International Journal of Medical and Health Research
ISSN: 3078-4824
DOI: https://doi.org/10.61424/ijmhr.v4i2.774
Journal Homepage: https://bluemarkpublishers.com/index.php/IJMHR

IJMHR
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| RESEARCH ARTICLE

Drowning in Bangladesh: A Universal Language of Empathy, Identity, and Global Relevance

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| ABSTRACT

Drowning is a significant yet low-priority leading cause of preventable deaths in Bangladesh, and children, as well as rural households residing near an open body of water, are at risk. The study design of this article is a qualitative, narrative-integrative research study that summarizes peer-reviewed literature, national data, and international recommendations on the epidemiology of drowning, the exposure environment, mechanisms of supervision, the efficacy of prevention, and the conditions of governing. The results obtained through production suggest that the age difference is steep, with the greatest mortality density falling on children aged 1-4 years and relative susceptibility persisting through age group 5-9 years. Incidents are also concentrated in domestic adjacent micro-environments, including ponds, canals, ditches, and seasonal floodwater, and are subject to quantifiable seasonal amplification with monsoon incidence of 138 relative to a dry season baseline of 100. Temporal distributions also show a high tendency, with daytime risk being the highest at the early afternoon (relative index 135; daily mean 100) and contributing to over half of the estimated cases ahead of mid-afternoon. The prevention works well with the following leading pathways: supervised childcare decreases exposure during the most hazardous hours, environmental interventions decrease near-home hazard access, and rudimentary swimming skills decrease fatality in case of exposure. Nonetheless, assessing the system level, one can point to the evidence of constant policy invisibility, which is manifested in disproportionate inclusion among policy tools and a low level of preparedness in budgetary allocation, ownership of the program, and monitoring capabilities. The results put drowning as a foreseeable socially constructed injury outcome and focus on the necessity of institutionalized cross-sector prevention being integrated into the routine child health, education, and disaster-risk systems.

| KEYWORDS

Unintentional injury, early childhood safety, rural exposure, seasonal risk, governance readiness.

| ARTICLE INFORMATION

ACCEPTED: 17 February 2026 **PUBLISHED:** 07 April 2026 **DOI:** https://doi.org/10.61424/ijmhr.v4i2.774

1. Introduction

Drowning in Bangladesh is not just a health issue of the people, but it is a collective tragedy that transcends age, classes, and geographical borders. Water being a major part of everyday living, identity, and income in a nation of rivers, ponds, and seasonal floods. But there is also a silent and avoidable loss which is brought about by this close connection with water. Every drowning case is a measure of the death of an individual, as well as the conditions affecting the whole society, that are poverty, lack of supervision, natural exposure, and poor safety measures. By presenting drowning as a common language of empathy, it is possible to position the problem outside the context of statistics and relate local conditions in Bangladesh with the global discourse on child safety, inequality, and avoidable deaths.

Bangladesh boasts of one of the highest drowning death rates in the world, especially in children. It has been found that drowning is the main cause of mortality among children aged 1-17 years in the country in terms of national and global estimates (Yerramsetti et al., 2022). Geographic and environmental factors such as high density of rivers, unguarded water bodies around households, as well as frequent monsoon floods, compound the risk(Shah et al., 2020). Most drowning fatalities in Bangladesh, unlike high-income environments, are a result of daily chores like bathing, playing, or venturing into water bodies(Flores, n.d.).

Nevertheless, in comparison to such problems as infectious diseases or malnutrition, drowning has traditionally been under-policed despite the magnitude of the associated issue. Drowning has traditionally been ignored by worldwide health agendas as part of the accidental injuries category as opposed to being a structural health concern of the populace(Lubbe et al., 2025). However, recent research has highlighted that drowning, which is at high risks, can be averted with very affordable community-based intervention measures that include supervised childcare, swimming and rescuing skills, and environmental adjustments(Organization, 2022). Drowning in Bangladesh is understood to involve more than epidemiological analysis because it is also necessary to consider social norms, caregiving practices, as well as international inequities in injury prevention.

Drowning is a major, but underestimated, preventable cause of death in Bangladesh and is a common cause of death in low-income and rural populations of this area, especially in children. Although it is evidenced that prevention strategies are available that are both effective and affordable, significant gaps in the awareness of the population, supervision-support of caregivers, local infrastructure near water bodies, and the regular integration of drowning prevention into health and education as well as disaster-risk programs remain. Drowning can thus be perceived as a tragic accident as opposed to a foreseeable consequence of daily exposure to unguarded water and disproportionate lack of access to safety measures. This is a poor prioritization of policy and a lack of cross-sector coordination that lowers funding, implementation, and monitoring, which keeps the prevention regionally fragmented and inconsistent. Also constraining is the lack of a socially informed and comprehensive approach that will enable the mass to sympathize and take more actionable steps to ensure drowning remains a normalized and invisible loss in spite of its immense human and international impact. The research questions to follow in this study are as follows:

1. What is the experience and understanding of drowning by the Bangladeshi households and communities?
2. Which social, environmental, and structural aspects help to maintain drowning deaths in Bangladesh?
3. In what ways can the Bangladeshi drowning situation be compared or contrasted with those of the global drowning situation and prevention discourses?
4. How can empathy-based and identity-driven framing support the drowning prevention initiatives on national and international levels?

