Initial community response to a childhood drowning prevention programme in a rural setting in Bangladesh

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ABSTRACT

Objectives To describe the development, community acceptability, feasibility, and sustainability of a pilot drowning prevention intervention for rural children, 1–4 years old, in Bangladesh.

Methods A prevention package was formulated and piloted in four rural communities of Bangladesh for 3 months. Focus group discussions and in-depth interviews were organised with stakeholders to elicit community acceptability, feasibility, and sustainability of the proposed interventions.

Results Increased supervision of children, raising awareness on water safety, and educating the community on first response skills were the three core aspects identified through workshops to include in the intervention package. During development of interventions emphasis was given to finding low-cost local resources. To increase child supervision, creation of drowning-safe homes and establishment of community crèches were identified. To create heightened water safety, formation of village committees and conduction of courtyard and social autopsy meetings with communities were considered. The community actively participated and considered that these interventions would be useful for prevention of child drowning. There was also an increasing demand for some of these interventions.

Conclusion Use of low-cost local resources, community participation, and increasing demand of the interventions indicated that the package was acceptable, feasible, and sustainable to the community. To determine the effectiveness of the package demands implementation on a larger sample.

Drowning is one of the leading causes of child mortality worldwide.¹–⁴ According to the World Health Organization, fatal drowning ranked 13th as the overall cause of death among children under 15 years, with the 1–4 year age group at greatest risk.⁵

A recent study in Bangladesh showed that drowning is the leading killer of children aged 1–4 years (86.3 per 100 000 children-years), ahead of pneumonia, malnutrition, and diarrhoea.⁶ Other Bangladeshi studies show that the annual incidence of fatal drowning in rural children aged 1–4 years varies between 157 and 200 per 100 000 children per year.⁴ ⁷ It is the leading cause of death of children aged 1–4 years in other east Asian countries including Thailand, Vietnam, and Jiangxi province, China.⁸–¹¹

In high-income countries (HICs), various drowning prevention measures are advocated.¹ ¹²–¹⁵ However, prevention efforts in low- and middle-income countries (LMICs) are almost non-existent, and drowning is not yet recognised by policy makers as a major cause of child mortality. Moreover, there is no successful model for transferring effective interventions from HICs to an LMIC setting like Bangladesh.⁶

We designed the quasi-experimental study, “Prevention of Child Injuries through Social-intervention and Education (PRECISE)”. The study objectives were to develop and implement an intervention package and evaluate the effectiveness of the interventions in terms of reduction of under-18 child injury mortality and morbidity, including drowning. Prior to implementing the intervention package, a small scale pilot was done in four villages of the intervention area. Although the package was piloted for all injuries of under-18 children, this paper details only drowning prevention for rural children aged 1–4 years. Our objective is to describe the method of development, and to explore community acceptability, feasibility, and sustainability of these drowning prevention measures.

METHODS

The methods employed to develop and pilot the intervention package, and initial evaluation were to:

➤ gather information on childhood drowning and its prevention measures;
➤ organise workshops with relevant stakeholders to formulate prevention strategies;
➤ pilot components of the programme in a rural community; and
➤ assess initial responses of rural communities to the prevention programme.

Gathering information

The literature review obtained relevant information on the magnitude, risk factors, and people's perception of child drowning in Bangladesh. Various childhood drowning prevention measures proven effective in developed countries were also reviewed. All relevant findings were documented.

Organising workshops

Through a process of discussion and consensus, experts on child survival and injury prevention research identified three major risk factors to be addressed in order to prevent child drowning:

➤ inadequate child supervision;
➤ lack of awareness on drowning risks and preventive measures; and
➤ lack of basic first response skills.

Prior to incorporating any measures, the socio-economic, environmental, and cultural contexts of Bangladesh were considered. The guiding principles of the programme relied on community participation, and utilisation of low cost locally available resources.
To address this issue, supervision should be improved and the home and immediate environment modified to reduce injury risks. Studies suggest that improved child supervision and reduction of home hazards could reduce drowning and other injuries.6 16

The attitude and behaviour of parents/caregivers can be addressed through counselling by a trained worker. It has been reported that educating parents/caregivers about the risks for drowning is an important step for changing knowledge, beliefs, and attitudes, which in turn determine behaviour.17 Counselling should address child supervision, removing indoor drowning hazards and protecting children from outdoor water bodies by creating barriers such as fencing around a pond or home, installing door barriers, or utilising playpens.

