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Empowerment Beyond Education and Employment: Evidence from Highly Educated Women in Urban Bangladesh

Nusrat Jahan Sumi[1], Nazmun Naher[2], Md. Mominur Rahman[3]

Abstract

Despite higher education and formal employment, many women in Bangladesh remain hesitant to exercise decision-making authority, control their earnings, or assert personal choices in domestic and professional spheres. This study explores the empowerment dynamics of highly educated urban women employed in government organizations, addressing a critical gap in existing research that largely focuses on rural or less-educated populations. Guided by three objectives—examining whether education and employment translate into empowerment, identifying social, psychological, familial, and institutional constraints, and exploring strategies to enhance agency—the study adopts a mixed-methods approach. Quantitative data were collected from 63 women, and qualitative insights were obtained from 10 key informants with expertise in gender policy and institutional administration. Findings reveal that empowerment remains uneven despite formal achievements. Women exhibit autonomy in certain domains, such as household expenditures and healthcare decisions, yet patriarchal norms, low self-esteem, limited family support, and weak implementation of gender-sensitive policies continue to restrict decision-making power. Only 34.9–66.1% reported joint or independent authority in key household decisions, highlighting persistent structural and psychological barriers. The study emphasizes that meaningful empowerment requires a multi-level approach: fostering self-esteem, promoting family support, leveraging media to challenge gender stereotypes, and implementing robust gender-sensitive policies. By integrating individual, familial, and structural interventions, the research provides evidence-based guidance to transform formal educational and professional gains into substantive autonomy and decision-making power.

Keywords: Women's empowerment; patriarchy; gender equality; gender stereotypes; decision-making autonomy

1. Introduction

Despite attaining higher education and participating in formal employment, many women in Bangladesh remain hesitant to exercise decision-making authority, control their earnings, or assert personal choices in both domestic and professional spheres. They often lack confidence in claiming their rights and are frequently disregarded within families and workplaces alike. Women's empowerment continues to be constrained by deeply entrenched patriarchal social structures. Although education and formal employment are commonly assumed to

[1] Bangladesh Betar, Dhaka, Bangladesh. Email: nusratsumi28@gmail.com
[2]Bangladesh Institute of Governance and Management (BIGM), Dhaka, Bangladesh. E-mail: nazmun.naher@bigm.edu.bd (Corresponding author)
[3]Bangladesh Institute of Governance and Management (BIGM), Dhaka, Bangladesh. Email: mominur.rahman@bigm.edu.bd

automatically enhance empowerment, this assumption remains insufficiently examined within urban and institutional contexts (Buvinić & O'Donnell, 2019; Kabeer, 1999; Zimmerman, 2000).

This study focuses on highly educated urban women employed in government organizations in Dhaka, a socially influential yet understudied group. Many of these women belong to upper socio-economic or "elite" urban classes and are engaged in prestigious occupations or businesses, where financial necessity may not be the primary motivation for employment (Sogra, 1995). Despite their academic achievements and formal engagement in paid work, these women often encounter invisible social and cultural barriers that limit their empowerment, particularly in decision-making processes. Patriarchal family structures, restricted decision-making power, and deeply embedded gender norms continue to shape their lived experiences, creating a persistent contradiction between formal status and actual agency.

Existing literature highlights the "empowerment paradox," where access to resources such as education and employment does not automatically translate into agency (Sridevi, 2005; Soharwardi & Ahmad, 2020). Empowerment is increasingly understood as a dynamic, multidimensional process that encompasses economic, social, political, and psychological domains (Kabeer, 1999; Zimmerman, 2000). For highly educated urban women, empowerment extends beyond formal achievements to include the ability to make independent decisions, exercise mobility, and challenge entrenched societal stereotypes. Critical consciousness, self-efficacy, and the capacity to question internalized oppression are closely associated with empowerment (Bandura, 1997; Freire, 1970).

Patriarchal control, combined with internalized social expectations that prioritize caregiving and submissiveness, often undermines autonomy, even among economically independent and educated women. Women may be empowered in certain domains while remaining disempowered in others, highlighting the uneven and conditional nature of empowerment (Sridevi, 2005; Soharwardi & Ahmad, 2020). Psychological empowerment—particularly self-esteem and perceived control—mediates between structural opportunities and actual agency (Zimmerman, 2000). Therefore, understanding empowerment requires a multidimensional and context-sensitive approach (Costa et al., 2023; Richardson, 2018; Buvinić, 2017; Fox & Romero, 2017).

Although financial literacy is often promoted as a key driver of empowerment, evidence suggests that empowerment extends beyond economic competence, requiring psychological, familial, and structural support (Hung et al., 2012; Batool & Batool, 2018). Empirical evidence regarding the relationship between empowerment and decision-making autonomy remains mixed, particularly when it comes to urban professional women (Gupta & Roy, 2023; Mishra, 2014). Patriarchy, stereotyping, weak policy implementation, and limited family support continue to hinder women's ability to make independent decisions in the household and workplace (Crenshaw, 2013a, 2013b; Kandiyoti, 1988). These dynamics emphasize the necessity of intersectional analysis, acknowledging variation across class, age, religion, geography, and institutional position (Richardson, 2018). Even within similar educational or occupational categories, women may experience patriarchy differently, underscoring the need

for an intersectional understanding in urban elite contexts (Crenshaw, 2013a, 2013b; Kandiyoti, 1988).

While media is frequently cited as a tool for empowerment, existing discussions are often descriptive. Media representations are shaped by political and economic structures, and unequal digital access may reproduce gender inequalities (Colom, 2020; Narayana & Ahamad, 2016). Focused qualitative research on highly educated urban women remains limited, constraining understanding of how control, resistance, and self-perception intersect in shaping empowerment trajectories.

This study addresses these gaps by examining barriers and enablers of empowerment among highly educated women working in government organizations in Dhaka. It investigates socio-cultural and institutional constraints—including patriarchal norms, stereotypical thinking, limited family support, and weak gender-responsive policy implementation—that hinder empowerment. Decision-making autonomy is examined across key domains: household expenditure, children's education, healthcare, and personal mobility, alongside self-esteem and perceived empowerment.

By adopting a theoretically informed, intersectional approach, the study moves beyond descriptive accounts of patriarchy to analyze how empowerment is negotiated, constrained, and exercised within privileged yet gendered urban contexts. Findings aim to inform recommendations emphasizing individual agency, supportive family dynamics, and structural opportunities, as articulated by respondents and key informants. Despite higher education, formal employment, and relatively privileged family backgrounds—including educated and employed spouses—many women still lack control over financial management and decision-making, undermining self-esteem and confidence (Al-Qahtani et al., 2021). Empowered women can serve as role models, inspiring broader societal change and encouraging future generations to pursue meaningful empowerment.

2. Conceptual framework

This study is primarily grounded in Kabeer's (1999) empowerment framework, which conceptualizes empowerment as the process through which individuals acquire the capacity to make strategic life choices in contexts where such capacity was previously denied. While Kabeer's framework has been widely applied to rural, poor, or marginalized women, this study extends its analytical application to highly educated, urban women working in government service. In doing so, it addresses an important conceptual gap in the literature, where empowerment among this group is often presumed rather than empirically examined.

Kabeer's framework identifies three interrelated dimensions of empowerment: resources, agency, and achievements. In the context of this study, resources are reflected in women's access to higher education and formal employment; agency refers to their capacity to make and negotiate decisions related to household finances, health, mobility, and professional life; and achievements are understood as women's perceived sense of empowerment and realized outcomes of these choices. This structure allows the study to critically assess whether formal resources translate into substantive empowerment in everyday life.

In order to deepen the analysis of agency as an active, reflexive, and transformative process, the study integrates Psychological Empowerment Theory (Zimmerman, 2000) as well as Self-Efficacy Theory (Bandura, 1997). Both of these perspectives emphasize self-esteem, perceived control, and confidence as mediating mechanisms between structural opportunities and actual empowerment outcomes. In this study, self-esteem and self-efficacy are not treated merely as individual attributes but as socially shaped capacities that influence women's willingness and ability to negotiate power within households, workplaces, and institutions.

Further, drawing on Freire's (1970) concept of critical consciousness, empowerment is conceptualized as involving the ability to recognize, question, and challenge internalized gender norms and structural inequalities. This dimension enables the framework to move beyond surface-level indicators of empowerment and examine how highly educated women critically engage with, accommodate, or resist patriarchal expectations in their daily lives.

Complementing these agency-focused perspectives, Feminist Standpoint Theory (Harding, 2004) and Patriarchy Theory (Walby, 1990) provide important insights into the structural and institutional conditions shaping empowerment. Feminist Standpoint Theory underscores that knowledge is socially situated and that women's lived experiences—particularly those shaped by gendered power relations—offer crucial insight into how empowerment is constructed, constrained, and negotiated. This aligns with the study's qualitative orientation, which draws on women's narratives to capture context-specific expressions of empowerment.

Importantly, patriarchy is treated as a differentiated and intersectional system rather than a uniform structure. Drawing on intersectional feminist scholarship (Crenshaw, 2013a, 2013b; Kandiyoti, 1988), the framework recognizes that patriarchal constraints operate differently across class, age, religion, institutional position, and urban context. Even among highly educated urban women, experiences of empowerment and disempowerment vary, challenging the tendency in existing literature to treat this group as homogeneous.

The framework also incorporates a media and digital empowerment dimension to address gaps in prior research. While media is often portrayed as a neutral or inherently empowering tool, this study conceptualizes media as embedded within political–economic power structures that simultaneously enable and constrain women's agency (Gill & Gill, 2007). Digital media is further examined through the lens of digital inequality, recognizing that access, algorithmic visibility, and digital literacy shape empowerment outcomes unevenly across socio-economic groups (Colom, 2020). This perspective allows the study to analyze how media influences women's self-perception, aspirations, and social legitimacy rather than merely assessing representation.

Taken together, the conceptual framework positions empowerment as a multi-layered, relational, and context-specific process shaped by the interaction of structural resources, psychological agency, critical consciousness, patriarchal institutions, and mediated power. By integrating structural, psychological, and intersectional perspectives, the framework enables a deeper analytical understanding of why higher education and formal employment do not automatically translate into empowerment for highly educated urban women in Bangladesh (see Figure 1).

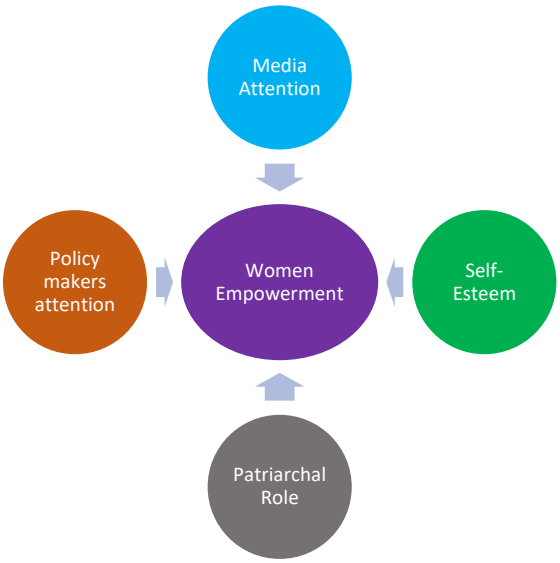


Figure 1: Conceptual framework of the study.

3. Method

3.1. Research Design

This study adopts a rigorously framed mixed-methods design to comprehensively investigate women's empowerment among highly educated government employees in Dhaka. A mixed-methods approach is justified by the multifaceted nature of empowerment, which requires both breadth and depth to capture individual experiences within broader socio-institutional frameworks. The design purposefully integrates quantitative and qualitative components, employing methodological triangulation to strengthen validity and provide a contextualized understanding of empowerment.

The quantitative component systematically measures women's decision-making autonomy, self-esteem, and perceived empowerment, acknowledging the multi-dimensionality of empowerment (economic, social, and psychological). Data were gathered through a structured questionnaire focusing on women's perspectives regarding their earning capacity, freedom to spend their earnings, and their ability to make decisions related to themselves, their children, and their families. Ten dimensions of empowerment were measured, informed by prior literature and the local context. Validated instruments, such as the Rosenberg Self-Esteem Scale and DHS women's empowerment modules, were adapted to the study's population.

Table 1: Women's empowerment dimensions for educated and employed women.

Dimensions	Descriptions	Measurement scale
Decision in family expenditure	Do you think you have the ability to make decisions regarding your family's expenditures?	Yes / No / Moderately capable / Joint decisions
Decision for children	Do you have the final say in selecting your child's educational institution?	Yes / No / Moderately capable / Joint decisions
Decision in health care	Do you think you are able to make decisions regarding your own healthcare and your child's healthcare?	Yes / No / Moderately capable / Joint decisions
Women's mobility	Do you have the freedom to go shopping alone? Do you decide whether to visit relatives? Are you able to travel for family, academic, or professional purposes?	Yes / No / Sometimes / Very often
Women's perception of stereotypical thinking	Do you believe that gender stereotypes limit women's empowerment?	Yes / No / Sometimes / Very often
Women's perception of the role of family members	Do you think that family members should play a positive role in promoting women's empowerment?	Yes / No / Sometimes / Very often

The qualitative component uses in-depth interviews with key informants to capture the structural, cultural, and policy-related factors that influence women's empowerment—factors often invisible in survey data. Key Informant Interviews (KII) and semi-structured interviews were conducted to explore why women, despite having financial and educational resources, may still experience limited decision-making autonomy, constrained self-esteem, and uneven empowerment. Themes included media influence, policy gaps, societal norms, family dynamics, and self-efficacy. Thematic analysis was applied to the qualitative data to generate rich insights complementing quantitative findings.

3.2. Data and sampling

Data collection involved two distinct but complementary samples, aligned with a mixed-methods approach. By targeting highly educated women employed in government organizations, this study examines a population often overlooked in empowerment research, providing insights into decision-making and autonomy within urban professional contexts.

Quantitative data were collected from 63 highly educated women, aged 25 to 49, working in various government organizations in Dhaka. While modest in size, this sample is appropriate for an exploratory study focusing on a specific urban professional demographic whose empowerment dynamics remain under-researched. Convenience sampling facilitated access to this population, which is essential for examining empowerment within urban institutional contexts.

Qualitative data were obtained from 10 key informants, purposively selected based on expertise in gender policy, institutional administration, and women's empowerment advocacy. This approach allowed for a deeper exploration of structural, cultural, and institutional factors that shape women's empowerment beyond individual-level experiences.

Ethical considerations—including informed consent, confidentiality, and voluntary participation—were strictly observed. Researcher reflexivity was maintained to account for positionality and potential influence on data interpretation.

By combining a targeted survey of women directly experiencing empowerment dynamics with expert insights, the study provides a multi-layered understanding of empowerment among highly educated urban women. This approach offers novel evidence of the paradox that education and employment do not automatically translate into agency, highlighting barriers at individual, familial, institutional, and societal levels. The findings provide evidence-based guidance for interventions aimed at enhancing decision-making autonomy and self-efficacy among urban professional women.

3.3. Analysis approach

Quantitative survey responses were analyzed using descriptive statistics and exploratory cross-tabulations to examine patterns of autonomy, mobility, and empowerment perceptions. Although the small sample precludes inferential statistical generalization, results provide rich, context-specific insights.

The qualitative data were analyzed using thematic analysis following Braun and Clarke's (2006) six-phase framework to structure and interpret recurring patterns. This method allowed systematic coding, theme development, and interpretation in line with the conceptual framework, ensuring that the analysis moves beyond descriptive illustration to generate different insights on structural and psychological determinants of empowerment.

The six-phase thematic analysis process included familiarization, initial coding, clustering codes into themes, reviewing and refining themes, defining final themes, and synthesizing findings for reporting. Codes were independently reviewed to minimize bias and triangulated with quantitative findings where applicable. This approach allowed the study to integrate structural, cultural, and psychological dimensions, moving beyond descriptive analysis to uncover nuanced barriers and enablers of empowerment in an urban, professional context.

Table 2: Thematic Analysis Process and Steps.

Analytical Process	Description of Steps
Familiarization with the data	Transcripts from KIIs and open-ended survey responses were repeatedly read to gain familiarity with participants' perspectives. Initial notes and reflections were recorded to capture recurring ideas and contextual meanings.
Generation of initial codes	Line-by-line open coding was conducted inductively, deriving codes directly from the data to capture key concepts related to women's empowerment, decision-making, and structural barriers.

Collation of codes	Similar and related codes were grouped through clustering, supported by multiple data excerpts. Redundant codes were merged for analytical clarity.
Theme development	Clustered codes were organized into broader themes via selective coding, focusing on underlying patterns and relationships across the dataset.
Review and refinement of themes	Themes were reviewed against the full dataset to ensure coherence, distinctiveness, and relevance to the study objectives. Necessary revisions were applied to finalize the thematic structure.
Reporting and interpretation	Final themes were interpreted in relation to the research objectives and existing literature, illustrated with representative quotations to enhance credibility and analytical depth.

The analysis involved careful reading and re-reading of interview transcripts. Codes were developed and grouped into categories based on similarities in participants' views related to the study objectives. These categories were then sorted and clustered into overarching themes and subthemes, with primary attention given to those reflecting the conceptual framework. Key themes focused on barriers hindering women's empowerment and strategies to overcome them, providing an in-depth understanding of both challenges and potential enablers.

4. Results and ~~Discussions~~Discussion

4.1 Quantitative findings

4.1.1 Survey demographic profile

The study's focus on mid-career, highly educated women allows a nuanced understanding of how intersecting factors such as age, education, income, and experience influence empowerment, a perspective rarely examined in prior research.

Table 3 presents the socio-demographic profile of the 63 respondents who participated in the quantitative survey. The majority of participants are aged 30–34 (28.6%), followed by 35–39 (23.8%) and 25–29 (22.2%), reflecting a relatively young and mid-career workforce. This age composition is relevant, as mid-career women often experience both increased professional autonomy and heightened household responsibilities, which can influence empowerment outcomes (Zimmerman, 2000).

In terms of education, most respondents hold a Master's degree (57.1%), while 34.9% have a Bachelor's degree and 7.9% possess MPhil or PhD qualifications. Higher education is expected to enhance agency and self-efficacy, contributing to decision-making capacity in both household and professional domains (Ang & Lai, 2023). All participants are married, which is significant in the context of patriarchal societies where household decision-making is often influenced by spousal and extended family dynamics (Yusof, 2015).

Regarding professional roles, most women occupy mid-level executive positions (44.4%), followed by officer/junior-level roles (38.1%), and a smaller portion in senior management or

director-level roles (17.5%). Professional designation can shape access to financial resources, mobility, and influence, which are central to empowerment (Albert & Escardíbul, 2017). Work experience is also diverse, with 36.5% having 5–10 years, 33.3% over 10 years, and 30.2% less than 5 years, potentially affecting confidence in decision-making within households and workplaces (Acharya et al., 2010).

Income levels show that 42.9% earn BDT 40,000–60,000, 31.7% earn above BDT 60,000, and 25.4% earn below BDT 40,000, indicating a professionally active group with varying financial resources. The focus on a well-educated, professionally active, urban female demographic reveals empowerment dynamics in a population largely absent from prior studies in Bangladesh.

Table 3: Socio-Demographic Profile of Respondents (N = 63).

Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Age Group (years)	25–29	14	22.2
	30–34	18	28.6
	35–39	15	23.8
	40–44	10	15.9
	45–49	6	9.5
Education Level	Bachelor's	22	34.9
	Master's	36	57.1
	MPhil/PhD	5	7.9
Marital Status	Married	63	100.0
Job Designation	Officer/Junior Level	24	38.1
	Mid-Level Executive	28	44.4
	Senior Management/Director	11	17.5
Years of Experience	<5 years	19	30.2
	5–10 years	23	36.5
	>10 years	21	33.3
Monthly Income (BDT)	<40,000	16	25.4
	40,000–60,000	27	42.9
	>60,000	20	31.7

This profile establishes a well-educated, professionally active cohort with diverse experiences and financial resources, providing an appropriate basis for examining how intersecting factors such as age, education, income, and work experience affect empowerment across household, mobility, and decision-making domains.

4.1.2. Source of money spent by women

This study examined the relationship between financial empowerment and decision-making capacity among highly educated, employed women, considering areas such as family expenditures, children's education, healthcare, and personal mobility. These domains ultimately reflect women's self-esteem, self-confidence, and perceived empowerment.

Survey results indicate that 82.5% of women spend money they earn themselves, while only 9.5% report spending money received from their husbands. Although access to a husband's financial resources is often considered an empowerment dimension (Soharwardi & Ahmad, 2020), the low proportion of women with such access underscores that financial independence alone does not automatically translate into broader household decision-making authority or social recognition within patriarchal structures (Albert & Escardíbul, 2017; Ang & Lai, 2023).

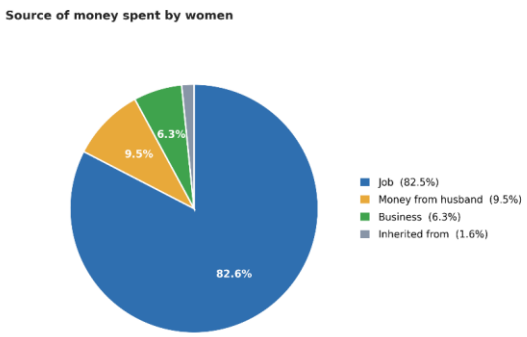


Figure 2: Sources of money spent by women, based on survey analysis.

4.1.3. Women's Role in Family Expenditure Decision-Making and the Extent to Which Their Opinions Are Valued

Regarding household expenditure decisions, 66.1% of women reported being able to make decisions independently, 21% make decisions jointly, and 12.9% do not participate in decision-making. Approximately 69.8% of respondents indicated that their opinions matter in family decisions, whereas 20.6% felt their voices were only moderately considered. The study adds new evidence that even highly educated and employed women face constraints in household financial decisions, underscoring persistent patriarchal norms in urban contexts.

While women contribute significantly to household income, the assumption that the primary earner automatically becomes the chief decision-maker does not hold in this context, reflecting persistent gender biases (Yogendrarajah, 2013). Factors such as spouse age difference, household type (nuclear vs. joint), and cultural norms influence decision-making authority (Yusof, 2015). Education and employment enhance bargaining power and autonomy in theory (Ang & Lai, 2023), yet highly educated and employed women in this study still face limited opportunities to make independent financial decisions.

The literature highlights cross-cultural variations: for example, in Chinese households, husbands predominantly control financial decisions, whereas in Ghana, women with higher education may be the final decision-makers (Osei-Tutu & Ampadu, 2018). Despite these differences, findings from the present study indicate that even highly educated, professionally

employed women often exercise autonomy primarily in minor or discretionary household spending, with major financial decisions remaining shaped by patriarchal norms (Albert & Escardíbul, 2017).

Overall, the analysis underscores that education and employment, while important, are insufficient alone to guarantee decision-making power, as entrenched social and cultural structures continue to constrain women's agency within the household.

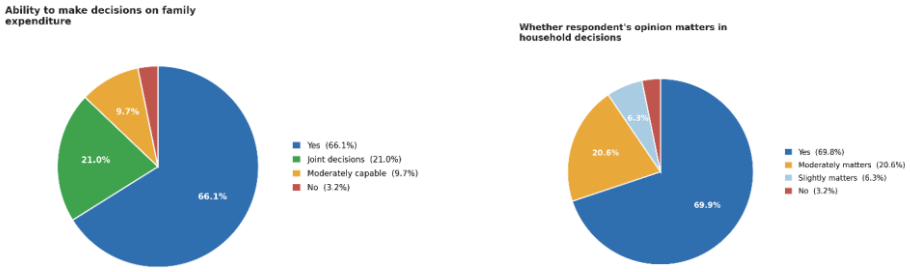


Figure 3: Survey findings on women's role in family expenditure decision-making and the extent to which their opinions are valued.

4.1.4. Women's decision-making power in selecting their children's educational institution

Regarding decisions about their children's educational institutions, 54.1% of women reported making these decisions independently, while 36.1% reported joint decision-making with their spouse or family members. This pattern reflects women's active caregiving role, which affords them greater influence in areas closely linked to child welfare.

Although joint decision-making is still common, the 36.1% share indicates a gradual shift toward more collaborative family practices, suggesting that men in some households are beginning to adopt more egalitarian approaches to childcare and education. These findings highlight that even in patriarchal contexts, domains perceived as inherently linked to women's caregiving responsibilities may offer opportunities for enhanced autonomy and negotiation within family decision-making. By documenting joint and independent decision-making patterns in children's education, this study reveals shifting family dynamics and the partial empowerment of professional women, providing new empirical insights.

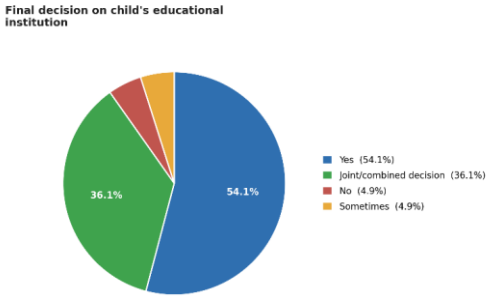


Figure 4: Survey findings - Women's decision-making power in selecting their children's educational institution.

4.1.5. Women's decision-making in the family regarding their own healthcare and their children's healthcare

Research in Nepal has shown that women's education enhances autonomy in healthcare decisions; however, women from wealthier or privileged families may experience reduced autonomy due to social expectations and restricted mobility (Acharya et al., 2010). In such households, women are often accompanied by husbands, family members, or chauffeurs, limiting their opportunities for independent action.

In the present study, 73% of respondents reported the ability to make healthcare decisions independently for themselves and their children, while 22.2% made such decisions jointly with family members. Employment appears to support greater mobility and agency, enabling women to visit doctors, purchase medicines, and make timely healthcare choices. These findings suggest a positive link between professional engagement and autonomy in health-related decision-making, highlighting that employment can enhance women's practical capacity to act independently within the household. The findings provide evidence linking employment, mobility, and healthcare autonomy, emphasizing that professional engagement facilitates practical empowerment beyond financial independence.

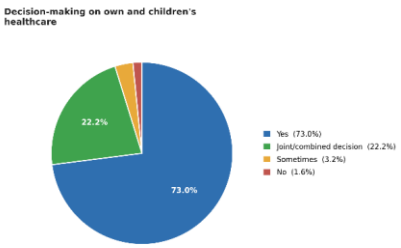


Figure 5: Survey findings- Women's decision-making in the family regarding their own healthcare and their children's healthcare

4.1.6. Women's mobility

Mobility is a key dimension of empowerment, as it directly influences women's ability to access resources, participate in social life, and make independent decisions. In this study, 95.2% of respondents reported being able to go shopping alone, reflecting high levels of everyday autonomy. Regarding social visits, 77.8% can freely visit relatives' homes, 7.9% do so very frequently, and 11.1% do it occasionally. For longer-distance travel, 58.7% indicated they can travel outside the home for professional, academic, or family purposes, while 11.1% cannot, and 27% do so only occasionally.

These findings suggest that higher education and employment significantly enhance women's mobility, which in turn facilitates independent decision-making in areas such as healthcare, household management, and social participation. The results underscore the interconnection between mobility, professional engagement, and empowerment, as illustrated in Figure 6.

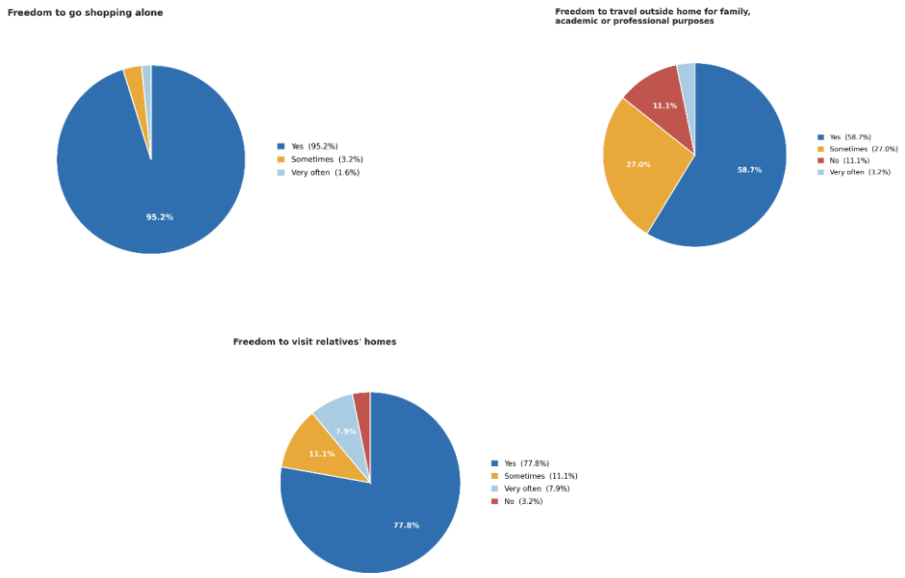


Figure 6: Survey findings – analysis of women's mobility for shopping, visiting relatives, and traveling abroad.

4.1.7. Decision about family planning

Family planning represents a significant aspect of women's empowerment, yet decision-making in this domain is often more complex than in other areas such as household spending or mobility (Prata et al., 2017). Evidence from Nepal suggests that for women from marginalized communities, empowerment does not significantly influence family planning decisions (Kc et al., 2021). Similarly, a study among Iranian women found that joint decision-making in family planning led to higher levels of empowerment (Kohan, Simbar, & Taleghani, 2012).

In the present study, 34.9% of respondents reported making family planning decisions jointly with their spouses, while 57.1% make such decisions independently. These findings indicate that, despite being highly educated, employed, and from privileged backgrounds, women often lack adequate spousal support in family planning matters. Consequently, many are compelled to make decisions independently, highlighting persistent gaps in partnership-based decision-making and reflecting underlying patriarchal norms that constrain shared responsibility even in well-educated households. This highlights that educated and employed women still often make independent family planning decisions due to limited spousal support, providing further understanding of persistent gendered constraints even in privileged populations.

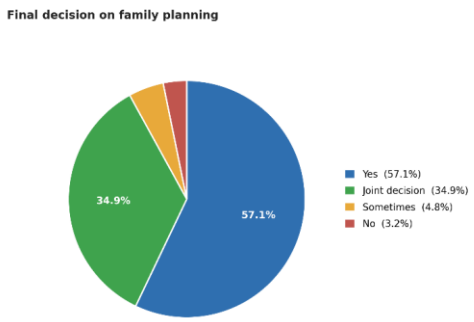
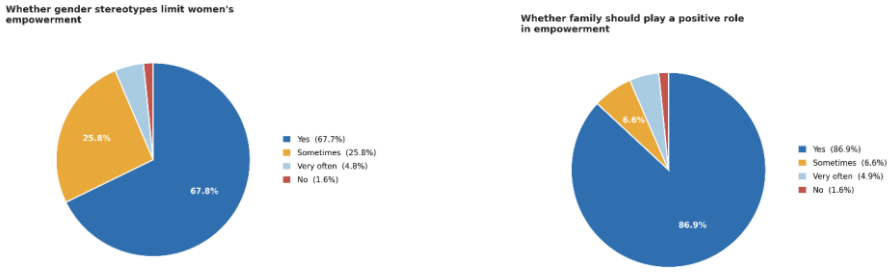


Figure 7: Survey findings – women's decision-making capacity regarding family planning

4.1.8. Stereotypical thinking and women's empowerment

The survey indicates that gender stereotypes continue to constrain women's empowerment. About 67.7% of respondents perceive stereotypical thinking as a barrier to empowerment, while 25.8% consider it a partial or occasional barrier. Despite these societal constraints, family support emerges as a crucial enabler: 86.9% of respondents acknowledge that family plays a significant and positive role in fostering women's decision-making capacity. These findings highlight the dual influence of social norms and familial encouragement, suggesting that interventions to enhance empowerment must simultaneously challenge patriarchal mindsets and strengthen supportive family dynamics. The study uniquely quantifies perceptions of stereotypical thinking and family support as barriers or enablers, contributing actionable insights for empowerment interventions.



~~Fig 8~~*Figure 8: Survey findings – stereotypical thinking as a barrier to women's empowerment*

4.2 Qualitative findings

4.2.1 Role of Media in Women's Empowerment

Media is a pervasive force in modern society, influencing perceptions across age, gender, and class. It can empower women by raising awareness, increasing participation, and portraying women's real-life achievements (Narayana & Ahamad, 2016). However, limitations in professionalism, training, and gender-sensitive policies often result in media portraying women as commodities or marketing tools rather than empowered individuals (Yeasmin et al., 2024). This misrepresentation can negatively affect self-perception, particularly among younger women, who may internalize undervaluation.

Research in Pakistan revealed that while educated women recognize media's role in promoting awareness of education, rights, and social responsibilities, it often fails to enhance women's professional recognition, decision-making capacity, or social status (Akhter & Naheed, 2014). This study similarly found that respondents believe media can empower women by broadcasting programs, publishing informative articles on rights, showcasing role models, and challenging stereotypical thinking. Social media was highlighted as a tool for connecting with empowered role models and fostering awareness.

Respondent-1: "Media inspire role models, accelerate social changes, advocate for policy reforms, create platforms for solidarity, and provide information on economic opportunities."

4.2.2 Self-Esteem and Women's Empowerment

Self-esteem, comprising self-identity, self-concept, and self-perception, is central to empowerment (Bailey, 2003). Even among highly educated and employed women, low self-esteem can limit their perceived need for autonomy and decision-making. Studies show that higher self-esteem and self-efficacy directly enhance women's empowerment, enabling them to challenge discrimination and internalized gender norms (Al-Qahtani et al., 2021; Batool, Ahmed, & Qureshi, 2016).

Survey and interview data indicate that women perceive self-esteem to be vital for financial independence, decision-making, and pursuing education or employment opportunities.

Education, employment, social status, and recognition emerged as key contributors to self-esteem, while exposure to empowered role models can inspire younger women to pursue autonomy. Self-esteem also enhances resilience, negotiation skills, and willingness to take risks, thus facilitating genuine empowerment (~~Colakkadıoğlu~~Colakkadıoglu & Celik, 2016).

Respondent-4: "Self-esteem and self-awareness enormously influence women's ability to make decisions, navigate opportunities, overcome barriers, and achieve financial independence."

4.2.3 Patriarchal Domination and Women's Empowerment

Patriarchy continues to shape women's lives in Bangladesh, reinforcing male dominance in leadership, authority, and decision-making while limiting women's access to opportunities (Hossen, 2020). This systemic inequality is maintained through cultural norms, religious misinterpretations, and family structures, restricting women's education, employment, and social mobility.

Respondents emphasized that patriarchal domination hinders financial independence and empowerment, perpetuating wage gaps, unequal resource access, and limited household decision-making authority. Families often reinforce traditional gender roles, and workplace glass ceilings prevent women from reaching leadership positions, regardless of qualifications. Psychological factors, including internalized inferiority and fear of social reprisal, further constrain women's autonomy.

Respondent-6: "Patriarchy shapes women's financial empowerment by historically restricting economic participation but also drives resistance movements that enable education, activism, and policy change."

Respondent-3: "Patriarchal domination limits access to education, resources, and opportunities, reinforcing traditional gender roles and hindering economic agency."

Addressing these barriers requires multi-level interventions, including community awareness programs, professional networks and mentorship, financial and entrepreneurial support, safe educational environments, and gender-sensitive legal reforms.

4.2.4 Policymakers' Attention

Policymakers' attention refers to the prioritization of gender equity in laws, policies, budgets, and programs. Respondents emphasized the essential role of policy in enabling women's empowerment:

Respondent-1: "Gender-sensitive policies promote financial empowerment by addressing systematic barriers, ensuring equal access to opportunities, and supporting workplace equality."
Respondent-2: "Policies must focus on changing social and familial attitudes while extending girls' education."

Policy action alone, however, is insufficient. Sustainable empowerment requires political will, resource allocation, and accountability mechanisms to translate policies into practice. Without such support, highly educated women remain constrained, underrepresented in decision-

making spaces, and psychologically disempowered, creating a disconnect between qualifications and agency. This exclusion undermines national development and jeopardizes progress toward the SDGs, including quality education (SDG 4), gender equality (SDG 5), and decent work (SDG 8). ~~(Sultana, 2021; Nazneen & Mahmud, 2012).~~

By integrating targeted policy interventions with societal and institutional reforms, governments can dismantle patriarchal barriers, enhance women's autonomy, and foster meaningful empowerment for highly educated urban women.

5. Limitations of the study

Despite offering new insights into the empowerment dynamics of highly educated urban women in Bangladesh, this study has several limitations. These relate to the sample size, study location, analytical scope, and time frame.

The quantitative sample (N = 63) was relatively small and based on convenience sampling, limiting statistical generalizability beyond highly educated government-employed women in Dhaka. Similarly, the qualitative component (N = 10) may not fully capture diverse institutional or policy perspectives. The study is geographically confined to Dhaka and excludes women from other sectors, smaller cities, and rural areas, thereby limiting contextual variation.

All respondents were married, as married women often face greater challenges in negotiating agency within households. While this approach enabled focused analysis of marital decision-making dynamics, it excludes unmarried, divorced, widowed, or single women, whose empowerment experiences may differ.

Methodologically, the cross-sectional design restricts causal inference between education, employment, self-esteem, and decision-making autonomy. Given that empowerment is dynamic, longitudinal research with broader data access would enable more robust and balanced analysis. The reliance on self-reported data may also introduce social desirability bias.

Although validated scales were adapted, contextual modifications may affect comparability. Empowerment was assessed mainly through selected decision-making domains, potentially overlooking political participation, workplace hierarchies, and informal influence. Furthermore, despite adopting an intersectional framework, the study could not extensively disaggregate findings by income, job rank, age, or experience due to sample constraints.

Notwithstanding these limitations, the study remains a valuable exploratory and context-specific contribution, opening avenues for future longitudinal, comparative, and multi-sectoral research on empowerment among highly educated urban women in Bangladesh.

6. Conclusions

Despite limitations, this study explored the challenges faced by highly educated women in Bangladesh in exercising empowerment, particularly in decision-making, and examined factors that can facilitate greater autonomy. The findings indicate that patriarchal domination persists in multiple forms, including control over financial decisions, disregard for women's opinions, and reinforcement of gendered norms within families.

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Self-awareness and self-esteem emerged as key factors enabling women to navigate these constraints and exercise agency. While 66.1% of women reported autonomy in household expenditure decisions, this autonomy was largely confined to consumption, reflecting the persistent expectation that women bear primary responsibility for household management and childcare. Only 36.1% of women reported making joint decisions regarding their children's education, while 54.1% were solely responsible for these decisions, highlighting the disproportionate domestic burden placed on working women.

Decision-making regarding family planning—an area closely linked to empowerment—remained constrained, with only 34.9% of women participating jointly, underscoring the continued influence of patriarchal norms even among highly educated and employed women. The study emphasizes the importance of challenging stereotypical thinking, fostering self-esteem, and promoting social recognition of women's educational and professional achievements to enhance empowerment. Achieving meaningful autonomy requires the combined support of families, proactive media representation, and gender-sensitive policy formulation and implementation. By integrating structural, psychological, and institutional interventions, women's empowerment—particularly in decision-making—can be substantially strengthened, yielding broader societal and developmental benefits.