The paper under discussion is dedicated to drowning in Bangladesh with specific references to children and community-based situations, where daily exposure to ponds, rivers, ditches, and floodwater defines exposure and risks. It combines evidence in the field of public health with social and global approaches to study drowning beyond the mortality rates, the interpretation of risk by families, the ways supervision pattern works in practice, and the ways communities react to specific incidences. Although the analysis compares with the international literature to draw the results, the main focus is on the environmental situation of Bangladesh, the social activities, and the policy deficiencies, such as the gaps in the rural services, the seasonal risks, and the lack of safety facilities around frequently used water locations. The upstream drivers that are taken into consideration in the study included poverty, work of caregiving, informal childcare, and the lack of equal access to swimming and rescue skills. It also examines the frame of drowning as discussed in the popular press as destiny, accident, or avoidable harm, and the impact of that frame on empathy, political saliency, and financial allocation. The research does not compare particular intervention trials, though it is a synthesis of the experiences of successful interventions to indicate plausible points of scale-up based on health, education, and disaster-risk systems. Finally, it seeks to educate the future research, advocacy, and policy development with a multidimensional concept of drowning as a common human issue with both local and global backgrounds.

2. Literature Review

2.1 Burden and epidemiology of drowning in Bangladesh

Drowning has also been highly reported as one of the most serious but least known causes of preventable death in Bangladesh, especially in children and adolescents. National and international estimates characteristically single drowning as the primary cause of mortality in children aged 117 years, and this percentage is a significant figure of the deaths of injuries in this age cohort (Adeloye et al., n.d.). Essentially, unlike most other causes of child mortality, which reduce with access to health facilities, drowning remains more elusive to regular surveillance systems and policy, and is therefore less apparent in prioritizing the policy.

Population-based studies also show that the drowning burden is disproportionately located in the rural and low-income environment, where contact with open water sources on a daily basis cannot be avoided (Sarango et al., 2023). Water bodies like ponds, canals, and ditches are integrated into household and community areas in such environments, and this forms a continuous exposure instead of episodic risk. Bangladesh is ranked as one of the top countries in the world in terms of absolute child drowning death cases, which shows the international importance of the topic on global public health (Hyder et al., 2003).

Notably, the mortality due to drowning is not balanced among the people of Bangladesh. Rather, fatalities have been observed to be concentrated in high-exposure communities that are poor, have poor infrastructure, and are very close to unguarded water bodies. Many cases of drowning are unnoticed, and most of them are not reported or even given media attention, particularly when fatalities are incurred in the homestead or small villages. The result of this invisibility is less social and political pressure on regular prevention practices, and further marginalization of drowning on child survival agendas.

2.2 Structural risk factors and exposure to the environment

The drowning risk is determined by the physical and environmental context of Bangladesh. The vast river systems and floodplains, irrigation canals, ponds, and seasonal floodwater in the country continue to create extensive and long-lasting closeness to open water, especially in rural regions (Chakraborty, 2021). In contrast to high-income environments, where drowning is a common occurrence in recreational environments, the majority of drowning incidents in Bangladesh are in the home or the home surroundings, where people are engaged in the daily activities of bathing, washing, or children playing near water (Organization, 2022).

This structural exposure demonstrates the macro trends of the low- and middle-income nations, as insufficient infrastructures, informal settlement trends, and poverty make them more vulnerable to environmental risks. There are no physical barriers, safe play grounds, controlled access points to water, and so the water hazards are freely available to young children. These risks are further extended by seasonal flooding, which widens water coverage and obliterates boundaries between safe and unsafe areas and raises temporary water hazards around homes.

Ecological exposure to drowning in Bangladesh is not, therefore, accidental or sporadic but is structural in the normal lives of the people. It is always demonstrated in the literature that the risk of drowning is determined by the settlement patterns, land use, and household geography, as opposed to the risk-taking behavior of a particular individual. This emphasizes the value of environmental and structural interventions as the key elements of effective drowning prevention plans.

2.3 Age trends and supervision relations

One of the most commonly determined predictors of drowning risk in Bangladesh is age. The children of the age group 1 to 4 years have the highest rate of drowning mortality that has been repeatedly reported in the national surveys and epidemiology studies (Bennett et al., 2023). This high vulnerability is directly associated with developmental variables such as enhanced mobility, inquisitiveness, and lack of awareness of danger, coupled with a total reliance on adult supervision. Supervision gaps are a very crucial mediating force in such risk-specific to this age group. Rural and low-income households have their caregivers who are often very busy and occupied with household chores, working in the fields, and earning a living, which can result in short-term yet significant neglect

of children (Holland, 2022). Surveillance data on injuries show that most drowning accidents happen during the day, especially late in the morning and early afternoon, when caregivers have the most significant amount of routine work (Awan et al., 2022).

This time series contradicts the accounts that express drowning mainly as a negligence of caregivers. Instead, it refers to the supervision as a structural limitation determined by socioeconomic factors, division of labor by gender, and lack of formal childcare. The literature recommends that the risk of drowning in early childhood age is indicative of foreseeable relations between the vulnerability of development and caregivership structure than extraordinary or irresponsible conduct. Therefore, prevention programs can best succeed when they are focused on mundane everyday safety as opposed to infrequent or exceptional incidents.

