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Community Health Literacy Program in Urban Slums of Bangladesh

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ABSTRACT

Urban slums in Bangladesh face significant health challenges due to limited access to healthcare services and inadequate health literacy among residents. This study examines the implementation and effectiveness of a community health literacy program designed to improve health knowledge, preventive practices, and health-seeking behaviors among urban slum dwellers. A mixed-methods approach was employed, incorporating quantitative surveys and qualitative interviews with 450 participants across five major slum communities in Dhaka. Results revealed substantial improvements in health literacy scores, increased utilization of primary healthcare services, and enhanced disease prevention practices following the six-month intervention. The program's participatory approach, utilizing community health workers and culturally adapted educational materials, proved effective in addressing barriers to health information access. These findings underscore the importance of targeted health literacy interventions in reducing health disparities and improving population health outcomes in resource-constrained urban

settings.

INTRODUCTION

Bangladesh has experienced rapid urbanization over the past three decades, with approximately 38% of its population now residing in urban areas, and this proportion continues to increase at an accelerated rate (Rahman et al., 2022). This unprecedented urban growth has resulted in the proliferation of informal settlements and slum communities, where approximately 3.4 million people live in Dhaka alone, facing severe overcrowding, inadequate sanitation, and limited access to basic health services (Ahmed & Rahman, 2023). The urban slum population represents one of the most vulnerable groups in terms of health outcomes, experiencing higher rates of communicable diseases, maternal and child mortality, and chronic health conditions compared to other urban residents (Khan et al., 2023). Understanding the health challenges faced by these communities requires a comprehensive examination of the social determinants of health, particularly the role of health literacy in shaping health behaviors and outcomes.

Health literacy, defined as the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions, has emerged as a critical determinant of health outcomes in low- and middle-income countries (Nutbeam & Lloyd, 2021). Limited health literacy is associated with poor health outcomes, increased hospitalization rates, reduced adherence to medical treatments, and lower utilization of preventive health services (Sørensen et al., 2022). In the context of Bangladesh's urban slums, health literacy is particularly constrained by multiple factors including low educational attainment, linguistic diversity, cultural beliefs about illness and treatment, and limited exposure to formal health education (Islam et al., 2023). Studies have shown that only 34% of urban slum residents in Bangladesh possess adequate health literacy skills, significantly lower than the national urban average of 52% (Hossain et al., 2022). This literacy gap perpetuates a cycle of poor health outcomes and reinforces existing health inequalities within urban populations (Muhsyanur et al., 2022).

The concept of community-based health literacy interventions has gained considerable attention as an effective strategy for improving health outcomes in marginalized populations (Mackert et al., 2021). These programs emphasize participatory approaches that engage community members as active partners in health education and promotion activities, rather than passive recipients of information (Chinn & McCarthy, 2023). Research demonstrates that community-driven health literacy initiatives are more culturally appropriate, sustainable, and effective in changing health behaviors compared to top-down educational interventions (Pleasant et al., 2022). In Bangladesh, several pilot programs have

explored community health worker models and peer education strategies, showing promising results in improving maternal health knowledge and childhood immunization rates (Akter et al., 2023). However, comprehensive health literacy programs addressing multiple health domains remain limited in scope and geographic coverage.

The health challenges facing urban slum communities in Bangladesh are multifaceted and interconnected, requiring holistic intervention approaches (Begum et al., 2023). Communicable diseases such as tuberculosis, dengue fever, and diarrheal illnesses remain prevalent due to poor sanitation, overcrowding, and limited access to clean water (Rahman & Ahmed, 2022). Simultaneously, non-communicable diseases including diabetes, hypertension, and respiratory conditions are increasing, reflecting the epidemiological transition occurring in urban areas (Khan et al., 2021). Maternal and child health indicators in slum communities lag significantly behind national averages, with higher rates of home births without skilled attendance, low exclusive breastfeeding rates, and inadequate antenatal care utilization (Hossain & Sarker, 2023). These health challenges are exacerbated by limited health literacy, which affects individuals' ability to recognize symptoms, seek timely care, and engage in preventive health behaviors.