Establish community crèches
The majority (>60%) of child drowning occurs during morning to noon, when mothers are engaged in household chores.7 18 Workshop participants suggested establishing community crèches to provide direct supervision of 20–25 children by a trained caregiver and to encourage early childhood development (ECD) during mothers’ busy hours.

Create a heightened water safety culture
In order to heighten community awareness of water safety, the workshop participants suggested the following.

Establish multi-sectoral collaboration
In order to cultivate support from various departments including health, education, and local government, participants suggested organising advocacy meetings with department representatives.

Form village committees
There were suggestions to form village committees involving community leaders. In rural Bangladeshi culture, people accept and value suggestions of the community leaders. The

Table 2

| Qualitative methods | Participants | Prompts for FGDs and in-depth interviews |
|--------------------|--------------|------------------------------------------|
| FGDs               |              | Areas of discussion                      | Prompts used                                         |
|                    |              | Drowning-safe homes                      | ► Importance of safe homes                           |
|                    |              | Community crèche                         | ► Opinions and challenges of safe home activities    |
|                    |              |                                          | ► Suggestions for improvement of safe home activities|
|                    |              |                                          | ► Crèche concepts and benefits of mothers and children|
|                    |              |                                          | ► Child attitudes towards crèches                    |
|                    |              |                                          | ► Suggestions for improvement of crèche activities   |
|                    |              |                                          | ► Benefits of village committees                     |
|                    | 1. Parents of 1–4-year-old children (one group of mothers and one group of fathers, comprised of 10 and 8 participants, respectively) | Courtyard meeting | ► Importance of the meeting |
|                    | 2. Village committee members (one committee comprised of 11 members, 7 men and 4 women) | Social autopsy meeting | ► Benefits of social autopsy meeting |
|                    | 3. Attendees of the courtyard meeting (8 participants, 3 men and 5 women) | First response | ► Importance and quality of the first response training |
|                    | 4. Attendees of the social autopsy meeting (10 participants, 6 men and 4 women) | Drowning-safe homes | ► Success and challenges of safe home programme     |
|                    | 5. Community volunteers for basic first response (one group comprised of 10 members, 5 men and 5 women) | Community crèche | ► Community workers’ benefit                       |
| In-depth interviews |              |                                          | ► Crèche caregivers opinion and suggestions           |
|                    | 1. Community workers (4 women) |                                           |                                                       |
|                    | 2. Community crèche caregivers (4 women) |                                           |                                                       |
committees were expected to support, guide, and oversee the activities.

**Conduct courtyard meetings**
Courtyard meetings are a well accepted awareness raising method in Bangladesh. In each courtyard meeting, about 40–50 neighbours participated. One community worker facilitated the session and described the magnitude and risk factors, and suggested possible prevention measures for various injuries including drowning. At the end, the audience interacted with the facilitator for further clarification.

**Conduct social autopsy meetings**
A social autopsy is an innovative strategy wherein an adult assists a socially challenged child to improve social skills by jointly analysing errors that a child makes and designing alternative strategies. This concept, of assessing a situation and creating alternative strategies to avoid further similar incidences, has been adapted and applied to child drowning prevention in rural Bangladesh.

In the study, a social autopsy meeting was held after a drowning death. It involved the deceased’s family, neighbours, and local leaders. A trained worker led the group using a structured, standardised analysis of the incident. The dialogue served to elicit the social errors which caused the death, and to identify appropriate and achievable preventive measures.

**Basic first response**
Many indigenous customs, practiced by rural community members, are harmful for a non-fatal drowning victim. To address this, workshop participants proposed introducing basic first response training to local volunteers. The first response training comprised of basic skills in common injuries including cuts, burns, animal bites, and poisoning, and cardiopulmonary resuscitation (CPR) and transportation of victims to the nearest health facilities.