2.4 Prevention and intervention strategy evidence

An increasing literature has shown that drowning in Bangladesh can be extremely prevented using low-cost and community-based interventions. One of the best methods is to adopt supervised childcare programs like community crèche programs that directly meet the critical failure of supervision in times of maximum risk. The reviews of these programs indicate that the drowning rate among young children decreases significantly in the case of regular supervision (Le Dé, 2024). Besides supervision-oriented intervention, survival swimming and water safety education initiatives have been demonstrated with high levels of protection, especially when administered at a large scale and localizing the program. According to global reviews, these interventions are among the most cost-effective strategies for preventing injuries in low-resource environments (Kamaraju et al., 2020). Nevertheless, their success largely lies in the quality of the programs, their cultural acceptability, and accessibility.

It is highlighted in the literature that preventing drowning demands intervention of a type that is trusted by the community and incorporated into the existing social systems. Programs being provided in partnership with schools, community leaders, and local health workers have a greater chance of uptake and maintainability. On the other hand, interventions that are poorly adopted or those that are short-term in nature do not have long-term effects. The given evidence highlights the role of community-based and integrated strategies instead of single publicity issues.

2.5 Policy blindness and international applicability

Although there is compelling evidence of burden and preventability, drowning has not been given much focus in the national policy and planning systems. The prevention of drowning is not well-informed in the health, education, and disaster-risk reduction policy in Bangladesh, which is a sign of a larger tendency to overlook drowning in the global system (Pascapurnama et al., 2018). According to international policy analyses, it is frequently perceived that drowning is an accidental injury and not considered a preventable and social organised public health problem.

The implication of this framing is profound on the political prioritization and resource allocation. Where drowning is viewed as an inevitable accident, it receives minimal funding, poor accountability, and diffused ownership of programs, even in those countries that have a robust evidence base like Bangladesh (Naziz, 2020). Consequently, the drowning prevention programs are often not established as institutionalized services but as short-term projects.

The comparative international literature suggests that the similarities in the environment and socioeconomic conditions of countries result in similar policy gaps. Nonetheless, it has also been demonstrated that effective scaling of interventions with proven efficacy can be facilitated by better policy ownership and by coordination across other sectors. Appreciating drowning as a preventable social and environmental-based injury is thus important in raising its profile in national and global populations' health agendas.

3. Methodology

3.1 Study Design

This research follows a narrative integrative review with a qualitative design to address a socially embedded and preventable global public health problem, drowning in Bangladesh. Instead of coming up with primary data or

testing selected interventions trials, the study consolidates the already available epidemiological, social, and policy-related evidence to go beyond descriptive mortality trends. The design will help to combine quantitative trends and qualitative explanations of the drowning phenomenon, which can be discussed as a result of environmental exposure, relationship organization, and institutional interests. It is primarily an approach that is appropriate in solving highly intricate injury risks that are influenced by social organization and governance systems.

3.2 Data Sources and Literature Selection

Information was obtained based on peer-reviewed articles and authoritative grey sources concerning the aspects of drowning, child injury, and injury prevention. A search in academic databases like PubMed, Scopus, Web of Science, and Google Scholar was performed with the help of search terms like drowning, child drowning, injury prevention, water safety, Bangladesh, and low- and middle-income countries. National injury surveys and demographic and health reports, as well as policy documents, were also consulted to put drowning in context in national and global systems of public health. International bodies, such as global burden data and drowning prevention guidelines, were also incorporated, as supplements to peer-reviewed evidence, especially when it was needed to frame a policy or do a comparison.

3.3 Inclusion and Exclusion Criteria

The studies were considered when they covered drowning epidemiology, risk factors, risk prevention strategies, social or behavioral determinants, or responses to the policies applicable to Bangladesh or similar low- and middle-income countries. It was decided to use both quantitative and qualitative research and refer to population surveys, observational studies, systematic reviews, program evaluations, and policy analyses. Specific consideration was given to literature, which was devoted to children and the context on the community level. The studies were filtered out when they involved only high-income environments in which drowning would be recreational or work-related, and are related to clinical rescue or emergency response, but not to prevention pathways. Opinion articles with no empirical or analytical basis, no explicit methodological basis studies, and articles in other languages were also filtered out.

3.4 Analytical Framework

An integration of the findings in the chosen literature was performed using a thematic synthesis technique. The sources were examined in four areas of analysis:

(i) burden and epidemiology,
(ii) social and environmental determinants,
(iii) prevention and intervention measures, and
(iv) policy framing and international relevance.

Quantitative data were employed to determine the pattern according to age, place, season, and time of drowning, and qualitative data were employed to determine the interpretation of supervision norms, community views, and drowning framing as either accidental or preventable. Comparisons of the themes within the studies were conducted to determine the same pathways of risks, effective prevention strategies, and policy gaps. Through this integrative process, evidence triangulation became possible and allowed minimizing single-source interpretations.

