cause ICD codes W65, W74, X36-X39, V90, V92, X71, or X92.
- Information on all fatal injuries was collected over a two-year recall period.
- Multi stage cluster sampling method technique has used in selecting the required number of sample. Stratification has also done based on rural and urban areas. A village in rural areas and a mohallah in urban locations considered as a Primary Sampling Unit (PSU) or cluster. The number of PSUs or clusters for different strata had been determined proportionate to the population size (PPS).
- Data were collected on demographic characteristics, socio-economic status and on knowledge, attitudes and perceptions/ practices for community drowning, through qualitative mehods detailed in Table 1.

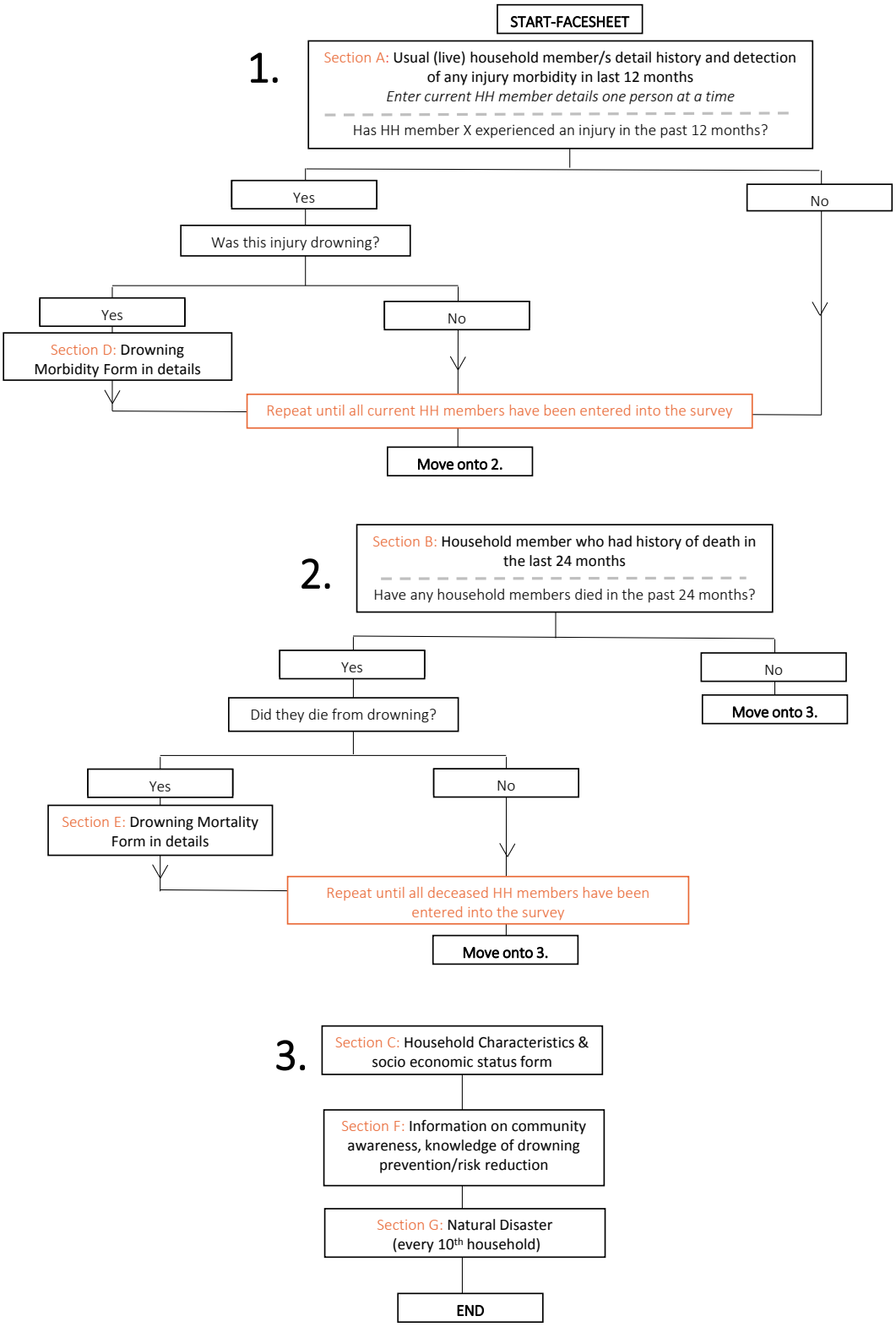
Table 1. Understanding context of drowning in Barishal division, through qualitative work