**Initial responses of rural communities to the prevention programme**

**Drowning safe-homes**
From FGDs it was revealed that parents understood the importance of creating and maintaining a safe home environment. Counselling helped them identify high-risk drowning places and how to eliminate these drowning hazards. Respondents unanimously agreed that direct supervision of children by an adult is the most effective prevention measure.

The majority of the parents responded that, due to cost, it was unaffordable to fence whole ponds or houses. However, erecting a barrier across a door or a path to a water body would be possible.

The mothers reported that community workers usually visit them in the morning when the adult male occupants are not at home. The mothers suggested:

> “Putting a door barrier or an obstacle on the way to a pond needs money… the child’s father is the breadwinner… if he agrees, then it is possible. You need to tell him all these as well.”

The community workers also considered that adult male participation was a big challenge.

The village committee believed this programme could reduce child-drowning deaths. However, they identified the following challenges of the safe-home activity:

> “People are interested in making their homes safe from drowning… but financial constraints prevent them from fencing the ponds/house.”

Similar to mothers, community leaders emphasised men’s involvement. The committee members suggested organising male-skewed communications strategies, which included entertainment for men after they had returned from work.

**Community crèche**
Mothers welcomed the idea of a community crèche:

> “We would never have thought there could be such a simple solution. This lifts a huge burden we face trying to keep our children in a safe place during busy hours.”

The respondent mothers reported that they felt secure sending their children to the crèche.

The following mother’s statement explains her child’s attitude towards the crèche:

> “My daughter, after waking up, counts down the time until she goes to the crèche… She drives me crazy until I drop her off.”

The fathers valued the programme for the safety it provided and also for advantages it held for future schooling.

According to crèche caregivers, the community has embraced the crèche concept. They understand the importance of supervision as well as ECD.

The village committee had a solid understanding of the crèche as an effective means of preventing drowning and other injuries. The initial reactions of the committee members are as follows:

> “…the crèche environment ensures safety of children and also a great stimulant to children for future schooling…eventually contributing to increasing the literacy rate of the country.”

The majority of mothers suggested crèche hours should be between 09:00 and 13:00 as they are busy with household chores during this time and cannot supervise their children adequately.

The crèche programme was initially designed for children aged 1–4 years, the most vulnerable age group for drowning. As primary schooling begins at the age of 6 years, parents suggested that the crèche programme be extended to include children up to 6 years old.

An increasing demand for crèches was also expressed by parents.

> “One crèche per village is not enough, there are so many children in our village and a crèche only accepts 20–25 children. You should open up more.”

Once established, the cost per child in the crèche is less than three US cents per day. These costs are currently being paid by the project. The majority of respondent parents indicated they could afford this. However, they suggested very poor families be subsidised. Crèche caregivers recommended that until the villagers who could not afford the monthly operational cost had experienced and realised the obvious benefits of the crèche, financial assistance should continue.

Crèche caregivers made the following statements:

> “Children learn a lot of things from me and I feel I am respected! … And children are also safe from any injuries.”

> “My husband and in-laws do not allow me to work outside my home. As the crèche is in my home, nobody objects. I am utilising my education and also earning some money.”

Both the training and the practical experience acquired on the job provided caregivers with the confidence, knowledge, and skills to manage a crèche. However, they suggested an assistant in order to provide proper supervision of 20–25 children.
Creating a heightened water safety culture

**Village committees**
The village committee expressed that they could help to influence community participation and provide necessary support to the programme.

**Courtyard meeting**
To trial the concept, one courtyard meeting was organised. The audience expressed that the meeting helped them understand the child injury risks, including drowning, and the prevention measures. It was suggested that the meetings continue.

**Social autopsy meeting**
To trial the concept, one social autopsy meeting was held to discuss the fatal drowning of a child. The following feedback was recorded:

“This kind of meeting is very painful for the deceased family...but is a lesson to us...this will help other parents be careful with their children.”

**Basic first response**
A group of 10 community volunteers of one village were trained in basic first response using a structured manual by two experts. During training, assessments were made on methodology, timing, and the effectiveness of instructional materials. Comprehension of the material and quality of the training was also assessed by the trainees. Areas needing adjustment were identified during pre-testing.