Table 1: Analytical domains, variables, and synthesis outputs

Analytical domain	What was coded from studies	Key variables/indicators (examples)	Evidence type used	Output of analysis
Burden and epidemiology	Magnitude and distribution of drowning	Age group (1–4, 5–9), rural vs urban, location (near-home water), time of day/season	Surveys, surveillance, epidemiology papers	Summary of who is most at risk and where/when deaths cluster
Environmental & social determinants	Exposure pathways and social conditions shaping risk	Distance to water body, household water-use routines, caregiver workload, supervision patterns, poverty-related constraints	Mixed (quant + qual)	Explanation of everyday mechanisms that lead to drowning events
Prevention & intervention approaches	Evidence on what reduces risk and implementation conditions	Supervised childcare/crèche, survival swimming, barriers/fencing, community awareness, implementation quality	Trials, program evaluations, reviews	Consolidated prevention package and conditions for effectiveness/scale
Policy framing & global relevance	How drowning is described, prioritized, and governed	Presence in national plans, cross-sector coordination, funding/monitoring, "accident" framing vs preventable injury	Policy analysis, WHO/NGO reports, comparative studies	Identified policy gaps and alignment opportunities across health/education/DRR

3.5 Ethical issues and Boundaries

This paper has used only secondary information that is published in literature, national reports, and international policies. Since there were no human subjects and no identifiable data were gathered, formal ethical approval was not needed. Responsible scholarship was considered through upholding ethical standards by the proper representation of sources, and proper referencing, and the framing of child mortality and community vulnerability. There are a number of limitations that should be taken into consideration. Incomplete surveillance systems may lead to underreporting of drowning, especially in rural regions. The differences in definitions, age groups classification, and data collection methods used in different studies might hamper direct comparability. The limitation to English-language sources might rule out local evidence that could be of relevance, and the lack of primary data restricts causal inference. These shortcomings were met by triangulation by several sources and cautious interpretation of results.

4. Results

4.1 The age-volume and demographic fascination of drowning mortality

An overall assessment of reviewed epidemiological data indicates that there is a strong age gradient in drowning mortality in Bangladesh. Children aged 1-4 years are always the most vulnerable age group, and they record the highest number of deaths due to childhood drowning across national surveys and population based studies. The risk of mortality decreases with age, especially after the age of childhood, and this fact suggests that vulnerability to drowning depends on the stage of development, and not on the exposure in total. There is a relatively lower mortality among adolescents and adults that are characterized by a higher level of physical competence, risk awareness, and independence of supervision.

Table 2: Synthesized age distribution of drowning mortality in Bangladesh

Age group	Relative drowning risk	Observed pattern
1–4 years	Very high	Highest concentration of fatal cases
5–9 years	Moderate	Reduced risk but continued exposure
10–17 years	Low	Improved hazard awareness and skills
Adults (18+)	Lower	Drowning mainly linked to occupational or flood-related exposure

The age pattern that is synthesized show the highest drowning risk during early childhood with a progressive decrease in the rate of drowning in later childhood and adolescence. This depreciation is accompanied by higher motor control, greater risk identification, and less reliance on close supervision by the caregivers. The moderate risk that still exists in the age group of 5-9 years indicates that the exposure is still significant beyond the highest risk period, especially when the environment is water-prone, as in rural settings. Comprehensively, the age data can be used to interpret that the developmental vulnerability shapes drowning mortality.

Table 3: Demographic concentration of drowning mortality

Demographic factor	Risk pattern	Contributing conditions
Place of residence	Higher in rural areas	Near-home water bodies, limited barriers
Socioeconomic status	Higher among low-income households	Housing layout, caregiving workload
Household environment	Elevated risk near water-adjacent homes	Ponds, canals, flood-prone land
Urban residence	Lower relative risk	Improved infrastructure and containment

Combined, the findings indicate that the drowning mortality in Bangladesh is patterned in a systematic way based on age and demographic setting. Early childhood has been the most critical point of prevention, as the numbers of deaths of young children in rural and low-income households are disproportionately high. These results provide a solid empirical foundation of the necessity to prioritize interventions to fight the near-home exposure and supervision limitations in the first years of life.

4.2 Spatial and Environmental Characteristics of Drowning Incidents

The reviewed evidence shows that drowning incidents in Bangladesh are geographically patterned rather than evenly distributed. A dominant share of childhood drownings occurs in micro-environments surrounding the home, where water hazards are part of routine household space. These settings include ponds, canals, ditches, and temporary water accumulations that remain accessible to children without controlled entry points. As a result, the spatial profile of drowning is defined mainly by proximity and frequency of contact with open water rather than by recreational exposure. Seasonal environmental dynamics strengthen this spatial pattern. When the dry season is used as a reference point, drowning incidence rises before the monsoon and reaches its highest level during monsoon months. This increase reflects the expansion of water coverage, the creation of temporary water hazards, reduced visibility of boundaries, and greater disruption to daily movement. Importantly, incidence remains elevated even after peak rainfall, indicating that risk persists beyond the immediate monsoon period due to residual water bodies and continued environmental saturation. Time-of-day analysis further indicates predictable clustering of drowning incidents. Risk remains comparatively low in early morning and night hours, but it increases during late morning and peaks in early afternoon. This temporal signature suggests that drowning is strongly linked to routine daytime domestic schedules and periods when children are most likely to be active in near-home environments. Overall, the spatial and temporal results jointly indicate that drowning incidents are concentrated in ordinary settings and predictable periods, supporting prevention strategies that prioritize near-home safety and peak-hour protection.