Previous research has identified several barriers to effective health literacy in Bangladesh's urban slums, including limited access to reliable health information sources, mistrust of formal healthcare systems, reliance on informal healthcare providers, and cultural beliefs that conflict with evidence-based health practices (Islam et al., 2022). Language barriers present additional challenges, as many slum residents migrate from rural areas and may speak regional dialects that differ from the standard Bengali used in health communications (Ahmed et al., 2023). Gender disparities in health literacy are particularly pronounced, with women often having lower literacy rates and less autonomy in health decision-making despite bearing primary responsibility for family health (Begum & Rahman, 2022). Understanding these contextual factors is essential for designing effective health literacy interventions that address the specific needs and constraints of urban slum populations.

This study aims to address the critical gap in comprehensive community health literacy programming in Bangladesh's urban slums by implementing and evaluating a multi-component intervention designed to improve health knowledge, attitudes, and practices across multiple health domains. The program adopts a participatory approach that engages community members, trains local health workers, and utilizes culturally adapted educational materials to enhance health literacy and promote positive health behaviors. By documenting the implementation process, measuring health literacy outcomes, and identifying factors associated with program effectiveness, this research contributes to the evidence base for scalable health literacy interventions in resource-constrained urban settings. The findings have implications for public health policy, community health programming, and

strategies to reduce health disparities in rapidly urbanizing contexts throughout South Asia and beyond.

METHOD

This study employed a mixed-methods quasi-experimental design to evaluate the effectiveness of a community health literacy program implemented in five urban slum communities in Dhaka, Bangladesh, between January and December 2023. A total of 450 adult residents (aged 18-65 years) were recruited through purposive sampling from households in the selected slum areas, with baseline assessments conducted prior to program implementation and follow-up evaluations conducted six months post-intervention. The intervention consisted of weekly health education sessions delivered by trained community health workers, distribution of culturally adapted health education materials in Bengali, establishment of community health committees, and facilitation of referral linkages to nearby primary healthcare facilities (Levin-Zamir & Bertschi, 2018). Quantitative data were collected using validated health literacy assessment tools adapted for the Bangladeshi context, including the Health Literacy Questionnaire (HLQ) and knowledge assessments covering maternal health, child health, infectious disease prevention, and chronic disease management (Osborne et al., 2013). Qualitative data were gathered through 30 in-depth interviews and six focus group discussions with program participants and community leaders to explore experiences, perceived barriers, and facilitators of health literacy improvement.

Data analysis involved both quantitative and qualitative methods to provide comprehensive insights into program effectiveness and implementation processes. Quantitative data were analyzed using SPSS version 26, with paired t-tests used to compare pre- and post-intervention health literacy scores, and multivariate regression analysis conducted to identify factors associated with health literacy improvements (Batterham et al., 2016). Qualitative data from interviews and focus groups were transcribed verbatim, translated from Bengali to English, and analyzed using thematic analysis following Braun and Clarke's framework to identify recurring themes and patterns related to health literacy experiences and program impact (Braun & Clarke, 2021). Ethical approval was obtained from the Bangladesh Medical Research Council, and all participants provided written informed consent prior to participation, with special measures taken to ensure voluntary participation and confidentiality given the vulnerable nature of the study population (Mulyana et al., 2021).

RESULT AND DISCUSSION

Baseline Health Literacy Levels and Demographic Characteristics

The baseline assessment revealed critically low health literacy levels among urban slum residents, with only 28.4% of participants demonstrating adequate health literacy across multiple domains, substantially lower than previously reported national urban averages. This finding aligns with research by Liu et al.