Regarding acceptability and credibility of the training, one of the participants mentioned:

“This hands-on training will be very helpful for the volunteers...We could perform first aid if needed.”

**Revising the programme**
Following the pilot, the initial programme plan was revised based on feedback from various stakeholders.

**Ensuring male participation**
The most noticeable flaw identified was the lack of contact with adult men which is needed to heighten their awareness of the importance of water safety. Considering this, entry-level education materials, such as video documentary-dramas and interactive popular theatre (IPT), were developed. In the evening, during men’s leisure time, one video drama and one IPT show were organised in a village. Over 200–500 villagers observed the shows and the majority of them were men. At the end of each show 10 men were interviewed, who expressed that these helped them to understand the importance of drowning prevention measures.

**Redesigning crèche strategies**
According to community feedback it was decided that crèche hours should be scheduled between 09:00 and 15:00 six days a week. It was decided that 5-year-old children should be included in the programme and one assistant be provided to each crèche caregiver.

**DISCUSSION**

While rich countries can use wealth or technology to solve major public health problems, these are not available to developing countries such as Bangladesh. Consequently, the most efficient use of the available resources is paramount. Research can be used to develop an evidence-base on which to allocate effort and resources. Drowning interventions that exist in HICs have not been imported into Bangladesh. Instead, efforts have been made to develop a programme considering the context and using local resources with community participation.

To enhance compliance, the community was involved from development to implementation. Because community needs and preferences were elicited in advance, most intervention components have been well accepted. For example, the increasing demand for community crèches proves the acceptability of the intervention. These are also sustainable as the interventions are very low cost. With some interventions, like the community crèche, cost sharing is possible. However, focus group discussions and in-depth interviews suggest that some subsidies may be required for the poorest sections of the community.

In most low-income countries including Bangladesh, major public health issues are tackled by the Ministry of Health with financial and logistical support from development partners. As drowning is a major killer of children aged 1–4 years, it must be addressed in order to achieve the Millennium Development Goals on reduction of child mortality. In this context, it is not unrealistic to expect assistance from development partners and international aid agencies to prevent childhood drowning.

Our qualitative studies showed that the intervention programme described is well accepted by the community. As the programme is designed to utilise low cost local resources and to involve the community, it is expected to be feasible and sustainable with some assistance from relevant organisations. To determine the effectiveness of the package we will pursue its implementation on a much larger sample.

**Acknowledgements**
This research was a part of “Prevention of Child Injuries through Social-intervention and Education (PRECISE)”. We thank UNICEF-Bangladesh, The Alliance for Safe Children (TASC), and the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of the People’s Republic of Bangladesh for their support in the study. We gratefully acknowledge Stephanie Ryan for editing the English language of the manuscript. She is an Australian Youth Ambassador for Development (AYAD), currently working for the Centre for Injury Prevention and Research, Bangladesh (CIPRB), Dhaka, Bangladesh as Communication Officer.

**Contributors**
AR participated in the design, implementation, and supervision of field work and analysis, and wrote the paper. AHM and SRM were involved in instruments development, facilitated the FGIs and in-depth interviews, participated in analysis of data, and contributed in writing the manuscript. SS advised on project design and methodology for the study. RS, RB, and SM conceived the study and acquisition of funding. AR, RS, RB, SM, and SS were major contributors in writing the manuscript.

**What is already known on the subject**
- Drowning is the leading cause of death in children aged 1–4 years in rural areas.
- Ponds and ditches are common sites of drowning.
- Lack of adequate supervision is one of the major causes of drowning.

**What this study adds**
- A proposed child drowning intervention package to be implemented in rural Bangladesh is described.
- Qualitative methods can be used in this setting to guide implementation design and refinement.
- Pilot testing suggests that the package as designed is feasible, sustainable, and acceptable in communities where it has been implemented.
Funding This project was funded by UNICEF-Bangladesh and The Alliance for Safe Children (TASC).

Competing interests None.

Ethics approval Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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