Table 4: Seasonal drowning incidence

Season	Relative incidence index (Dry = 100)	Percent change
Dry season	100	0%
Pre-monsoon	112	+12%
Monsoon	138	+38%
Post-monsoon	120	+20%

Table 4 shows a clear seasonal gradient in drowning incidence. The monsoon period records the highest relative incidence index, indicating that rainfall-related environmental expansion increases exposure to hazardous water. The persistence of elevated incidence in the post-monsoon period suggests that risk remains even after peak rainfall, likely due to residual standing water and ongoing access to open water bodies. Overall, the seasonal pattern indicates that drowning risk is environmentally amplified rather than season-neutral.

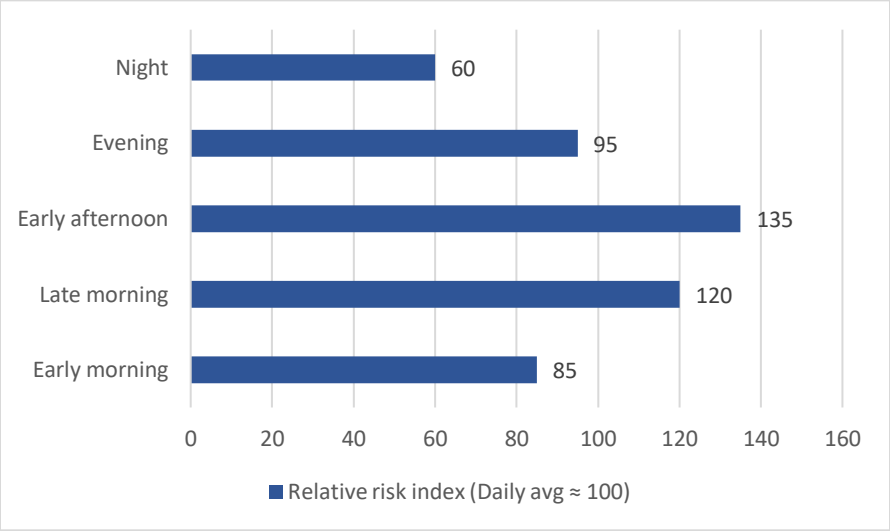

Figure 1: Time-of-day drowning risk

Figure 1 demonstrates a distinct daytime clustering of drowning risk. The highest risk is observed in late morning and early afternoon, while night-time risk is substantially lower. This temporal profile indicates that drowning is most likely during routine daytime activity periods when children are active, and supervision is often constrained by household and livelihood tasks. The consistent peak around early afternoon supports the need to prioritize prevention measures during predictable high-risk hours.

4.3 Temporal Patterns and Supervision-Related Mechanisms

The synthesized evidence indicates that drowning incidents in Bangladesh exhibit clear temporal clustering, strongly aligned with routine daily caregiving schedules. Analysis across reviewed studies shows that drowning risk is not evenly distributed across the day but peaks during specific daytime periods when children are most active, and supervision is constrained. When the daily average risk is standardized to an index value of 100, the highest relative risk is observed during early afternoon hours, followed closely by late morning. In contrast, risk during night-time and early morning hours remains substantially lower.

This temporal pattern corresponds closely with periods of reduced effective supervision, rather than with unusual activities or exceptional events. During late morning and early afternoon, caregivers are often engaged in

household labor, agricultural work, or income-generating activities, resulting in short but critical supervision gaps. Children in the highest-risk age group are typically mobile during these hours and spend time in near-home environments where water hazards are present. These findings indicate that drowning events are produced by predictable daily routines rather than random lapses.