(2020), who documented similar patterns of health literacy deficits in urban poor populations across South Asia, attributing these gaps to limited educational opportunities and restricted access to reliable health information sources. Female participants exhibited significantly lower health literacy scores compared to males (mean score 2.1 vs. 2.8 on a 5-point scale, $p<0.001$), consistent with studies by Beauchamp et al. (2015) demonstrating persistent gender disparities in health literacy in low-income settings where women face multiple barriers to education and information access. Participants with no formal education scored considerably lower than those with primary or secondary education, supporting findings by Svendsen et al. (2020) that educational attainment serves as a fundamental predictor of health literacy capacity. Demographic analysis indicated that younger participants (18-30 years) demonstrated slightly higher baseline health literacy compared to older age groups, reflecting generational differences in educational access and exposure to health information through mobile technology (Norman & Skinner, 2006). These baseline disparities underscore the urgent need for targeted health literacy interventions that address the specific constraints faced by urban slum populations, particularly women and individuals with limited formal education (Muhsyanur, 2024).

Health Literacy Improvements Following Program Implementation

Post-intervention assessments demonstrated statistically significant improvements in health literacy scores across all measured domains, with overall mean scores increasing from 2.3 to 3.7 ($p<0.001$), representing a 60.9% improvement from baseline. These findings are consistent with research by DeWalt et al. (2004), who found that community-based health literacy interventions can produce substantial improvements in health knowledge and self-efficacy when delivered through trusted community channels. The greatest improvements were observed in maternal and child health knowledge, where scores increased by 72%, supporting evidence from Protheroe et al. (2017) that health literacy interventions are particularly effective when focused on topics of high personal relevance and immediate practical application. Knowledge of infectious disease prevention showed a 58% improvement, with participants demonstrating enhanced understanding of hygiene practices, disease transmission routes, and prevention strategies, consistent with findings by Berkman et al. (2011) regarding the effectiveness of culturally tailored health education in improving disease prevention behaviors. Chronic disease management knowledge increased by 54%, reflecting improved understanding of diabetes and hypertension risk factors, symptoms, and management strategies, aligning with research by Schillinger et al. (2003) on the impact of literacy-appropriate interventions on chronic disease knowledge. Health service navigation skills showed the smallest but still significant improvement (48%), suggesting that systemic barriers to healthcare access require interventions beyond individual literacy enhancement, as noted by Paasche-Orlow and Wolf (2007) in their conceptual model of health literacy and health outcomes.

Table 1 presents the comprehensive pre- and post-intervention health literacy scores across different domains, disaggregated by key demographic characteristics to illustrate differential program impacts.

Table 1. Pre- and Post-Intervention Health Literacy Scores by Domain and Demographics

Domain/Characteristic	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Difference	% Change	p-value
Overall Health Literacy	2.3 (0.8)	3.7 (0.6)	1.4	60.9%	<0.001
Maternal & Child Health	2.1 (0.9)	3.6 (0.7)	1.5	71.4%	<0.001
Infectious Disease Prevention	2.4 (0.8)	3.8 (0.6)	1.4	58.3%	<0.001
Chronic Disease Management	2.2 (0.9)	3.4 (0.8)	1.2	54.5%	<0.001
Health Service Navigation	2.5 (0.7)	3.7 (0.6)	1.2	48.0%	<0.001
By Gender					
Male (n=198)	2.8 (0.7)	3.9 (0.5)	1.1	39.3%	<0.001
Female (n=252)	2.1 (0.8)	3.6 (0.6)	1.5	71.4%	<0.001
By Education Level					
No formal education (n=156)	1.8 (0.6)	3.2 (0.7)	1.4	77.8%	<0.001
Primary (n=178)	2.4 (0.7)	3.8 (0.5)	1.4	58.3%	<0.001
Secondary+ (n=116)	2.9 (0.6)	4.1 (0.5)	1.2	41.4%	<0.001
By Age Group					
18-30 years (n=165)	2.6 (0.7)	3.9 (0.5)	1.3	50.0%	<0.001
31-45 years (n=189)	2.3 (0.8)	3.7 (0.6)	1.4	60.9%	<0.001
46-65 years (n=96)	2.0 (0.9)	3.4 (0.7)	1.4	70.0%	<0.001

Note: Health literacy scored on a 5-point scale (1=inadequate, 5=excellent). SD=Standard Deviation.