This study contributes new insights by combining quantitative and qualitative evidence on urban professional women's empowerment, highlighting the interplay of self-esteem, media influence, patriarchal structures, and policy environment. The findings reveal that even highly educated and employed women face persistent structural and psychological barriers, emphasizing the need for multi-level interventions that extend beyond financial independence.

AI Declaration:

The authors used AI-based tools Claude (Anthropic) and ChatGPT (OpenAI) solely for language editing to improve clarity and readability. The content, analysis, and interpretation of the manuscript were entirely authored by the human authors, who take full responsibility for its accuracy and integrity.

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Challenges and Strategic Approaches for Addressing Gender Inequities in Climate-Vulnerable Coastal Regions of Bangladesh

Mahbuba Rahman[1] *Md Injamul Haq Methun*[2]

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ABSTRACT

The southwestern districts of Bangladesh, particularly Khulna, Bagerhat, and Satkhira, are highly susceptible to frequent cyclones, salinity intrusion, and flooding due to rising sea levels and coastal erosion. Social disparities, restricted mobility, and exclusion from decision-making processes exacerbate women's risks in these regions. During disasters, women often face food insecurity, travel long distances to collect water, reside in unsafe shelters, and experience increased gender-based violence. Addressing these challenges is essential to ensure the security and well-being of women. Over time, these issues undermine community resilience, hinder development, and adversely affect women's reproductive health, mental health, livelihoods, and financial stability. This research focuses on the increasing exposure of women in Khulna, Bagerhat, and Satkhira to climate hazards such as cyclones, salinity, and flooding. Vulnerabilities are examined using a qualitative methodology, including sixteen Key Informant Interviews (KIIs) with government officials, local representatives, and NGO staff, as well as four focus group discussions with twenty-two male and female community members and NGO mid-level officials. Findings indicate that women face heightened risks due to limited education, restricted mobility, insufficient digital literacy, lack of gender-sensitive services, and weak institutional support, all of which contribute to their marginalization before, during, and after disasters (the author's fieldwork in 2019-2025 was conducted in Khulna, Bagerhat, and Satkhira). Women's vulnerability to climate change in coastal Bangladesh is multifaceted. Addressing these vulnerabilities requires the implementation of gender-responsive policies. The primary objective of this research is to empower women as agents of resilience, which is crucial for equitable adaptation, sustainable development, and social inclusion. The findings demonstrate that gender-responsive strategies enhance resilience in coastal communities and inform policy and development. The study underscores the importance of integrating financial and non-financial services into adaptation plans to promote inclusive, evidence-based policies.

[1] JICA Bangladesh. Email: rahmanmahbuba2015@gmail.com (Corresponding author)

[2] Bangladesh Institute of Governance and Management, Dhaka, Bangladesh. Email: injamul.haq@bigm.edu.bd

Key Words: Gender inequities, climate vulnerability, disaster risk reduction, gender inequality, climate change adaptation

1. INTRODUCTION

Bangladesh is ranked as the seventh-most disaster-prone country in the world, according to the Global Climate Risk Index 2021 report, and it is vulnerable to both disasters and climate change. Tropical cyclones, tornadoes, floods, coastal and riverbank erosion, droughts, and landslides are the principal climate-induced hazards in Bangladesh. After realizing the adverse effects of climate change, the Government of Bangladesh has conducted and enforced the climate change mitigation and adaptation policies and programs. Most development programs in the country aim to reduce vulnerability to disasters or poverty, and it is well documented that local people have their own well-established coping capacities. Substantial gaps remain in addressing the nexus between climate change and gender inequality, despite Bangladesh having a well-developed national policy framework for climate-resilient disaster management. Significant barriers to realizing equity remain, as disparities exist in gender, leading to unequal access to opportunities, resources, and equitable treatment. These challenges are further intensified during disasters. This also impedes practitioners' ability to exactly determine climate vulnerabilities because there is a lack of disaggregated data, information, analysis, and evidence on gender impacts (Shamsuddoha et al., 2024).

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Due to local geography and socio-economic challenges, Bangladesh's coastal regions are particularly vulnerable. Gender is a vital factor influencing people's resilience in this context. Hence, including gender thoughts in climate policies is vital for promoting social equity or inclusion and improving the effectiveness of adaptation and mitigation efforts. As highlighted by the IPCC (2022), inclusive strategies that recognize the unique challenges women face are central to building long-term climate resilience.

National responses to climate change in Bangladesh have not sufficiently incorporated gendered viewpoints, despite the realities. Bangladesh has made notable progress in developing a robust policy framework for climate adaptation and disaster risk management through the National Adaptation Plan (NAP) 2023–2050, the Standing Orders on Disasters, the Delta Plan 2100, the Perspective Plan 2021–2041 and the 8th Five-Year Plan (2021–2025). These policy documents underscore the importance of resilience, resource mobilization, and long-term planning. However, gaps remain in mainstreaming gender considerations into these

frameworks. Moreover, the absence of gender-disaggregated data and evidence limits policymakers' ability to design interventions that respond to local realities.

The international literature strongly illustrates that gender-responsive approaches significantly enhance the effectiveness of climate adaptation. In India, the state of Odisha has revised its climate action plans to formally recognize women as important change agents (Bhattacharya & Mukherjee, 2025). Meanwhile Philippines has developed national climate bodies with gender mandates (UN Women, 2023). Similarly, countries like Nepal and Japan have advanced reforms to improve gender mainstreaming in adaptation policies (Rai et al., 2021; UN Women, 2021). However, Bangladesh lags in adopting systemic approaches for vulnerable coastal regions, despite evidence of the gendered impacts of climate change (Jannat, 2024; Hoque & Uddin, 2025).

In coastal Bangladesh, the experience of vulnerability among women and men extends beyond the immediate effects of disasters to include long-term issues with livelihoods and health. For example, salinity in drinking water sources disproportionately affects women by increasing risks of hypertension and pregnancy complications. Additionally, loss of agricultural land and declining fish stocks due to climate change are eroding women's income-generating opportunities. Climate-induced migration patterns are also often male-dominated (Lukman et al., 2025). The migration leaves women behind to manage fragile households and exposed agricultural land, which significantly increases their workload and psychological stress.

However, these gendered burdens are rarely acknowledged in disaster recovery programs or in recommended solutions[A1], which tend to prioritize infrastructure reconstruction and livelihood restoration without considering intra-household inequalities.

Governance structures are another dimension of the problem. Community-based disaster management committees are effective in Bangladesh, though women's participation in these bodies remains minimal. Cultural norms, time constraints due to household responsibilities, and a lack of acknowledgment of women's leadership capacity are the reasons for their exclusion. However, when women are included, their voices are often marginalized in male-dominated decision-making environments (Dewan et al., 2019). This exclusion results in the neglect of women's knowledge and experience, despite their importance for household-level disaster coping strategies (Luna, 2023). Therefore, this exclusion of women's contribution

makes the climate adaptation strategies less effective and gender-biased (Akhter & Uddin, 2024).

The gap between policy and practice is further exacerbated by the inadequacy of data and research that capture the intersection between gender and climate vulnerability (Memon et al., 2023). There are so many studies that focus on aggregate measures of poverty, livelihoods, or disaster impacts, with limited disaggregation by gender or attention to women's knowledge and experiences. Without reliable gender-sensitive data, policymakers and practitioners will not be able to design targeted interventions or properly evaluate their outcomes. For instance, the absence of data on women's access to early warning systems, mobility constraints during evacuation, or differential recovery rates after disasters means that crucial aspects of vulnerability remain invisible in official reports.

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Although extensive literature has focused on the gendered impacts of climate change, the majority of research has highlighted broad inequalities without adequately addressing the specific vulnerabilities faced by women in Bangladesh's coastal regions. Studies from Asia and Africa illustrate how climate change intensifies pre-existing gender disparities, particularly within agricultural economies where women are bound to sustain precarious livelihoods as men migrate (World Bank, 2025). However, in Bangladesh's south-western coastal zone encompassing Khulna, Bagerhat, and Satkhira, the intricate intersection of gender, poverty, and recurrent climate hazards remains insufficiently explored. The limited accessibility of localized, gender-sensitive evidence in coastal Bangladesh highlights a substantial research gap. This study aims to fill that gap by converging on women's core needs and vulnerabilities and finding potential policy actions.

This research studies the growing vulnerability of women in the southwestern districts of Bangladesh–Khulna, Bagerhat, and Satkhira–to climate hazards, including cyclones, salinity, and flooding. Women in coastal Bangladesh face multiple vulnerabilities to climate change. To address this, gender-responsive policies require to be executed. The main objective is to empower women as key players in building resilience, which is vital for effective fair adaptation and sustainable development. This Research recommends that strategies tailored to the requirements of both genders can enhance resilience in coastal communities, ultimately informing policy, strategy, and development decisions. By incorporating financial and non-financial services into adaptation plans, communities can develop more inclusive and evidence-based policies. This framework can be applied in other areas, potentially influencing long-term

planning, supporting sustainable goals, and driving further research on the intersection of gender, resilience, and climate change.

2. LITERATURE REVIEW

Women in rural areas are vulnerable to climate impacts and encounter greater hardships during disasters because of increased risks, societal pressures, and unequal resource distribution. Research across South Asia, Sub-Saharan Africa, and the Pacific shows the same pattern: climate shocks tend to deepen gender inequality, though women already have limited mobility, weaker asset ownership, or little say in community decisions (World Bank, 2025; UN Women, 2021).

The findings related to Women living in rural areas face more challenges from climate impacts and suffer more during disasters due to higher risks, social pressures, and unfair access to resources are consistent with the theory of intersectional vulnerability. The theory, coined by legal scholar Kimberlé Crenshaw in 1989, elucidates how climate-related stresses interact with factors such as gender, poverty, marital status, social norms, and age, thereby generating disproportionate risks. This pattern is predominantly distinct in Bangladesh's southwestern coastal region.

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Studies from Khulna, Bagerhat, and Satkhira describe how repeated cyclones, salinity, flooding, and water shortages make women's daily routines challenging. They need to walk long distances for water, their shelters are unsafe, their crops are lost, and their income opportunities are shrinking. High salinity levels in drinking water even contribute to pregnancy complications and hypertension. During disasters, women eat last, evacuate last, and mostly recover later. These experiences reflect the scholars' description of gaps in adaptive capacity: the idea that resilience is shaped by knowledge, assets, confidence, mobility, digital access, and institutional support (Alam et al., 2017).

In the current world, so many countries have undertaken decisive measures to diminish these gender disparities. The Philippines has incorporated gender mandates into climate institutions (UN Women, 2023). Odisha in India has revised its climate action plans to position women as agents of change (Bhattacharya & Mukherjee, 2025). Nepal has enhanced gender inclusivity within disaster governance frameworks (Rai et al., 2021). These instances depict that policy can reshape the outcomes if women have the opportunity to contribute to the decision-making process.

Bangladesh, despite possessing robust frameworks such as the NAP 2023–2050, the Delta Plan 2100, and the Standing Orders on Disaster, faces challenges in translating policy commitments into tangible actions. Women's participation in disaster management committees remains limited, even where community-based systems exist (Dewan et al., 2019). Studies say that the barriers come from social norms, unpaid care loads, lack of land rights, and weak recognition of women's leadership skills (Chowdhury et al., 2023). In the absence of increased participation, policies often overlook the lived experiences of women, despite their significant role in household preparedness.

Another consistent gap in the literature is the lack of gender-disaggregated data in coastal Bangladesh. We still possess limited knowledge regarding how women perceive early warning messages, the impact of mobility restrictions on evacuation decisions, the influence of disability or age on safety, and the duration of recovery for women compared with men (Choudhury et al., 2024). These oversights diminish the effectiveness of responsive programs.

Regionally and globally, researchers are also paying attention to climate-induced migration. In both Africa and South Asia, when men migrate for work, women are left to manage fragile homes, elderly parents, children, farm plots, and damage from disasters with very limited resources (World Bank, 2025; Luna, 2023). This trend is rising in Bangladesh's coastal belt, and it pushes women into greater stress, isolation, and unpaid labor.

Although many studies describe the general gendered impacts of climate change in Bangladesh, the literature still leaves major gaps in the area, including sector-specific evidence, nominal data on financial, digital, mobility, WASH, market access, shelter safety, and a lack of detailed evidence on cross-cutting needs of coastal women. The next gap is the limited number of studies that integrate public voices and community perspectives with institutional insights; hence, participatory data collection is missing. Also, weak connections exist between empirical findings and global adaptation frameworks, such as the Sendai Framework or Sustainable Development Goals (SDGs) 5 and 13 (Achampong & Officer, 2023; Hossen et al., 2021).

These gaps have been addressed in the study while inspecting women's lived experiences through KIIs and FGDs, relating them to national and global frameworks, and recognizing clear strategic options to strengthen gender-responsive climate adaptation. The findings add new suggestions from three of Bangladesh's most climate-stressed districts and highlight where policy, community needs, and institutional systems fail to align.

3. Methodology of the STUDY

3.1 Study Area

The south-western coastal zone, including the Sundarbans, is frequently exposed to multiple climate hazards, including heavy rainfall, river flooding, sea-level rise, salinity intrusion, tropical cyclones, storm surges, droughts, heat waves, cold spells, riverbank erosion, and lightning. The persistence and intensity of these threats render the region highly vulnerable, making it an appropriate context for studying gendered resilience and adaptation. Furthermore, the *National* Adaptation Plan (2023–2050) and multiple studies confirm that these regions face frequent and severe climate events, making them critical for research on climate impacts and adaptation (Naz et al., 2024). Hence, this research was conducted in the southwestern coastal districts of Khulna, Bagerhat, and Satkhira, which are among the most climate-stressed regions of Bangladesh according to the National Adaptation Plan (2023–2050).

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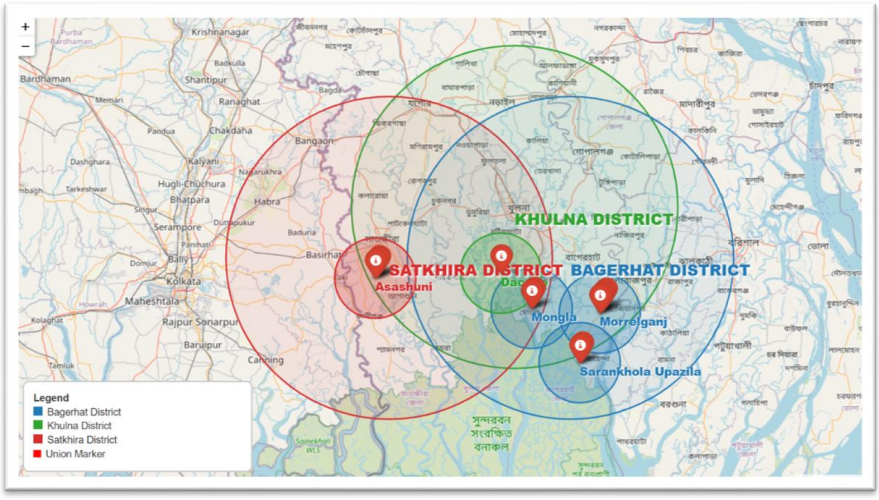


Figure 1: Spatial distribution of project locations across Satkhira, Khulna, and Bagerhat districts

Source: Author's elaboration based on geographic data and administrative boundary maps of Bangladesh (GIS-based mapping)

3.2 Research Design

A qualitative research design was adopted to capture the complex social realities of climate vulnerability. Qualitative approaches are particularly suitable for exploring how individuals interpret their experiences and for understanding phenomena in which emotions, perceptions, and lived realities are central. Hence, the study employed semi-structured interviews, focus group discussions (FGDs), and direct observation, which are well-suited for investigating issues where underlying social and institutional factors may not be immediately visible.

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3.3 Sampling and Participants

A purposive and convenience sampling strategy was employed due to time and logistical constraints as well as the need to access information-rich participants such as district and local government officials, local representatives, non-governmental organization representatives, and higher government authorities involved in disaster management and the Department of Environment. Hence, purposive sampling was the best fit for this study, as it requires insights from people's direct experience with gendered climate vulnerability and local disaster management. These are not random community members these are individuals who understand how climate risks affect women in coastal Bangladesh. These include government officials involved in disaster planning, local elected leaders, NGO staff working in vulnerable unions, women and men who regularly face cyclones, salinity, and water shortages. A random sample would not have guaranteed access to these specific voices. Purposive sampling allowed the study to intentionally select people who could provide rich, relevant, and informed perspectives.

Convenience sampling was also used at the community level due to the realities of the field context. The study areas Khulna, Bagerhat, and Satkhira are disaster-prone and difficult to reach. Many communities were facing tidal floods, poor road conditions, and time constraints linked to women's household responsibilities. Convenience sampling made it possible to engage participants who were available, accessible, and willing to participate at the time of field visits. Together, purposive and convenience sampling helped the study to reach the right people with the right knowledge, to collect data within the time and mobility constraints of a high-risk region, to ensure women's participation without putting them under pressure, and to gather reliable insights quickly in areas with limited accessibility. In qualitative research, this mixed approach is widely accepted, as the goal is to understand complex social realities and lived experiences rather than produce statistical generalizations.

Key Informant Interviews (KIIs): Sixteen KIIs were conducted, involving eight government officials at senior and mid-level positions, two representatives from local government, and six staff members from non-governmental organizations.

Focus Group Discussions (FGDs): FGDs involved twenty-two participants from both male and female community groups. Primarily, there were four groups for the FGD. Two groups were from Satkhira District: one was the Female Beneficiary Group, consisting of **five members**, while the Male Beneficiary Group comprised **three** members. An additional group of **six members** from Dacope, Khulna, joined in another FGD. Finally, an **eight-person** group of NGO staff (NGO Branch Managers) from various unions in Bagerhat District was included in the FGD to understand the context of Bagerhat as well. It is worth mentioning that in Satkhira, in both groups, a total of four members were absent due to unavoidable reasons. The author was intended to conduct a standard focus group discussion; however, due to a misunderstanding, it was treated as a small group discussion. Also, as community members were difficult to reach within a short period of time, the researcher included the insights of individuals who work directly with the community and possess a clear understanding of the vulnerability context.

While this approach limits generalizability, it provides valuable insights into community realities, institutional challenges, and lived experiences in climate-vulnerable settings.

Ethical Considerations: For the FGDs, all community members were informed about the study's objectives, voluntary participation, and right to withdraw. Verbal consent was obtained, and confidentiality was assured. Similarly, for KIIs, interviewees were briefed on the research purpose, consented voluntarily, and had their anonymity protected.

3.4 Institutional Engagement

To strengthen the relevance of community-level insights, 28 participants were selected from organizations associated with the Palli Karma-Sahayak Foundation (PKSF), the apex development organization in Bangladesh. PKSF has a long-standing history of partnering with NGOs to mitigate rural poverty and enhance resilience. These participants were deliberately chosen from PKSF partner organizations due to their direct engagement in coastal climate initiatives, gender-focused activities, and local expertise. This selection process was designed

to ensure informed, contextually relevant insights rather than random participation. Regarding the qualitative component, the Focus Group Discussion participants were selected purposively from PKSF-enlisted organizations to ensure representation of women experiencing diverse forms of climate vulnerability. Local leaders and NGO workers helped identify participants with direct experience of climate shocks and gender constraints. This method focused on capturing detailed perspectives rather than statistical representativeness.