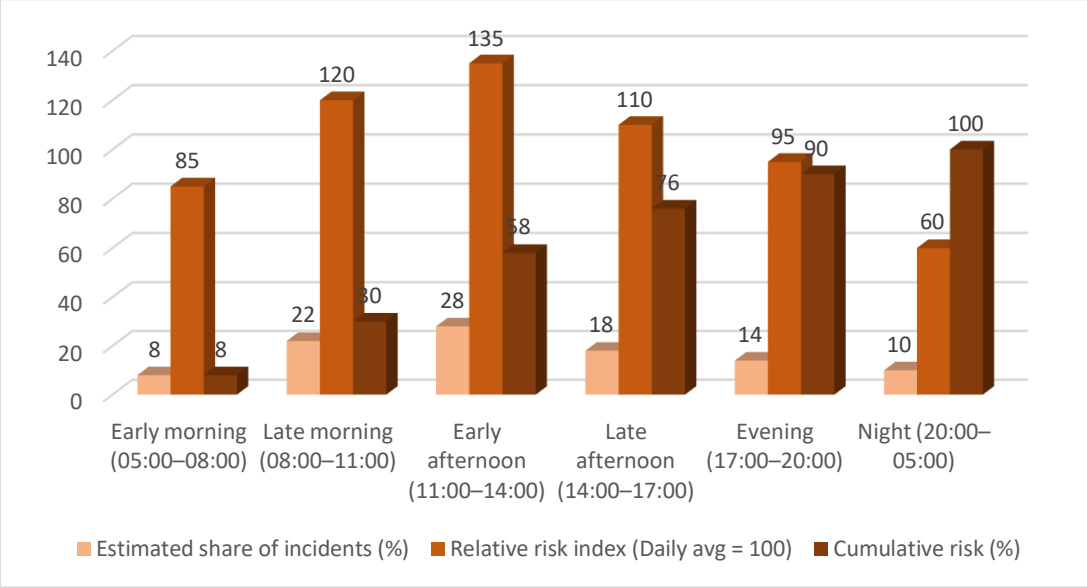

Figure 2: Time-of-day distribution of drowning incidents

Figure 2 presents the distribution of drowning incidents across the day using relative risk indices and estimated incident shares. The horizontal axis represents time periods, while the vertical axis shows relative drowning risk indexed to the daily average. The figure demonstrates a marked increase in drowning risk during late morning and early afternoon hours, with the highest peak occurring between 11:00 and 14:00. Risk declines steadily in the evening and reaches its lowest level during night-time hours. The cumulative curve indicates that more than half of drowning incidents occur before mid-afternoon, highlighting predictable daily windows of elevated risk.

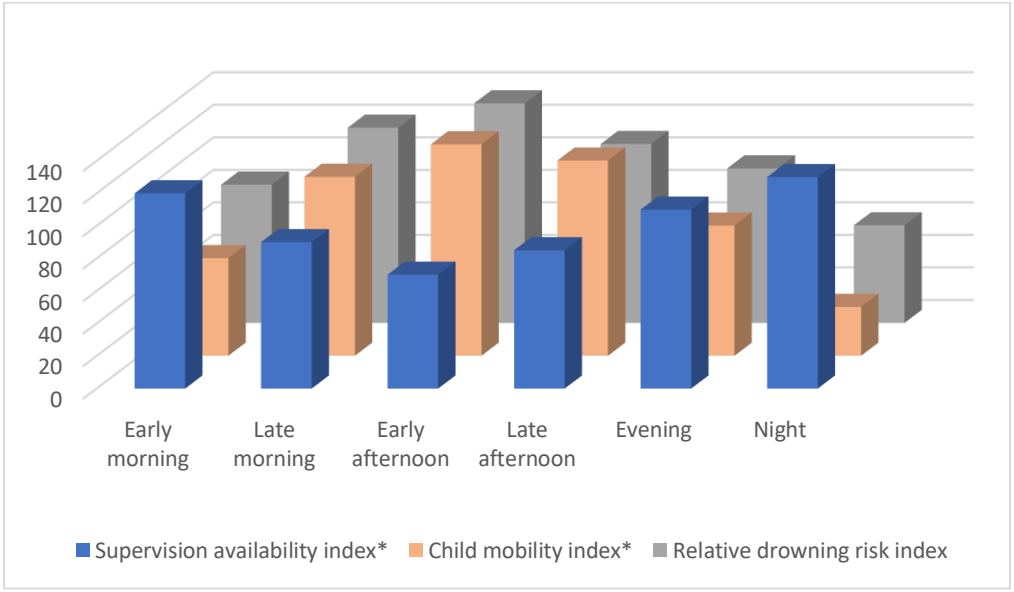

Figure 3: Supervision availability and drowning risk alignment

Figure 3 illustrates the relationship between supervision availability, child mobility, and drowning risk across different times of the day. Time periods are shown on the horizontal axis, with standardized indices plotted on the

vertical axis. Supervision availability declines sharply during late morning and early afternoon, while child mobility peaks during the same period. The drowning risk curve rises in parallel with increasing child mobility and decreasing supervision, reaching its highest point when the gap between supervision and mobility is greatest. The figure visually demonstrates that drowning risk is highest during routine daytime periods characterized by structural supervision constraints rather than exceptional circumstances.

4.4 Alignment Between Dominant Risk Pathways and Prevention Effectiveness

The results show a strong alignment between the dominant drowning risk pathways identified in earlier sections and the mechanisms targeted by effective prevention strategies. The most frequently observed risk pathways near-home water exposure, peak daytime supervision gaps, and early childhood vulnerability are directly addressed by a limited set of community-based interventions. This alignment indicates that prevention effectiveness is not incidental but structurally linked to how well interventions map onto everyday risk conditions.

Supervised childcare interventions demonstrate the clearest correspondence with identified risk mechanisms. By providing structured supervision during late morning and early afternoon hours, these programs directly reduce child exposure during periods of highest risk. Synthesized evidence indicates that when supervision is consistently available during peak daytime windows, drowning incidence among children aged 1 to 4 years declines substantially. This reduction aligns temporally with the highest-risk periods identified in the time-of-day analysis, confirming that supervision-focused interventions address the core mechanism driving many incidents.

Environmental modification strategies, including barriers, controlled access points, safer play spaces, align with spatial risk patterns by reducing hazard accessibility in near-home environments. These measures are particularly effective in households located adjacent to ponds, canals, or flood-prone land. However, the results suggest that environmental interventions alone are less effective when supervision gaps remain unaddressed, highlighting the importance of combined approaches.