Objective	Methods (N)	Participants
Document children's access to water, and practices post drowning event, risk taking behaviour around water	Observations (6) Focus groups (12) In-depth interviews (37)	Children Community / Household members
Explore transport users and provider's perceptions and practices on water safety.	Observations (3) Focus groups (3) In-depth interviews (18)	Community First responders Civil servants
Describe knowledge and perceptions on safety during flooding	Focus groups (4) In-depth interviews (7)	Community First responders Civil servants
Perceptions and knowledge of fisherman on water safety	Focus groups (2) In-depth interviews (16)	Fisherman (organised & unorganised sectors)

Statistical analysis

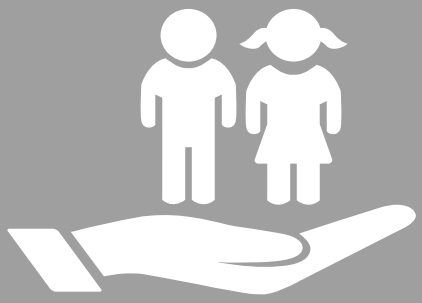
- Weights were created for the survey data to appropriately adjust for differences in probability of selection and response rates according to age and sex. We calculated the probability of selection based on sampling information (number of upazilas, number of villages), and then adjusted this to the age and sex distribution from the 2011 Bangladesh Population and Housing Census. All data were analysed using SAS 9.4 with SAS/STAT 14.2
- Rates (/100,000 for fatal drowning and % for other variables) were estimated using Taylor Series method. This incorporated the survey weights and the other features of survey design (stratification by district, and cluster sampling of villages). We used survey regression procedures when estimating regression models.

Flowchart 1: Survey tool design for electronic data capture.



Interventions

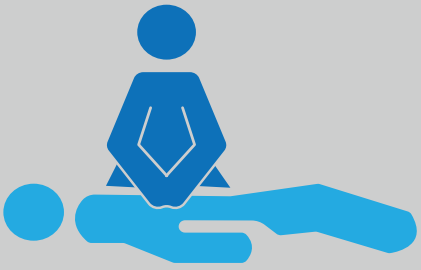
Evidence-based interventions for preventing child drowning are being implemented in sub districts of Taltoli, Betagi, and Kalapara over a 3 year period (2017-2019).



INCREASING SUPERVISION FOR 10,000 CHILDREN AGED 1–5 YEARS WITH 400 ANCHAL (CRÉCHE) CENTRES

IMPROVING WATER SAFTEY SURVIVAL SKILLS IN 30,000 CHILDREN AGED 6–10 YEARS

INCREASING AWARENESS ON WATER SAFETY IN SCHOOLGOING CHILDREN, AGED 11–14 YEARS



TRAINING 3,000 COMMUNITY VOLUNTEERS FOR RESCUE AND FIRST RESPONSE, IN THE EVENT OF DROWNING

Anchal creche lessons

Swimsafe lessons

School water safety awareness program implemented by BFSCD

@SteveWills

Recommendations

Priority Actions

Planning

Develop and support the implementation of a division-level drowning prevention strategy, and 6 district-level operational plans in the Barishal division

Prevent

Enable the continuation and scale up of child supervision centres (day care, crèches, anchal etc.), survival swimming lessons and water safety awareness through schools across the Barishal division

Respond

Increase front-line and community personnel trained as first responders across the Barishal division