In the Khulna district alone, PKSF collaborates with 33 partner organizations and implements projects supported by JICA, the Asian Development Bank (ADB), the World Bank, and other development partners. For this study, five NGOs for FGD and KII from PKSF's partner list were selected, as they are actively engaged in highly vulnerable unions within the study area. The selection aimed to ensure geographic coverage and institutional diversity while focusing on organizations with relevant experience related to the research objectives. Overall, the methodological rigor of the study lies in the transparent and theory-driven selection of indicators and participants, ensuring that the findings meaningfully reflect gendered realities in climate-vulnerable coastal contexts.

Table 1: Number of Respondents from Selected NGOs

Category of Respondents	Number of Respondents
NGO (KII Participants)	6
NGO (FGD Participants)	22
Total Respondents (Five NGOs)	28

3.5 Data Collection

Data collection was conducted through s**emi-structured interviews** with key informants to explore institutional perspectives and policy-level insights as well as**FGDs** with community members to understand local perceptions, coping strategies, and gendered experiences of vulnerability. **Observation** during field visits provided a contextual understanding of socio-economic conditions and environmental stressors.

3.6 Data Analysis

All interviews and FGDs were transcribed and coded thematically. The study's goals served as a guide for the inductive method of analysis, which allowed themes to surface from the data. To increase reliability, themes were cross-validated across data sources (KIIs, FGDs, and

observations). Lastly, Excel was used to compile raw data into a structured format of rows and columns, essentially using it as a simple database.

4. Theoretical Framework

Climate change affects women and men differently because of the different roles they play in society and their different access to resources. Climate change and gender inequities are inextricably linked. Further, climate change hinders progress towards gender equity and impedes efforts to reduce poverty; as a consequence, gender inequity can exacerbate the effects of climate change. Therefore, gender mainstreaming should not only be considered as an aspect requiring attention in actions to mitigate climate risks but also as an important factor for adaptation to ensure success and sustainability. Women are not only affected by climate change differently than men but they also contribute to climate change action in a different manner. Therefore, we should mainstream gender in our climate action for sustainable impact (African Development Bank [AfDB], 2019).

To study how gender influences climate risk in Bangladesh's coastal areas, this study draws on Intersectional Vulnerability Theory (Assaduzzaman et al., 2023) and Adaptive Capacity Theory (Mortreux & Barnett, 2017). Intersectional Vulnerability Theory directs that people's experiences with climate impacts differ based on their social identities and the structural barriers they encounter in addressing them. Women from Khulna, Bagerhat, and Satkhira encounter increased vulnerability due to the union of climate hazards with poverty, rigid gender norms, restricted mobility, inadequate asset ownership, and their marginalization from institutional structures and processes (Rao et al., 2019). This theoretical perspective emphasizes how climate change exacerbates pre-existing inequalities rather than generating new vulnerabilities independently. Adaptive Capacity Theory was situated in the context of gender-related structural disadvantages that worsens resilience. Women’s limited access to financial services, information, technology, secure shelters, and livelihood options directly weakens their capacity to anticipate, withstand, and recover from climate-related impacts and shocks. Women’s exclusion from decision-making further limits opportunities to influence resource distribution and community preparedness systems (Dev & Manalo, 2023).

The study's analysis facilitates an understanding of women's lived experiences and institutional dynamics, and these theories offer a clear framework of the context. After integrating the two theories, the framework shows that gendered vulnerability is not just a result of environmental exposure; rather, it is also influenced by power imbalances, socio-economic obstacles, and

weaknesses in institutional factors. In this study, five key areas for intervention– gender-sensitive financial services, livelihood diversification, awareness and capacity-building, family engagement, and improved GO–NGO coordination–have been identified through this integrated approach (Bryan et al., 2024; Call & Sellers, 2019). To enhance women's adaptive capacity and strengthen more equitable climate resilience strategies, all these elements require to be combined while addressing.

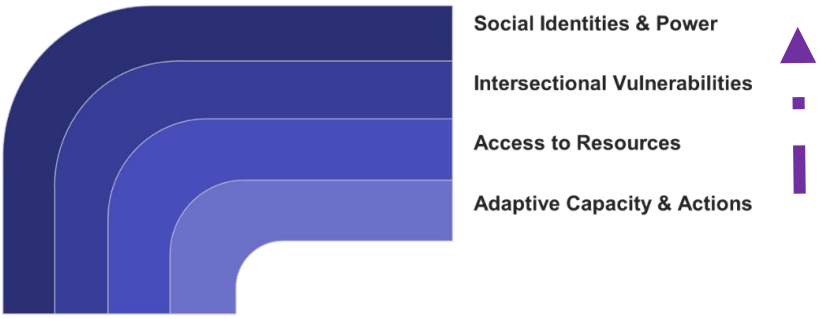


Figure 2: Link between adaptive capacity, social identities, and power.

Source: Prepared by the authors, drawing on Thompson-Hall et al. (2016).

The framework illustrates the intersectional approach to climate adaptation. It shows how social identities and power dynamics shape vulnerabilities, which in turn influence access to resources and ultimately determine adaptive capacity and responses. The key message here is that vulnerability and resilience are built up in layers. Social identities and power determine your position in society, your gender, class, age, ethnicity, disability, and status, and who has power. These factors affect everything. Then there is the issue of interconnected vulnerability, which shows the problem of multiple factors. Apart from that, being a woman is different from being a poor woman in a remote area, where overlapping identities increase risk. Vulnerability increased with the limited access to resources. In conclusion, adaptive capacity and action are the key to coping with climate stress. The crucial point in this theory is that people's ability to adapt is shaped by power, identity, and access long before a disaster occurs. Apparently, this paper gathered similar evidence, which specifies that a person is not only vulnerable due to

exposure to climate hazards but is also heightened by social inequities, scarcity of resources, and poor institutional strengthening of the vulnerability.

The framework also suggests directing more time and resources in very targeted ways to apply intersectional approaches as a more effective means for addressing specific adaptation, as resilience and vulnerability is not a characteristic of social groups but a product of existing societal marginality (Thompson-Hall et al., 2016).

5. Results

5.1 Respondent Profile

Data were collected from 16 Key Informant Interviews (KIIs) with government officials, local representatives, and NGO staff, along with 4 Focus Group Discussions (FGDs) involving 22 participants (male/female community members and NGO staff).

Table 2: Respondents' Details

SL	KII Recipients	Respondents
1	Government	3
2	Government-established Entity	5
3	Local Government	2
4	NGO	6
Total Respondents		16

Note: Government and NGO representation was balanced (8:8), and participant gender distribution was equally balanced (11 males and 11 females).

SL	FGD Participants	Respondents
5	Male Group Bagerhat	8
4	Female Group Satkhira	5
3	Male Group Bagehat	4
5	Female Group Khulna	6
6	Total Respondents	22

Note: Gender distribution was balanced, with 11 male and 11 female participants.

Source: Authors' compilation based on primary data collected through Key Informant Interviews (KII) and Focus Group Discussions (FGDs).

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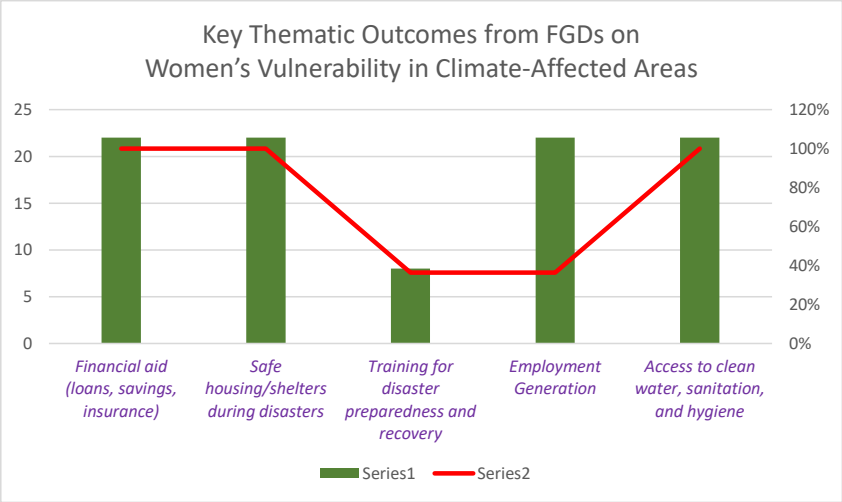
5.2 Thematic Findings from Key Informant Interviews (KIIs)

Based on qualitative analysis, the themes that emerged are, at the first stage, women's needs, which include financial services, mobility support, safe shelters, awareness training, WASH facilities, and community safety networks. Inclusive education, family awareness, home-based income activities, and market linkages are essential and necessary for inclusion in decision-making. Challenges remain restrictive norms, male-dominated leadership, and unequal land rights. Also, governance gaps that are a lack of gender sensitization among officials, weak GO NGO coordination, duplication of services, and political influence undermine transparency and accountability. Another one is policy and institutional gaps, which include poor coordination, political influence, and corruption. Clear division in role, male engagement, coastal interventions, and microfinance integration are recommended. Limited digital literacy and data access are also suggested, as access to disaster information is limited. Further emphasized are short-term training, subsidized internet access, safe browsing education, and the integration of digital financial systems. The need for regular collection of gender-disaggregated data was also highlighted.

5.3 Thematic Findings from Focus Group Discussions (FGDs)

FGDs with community members further revealed the following: Firstly, the basic needs of a woman include financial aid, safe housing, job opportunities, and access to clean water and sanitation, which were the most urgent needs. Training and awareness follows, but only one-third of participants mentioned preparedness training, and decision-making participation was low (23%). Also, 55% cited tradition and 45% cited religious leaders as barriers to women's safety and recovery, which represent **cultural & religious norms. Regarding digital tools,** 59% recognized their importance for disaster information, but 41% of women lacked access due to cost, skills, and restrictions. For **women's groups,** few exist (23%), but the potential for strengthening was acknowledged. Finally, 36% emphasized the necessity for enhanced collaboration on policy and equity initiatives, which constitutes a government–NGO partnership.

Types of Support Women Most Needed by Women to Cope with Disasters



Source: Compiled by the authors from primary field data

Figure 4: Types of support most needed by women to cope with disasters

The illustrations demonstrate the vulnerability and gendered disparities in access to resources across household, community, and institutional levels, highlighting the significant decline in women's participation beyond the household domain.

5.4 Causes of Women's Vulnerability

Analysis of interviews and FGDs identified three levels of causes:

Primary Causes: lack of education, digital literacy gaps, lack of awareness, food and water insecurity, poor nutrition, and unemployment or informal work.

Secondary Causes: limited digital access, economic dependence on men, restrictive gender norms, unequal land rights, wage discrimination, and gender-blind disaster responses.

Tertiary Causes: systemic policy failures, lack of women's awareness and readiness, exclusion from resources and assets, exposure to gender-based violence, inadequate health services, and limited mobility/participation.

5.5 Consequences of Vulnerability

Analysis of interviews and FGDs identified that women in climate-vulnerable coastal regions face:

i. Added caregiving responsibilities, which slow recovery by causing stress, burnout, social isolation, and physical health issues.
ii. Exclusion from decision-making, limited mobility, and limited access to relief.
iii. Income loss from disrupted livelihoods (agriculture, small businesses).
iv. Increased health threats due to sanitation and water shortages.
v. Financial debt traps due to microcredit burdens.
vi. Compromised safety, privacy, and dignity in shelters and damaged infrastructure.

These interconnected challenges create cycles of poverty and vulnerability, intensifying long-term inequities.

5.6 Strategic Options Identified

The study identified several **strategic options** to reduce gender inequities and advance resilience in climate-vulnerable coastal areas of Bangladesh. These options integrate financial, social, and institutional actions.

First, access to **financial services and asset protection** is critical. Women need credit support, savings systems, and insurance to protect their crops, livestock, and small businesses. These services can help them recover faster after disasters and avoid debt. However, there are risks because current systems are not fully gender-sensitive, and technical capacity is weak.

Second, women need **non-financial services** that support their livelihoods. This includes training, new job opportunities, and better access to local and regional markets. For example, women could benefit from climate-resilient farming, aquaculture, or small enterprises. These options can increase income, although they also require strong institutional support and business knowledge.

Third, **awareness-building programs** are essential. Education, community campaigns, and male engagement can help shift attitudes and improve women's roles in disaster preparedness and decision-making. These programs face challenges because some community members may resist change, but with continued awareness they can bring long-term benefits.

Fourth, **family participation** is another important strategy. When families share caregiving responsibilities and support women in income-generating activities, resilience improves. Families also play a role in recognizing women's contributions and involving them in household decisions. This option carries some risks due to a lack of resources and awareness, but it can create sustainable change.

Finally, **dialogue and coordination between local government and NGOs** are critical. Better cooperation can reduce duplication of services, improve accountability, and make programs more effective. Yet, political influence and institutional barriers may create difficulties, so strong partnerships are needed.

In summary, these five strategic options—financial services, livelihood opportunities, awareness programs, family participation, and government–NGO coordination—offer different pathways to reduce women's vulnerability. Each has risks, but together they provide a roadmap for more inclusive and resilient communities.

6. Discussion

The study discovers an advanced, inclusive understanding of the main study outlined in current literature. Research that has been done previously in Bangladesh and other susceptible areas expresses that a blend of environmental burdens and social disparities, such as limited mobility (Ayeb-Karlsson, 2020; Ferdous & Mallick, 2019; Rahman et al., 2022), income insecurity (Mondal et al., 2025; Hossain et al., 2021), caregiving burdens (Anjum & Aziz, 2025; Assaduzzaman et al., 2023), weak institutional contribution (Hasan & Majumder, 2018; Shamsuddoha et al., 2024), and limited access to crucial services (Amin et al., 2025; Zahan, 2022), consistently distresses women's vulnerability. The findings of the study in Khulna, Bagerhat, and Satkhira provide these similar patterns and further explain the substantial impact of these key obstacles on daily life.

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Nonattendance hinders women's adaptive capacity in financial access, digital literacy, mobility, safe shelter design, and gender-sensitive WASH facilities, as identified through interviews and observations in the study. These are closely aligned with the crucial elements of resilience identified by global studies (Scott et al., 2023; Scott, 2023; Kulkarni & Ghosh, 2021). Adaptation becomes erratic, and recovery is delayed when institutions fail to acknowledge women's needs.

Excluding women from disaster management decision-making increases vulnerability, reduces access to aid, and leads to less effective disaster response and recovery (Drolet et al., 2015;

Hamidazada et al., 2019; Mahbub et al., 2025; Pérez-Gañán et al., 2022; Roy & Mukherjee, 2024; Sedghi et al., 2025;). Women's unique knowledge, caregiving roles, and community connections are critical for effective risk reduction, early warning, and resource allocation (Abdalla et al., 2024; Drolet et al., 2015; Roy & Mukherjee, 2024; Ruszczyk et al., 2020; Sedghi et al., 2025). Male-dominated structures often overlook women's needs, resulting in gender-insensitive policies and facilities, which can undermine community resilience (Drolet et al., 2015; Mahbub et al., 2025; Roy & Mukherjee, 2024).

Women's participation is always treated as beneficial. Including women in planning, response, and recovery leads to more comprehensive, equitable, and sustainable disaster management outcomes (Abdalla et al., 2024; Sedghi et al., 2025; Roy & Mukherjee, 2024; Mahbub et al., 2025; Ruszczyk et al., 2020; Drolet et al., 2015). Women's participation improves early warning systems, shelter design, WASH (Water, Sanitation, and Hygiene) facilities, and post-disaster recovery (Drolet et al., 2015; Mahbub et al., 2025; Roy & Mukherjee, 2024; Sedghi et al., 2025). Empowering women in decision-making is linked to reduced loss of life, better resource distribution, and increased community resilience (Abdalla et al., 2024; Drolet et al., 2015; Hamidazada et al., 2019; Mahbub et al., 2025; Roy & Mukherjee, 2024; Sedghi et al., 2025;).

This study further validates the argument that climate intrusions frequently neglect the social magnitudes of disasters. Although national policies in Bangladesh recognize gender as a priority, successful implementation still relies on community-level consciousness, inclusive decision-making, and improved harmonization between government and non-governmental organizations (GO–NGO). Similar insights are observed in India, the Philippines, Nepal, and Pacific Island nations, where policy reforms proved effective only after systematic engagement with women and local leaders (Rai et al., 2021).

The widening disparity ensuing from climate-induced migration is another significant concern (Mallick, 2024). As men move for job opportunities, especially in response to rapid-onset hazards such as cyclones or flood damage, communities may have few or no options for adapting where they are. In such situations, migration is the only viable option for survival. On the other hand, women take on more responsibilities, including disaster recovery, childcare, household decisions, and the maintenance of fragile livelihoods. This phenomenon mirrors trends observed in Sub-Saharan Africa and South Asia, underscoring that climate change influences gender roles in ways that require serious consideration by policymakers (World Bank, 2025).

Policy and international frameworks (e.g., Sendai Framework) and research that call for gender mainstreaming and women's active involvement at all levels of disaster management (Abdalla et al., 2024; Hamidazada et al., 2019; Ruszczyk et al., 2020; Zaidi & Fordham, 2021) are compelling and sustainable.

Further, global research consistently shows that disaster management systems are less effective when women are excluded from decision-making. Women's participation is essential for equitable, resilient, and effective disaster response and recovery.

Most importantly, the findings highlight a crucial point: when women are absent from decision-making processes, whether at the household, community, or institutional levels, the overall effectiveness of the disaster management system declines. This aligns with global evidence showing that inclusive governance results in better early warning responses, a fairer distribution of relief, and stronger community resilience (Drolet et al., 2015; Hamidazada et al., 2019; Mahbub et al., 2025; Pérez-Gañán et al., 2022; Roy & Mukherjee, 2024; Sedghi et al., 2025). In conclusion, the study, by linking the community's lived experiences with the extensive body of literature on gender-responsive adaptation and addressing the gaps identified at both local and global levels, and these five strategic options—financial services, livelihood support, awareness programs, family participation, and stronger government-NGO and GO–NGO coordination—can offer pragmatic pathways to solutions.

7. POLICY IMPLICATIONS

Because gender is acknowledged as a cross-cutting issue at the policy level, there is still a large implementation gap at the community level. Although national frameworks like the Bangladesh Climate Change Strategy and Action Plan and the Sendai Framework emphasize women's participation as a concept, they do not institutionalize systems that guarantee their active roles in decision-making. This knowledge gap is caused by a lack of bottom-up data integration, the competence of local institutions, and inadequate cooperation between GO-NGO actors.

Therefore, future policy efforts must focus on the further implication of this framework, which would be the institutionalization of bottom-up data flows to facilitate more responsive decision-making. Local government bodies such as Union Parishads and Upazila Disaster Management Committees (UDMCs), along with Union- and Ward-level committees, should be empowered to spearhead localized decision-making, data collection, and response efforts, supported by adequate training, funding, and digital infrastructure. If this policy framework is successfully implemented, it could further be applied to managing disease outbreaks, health hazards,

earthquakes, and similar disasters, as well as enhancing general public services such as providing subsidies to agriculture and funding for the elderly, widows, and patients with life-threatening conditions like cancer and kidney disease. All of these public services would become more effective by leveraging this same infrastructure.

However, there is a need for an assessment to understand the challenge and the type of vulnerability of the population in targeted areas and to choose a location that is easily accessible and make appropriate provisions at the Union Parishad in the target area. It is also necessary to organize multiple awareness campaigns aimed at educating members of the community, including males, females, and other demographic groups, as well as their families. Besides, strengthen 'Network Governance' and increase collaboration with development partners, local community organizations, healthcare providers, and non-governmental organizations to effectively implement the policy. Finally, it is important to develop an evaluation strategy to ensure the policy's effectiveness.