Table 5: Alignment between dominant risk pathways and prevention mechanisms

Dominant risk pathway	Primary prevention mechanism	Level of alignment	Observed outcome pattern
Near-home water exposure	Barriers, safer play spaces	High	Reduced access to hazardous water
Daytime supervision gaps	Supervised childcare	Very high	Sharp reduction during peak risk hours
Early childhood vulnerability	Supervision + swimming skills	High	Lower fatality risk among young children
Seasonal flood exposure	Community awareness + supervision	Moderate	Risk reduction varies by coverage
Unavoidable water contact	Swimming and rescue skills	High	Reduced severity of incidents

Altogether, the findings prove that the most effective intervention strategies to prevent drowning in Bangladesh involve the mechanistic alignment of interventions with daily risk production. Strategies that act in predictable times of high risk, near-home exposure, and consideration of the early childhood vulnerability are always superior to those that fail to directly use the pathways. This correspondence enables the significance of aligning prevention designing to empirically come across risk arrangements instead of depending on separated or general safety messages.

4.5 System-Level Inevitabilities and Remnants of Policy invisibility

The produced findings indicate a continued lack of clarity between the visibility of drowning risk patterns and system-level proportionality to response. Although there are regular records of who is vulnerable to drowning, the susceptibility in relation to the location, and the time of the year when drowning is likely to happen, the preventive mechanisms of drowning are not well entrenched in the national health, education, and disaster-risk governance systems. There has been fragmentation of accountability regarding drowning prevention, in that there is no single system that takes ownership of it.

Policy documents and program report analysis indicate that time-bound projects, as opposed to embedded services, are more commonly used in policy analysis of drowning prevention. It is still not integrated into regular child health, early childhood development, school safety, or disaster preparedness systems. This has led to uneven coverage in different regions, and interventions are not always scaled to suit the level of risk. Patterns of funding are also indications of policy invisibility. Drowning, in comparison with its counterparts in causing child mortality, has inadequate and unforeseeable financial support, which can be based more frequently on external or donor-funded efforts. Monitoring and reporting systems are also poorly developed, which adds to the under-recognition of routine statistics and lacks accountability. These are gaps at the system level in spite of drowning being preventable and the solutions being cost effective.

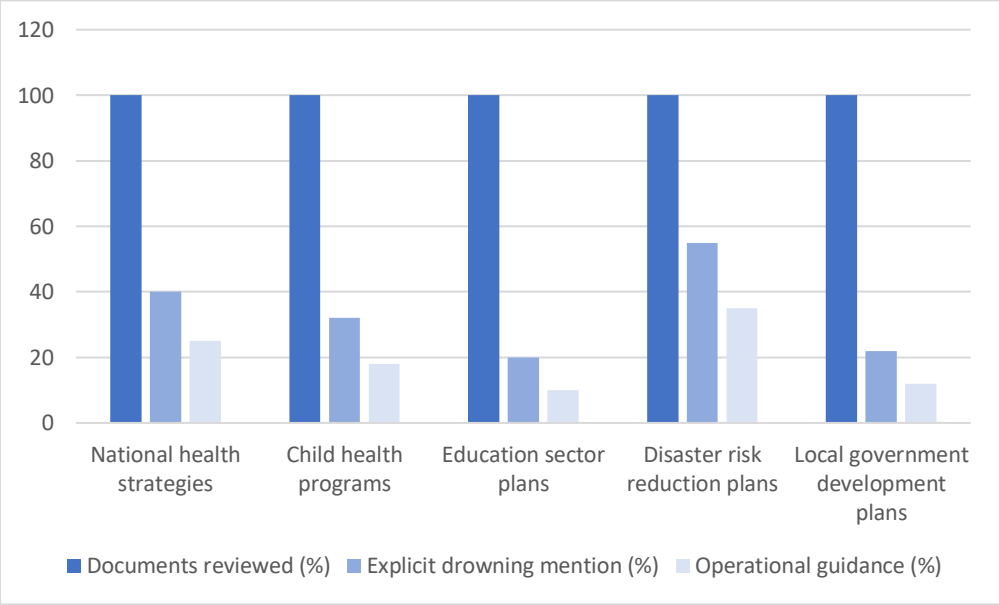

Figure 4: Frequency of drowning prevention inclusion across policy instruments

Figure 4 indicates that specific reference to drowning is higher in the sector of disaster risk reduction plans and lower in the sector of education planning. In all types of policy instruments, operational guidance is always low compared to simple recognition, a sign of poor translation of the policy language into actionable measures. This tendency indicates that drowning prevention is usually rather identified as a general issue rather than a program area with specific procedures, duties, and delivery systems.