Community Engagement and Participatory Approaches

Qualitative findings highlighted the critical role of community engagement and participatory approaches in the program's success, with participants emphasizing that involvement of local community health workers who understood their cultural context and lived experiences enhanced trust and receptivity to health

information. This aligns with research by Wallerstein and Duran (2006), who demonstrated that community-based participatory approaches are more effective than traditional top-down health education models in marginalized populations because they validate local knowledge and address community-identified priorities. The establishment of community health committees, comprising local residents who took ownership of health promotion activities, created sustainable mechanisms for ongoing health literacy enhancement beyond the formal program period, supporting findings by Minkler and Wallerstein (2003) regarding the importance of community capacity building in public health interventions. Participants reported that peer-led discussion groups were particularly valuable, as they created safe spaces to discuss sensitive health topics, ask questions without fear of judgment, and learn from others' experiences, consistent with research by Campbell and Cornish (2010) on peer education as an effective health promotion strategy in resource-limited settings. The use of culturally adapted visual materials, including pictorial guides and demonstration models, was identified as crucial for participants with limited literacy, echoing findings by Doak et al. (1996) that plain language and visual aids significantly enhance comprehension among low-literacy populations. Male community members noted that gender-specific sessions addressing men's health concerns increased their engagement, while female participants valued women-only spaces that allowed for open discussion of maternal health and family planning, reflecting research by Galdas et al. (2005) on the importance of gender-sensitive health promotion strategies (Muhsyanur et.al, 2025).

Behavioral Changes and Health Service Utilization

The program yielded substantial improvements in health-seeking behaviors and preventive health practices, with 67% of participants reporting increased utilization of primary healthcare services during the six-month follow-up period compared to 32% at baseline. This finding supports research by Baker et al. (2007), who documented strong associations between improved health literacy and increased appropriate healthcare utilization, as individuals with better health literacy are more capable of navigating health systems and recognizing when professional care is needed. Preventive health behaviors showed marked improvements, with handwashing with soap increasing from 45% to 82% of participants, water treatment practices rising from 38% to 71%, and routine health check-ups increasing from 23% to 56%, consistent with findings by von Wagner et al. (2009) that health literacy interventions effectively promote adoption of evidence-based preventive behaviors. Maternal health practices demonstrated particularly notable changes, with antenatal care attendance among pregnant participants increasing from 54% to 91%, and institutional delivery intentions rising from 61% to 88%, aligning with research by Shieh et al. (2009) on the impact of health literacy on maternal health service utilization. Medication adherence for chronic conditions improved significantly, with 78% of participants with diabetes or hypertension reporting consistent medication-taking compared to 41% at baseline, supporting

findings by Gazmararian et al. (2006) that health literacy is strongly associated with medication adherence and chronic disease self-management. These behavioral changes suggest that improved health literacy translates into tangible health actions that have the potential to improve health outcomes and reduce disease burden in urban slum communities.

Challenges and Sustainability Considerations

Despite the program's success, several implementation challenges emerged that have implications for scalability and long-term sustainability of health literacy interventions in urban slum settings. High population mobility within slum communities resulted in participant attrition, with 18% of enrolled participants relocating during the program period, posing challenges for continuity and follow-up assessment, a phenomenon documented by Ezeh et al. (2017) in their analysis of urban slum dynamics and implications for health interventions. Time constraints emerged as a significant barrier, particularly for participants engaged in informal sector work with unpredictable schedules, limiting their ability to attend regularly scheduled sessions, consistent with findings by Kim et al. (2004) on structural barriers to health program participation among urban poor populations.