8. CONCLUSION

The evidence gathered in this paper indicates that a person is not only vulnerable due to exposure to climate hazards, but vulnerability is also heightened by social inequities, scarcity of resources, and poor institutional support. Specifically, women are at a higher risk largely because of limited freedom of movement, inability to make decisions, and the inability to access critical services such as childcare and water. When women obtain access to safe water, sanitation, and hygiene facilities, as well as livelihood and disaster preparedness training, their adaptive capacity increases significantly, which is also demonstrated by the study.

By enhancing local leadership, institutional effectiveness, gender-sensitive awareness, and skill development initiatives, an inclusive policy has the potential to reduce vulnerability by offering both financial and non-financial services. Additionally, it should promote coordination among local government entities and Palli Karma-Sahayak Foundation (Bangladesh) (PKSF) partner NGOs within the framework of gender-responsive policies and guidelines. Enhancing livelihoods, adaptation, and living standards while reducing economic insecurity, social alienation, and health risks is essential to ensuring that women actively participate in disaster risk reduction. The study also shows that targeted support for women is vital to strengthening resilience to overcome the challenges of vulnerability, and for improved adaptation strategies, gender-responsive climate budgeting is required.

In the southwestern region of Bangladesh, numerous projects are currently underway; however, they are modest in scale compared to the requirements. According to the National Adaptation Plan (2023-2050), the area faces the most climate-related hazards, and the average damages and losses from disasters totaled BDT 30.2 billion during 2016-2021, primarily driven by climate stress (BBS, 2022a). When these vast numbers of figures exist, interventions remain fragmented, short-lived, and primarily focused on relief rather than on building long-term resilience in the community. Hence, the difference between policy goals and ground levels is clearest in rural coastal areas, where households, especially those led by women, struggle to recover from repeated disaster hazards (Almutairi et al., 2020).

As a development professional, I have always had a chance to closely observe women's vulnerability while implementing a project in this area, and I would like to share a community story. Mst. Poly Khatun, a 35-year-old woman living in a coastal village in Satkhira during Cyclone Remal in May 2024, wakes up every day before sunrise. Her husband left for Dhaka after the last cyclone demolished their paddy fields. Now, she alone takes care of her two children and her elderly mother-in-law. When the high tide enters through broken embankments, saline water floods her homestead. Drinking water becomes scarce, crops fail to grow due to salinity, and her children often fall sick. Poly spends hours walking to collect drinking water and firewood, and as a consequence she cannot work and is unable to generate income. She faces a dilemma during every cyclone warning to make a decision: whether to rush to the shelter, leaving her livestock behind, or to stay and risk her children’s lives. She does not have a voice in the community meetings that plan disaster preparedness, as our social norms do not allow her mobility, instead limiting her capacity to make decisions.

But Poly was not helpless. She learned new skills in vegetable gardening on raised beds and small-scale poultry rearing with the help of a local women’s group. She also joined a savings group that gives her access to micro-insurance. She restructured her life gradually. Women usually face vulnerability in climate-affected coastal areas and have the power of resilience when financial and non-financial services are available to them; her story can describe the same. In short, the story of Poly is about the root causes of vulnerability that signify poverty, salinity, and gender inequality. Impacts followed by health risks, livelihood loss, migration, food insecurity, and resilience strategies mean community support, women’s empowerment, and financial & non-financial services.

The initial things communities face during or after a disaster are poor housing conditions, sanitation, water, health, and, ultimately, due to a lack of education, unemployment. According to the data, the advancement of basic services (WASH)[1] and strengthening policy and equity measures are the most effective ways to reduce women's vulnerability. These initiatives will give women the power to make a difference, advocate for their rights, and help to break down systems that fuel gender-based violence and inequality.

Gendered vulnerabilities and suggested policy approaches are the main highlights of this study. Inter-institutional coordination progress is recommended to foster collective effort. However, due to a lack of monitoring, gender data, and funding gaps, gender-sensitive policies are not translated into local, measurable activities. For the future studies, it is recommended to include inclusive gender-responsive indicators, improved collaboration, and evaluation of long-term community impacts. Consequently, the integrated context will increase the understanding of the connection between gender, power, and climate threats. It will further inspire study on climate finance, social norms, and adaptation strategies in the climate-vulnerable areas, which will provide visions and can guide more inclusive and effective climate adaptation and mitigation techniques.

[1] WASH (Water, Sanitation, and Hygiene) in the context of coastal regions

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ANNEX 1

KII Participant Attendance List						
SL	**Sex**	**Status of the position**	**Name**	**Category of Respondents**	**Designation**	**Organizations Name**
1	Male	Senior	Khaled Hasan	Government-established Entity	Deputy Managing Director	Palli Karma-Sahayak Foundation (PKSF)
2	Male	Medium	Mahamudur Rahman	Government-established Entity	Manager	Palli Karma-Sahayak Foundation (PKSF)
3	Male	Senior	Kamrul Hasan	Government-established Entity	Assistant General Manager	Palli Karma-Sahayak Foundation (PKSF)
4	Male	Medium	Mahfuzur Rahman	Government-established Entity	Manager	Palli Karma-Sahayak Foundation (PKSF)
5	Male	Medium	Abu Naser	Government-established Entity	Project Coordinator	Palli Karma-Sahayak Foundation (PKSF)
6	Male	Medium	Bitan Kumar Mandal	Local Government	ADC, Khulna	GoB
7	Female	Medium	Rony Khatun	Local Government	UNO-Shyamnagar Upazila, Satkhira,	GoB

8	Male	Senior	Dr. Nurul Kadir,	Government	Member	Bangladesh Public Service Commission
9	Male	Senior	Md. Ziaul Haque	Government	Director	Department of Environment
10	Male	Senior	Mirza Shawkat ALI	Government	Director	Climate Change, Department of Environment
11	Male	Senior	Md. Alamgir Kabir	NGO	Head of Micro Credit	Nowabeki Gonomukhi Foundation, Shamnagar, Satkhira
12	Male	Senior	Md Mustafizur Rahman	NGO	Director	Nabolok, Khulna
13	Male	Senior	Fazlul Haque	NGO	Head of Micro Credit	Addin, Head Office, Jessore
14	Male	Senior	Quazi Wafiq Alam (Nishid)	NGO	Director	CODEC, Head Office CTG
15	Male	Medium	Md. Mahbubur Rahman	NGO	Zonal Manager	CODEC, Bagerhat
16	Female	Medium	Mazbahun Nahar	NGO	Project Coordinator (Legal Aid and Women's Rights)	RDRS Bangladesh, Rangpur,

FGD Members Attendance List						
1	Male Group (N 8)	Group 1	Sajib kumar Mridha	Teligati Union	Morrelganj	Bagerhat
2	Male Group (N 8)	Group 1	Md Torikul islam	Putikhali Union	Morrelganj	Bagerhat
3	Male Group (N 8)	Group 1	Md Riajuddin	Daibagnyahati Union	Morrelganj	Bagerhat
4	Male Group (N 8)	Group 1	Md. Imran hossain	Sundarban Union	Mongla	Bagerhat
5	Male Group (N 8)	Group 1	Md Borhan Sarder	Rayenda Union	Sarankhola Upazila	Bagerhat
6	Male Group (N 8)	Group 1	Shariar Hossain	Baraikhali Union	Morrelganj	Bagerhat
7	Male Group (N 8)	Group 1	Goutom Halder	Rayenda Union	Sarankhola Upazila	Bagerhat
8	Male Group (N 8)	Group 1	Abdul Khaleq	Mithakhali Union	Mongla	Bagerhat
9	Female Group (N 6)	Group 2	Runa Begum	Laudobe Union/Khutakhali	Dacope	Khulna
10	Female Group (N 6)	Group 2	Mis. Hanoara Begum	Laudobe Union/Khutakhali	Dacope	Khulna
11	Female Group (N 6)	Group 2	Laboni Begum	Laudobe Union/Khutakhali	Dacope	Khulna

12	Female Group (N 6)	Group 2	Rupa rani	Laudobe Union/Khutakhali	Dacope	Khulna
13	Female Group (N 6)	Group 2	Swapna Rani Mandal	Laudobe Union/Khutakhali	Dacope	Khulna
14	Female Group (N 6)	Group 2	Luisa Roy	Laudobe Union/Khutakhali	Dacope	Khulna
15	Male Group (N 3)	Group 3	MD Al amin	Baradal Union/Buria	Asashuni	Satkhira
16	Male Group (N 3)	Group 3	MD Zahidul Islam	Baradal Union/Buria	Asashuni	Satkhira
17	Male Group (N 3)	Group 3	Shahadat Hossain	Baradal Union/Buria	Asashuni	Satkhira
18	Female Group (N 4)	Group 4	MST ASMA BEGUM	Baradal Union/Boddodol	Asashuni	Satkhira
19	Female Group (N 4)	Group 4	Rupia Begum	Baradal Union/Boddodol	Asashuni	Satkhira
20	Female Group (N 4)	Group 4	Hasina Begum	Baradal Union/Boddodol	Asashuni	Satkhira
21	Female Group (N 4)	Group 4	Shefali	Baradal Union/Boddodol	Asashuni	Satkhira
22	Female Group (N 3)	Group 4	Juthika	Baradal Union/Jamalnagar	Asashuni	Satkhira

ANNEX 2: QUESTIONS

A. Key Informant Interview Questions: Gender and Climate Vulnerability

1. What kind of support do women need most to develop effective disaster risk mitigation strategies (e.g., financial services, mobility, shelter, awareness training)?
2. What are the most effective ways to include women in decision-making for adaptation and disaster risk reduction (DRR), and how can existing gender gaps in labor roles be addressed?
3. How do cultural, religious norms, and other structural barriers limit women's ability to respond to climate-related challenges, including access to livelihood support and adaptation resources? What strategies can be adopted to mitigate these constraints?
4. What are the key reasons behind the lack of effective government or stakeholder initiatives in addressing gender disparities in climate-vulnerable areas?
5. What policy or institutional arrangements would you recommend to better address gender inequality in climate-vulnerable regions?
6. Do you think digital illiteracy, which contributes to a lack of access to information, is a key factor in gender vulnerability? If so, what strategies would you suggest to bridge this gap?
7. What are the major challenges in collecting or utilizing gender-disaggregated data in disaster or climate programs, and how can these barriers be addressed?

Note:

- You may consider adding one question specifically about **community-based or localized planning processes**, to gather views on how to operationalize gender-responsive DRR at the grassroots level.
- How accessible are financial instruments such as loans or insurance to women in climate-vulnerable areas?
- **the role of local government or traditional leadership** in perpetuating or challenging these barriers.

B. FGD Questions

Focus Group Discussion (FGD) Questions – Easy English Version

1. What kind of help do women in your area need the most to deal with floods, storms, or other climate problems? (For example: money support, safe shelter, training, transport)
2. How can women be more involved in making decisions for disaster planning and climate change issues in your village or town?
3. Are there any customs, traditions, or social rules that make it hard for women to stay safe or recover after disasters? How can we change those?
4. Do women and men get the same support and services during disasters like floods or cyclones? If not, why do you think that happens?
5. Do local leaders, religious heads, or government people help women take part in disaster planning? Or do they stop them? Please share your thoughts.
6. Is it important for women to know how to use mobile phones or the internet to get disaster or weather-related information? What makes it hard for women to use these tools?
7. Are there any women's groups or local clubs that help with disaster planning or support after disasters? What do they do?
8. Do women in your community get access to loans, savings, or insurance to help them recover after disasters? If not, what are the main problems?
9. Before or after a disaster, what kind of training or information do women get? What else do they need to protect themselves and their families?
10. What should the government or NGOs do to make sure women and men are treated equally during and after disasters?

Institutional Memory in Field Administration: Knowledge Gaps and Governance Continuity in Bangladesh

Aziz Sartaz Zayed[1]

Abstract

This study examines institutional memory loss as a structural constraint on governance continuity within Bangladesh's field administration. Drawing on Argote's organizational memory theory and Lipsky's street-level bureaucracy framework, it empirically assesses the extent, drivers, and operational consequences of knowledge discontinuity during officer transitions. A purposive cross-sectional survey of 77 serving Assistant Commissioners (AC), Upazila Nirbahi Officers (UNO), Additional Deputy Commissioners (ADC), and equivalent officials was conducted, combining quantitative indicators with qualitative insights from frontline administrators. The findings reveal substantial deficits in institutionalized knowledge transfer: only 13% of respondents reported access to structured archival records upon assuming office, fewer than one-third (32.4%) received any form of formal handover documentation, more than 75% experienced operational inefficiencies such as duplicated initiatives and procedural delays, and 70.20% reported vulnerability to manipulation by subordinate staff due to contextual unfamiliarity. Notably, 93.2% of respondents expressed strong support for formal institutional mechanisms to preserve administrative knowledge. These results highlight the operational and strategic consequences of weak institutional memory, showing how insufficient archival access and fragmented handovers impede policy continuity, reduce administrative efficiency, and increase discretionary variance among frontline staff. The overwhelming endorsement of structured knowledge-preservation mechanisms indicates both practitioner readiness and policy feasibility for interventions such as digital repositories, standardized handover templates, and formal exit reports. By integrating empirical evidence with organizational memory theory, this study provides actionable recommendations for strengthening administrative resilience, ensuring governance continuity, and embedding knowledge stewardship within Bangladesh's field administration.

Keywords: *Institutional memory, knowledge repository, administrative continuity, field administration, civil service reform, governance efficiency, bureaucracy, knowledge retention.*

1. Introduction

Institutional memory constitutes a critical yet often invisible infrastructure of governance, enabling continuity, consistency, and informed decision-making within public administration. In systems characterized by frequent personnel movement, the absence of structured mechanisms for retaining and transferring knowledge can significantly impair administrative effectiveness. In

[1] Ministry of Public Administration (currently on Deputation to the Ministry of Land), Bangladesh Secretariat, Dhaka, Bangladesh. Email: sartaz.aziz142@gmail.com (Corresponding author)

Bangladesh's field administration, where officer tenures are typically short and transfers are routine, the erosion of institutional memory has emerged as a structural governance risk, capable of stalling implementation momentum, reproducing past errors, and weakening service delivery outcomes (Beazley et al., 2002).

Bangladesh's administrative architecture is marked by rapid postings, fragmented record-keeping, and a persistent reliance on individual cognition rather than institutionalized repositories. Leadership transitions at district and upazila levels often occur without standardized handover procedures, resulting in the loss of contextual intelligence regarding ongoing projects, stakeholder relationships, and precedent-based decision-making. Consequently, incoming officers are frequently compelled to reconstruct operational knowledge independently, a phenomenon repeatedly described by practitioners as having to 'start from scratch' (Rahman et al., 2024). Such conditions heighten vulnerability to procedural delays, inconsistent rule application, and avoidable governance failures—particularly in crisis-prone or politically sensitive jurisdictions.

Despite the centrality of institutional memory to administrative continuity, Bangladesh lacks a codified, system-wide framework for preserving and transferring field-level knowledge. While comparative administrative systems have institutionalized transition mechanisms—such as structured onboarding briefings in the UK Civil Service and mandatory agency transition memoranda in the United States (Whicher, 2021)—knowledge preservation within Bangladesh's field administration remains informal, voluntary, and personality-driven. Existing digital platforms, including D-Nothi, have strengthened file movement and traceability but have not been designed to function as repositories of accumulated administrative experience or contextual learning.

This study interrogates whether prevailing practices of knowledge retention during officer transitions are adequate to prevent repetitive reinvention of administrative processes and governance discontinuity. Drawing on a purposive survey of 77 serving field-level officers—including Assistant Commissioners, Upazila Nirbahi Officers, and Additional Deputy Commissioners—the research systematically examines access to archival records, prevalence and quality of handover practices, operational consequences of knowledge gaps, and officer preferences regarding institutionalized exit documentation systems.

Grounded in Argote's theory of organizational memory and Lipsky's framework of street-level bureaucracy, the study positions institutional memory not merely as a managerial convenience but as a determinant of discretion, accountability, and policy coherence. By generating original empirical evidence from frontline bureaucrats—an underrepresented population in governance research—the paper contributes to both theoretical refinement and policy design within a developing-country context.

2. Background and Research Problem

Field administration in Bangladesh operates within a governance environment characterized by frequent and often abrupt officer transfers, yet it remains largely unsupported by formal mechanisms for systematic knowledge transfer or institutional memory preservation (Ibrahim, 2018). Incoming officers are routinely required to assume responsibility for complex administrative portfolios—ranging from development project execution and land management to disaster response and law-and-order coordination—without assured access to prior decisions, contextual records, or implementation histories (Collier & Lakoff, 2021). This structural deficiency produces recurring patterns of policy duplication, procedural delays, inconsistent rule application, and suboptimal decision-making, thereby undermining governance effectiveness (Masud & Hossain, 2021).

The consequences of institutional memory loss are particularly pronounced in disaster-prone, politically sensitive, and resource-constrained regions, where delayed responses or misinformed decisions can directly compromise public safety, service delivery, and state credibility. Comparative administrative experiences across South Asia suggest that similar challenges exist in India, Sri Lanka, and Malaysia; however, these systems have increasingly adopted structured transition protocols and administrative documentation practices to mitigate knowledge erosion. In contrast, Bangladesh's field administration continues to rely predominantly on oral briefings, informal staff mediation, and individual recollection, rendering institutional knowledge highly vulnerable to erasure with each transfer cycle.

Empirical evidence from this study reinforces the systemic and structural nature of the problem. Survey data from 77 serving field-level officers reveal that only a small minority accessed structured documentation upon assuming charge, while nearly 69% reported that subordinate staff exploited incoming officers' lack of contextual knowledge, thereby distorting authority, accountability, and decision-making autonomy. This asymmetry of information not only weakens formal administrative control but also amplifies discretionary manipulation, corroborating concerns raised in governance and street-level bureaucracy literature (Rahman et al., 2023). Reliance on verbal transmission and human memory has thus proven fragile, inconsistent, and institutionally unsustainable.

The significance of this research is threefold. First, operationally, it addresses institutional memory discontinuity as a persistent administrative bottleneck that fuels inefficiency, governance inertia, and discretionary capture at the field level. Second, from a policy perspective, the study aligns with Bangladesh's digital governance agenda and SDG 16 by critically examining why existing platforms—most notably *D-Nothi*—have improved procedural traceability but failed to institutionalize cumulative administrative knowledge at the field level Mollah et al. (2024). Third, theoretically, the study extends organizational memory and street-level bureaucracy scholarship by empirically testing these frameworks within a decentralized, developing-country context, demonstrating how institutionalized knowledge directly shapes administrative continuity,

discretion, and strategic performance. Importantly, the policy relevance of this research is immediate and actionable. Based on empirical findings, the study advances concrete recommendations for the Ministry of Public Administration and the Cabinet Division, including the institutionalization of mandatory exit reports, standardized handover templates, and digitally embedded knowledge repositories. Such reforms have the potential to shift Bangladesh's field administration from a cyclical governance model—where knowledge is repeatedly lost—to a cumulative, learning-oriented system that strengthens administrative resilience, professionalism, and long-term governance continuity.

3. Research Objectives and Guiding Questions

The overarching objective of this study is to critically examine the role and necessity of institutional memory mechanisms within Bangladesh's field administration, with particular emphasis on administrative continuity, accountability, and operational efficiency in public service delivery. Responding to reviewer observations regarding structural clarity and analytical focus, the study consolidates its inquiry around a limited number of tightly aligned objectives that integrate empirical investigation with theoretical interpretation.