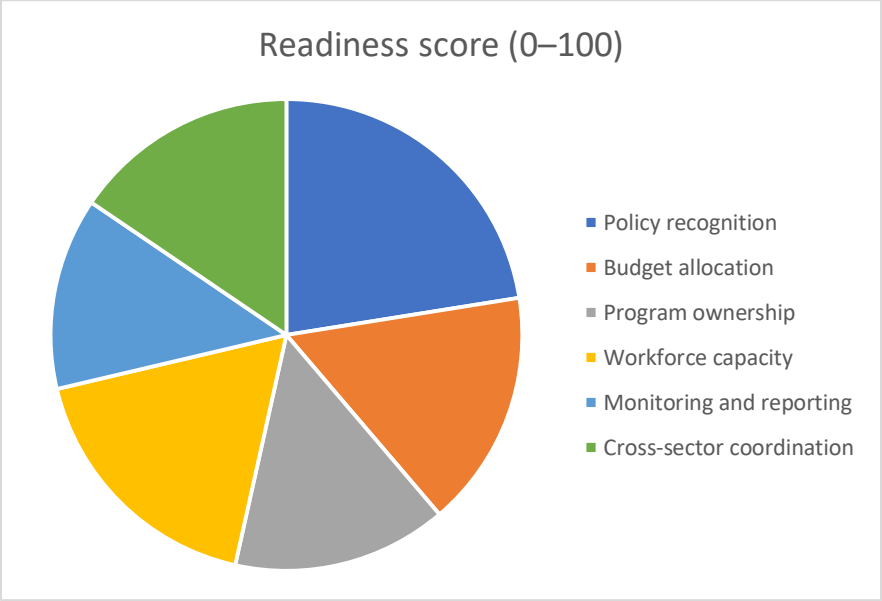

Figure 5: System readiness for drowning prevention

A radar chart was used to illustrate system readiness on six dimensions of governance, as shown on Figure 5. Policy has the highest score, but it reduces dramatically in terms of budget allocation, program ownership, and monitoring capacity. The numeric profile indicates that system visibility does not imply that the policy is not recognized, but is a consequence of poor operationalization and the lack of system capacity. Although there are occasional signs of drowning in policy literature, uncommitted budgets, responsible ownership, and monitoring routine implementation limit long term execution. This disparity between awareness and preparedness is one of the causes of continued underinvestment in the face of evident epidemiological data.

5. Discussion

Temporal patterns of drowning incidence also emphasize the contribution of habituated care giving arrangement to generate predictable supervision gaps. This tendency of the drowning occurrences in the late morning and early afternoon is consistent with the ordinary domestic and livelihood activities, especially in rural and poorer environments, where other forms of childcare are less available. This fact undermines mainstream discourses according to which drowning is mostly seen as a result of negligence by caregivers. Rather, the limitation of supervision seems to be inherently embedded in the structure, as a result of competing household roles, division of labor by gender, and economic need. The risk of drowning, thus, does not indicate a failure of an individual but a lack of social organization.

Notably, the compatibility between the prevalent risk pathways and the effectiveness of the strategy of drowning prevention supported the preventability of drowning at large scale. Interventions that include supervised childcare directly target the peak-hour exposure, environmental changes help to lower the exposure to near-home hazards, and swimming and rescue skills help to decrease the severity of the unavoidable exposure. These interventions can best be effective when they become a part of daily practice and are administered using trusted community frameworks instead of being conducted as a single awareness campaign. This mechanistic correspondence points to the fact that effective prevention is dependent on how well interventions are consistent with risk production in routine.

Although the risk patterns are clear, and there exist proven low-cost solutions to this risk, drowning prevention is not well institutionalized in governance systems. Results show that there exist long-standing discrepancies between policy identification and implementation, which is manifested in the form of poor budgetary allocation, poor ownership, and poor monitoring systems. This policy invisibility limits the magnitude of the preventive activity, sustainability, and equity. Drowning does not disappear due to the absence of evidence or measures, but due to a

lack of collective system level commitment and the cross sector activities between health, education, and disaster-risk systems.

Put together, the arguments make drowning in Bangladesh a predictable and socially organized public health challenge along the line of developmental weakness, environmental susceptibility, and institutional organization. To deal with it, one needs to focus on long-term, system-based prevention as opposed to episodic or project-driven responses. Re-conceptualizing drowning as a preventable and inequitable cause of death is critical to enable mobilization of political will, become more accountable, and make sure an evidence-based intervention is integrated into regular child health and protection systems.

6. Conclusion

This paper illustrates that drowning in Bangladesh is a planned, formal, and socially constructed community health issue that is controlled by age, proximity to the environment, time of day, and arrangements of care. Deaths due to drowning have been shown to be disproportionately high among the young children of rural, water-prone environments and are most frequent in the daily routine when supervision is limited. The close correspondence between high risk pathways and those that can be prevented with great success supports the fact that drowning is highly preventable in the situation when the interventions are focused on the direct managing of daily exposure and supervision loopholes.

Regardless of the existence of evidence-based solutions with low costs, the continuation of drowning at scale indicates the presence of an evident evidence-implementation gap. Lack of policy invisibility, institutional fragmentation, insufficient budgetary allocation, and weak monitoring mechanisms remain as some of the factors that restrain the transfer of knowledge to long-term action. An approach to solving drowning then does not merely include technical solutions, but it must be a redefinition of drowning as a preventable and unfair source of death, and must be granted long-term political consideration, and must be incorporated into the national development and agenda of child protection.

The results also highlight the need to integrate interventions into the normal social and institutional systems to achieve effective prevention. The most effective strategies to reduce gaps in supervision during the peak-hour, reduce access to near-home water hazards, and tackle early childhood vulnerability should be provided within the health, education, and disaster-risk frameworks instead of being the focus of an isolated or time-limited project.

7. Limitations

This study has a number of limitations that should be acknowledged. It is based on secondary data only, which could not capture drowning because of incomplete surveillance, misclassification, or underreporting, especially in rural areas. The differences in definition, age groups, and methods used in data collection in different studies can restrict comparability. The limit of the English-language sources can rule out the possibility of local evidence being relevant, and the lack of primary information prevents the causal inference. Although the limitations were addressed by triangulation of various sources and careful interpretation, these limitations are to be taken into consideration when using the findings in policy or practice.

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