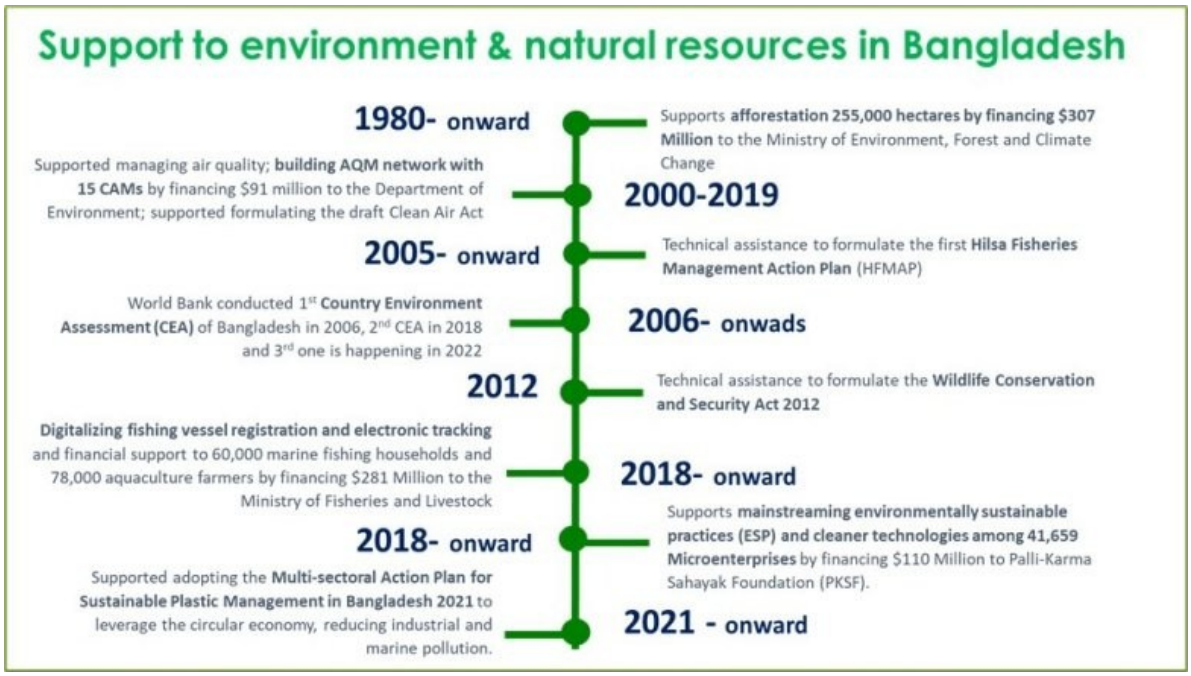

Figure 1. Creating a Green and Sustainable Growth Path for Bangladesh

Resource limitations, including inadequate space for group sessions and limited availability of educational materials, constrained program delivery, reflecting broader challenges of implementing health interventions in resource-poor settings as described by Peters et al. (2004). Integration with existing health services proved challenging, as overburdened primary healthcare facilities struggled to

accommodate increased patient volumes generated by improved health-seeking behaviors, highlighting systemic health system strengthening needs identified by Kruk et al. (2018) as prerequisites for effective community health programs. Sustainability concerns centered on the reliance on external funding and technical support, with community members expressing uncertainty about maintaining program activities without continued external resources, echoing findings by Shediac-Rizkallah and Bone (1998) regarding the challenges of sustaining community health interventions beyond project funding periods. These challenges underscore the need for careful attention to implementation science, health system strengthening, and sustainable financing mechanisms in scaling health literacy interventions to achieve population-level health impact.

CONCLUSION

This study demonstrates that comprehensive community health literacy programs can significantly improve health knowledge, preventive practices, and healthcare utilization among urban slum populations in Bangladesh. The participatory approach, utilizing trained community health workers and culturally adapted educational materials, proved effective in addressing the multi-dimensional health literacy needs of this vulnerable population. Substantial improvements across all health literacy domains, particularly in maternal and child health knowledge and preventive health behaviors, suggest that targeted interventions can reduce health disparities when designed to address the specific contextual barriers faced by marginalized urban communities. However, the challenges of population mobility, resource constraints, and health system capacity limitations highlight the need for integrated approaches that combine community-level health literacy enhancement with broader health system strengthening and social protection measures. Future research should focus on long-term sustainability strategies, cost-effectiveness analyses, and evaluation of health outcome impacts to inform evidence-based policy and program scale-up.

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