First, the study seeks to examine existing practices of knowledge transfer during officer transitions in field administration. This objective focuses on identifying the formal and informal mechanisms through which institutional knowledge is communicated, documented, or informally retained, including handover practices, record-keeping habits, and reliance on individual memory. By doing so, the study captures the operational realities that shape continuity during frequent administrative turnover. Second, the study aims to assess the operational consequences of weak or absent institutional memory systems. This involves analyzing the extent to which the lack of structured knowledge repositories contributes to service delays, inconsistent rule application, duplication of initiatives, and decision-making inefficiencies. Through this objective, the research empirically links knowledge discontinuity to observable governance challenges at the field level. Third, the study explores officers' perceptions and preferences regarding feasible and desirable institutional memory solutions. Particular attention is given to comparative preferences for physical documentation, digital platforms, and centralized searchable repositories, as well as perceived administrative, technical, and organizational constraints. This objective directly informs the design logic of policy-relevant knowledge management interventions. Finally, the study applies organizational memory theory—supplemented by insights from street-level bureaucracy—to interpret observed knowledge retention and loss patterns within Bangladesh's decentralized administrative context. This theoretical engagement serves both as an explanatory framework for the empirical findings and as an analytical foundation for formulating institutional reform recommendations.

These objectives are operationalized through a focused set of guiding research questions that structure the empirical analysis and results presentation. The study asks how knowledge is

currently handed over during officer transitions and how effective these mechanisms are in ensuring continuity of critical administrative information. It further examines the extent to which the absence of institutional memory systems affects service delivery outcomes and administrative stability. In addition, it investigates officers' preferences regarding different institutional memory formats and their perceptions of the feasibility of a centralized digital knowledge repository, including practical implementation concerns. By addressing these interlinked questions, the study systematically identifies both the structural deficiencies and reform pathways associated with institutional memory in field governance. In doing so, it directly responds to reviewer concerns regarding focus, coherence, and theory–practice linkage, while providing an evidence-based foundation for policy and administrative reform.

4. Literature Review

Institutional memory in public administration has been explored through multiple theoretical paradigms, notably organizational learning theory and knowledge management frameworks. Durepos et al. (2021) define organizational memory as the repository of accumulated information derived from historical experiences, which serves to inform present-day decision-making. While this construct is widely institutionalized in corporate governance, it remains markedly underutilized in the public sectors of developing countries, posing a substantial barrier to consistent and effective governance. Seitzer et al. (2024) document how OECD countries have prioritized structured transition mechanisms to facilitate knowledge continuity. For instance, the UK Government Transition Guide mandates departmental briefings for incoming ministers and senior civil servants, enabling rapid contextual familiarization. Similarly, the U.S. Presidential Transition Act requires agencies to prepare comprehensive briefing books, ensuring operational stability across political transitions.

In contrast, developing nations, particularly in South Asia, face entrenched structural limitations in institutionalizing memory systems. Hasan (2023) observes that Bangladesh's bureaucracy is heavily dependent on oral information transmission, leading to significant knowledge attrition during personnel turnover. Huang & Yuan (2024) further argue that the absence of embedded memory tools in local administration fosters repetitive decision-making and procedural amnesia, ultimately weakening the quality and efficiency of public service delivery. Sharmin et al. (2024) note that although Bangladesh has undertaken several ICT4D initiatives, such as the a2i program and various e-filing systems, none have established a formalized knowledge-archiving mechanism tailored for field-level administrative transitions. Anecdotal accounts from civil servants reveal that what institutional memory exists is often captured in informal formats — personal notes, diaries, or verbal briefings — none of which are standardized, centralized, or durable beyond individual tenures. The stakes are particularly high at the district level, where each Deputy Commissioner's office is responsible for key domains such as disaster response, project execution, land revenue, and law enforcement. Alam et al. (2022) warn that the absence of institutional memory tools in these high-stakes areas not only fosters inefficiencies but

also introduces severe vulnerabilities, especially during emergencies that demand quick and informed decision-making.

Research from India demonstrates that rural governance structures, which face high personnel turnover and contextual complexity, benefit disproportionately from systematic digital knowledge retention. Upadhyay and Kumbharana (2012) argue that comprehensive knowledge management frameworks embedded within e-governance initiatives significantly enhance sustainability and service continuity in rural sectors, where institutional memory is otherwise fragile. Complementing this, Naushad Ali and Iqbal (2015) observe that centralized knowledge repositories reduce cognitive and administrative overload on officers by consolidating precedents, guidelines, and operational knowledge, thereby allowing administrators to focus on priority decision-making rather than the rediscovery of routine processes.

Evidence from Pakistan further substantiates the governance value of structured knowledge transmission. Ali and Avdic (2015), drawing on the case of Gilgit-Baltistan, demonstrate that formalized handover mechanisms and documented institutional knowledge materially improve efficiency in local governance by ensuring continuity across officer transitions. Earlier work by Ali (2011) emphasizes that ICT-enabled knowledge repositories are particularly critical for non-local officers, who often lack socio-administrative familiarity with their postings and therefore rely heavily on documented institutional context to perform effectively. Within Bangladesh, however, the institutionalization of such knowledge systems remains constrained by structural and cultural factors. Panday (2018) identifies entrenched resistance among senior bureaucrats as a key impediment to administrative reform, noting that change aversion and personalization of authority have historically undermined efforts to formalize knowledge repositories within the civil service. Comparable reform challenges are observed in Nepal, where Gautam (2018) finds that the absence of knowledge-based incentive and reward systems has weakened the effectiveness of performance-oriented administrative reforms. Taken together, these regional studies highlight that while the utility of knowledge repositories in enhancing administrative continuity and efficiency is well established across South Asia, their successful adoption is contingent upon organizational culture, incentive structures, and political commitment—factors that are particularly salient in Bangladesh's field administration.

This study seeks to bridge the evident gap in the literature by integrating empirical evidence with a prescriptive framework for institutional reform. Unlike prior studies that primarily describe challenges, this research combines quantitative data and qualitative narratives to construct a hybrid policy argument. It advances a context-specific, actionable model aimed at embedding institutional memory within Bangladesh's field administration, thereby enhancing resilience, procedural continuity, and administrative effectiveness.

5. Conceptual and Theoretical Framework

This study is anchored in organizational memory theory, which conceptualizes institutions as repositories of accumulated knowledge embedded in documents, routines, procedures, and technological systems rather than solely in individual actors (Argote, 2013; Durepos et al., 2021). Within public administration, particularly in high-turnover field settings, organizational memory functions as a stabilizing mechanism that preserves decision rationales, operational precedents, and contextual intelligence across leadership transitions. The framework further draws on street-level bureaucracy theory (Lipsky, 2010) to explain how information asymmetries and discretionary power emerge when institutional memory is weak or fragmented.

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The central premise of the framework is that the absence of institutionalized memory systems compels incoming officers to reconstruct administrative knowledge independently, increasing transitional learning costs and exposing governance processes to inconsistency, delay, and discretionary manipulation. In Bangladesh's field administration—characterized by frequent transfers and limited formal handover practices—this condition systematically undermines operational continuity and service quality. The framework is structured around three core constructs. The first is institutional knowledge repositories, defined as the existence, accessibility, and usability of structured records, archives, and documentation systems that capture operational, legal, and contextual knowledge relevant to field administration. The second construct is handover and transition mechanisms, which include formal exit reports, standardized handover templates, briefing protocols, and transitional documentation practices between outgoing and incoming officers. The third construct is operational continuity, conceptualized as the capacity of administrative units to sustain consistent decision-making, service delivery, and procedural coherence despite changes in office-holders.

The framework posits a directional relationship in which the presence of accessible knowledge repositories and structured handover mechanisms enhances operational continuity by improving officer preparedness, reducing information gaps, and limiting scope for discretionary distortion. These relationships are empirically examined through outcome indicators such as perceived readiness of incoming officers, frequency of administrative errors, duplication of initiatives, service delays, and reported exploitation of informational asymmetries by subordinate staff. To capture the complexity of administrative environments, the framework incorporates mediating and moderating factors. Mediating factors include staff cooperation and behavioral adaptation, which influence how institutional knowledge is transmitted or withheld in practice, and technological readiness, reflecting the availability and functionality of digital platforms capable of supporting repository-based memory systems. Moderating contextual variables—such as tenure duration, organizational culture, and infrastructural capacity—condition the strength of relationships between institutional mechanisms and governance outcomes.

By integrating organizational memory theory with street-level bureaucracy insights, the framework provides a coherent analytical lens for interpreting both quantitative patterns and

qualitative narratives generated by the study. It is deliberately tailored to the institutional realities of Bangladesh's decentralized public administration, accounting for constraints related to technology adoption, documentation norms, and bureaucratic practice. As such, the framework serves not only as a diagnostic tool for identifying sources of knowledge discontinuity but also as a prescriptive foundation for designing feasible, theory-informed reforms aimed at institutionalizing memory preservation in field governance.

6. Methodology

6.1. Research Design

This study adopts a cross-sectional descriptive research design grounded in primary quantitative data, complemented by limited qualitative inputs. The design is appropriate for capturing prevailing patterns, perceptions, and operational consequences of knowledge discontinuity during officer transitions within Bangladesh's field administration. Consistent with organizational memory research in public-sector contexts, the study seeks to document both the prevalence of institutional memory mechanisms and their perceived effects on administrative performance at a specific point in time. The analytical focus is on measuring officers' experiential assessments of handover practices, archival accessibility, and governance disruptions arising from undocumented transitions.

6.2. Population and Sampling Strategy

The target population comprised field-level and mid-level civil servants currently serving in district and upazila administrations, specifically Assistant Commissioners, Upazila Nirbahi Officers (UNOs), and Additional Deputy Commissioners (ADCs). These officials were selected because they occupy positions most directly exposed to the operational consequences of frequent transfers, incomplete handovers, and institutional memory gaps. Officers stationed exclusively at central ministries or retired personnel were excluded, as they lack immediate, field-based exposure to transition-induced administrative disruptions.

A purposive sampling strategy was employed to ensure that respondents possessed recent, firsthand experience of officer transitions and day-to-day administrative execution. This approach is widely accepted in elite public administration research where the study population is specialized, bounded, and knowledge-intensive. The sample also reflects officers at relatively early and mid-career stages, a cohort particularly sensitive to transitional learning costs and thus well positioned to critically evaluate the adequacy of existing knowledge retention practices. Data were collected from 77 fully completed and validated responses between 9 and 12 June 2025 through secure digital dissemination using formal administrative communication channels. Out of approximately 120 invitations, the response rate was estimated at 62%, which is considered robust for targeted elite surveys in governance research. Although the sample does not claim statistical representativeness of the entire Bangladesh Civil Service, it adequately captures those administrative actors most affected by institutional memory discontinuity. The inclusion of

respondents across multiple designations and districts enhanced contextual diversity and analytical depth.

6.3. Instrument Design

Data were collected using a structured questionnaire designed to operationalize constructs derived from organizational memory and governance literature. The instrument was organized into five thematic domains: respondent service profile, access to institutional memory, handover and transition experiences, perceived operational consequences, and systemic feedback. It contained eighteen closed-ended Likert-scale items and two open-ended questions intended to capture explanatory narratives and reform suggestions. Item construction was informed by established indicators in organizational memory studies and refined through expert validation by two senior field administrators to ensure contextual relevance and face validity. The internal consistency of the instrument was assessed using Cronbach's alpha, which yielded a coefficient of 0.83, indicating a high level of reliability across the operational constructs measured.

6.4. Data Collection Procedure and Ethical Considerations

The survey was administered online using Google Forms to facilitate accessibility across geographically dispersed field locations. Participation was voluntary and anonymous. An informed consent statement preceded the questionnaire, and only consenting respondents were allowed to proceed. No personally identifiable information was collected, and no incentives were offered. All responses were stored securely and used exclusively for academic analysis. Given the non-invasive nature of the study and the absence of sensitive personal data, the research adhered to standard ethical norms for administrative and governance research.

6.5. Data Analysis Techniques

Quantitative data were analyzed using Microsoft Excel and SPSS (Version 25). Descriptive statistics, including frequencies, percentages, and means, were employed to summarize response distributions and identify dominant patterns. To explore associations between key variables—particularly access to institutional memory and perceived operational disruption—Pearson correlation analysis was conducted. Open-ended responses were subjected to thematic coding, allowing qualitative insights to contextualize and substantiate quantitative findings. This integration enhanced interpretive robustness and strengthened the linkage between empirical evidence and theoretical claims.

6.6. Theory Testing and Analytical Alignment

The study empirically tests the theoretical proposition derived from organizational memory theory that knowledge discontinuity during leadership transitions adversely affects administrative efficiency, decision consistency, and service delivery. The findings strongly support this proposition. These empirical patterns align closely with Argote's conceptualization of organizational memory as a determinant of decision quality and operational stability. The findings

further resonate with street-level bureaucracy theory by demonstrating how informational asymmetries created by memory gaps expand discretionary space and weaken hierarchical accountability. Taken together, the results provide robust empirical validation of the study's theoretical framework within the specific institutional context of Bangladesh's field administration and underscore the necessity of formalized knowledge retention and transition mechanisms as instruments of governance reform.

7. Results and Findings

This section presents and analyzes empirical findings derived from the responses of 77 field-level administrators. The results are organized thematically and interpreted through the lenses of organizational memory theory (Argote, 2013) and street-level bureaucracy (Lipsky, 2010), thereby explicitly linking observed administrative practices with established theoretical constructs. The findings collectively demonstrate how institutional memory discontinuity translates into operational inefficiencies, discretionary distortions, and governance risks.

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7.1. Quantitative Overview of Key Indicators

To anchor the thematic analysis, Table 1 summarises core quantitative indicators reflecting prevailing knowledge management practices in field administration.

Indicator	Value
Respondents with archive access upon joining	13.0%
Officers receiving structured handover (briefing or notes)	32.4%
Officers disrupted by lack of institutional memory	75.4%
Officers exploited due to knowledge asymmetry	70.2%
Officers supporting a formal knowledge repository	92.2%
Most recommended documents	Project reports (77%), Decision archives (65%), Templates (49%)

Table 1: Key Indicators of Institutional Knowledge Management

These statistics reveal a systemic absence of formalized organizational memory mechanisms, despite overwhelming professional consensus on their necessity.

7.2. Access to Institutional Archives

Only 13% of respondents reported having access to structured archival materials—such as prior decisions, correspondence, or project records—upon assuming office (Figure 1). From an

organizational memory perspective, this reflects a severe failure in knowledge retention mechanisms, where experiential and procedural knowledge is neither codified nor retrievable.
In the absence of institutional repositories, incoming officers depend on informal staff briefings or personal exploration, resulting in fragmented knowledge acquisition. This practice reinforces knowledge silos, undermines cumulative governance learning, and prevents strategic continuity across administrative tenures.

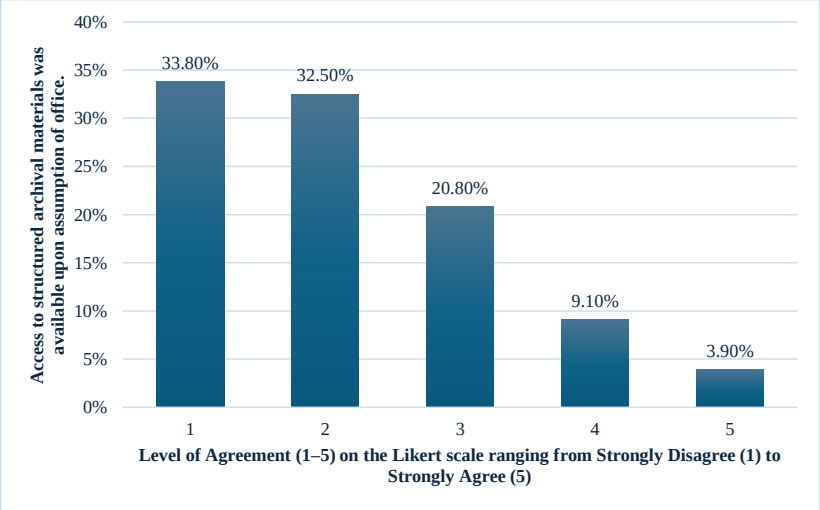


FIGURE 1: DISTRIBUTION OF RESPONSES ON THE ACCESS TO STRUCTURED ARCHIVAL MATERIALS UPON ASSUMING OFFICE. RESPONSES WERE RECORDED ON A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5).

7.3. Handover Practices and Transitional Governance

Only 32.4% of officers received any form of structured handover documentation, while 37.7% assumed charge without any written transitional record. Critically, a mere 8% benefited from both written documentation and in-person debriefing. This systemic weakness in handover culture directly contradicts principles of organizational learning and institutional continuity. The absence of structured transitions generates early-stage inefficiencies, disrupts policy momentum, and forces officers into avoidable cycles of rediscovery—what Argote characterizes as repeated loss of stored organizational knowledge.

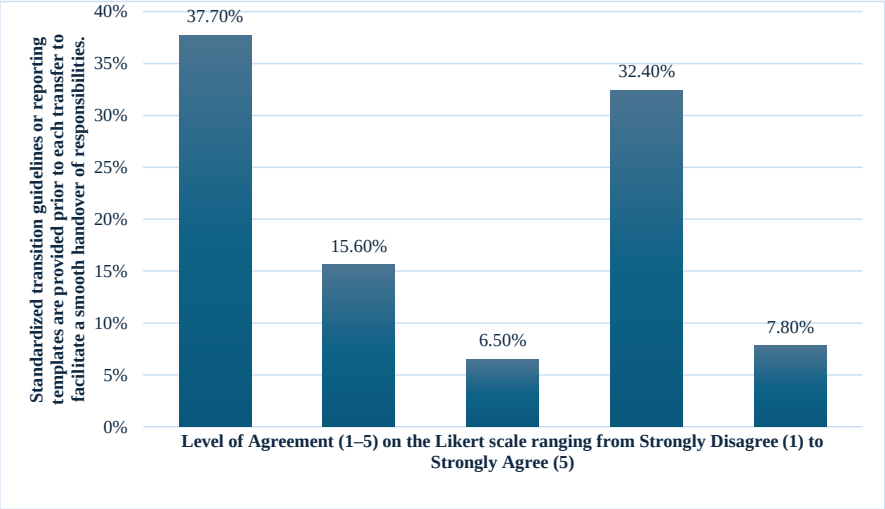


FIGURE 2: DISTRIBUTION OF RESPONSES ON THE AVAILABILITY OF STANDARDIZED TRANSITION GUIDELINES OR REPORTING TEMPLATES PRIOR TO OFFICER TRANSFERS. RESPONSES WERE RECORDED ON A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5)

7.4. Knowledge Discontinuity and Administrative Disruption

A substantial 75.4% of respondents acknowledged experiencing operational disruption due to institutional memory gaps (Figure 3). These disruptions manifest in redundant project initiation, reprocessing of completed tasks, overlooked directives, and procedural delays. Such outcomes exemplify how weak organizational memory amplifies administrative inertia and erodes governance efficiency. In high-pressure or remote postings, the absence of historical context further constrains decision-making agility, reinforcing Lipsky's observation that uncertainty increases discretionary variance among frontline bureaucrats.