Specific recommendations are:

a) High rates of drowning fatalities are reported, therefore the main focus needs to be on measures that prevent drowning events from occurring

b) Proven interventions for those at greatest risk, such as Anchal and Swimsafe need to be implemented at large scale

c) Primary prevention measures need multi sector approach. A common platform needs to be developed for the government ministries, relevant departments, and public health agencies with common agenda such as safe water supply, rural development, child development, transport and disaster management, enabling collaborative action. Further, partnerships should be developed with global agencies, non-governmental organisations, industry and private sectors

d) A drowning reduction divisional plan should be developed, focused on high risk group of children aged 1–10 years followed by district level plans. Specific time bound targets should be agreed upon by relevant stakeholders. Further, human and financial resources to implement the plan must be considered.

e) With waterways as the main mode of transportation, the population of Barishal has high exposure to water transport and associated risks. Legislation should be implemented and enforced for safe operation of vessels for the safety of those working or travelling on or around water.

f) To enable ongoing evaluations of drowning prevention efforts, it is important to share experiences and intervention strategies more effectively. There is a need for collection of consistent epidemiologic data. Development and implementation of robust mortality surveillance systems should be supported.

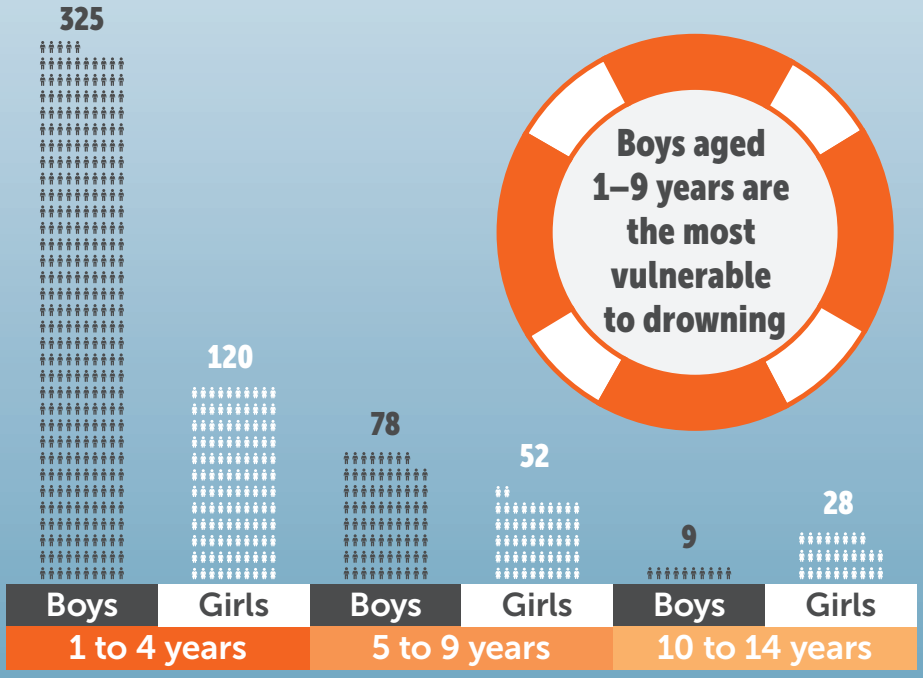
ENDING THE DROWNING EPIDEMIC

Project BHASA

46 Children die from drowning everyday in Bangladesh

3x The drowing mortality rates in Barishal compared to the rest of the country

7 Children drown every day in Barishal which is largely preventable



Boys aged 1–9 years are the most vulnerable to drowning

2/3 of deaths occur between **9 and 3pm** when children are most likely to be unsupervised

DROWNING IS PREVENTABLE

Project BHASA is a groundbreaking initiative to reduce drowning in the Barishal Division

400 community crèches (Anchals) will provide free supervision to 10,000 children

30,000 children will learn basic swimming and rescue skills

CIPRB

Lifeboats

The George Institute for Global Health


Lifeboats
CIPRB
SwimSafe
জীবনের জন্য সাঁতার


Lifeboats
CIPRB
SwimSafe
জীবনের জন্য সাঁতার

Project Bhasa

Ending the drowning epidemic in Barishal division, Bangladesh

A report on current evidence on drowning burden and implementation of evidence-based measures

October 2018

The George Institute for Global Health