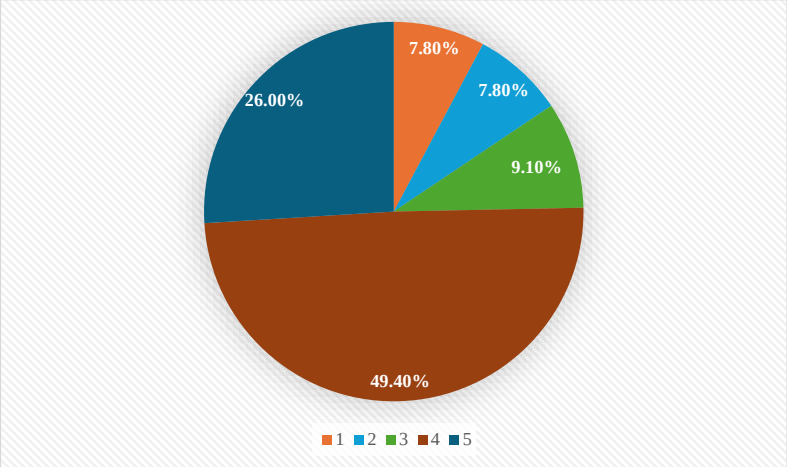


FIGURE 3: DISTRIBUTION OF RESPONSES ON THE EXTENT TO WHICH DISRUPTIONS IN ONGOING ADMINISTRATIVE INITIATIVES OCCUR DUE TO UNRECORDED LEARNINGS FROM PILOT IMPLEMENTATIONS. RESPONSES WERE COLLECTED USING A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5).

Likert Category	Narrative Meaning	Frequency (n)	Percentage (%)
Strongly Disagree (1)	No disruption experienced	6	7.8
Disagree (2)	Minimal disruption	6	7.8
Neutral (3)	Occasional/uncertain disruption	7	9.1
Agree (4)	Clear disruption	38	49.4
Strongly Agree (5)	Severe/repeated disruption	20	26.0
Total		77	100.0

Table 2: Perceived Operational Disruption Levels due to Institutional Memory Gaps

7.5. Knowledge Asymmetry and Staff Manipulation

Approximately 70.2% of officers reported vulnerability to manipulation by support staff due to limited contextual knowledge (Figure 4). This finding is theoretically significant: where

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institutional memory is absent, informational asymmetry shifts power downward, distorting formal hierarchies. Such dynamics weaken accountability structures, foster unhealthy dependencies, and expose administrative processes to informal gatekeeping. This confirms that institutional memory loss is not merely a technical deficiency but a governance risk with direct implications for integrity and decision quality.

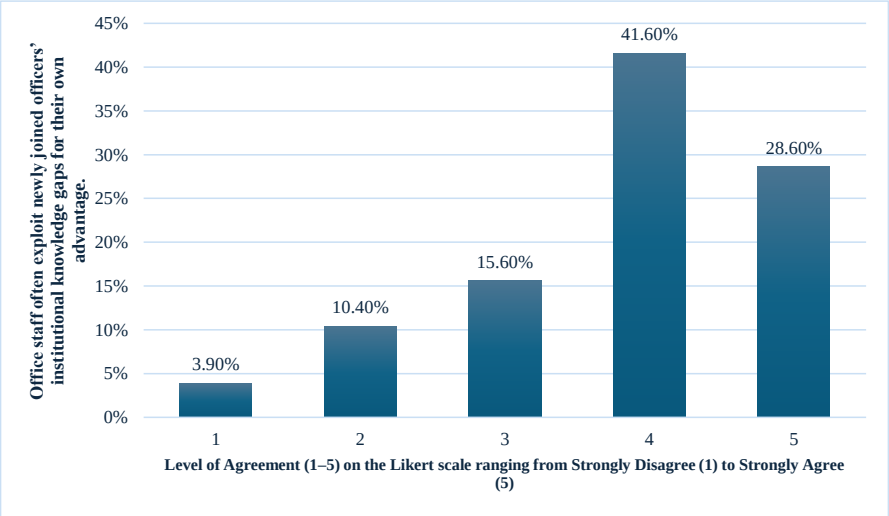


FIGURE 4: DISTRIBUTION OF RESPONDENTS' PERCEPTIONS REGARDING THE EXPLOITATION OF NEWLY APPOINTED OFFICERS' INSTITUTIONAL KNOWLEDGE GAPS BY OFFICE STAFF. RESPONSES WERE RECORDED ON A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5).

7.6. Demand for a Formal Knowledge Repository

An overwhelming 92.2% of respondents supported the introduction of a mandatory knowledge documentation mechanism during officer transfers (Figure 5). Preferred content included project reports (77%), decision archives (65%), and operational templates (49%). This near-unanimous endorsement underscores a collective professional recognition that personality-driven knowledge retention is unsustainable. The demand aligns strongly with organizational memory theory, which emphasizes codification as essential for institutional resilience and learning continuity.

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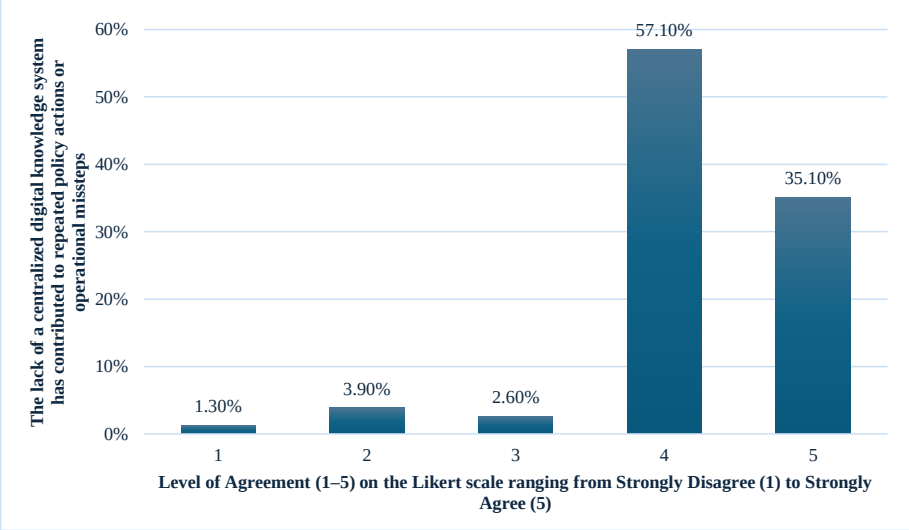


FIGURE 5: RESPONDENTS' ASSESSMENT OF WHETHER THE ABSENCE OF A CENTRALIZED DIGITAL KNOWLEDGE SYSTEM HAS RESULTED IN REPETITION OR MISSTEPS IN POLICY IMPLEMENTATION. RESPONSES WERE MEASURED ON A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5).

7.7. Institutional Readiness and Reform Feasibility

Despite strong support, respondents identified practical concerns relating to workload, data sensitivity, and role prioritization. Notably, 80.6% expressed preference for integrating a knowledge repository within the existing D-Nothi system, contingent upon robust access controls and data compartmentalization (Figure 6). This reflects a pragmatic reform orientation: officers are willing to institutionalize knowledge practices provided implementation remains secure, efficient, and embedded within familiar administrative infrastructure. Such readiness signals favorable conditions for piloting digital institutional memory frameworks in field administration.

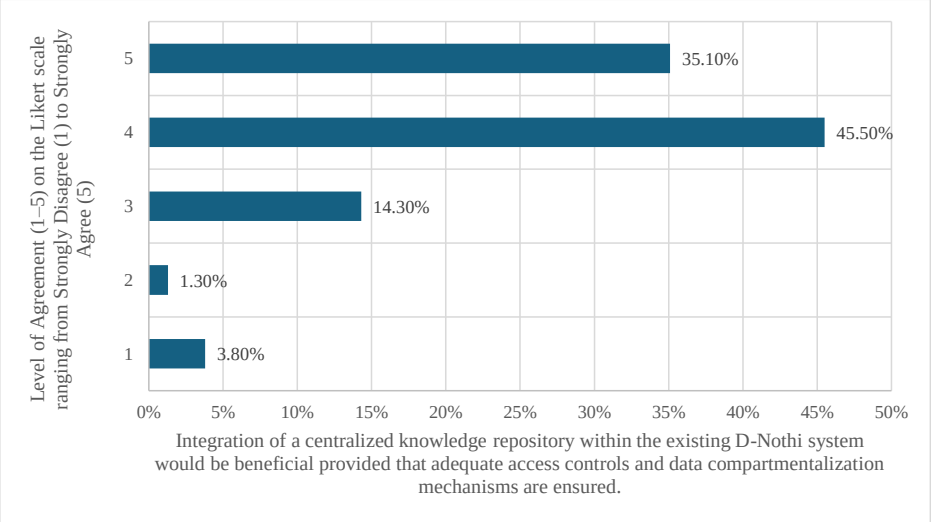


FIGURE 6: RESPONDENTS' ASSESSMENT OF WHETHER THE INTEGRATION OF AN EMBEDDED KNOWLEDGE REPOSITORY WILL RESULT IN HIGHER EFFECTIVENESS IN POLICY IMPLEMENTATION. RESPONSES WERE MEASURED ON A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5).

7.8. Synthesis of Findings

Collectively, the findings demonstrate a consistent pattern: institutional memory loss systematically undermines administrative efficiency, accountability, and governance continuity, while officers themselves overwhelmingly support structural remedies. By empirically linking knowledge discontinuity to discretion, manipulation, and inefficiency, the results substantiate the study's theoretical propositions and directly inform policy-oriented interventions.

8. Discussion and Policy Implications

This study empirically establishes that institutional memory loss functions as a structural weakness in Bangladesh's field administration, with direct implications for administrative continuity, accountability, and governance efficiency. The findings demonstrate that limited access to archives, weak handover practices, and pervasive knowledge asymmetry are not isolated operational lapses but symptoms of an underdeveloped knowledge governance architecture. By systematically linking these deficiencies to administrative disruption and discretionary distortion,

the study positions institutional memory as a foundational component of effective public administration rather than a supplementary managerial concern.

8.1. Theoretical Implications

The findings make a substantive contribution to organizational memory theory, particularly as articulated by Argote, by demonstrating how frequent personnel rotation in field administration accelerates the erosion of stored knowledge when repositories are absent or inaccessible. The observed patterns of repeated rediscovery, redundant decision-making, and loss of contextual awareness empirically validate the proposition that organizational performance is contingent upon institutionalized memory systems, not individual cognition or tenure. Simultaneously, the study extends Lipsky's street-level bureaucracy framework by introducing an important contextual refinement. While Lipsky emphasizes discretion exercised by frontline officers, the findings reveal that in low-memory environments discretion is often displaced downward to support staff who possess contextual continuity. This shifts discretion from formal authority holders to informal knowledge custodians, thereby complicating traditional understandings of accountability, control, and administrative power. In this sense, discretion emerges not merely as a behavioral attribute but as a function of organizational memory design, expanding the analytical scope of street-level bureaucracy in developing-country contexts.

8.2. Practical Implications

From a practice-oriented perspective, the study provides rare empirical insights from frontline administrators operating within high-frequency transfer regimes. The near-unanimous support for formal knowledge repositories indicates a strong practitioner consensus that informal briefings and individualized memory retention are inadequate for contemporary administrative demands. The findings suggest that standardized handover documentation, structured decision logs, and reusable operational templates are not additional bureaucratic burdens but efficiency-enhancing instruments. Embedding such tools into routine workflows would reduce onboarding time, minimize early-stage errors, and enable officers to build incrementally upon prior initiatives. In practical terms, the study reframes knowledge documentation as an operational necessity rather than a discretionary administrative courtesy.

8.3. Policy Implications

At the policy level, the study aligns closely with Bangladesh's digital governance agenda by proposing the institutionalization of memory-preservation mechanisms within existing platforms, particularly D-Nothi. Integrating exit reports, project archives, and access-controlled repositories into an already familiar system would mitigate resistance to adoption while leveraging existing digital infrastructure. Importantly, the findings indicate that reform feasibility is high: officers express readiness to comply with structured documentation requirements provided that role clarity, data protection, and workload considerations are addressed. By grounding policy recommendations in practitioner preferences and operational realities, the study bridges the

persistent gap between reform design and field-level implementation. Collectively, the discussion demonstrates that strengthening institutional memory is not a peripheral reform but a core governance intervention capable of enhancing continuity, reducing discretion-driven distortions, and improving public sector resilience. An overwhelming majority of respondents (88.3%) agreed or strongly agreed that instituting a formal exit-report mechanism would enhance knowledge continuity, indicating strong normative support among field officers for institutionalized knowledge transfer at the point of exit.

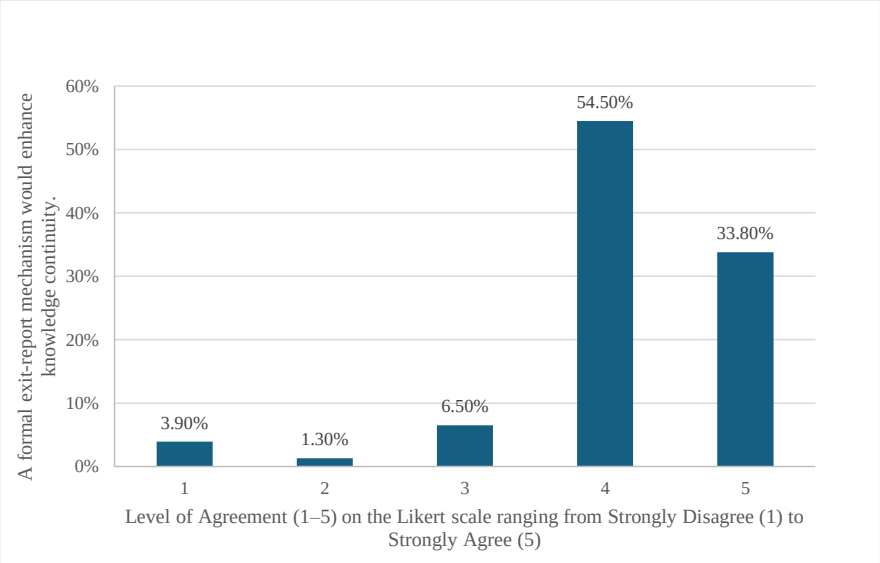


FIGURE 7: PERCEPTIONS OF FIELD-LEVEL OFFICERS REGARDING THE EFFECTIVENESS OF A FORMAL EXIT-REPORT MECHANISM IN STRENGTHENING KNOWLEDGE CONTINUITY. RESPONSES WERE MEASURED ON A FIVE-POINT LIKERT SCALE RANGING FROM STRONGLY DISAGREE (1) TO STRONGLY AGREE (5).

9. Conclusion

This study provides empirical evidence that institutional memory deficits materially undermine administrative continuity and effectiveness within Bangladesh's field administration. The absence of structured archives, fragmented handovers, and reliance on informal communication create operational discontinuity, expose officers to subordinate manipulation, and force administrators to repeatedly reinvent established processes. Grounded in organizational

memory and street-level bureaucracy frameworks, these findings demonstrate that discretion, accountability, and efficiency are structurally bound to the systems through which public knowledge is preserved.

While field officers display a strong appetite for systemic reforms—such as digital repositories integrated within D-Nothi—reversing these deficiencies requires a paradigm shift from personality-driven practices to institutionalized stewardship. Without a systematic transition to system-driven knowledge management, administrative performance will remain highly vulnerable to personnel turnover, leaving each new posting to begin from epistemic zero and weakening the long-term resilience of public governance.

9.1. Limitations and Directions for Future Research

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Several limitations qualify the findings of this study. First, the purposive sample of frontline officers may not be statistically generalizable to all civil service cadres or central-level administrative contexts. Second, the reliance on self-reported surveys introduces potential response and subjectivity biases, which future studies could mitigate by triangulating survey data with administrative records or key informant interviews. Third, the cross-sectional design restricts the ability to observe the cumulative, longitudinal effects of knowledge discontinuity over multiple successive transfer cycles.

To address these limitations and build upon these findings, future research should proceed in three key directions:

Longitudinal Analysis: Track administrative performance and policy execution across successive posting cycles to measure the cumulative governance costs of memory loss over time.

Action-Oriented Pilots: Design, implement, and evaluate digital knowledge repositories—particularly through prototype integration with existing platforms like D-Nothi—to identify and mitigate behavioral, technical, and cultural barriers to adoption.

Comparative Research: Conduct comparative studies across South Asian public administrations to contextualize Bangladesh's challenges and reform trajectory within regional knowledge-governance frameworks.

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Appendix A: Survey Instrument (Final Administered Questionnaire)
Section 1: Consent and Identity
Consent Declaration: "I agree to participate in this academic survey understanding that responses will remain anonymous and will be used solely for research."

Current Designation:
- Deputy Commissioner (DC) or equivalent
- Additional Deputy Commissioner or equivalent
- Upazila Nirbahi Officer (UNO)
- Senior Assistant Commissioner or equivalent
- AC (Land)
- Assistant Commissioner or equivalent
- Other

Total Years of Service:
- 0–2
- 2–4
- 4–6
- 6 or more

Current Working Station:
Division/District/Upazila

Number of Postings Since January 2022:
1, 2, 3, 4, 5, Other

Section 2: Institutional Memory Access & Handover
6. I had access to an organized archive of administrative decisions upon joining. (1–5 Likert)
7. My predecessor conducted a structured handover briefing. (1–5 Likert)
8. Handover briefings (if any) impacted my effectiveness in the first 30 days. (1–5 Likert)

Section 3: Operational Constraints and Efficiency
9. Inadequate access to records delayed urgent responses. (1–5 Likert)
10. Absence of centralized knowledge systems led to policy missteps. (1–5 Likert)
11. Pilot learnings are lost due to lack of documentation. (1–5 Likert)
12. Staff exploited my institutional knowledge gap. (1–5 Likert)
13. Frequency of consulting prior records in decision-making. (1–5 Likert)
14. Well-maintained tracking systems improve accountability. (1–5 Likert)

Section 4: Systemic Knowledge Mechanisms

15. I received standardized transition guidelines before transfer. (1–5 Likert)
16. There is a policy directive to preserve institutional memory. (1–5 Likert)
17. I contribute to preserving institutional knowledge before transfer. (1–5 Likert)
18. A formal exit-report mechanism would improve continuity. (1–5 Likert)

Section 5: Open-Ended Questions

19. Which documentation categories should be mandatory for each transition?
    Options included:
    - ☐ Major project reports and implementation strategies
    - ☐ Key stakeholder-contact lists and liaison history
    - ☐ Archive of administrative decisions with precedents
    - ☐ Legal correspondence and litigation records
    - ☐ Procurement and vendor history
    - ☐ Financial statements and audit trails
    - ☐ HR and staff performance evaluations
    - ☐ ICT credentials and access protocols
    - ☐ Cabinet instructions or circulars
    - ☐ Conflict resolution or media/crisis documentation
    - ☐ Annotated handover report from previous officer

20. Describe any incident where lack of prior knowledge led to error or delay.

Appendix B: Officer Testimonies (Anonymized)

- "I lost two weeks just trying to map what my predecessor was doing. No trace of fiscal files, nothing."
- "The clerical staff practically ran operations while I tried to guess my way into the system."
- "I replicated a survey already completed earlier just because there was no record it had ever been done."
- "Conflict with a local stakeholder escalated because I was unaware of past negotiations."
- "Media misrepresentation could have been avoided if I had known about earlier press briefings."

Factors Affecting Doctors' Decision-making on Serving in Rural Areas of Bangladesh: An Empirical Study

Abdullah Shibli Sadiq[1]*, Shakil Ahmed*[2]

Abstract

The authors developed a theory about why doctors choose whether or not to serve in rural areas in Bangladesh. Sometimes, doctors defy the decisions of the authority if they are posted in such areas. The theory was essentially that doctors maximize their utility, subject to constraints that the authority can effectively impose on the doctor. In this paper, the authors test the theory by interviewing doctors and other stakeholders about the factors that influence doctors' decisions to serve in rural placement. The doctors indicated that this was not a matter of comparing potential earnings in the cities and villages. Their demand was for amenities, good schools for their children, comfortable housing, ability for their spouses to secure good jobs that progress their careers, ability to visit family in the cities and opportunities for professional development. At the same time, there is weakness in enforcing the institutional constraints sufficiently. Sometimes, authorities fail to impose any significant punishment on doctors who avoid rural postings or remain absent part of the time. Therefore, the policy solution to assure better medical care for rural dwellers can be a combination of institutional support and institutional constraints.

Keywords: *Shortage of doctors, absenteeism, rural placement, utility-maximization, health policy, Bangladesh.*

Running Head: Factors affecting doctors' decision-making

1. Introduction

Excessive absenteeism and low retention of health professionals have resulted in a high vacancy rate in rural health facilities (Darkwa et al., 2015). Doctors are supposed to deliver services irrespective of their workplaces. Sometimes, it is found that doctors are eager to manage a better posting in urban areas for their own interest. It may hamper providing quality service to the patients in rural areas. Patients' service may be interrupted because of doctors' utilitarian behavior. If doctors refuse to serve where the State health service assigns them, how will the majority who cannot afford to pay the doctors expect to get proper health care? The issue is: who decides whether and where doctors will practice? This study aims to find out the answers in light of theories and empirical data.

2. Literature Review

[1] Press Information Department (Ministry of Information and Broadcasting), Dhaka, Bangladesh. E-mail: abdullah.sadiq@northsouth.edu (Corresponding author)

[2] Department of Government and Politics, Jahangirnagar University, Savar, Dhaka, Bangladesh; & South Asian Institute of Policy and Governance (SIPG), North South University, Dhaka, Bangladesh. E-mail: shakil.ahmed@juniv.edu

The aim of this section is to review the related literature on the doctors' retention in rural areas and to identify the research gap. The discussion is organized into two main areas: factors affecting doctors' rural placement in Bangladesh and global studies on rural health workforce retention.

Factors affecting doctors' rural placement in Bangladesh

Islam et al. (2024) suggest that the main reasons for absenteeism in rural health facilities are lack of formal training opportunities, family commitments, unmanageable workloads, physically unsafe environments, verbally abusive behavior by patients/caregivers and absenteeism by colleagues. According to Rahman et al. (2024), inadequate service rooms, unavailability of proper medical equipment, poor housing conditions, lack of public amenities, shortage of health workforce, lack of laboratory services, and excessive workload are the common challenges medical officers face in rural workplaces.

In addition, Joarder et al. (2018) found that lack of basic amenities and personal security, relaxed monitoring, unplanned career tracks, absence of allowances, and weakness in implementation of policies and provisions are the main reasons behind the shortage of doctors in rural settings, as well as the inability to keep spouses of doctors residing with them in their rural postings. Besides, Darkwa et al. (2015) identified inadequate opportunities for private practice, concern for children's education, anxiety about the unfamiliarity and poor living conditions in rural areas, overwhelming workloads, and insufficient incentives as the main factors that drive doctors to leave the rural areas. On the other hand, Rawal et al. (2015) considered the problem from a policy perspective. They identified that the policies are not explicitly addressing rural doctor retention issues, ineffective implementation, monitoring and evaluation of doctor supervision, and education and regulatory policy. Furthermore, Latif at al. (2013) found that undesirable rural posting, inadequate job satisfaction, urbanized mindset, isolation from nearest, dearest and colleagues, and sudden change of lifestyle are the main factors influencing doctors' decision-making about avoiding their rural placement. According to Al Mahdy (2009), lack of opportunities for private practice, lower salary structure, absence of financial incentives, inadequate accommodation and transportation facilities, and concerns about their family life can cause doctors to disappear from their rural postings.

According to Hossain et al. (2007), less opportunity for private practice, detachment from family, spouses' jobs, fear for personal security in rural areas, poor material incentives to stay in rural postings and work reliably, and a disorganized career ladder make doctors disinterested in continuing to practice in rural areas. According to the World Bank (2007), fewer opportunities for private practice and personal business, irresponsibility and negligence of duty, undesirability of rural posting, and administrative weakness are the causes of the doctors' shortage in rural areas of Bangladesh.

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Global Studies on Rural Health Workforce Retention

The scarcity of doctors in rural areas is not a unique problem in Bangladesh. Other countries also face similar problems. Rajbangshi et al. (2017) found that health workers' decisions to serve in rural India are closely linked to their personal backgrounds. A strong attachment to rural communities significantly influenced their willingness to provide care in these areas. On the other hand, retention of health workers in rural areas is hindered by poor living and working conditions, inadequate salaries and incentives, limited opportunities for professional growth and recognition, and limited educational options for their children. Nepal also faces a similar problem. According to Shankar and Thapa (2012), poor housing, low pay, reduced security, limited career growth, and weak health infrastructure are the main reasons health workers are unwilling to serve in rural Nepal. Sultana et al. (2017) studied doctors' willingness to work in rural Pakistan. They found that poor living conditions, low salaries, weak benefits, and limited career development opportunities make doctors less willing to serve in rural settings. For female doctors, the decision to work in rural areas often depends on their husbands' approval.

Not only in Bangladesh's neighboring countries but also in developed nations, doctors show similar reluctance toward rural placements. Brodribb et al. (2016) found that lack of professional support, poor supervision, and an unsupported environment are the main causes of maldistribution of the medical workforce in rural Australia. They also identified that the medical students and doctors who are more likely to intend to work outside metropolitan areas come from a rural background.

On the other hand, Whitcomb (2005) found that rural placements in the USA are unattractive because communities often fail to provide career opportunities for doctors' spouses and quality schooling for their children. In addition, many doctors experience professional isolation after an initial period of service in rural areas.

The literature clearly identifies factors influencing retention and absenteeism among doctors in rural areas. However, very few of those studies attempted to explain the factors from a theoretical point of view. Therefore, this paper focuses on testing theories to explain the shortage of doctors in rural areas in Bangladesh. It seeks to answer the following key questions:

a) Is doctors' utility-maximizing behavior causing them to abandon their rural placements?
b) Is institutional weakness creating a shortage of doctors in rural areas?

3. Theoretical Framework

Based on the literature review, we developed a theory in another study that, if institutional constraints become stronger, individual rationality gets weaker and vice versa (Sadiq & Ahmed, 2020). Weak and ineffective constraints create opportunities to maximize individuals' benefits. This study attempts to validate the theory using empirical findings. The components of that theory were taken from the rational choice theory and institutional theory.

The rational choice theory helps to understand the choice behavior of individuals (Oppenheimer, 2020). As Scott (2017) says, “in rational choice theories, individuals are identified as rational beings who are motivated by their necessities according to their 'preferences’.' Ultimately, this harks back to the utilitarian economic philosophers, exemplified by Bentham (1823) and Mill (1863). They believed that all people act rationally to maximize their utility subject to unavoidable constraints. In simple terms, people want to be happy and do whatever they perceive possible to make themselves happy. Scott merely details the factors of utility, defining what will make people happy in terms of their preferences.

Therefore, we used rational choice theory to understand whether doctors’ benefit-maximizing behavior is driving them to urban areas. This helped us to identify their preferences and constraints and how they make choices to maximize their utility (happiness) subject to effective constraints. We went directly to the doctors and asked them what they wanted in the cities that they were not getting in their rural posting and why the institutional constraints prohibiting this behavior was not deterring them.

This study also used institutional theory. According to Hall and Taylor (1996), “institutions affect behavior primarily by providing actors with greater or lesser degrees of certainty about the present and future behavior of other actors.” In this case, the institutions are the Ministry of Health and Family Welfare (MoH&FW) and Directorate General of Health Services (DGHS), representing the State, and the actors are the doctors. So, we see that institutional theory is not an opposing or different theory but merely clarifies what ‘constraints’ in rational choice theory means in this area.

4. Methodology

Research Design

Qualitative research design is used in this research. Primary data were collected from the upazila health complex and all the six union sub-centers in Ghatail upazila of Tangail District during 15 July to 14 August 2017. This upazila was selected because it has a diverse geography, i.e., plain areas, hills, and wetlands. Besides, some part of the upazila is located on the highway, while some parts are in quite remote areas. Therefore, this diversification gives us the benefit to understand the effect of location on doctors’ behavior thoroughly.

Although the study collected primary data in 2017, secondary data have been updated by the newly published articles. Recent publications confirm that the conditions are unchanged compared to 2017. The secondary data were collected from published and unpublished literature until February 2026. Primary data were collected through key informant interviews and in-depth interviews. For in-depth interviews, 26 were chosen for the study shown in table 1.

Table 1: Participants’ Matrix

Categories	Data collection method	Number of participants
Doctors (Code: D)	In-depth interview	8
Patients (Code: P)	In-depth interview	6
Other stakeholders (Code: S) (Local leaders/Academicians/Policy makers/Social workers)	In-depth interview	7
Health centre personnel (Code: H)	In-depth interview	5

Semi-structured and open-ended questions were used for the collection of primary data. Secondary data were collected from websites, books, journals, reports, documents, etc.

Scope of the Study

The healthcare-delivery systems in Bangladesh extend from the national to the community level. The healthcare infrastructure under the DGHS comprises six tiers: national, divisional, district-level[i], upazila-level[ii], union-level[iii], and ward-level[iv]. Primary health care is managed by a three-tiered upazila health management system. The upazila health complex (UHC) is the main institutional hub providing primary health care. The next step below the UHC is the union sub-centers (USC); those are located at the union level. Next below in the hierarchy are the community clinics. This study will focus on these primary health care facilities, the UHC and the USC.

Analytical Framework

The dependent variable in this study is whether a doctor stays in a rural posting or leaves it. It also covers cases where doctors live and practice in cities without permission from the authorities. The independent variables, coming from rational choice theory and institutional theory, are:

(1) the ranked-order preferences of the doctors for placement in a rural or urban setting, which will make them happier if they can be met;
(2) the constraints or support of the institution that influence doctors' decision-making towards placement

The hypothesis to be tested, in a gross sense, is whether the doctors comply with the rational choice theory by maximizing variable (1) subject to variable (2). Therefore, this paper will investigate whether doctors act rationally or simply make random choices.

From a policy perspective, it is important to identify which preferences are met by urban postings and which by rural ones. It is equally vital to understand which institutional constraints influence doctors' decisions towards rural placement. If this research discovers these facts, the MoH&FW can create more effective policies which will get the primary health centers serviced by doctors in the required numbers.

Sampling Method and Population Size

Purposive sampling method was used to select the sample to ensure that the whole upazila's area could be represented and that the more-experienced doctors participate in the research. The random component was whoever had time to participate at the time it was required. The number of doctors interviewed was eight. Among them, four were working in Ghatail UHC. Six male and two female doctors were interviewed. The policymakers were interviewed in the MoH&FW and in DGHS. Patients were also selected randomly, at least one from each USC, ensuring gender balance: three females and three males. Among the six patients, five were interviewed in the health facilities' premises when they came to visit a doctor. Another interview was taken in a nearby *bazaar* (small marketplace in rural areas) with patients who used to visit government health facilities. Besides, health center personnel were also interviewed to get different points of view.

Ethical Considerations

Written permission to conduct the research was obtained from the program office of the Master in Public Policy and Governance course at North South University. Ethical guidelines of this study were explained to the interviewees. Anonymity and confidentiality were ensured, informing participants that the collected data would be used for academic purposes. Respondents were also informed of the nature and scope of the study at the beginning of the interview. Respondents were interviewed individually and separately.

Challenges

Doctors' absenteeism is a very sensitive issue in Bangladesh. Doctors were very keen to ensure their anonymity and the confidentiality of their responses. Even some doctors did not allow recording of their voices. Some of them suspected it as a probe of their absenteeism. Interviewing the male doctors was no easier. The researchers wanted to interview those who had been previously posted in union health centers. Some of them are currently working in urban areas, and some are in the capital. Therefore, it was difficult to find them. Gaining permission and conducting interviews of some DGHS officials was difficult. A high-ranking official asked the researcher to seek permission for the interview and to collect documents under the Right to Information Act 2009 (RTI).

Data Processing and Analysis

To analyze the data, Braun and Clarke's (2006) thematic analysis approach was used. As the sample size is small, the analysis did not require the use of software.

5. Results

There are some factors found during the study that influence doctors' decisions towards placement, which are used in this study as variables. One of the major concerns for the doctors is income opportunity, which is likely to influence the doctors' decision in choosing placement. They may decide to take postings in the areas where income opportunities are higher. Moreover, professional

and institutional factors also affect doctors' decision-making. The table summarizes the reasons behind doctors' scarcity in rural settings.

Table 2: Summary of reasons behind doctors' scarcity in rural settings

Category	Reasons
Personal Preferences	Income opportunities, Proximity of family residence, Children's education, Doctors' attitude, Lower social status, Scope of exit, habituated in urban life
Institutional Support and Control	Lack of basic amenities and residence, Weak monitoring and management, Lack of personal security, Systematic inequities, "Management" by irregularities, Hijacking doctors, Lobbying, Inadequate promotion opportunities, Inadequate logistic support, Poor communication system, Narrow Scope of Professional Development
Stakeholders' Concerns	Ignorance leads to satisfaction, Lack of monitoring from Stakeholders

Personal Preferences

The practice of medicine is an intensely personal relationship. Doctors develop relationships with their patients, and once established in the city, they cannot just walk away from their patients to accept rural postings. Doctors' families also have a big impact on where a doctor decides to work. Doctors explained that they were reluctant to remain in locations where their families felt uncomfortable. They also noted that separation from relatives, friends, children's teachers, and spouses' employers weakened their ties and discouraged rural placement.

Income Opportunities

The assumption of this study was that doctors tend to use their posting places to maximize their benefits. Yet most of the doctors said that income opportunities play a quite insignificant role in decision-making about rural placement. The data showed that the decision to enter private practice does not depend solely on the place of service. There are many factors behind it, such as patients' trust, placement duration, doctors' goodwill, etc. Almost no doctor said that doctors leave rural placement for lack of income opportunities. According to H-1, a staff member of a union health center:

> *The Sub-Assistant Community Medical Officer (SACMO) of this union has a private chamber, and he earns a handsome amount of money every month. If a doctor stays here and practices regularly, then he/she also has the opportunity to supplement their income right here, in this area. So, it is not money that influences them to go to urban areas: there must be some other reasons.*

Proximity of Family Residence

It was found in the study area that most of the doctors' families live far from the rural postings. Therefore, doctors can only visit their families on the weekend. Most of the doctors' spouses are working in the cities and do not want to abandon their careers. D-1, a doctor from Ghatail upazila health complex, said that:

> *Transportation is poor in the rural areas. Therefore, I cannot visit my family and friends in the cities easily. Once I take a rural posting, I feel that I am losing touch with families just for my career.*

Children's Education

During the interview, doctors and many other stakeholders also admitted that one of the major causes of doctors leaving the rural places is inadequate education for their children. A doctor (D2) mentioned that "I want to pay top priority to put my children in famous schools in the city. Finishing at a village school could really damage the future of my children. Therefore, my children live with their mother in the city to attend a famous school there."

Doctors' Attitude

Sometimes doctors are not interested in staying in rural areas as they feel that doctors are not needed in union health facilities. A doctor, Mr. D-3, says:

> *Union health facilities provide only primary treatment and some medicines. If there is any more serious condition to treat, then patients move to the UHC, as there is no diagnostic facility in USCs. Therefore, there is little necessity for an MBBS (Bachelor of Medicine and Bachelor of Surgery) doctor at the union level. A SACMO is enough for it. More-qualified doctors literally have nothing to do that their assistants cannot do equally well.*

However, some doctors feel that there is a need for MBBS doctors for better treatment and care strategies. Sometimes, a SACMO cannot diagnose a patient's illness properly, and they just prescribe the same common medicine for each and every case. Therefore, logistics support should be provided before sending the patients to the union level.

Lower Social Status

Some doctors note that Bangladesh civil servants, professionals with life tenure, simply do not work in villages. A doctor (D-4) from UHC told us that "If the doctors are assigned in a rural setting, they are the only civil servants assigned to such a "low" posting, as if it were a punishment. Besides, they cannot avail government vehicles or security to go to the union level. On the other hand, some officers of other cadres have been given vehicles and security when they move outside of the upazila center". Liu and Mills (2007) also identified that, apart from income, achieving and maintaining ideal social status and recognition may be one of the prime objectives of doctors in medical practice. Doctors feel that they are losing this if they work in a village.

Scope of Exit

Doctors are highly trained professionals (Chowdhury & Hammer, 2004). They will be welcomed in private medical or non-medical employment if they leave government jobs. A health ministry official, S-,1 mentioned:

> *Because of the significant scope of exit, it is tough to control doctors strictly. Sometimes, it may be difficult to take any action against unauthorized absence. That is why the absence rate is very high in the health sector, especially in rural areas.*

Habituated in Urban Life

During their student life, doctors live in urban areas with the best amenities for a long period of education. Placement in a village is, for them, like being dropped on a desert island. A doctor (D-5) told us during the interview, "If infrastructures and some basic facilities were arranged in rural areas, then I would not be disinterested in rural placement. Improvements in basic amenities could reduce disinterest in serving in remote locations".

Institutional Support and Control

Lack of Basic Amenities and Residence

Most of the doctors complain that the poor condition of residences makes doctors disinterested in staying in the rural areas. There is a dormitory there but the doctors are not satisfied with its facilities. The numbers of rooms are not adequate. Even basic amenities like electricity and water supply are inadequate at some stations. Moreover, there are no quarters at the union level for a doctor.

Weak Monitoring and Management

It was found that monitoring is very weak in the rural areas. Upazila health complexes are directly supervised by the Upazila Health and Family Planning Officer (UH&FPO), who usually does not visit the USCs regularly. Thus, there is no one to monitor the doctors at the union level. Sometimes, doctors posted at the union level do not stay at the station and attend once or twice a week or even in a month. There is a lack of monitoring, so the doctors take the chance to be absent. They utilize that time for their personal benefits, e.g., study, private practice, etc.

Lack of Personal Security

Almost every doctor admitted that they feel a lack of security working at the rural health facilities. A doctor (D-6) from Ghatail UHC mentioned that "the local leaders, influential persons, or local people often behave aggressively if any accident occurs. Consequently, to avoid any unwanted situation, sometimes doctors intentionally refer patients to the district hospital, even though they could be treated at the UHC". A study by Hossain et al. (2007) also found that vandalism or violent attacks, verbal abuse or loud complaints, and physical assault of doctors are very common incidents at upazila-level health facilities. Moreover, female doctors often need to travel alone to USCs but there is no security guard, and they are afraid.

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Systematic Inequities

There are many complaints from doctors in the rural areas that they are deprived of the benefits due to them as Bangladesh Civil Service officers. The main forms of discrimination they mention include access to vehicles, security arrangements, promotion prospects, and residential facilities. In Ghatail upazila, most of the civil servants are junior to the UH&FPO, but they enjoy better privileges and facilities. Such issues do not arise in the cities, where all Bangladesh Civil Service appointees, medical and non-medical, of the same level of experience work independently in their own workplaces.

"Management" by Irregularities

One of the high officials of DGHS said that somehow doctors in the rural areas manage their direct supervisors (UH&FPO) by bribery or by using their connections with higher authorities. For example, doctors sometimes persuade the UH&FPO not to file complaints. This lets them stay longer in urban areas with their families while absent from rural duties. A local leader also complained to the researchers that certain UH&FPOs have a fixed price per month to let a doctor completely desert their upazila.

Hijacking Doctors

One of the main visions of the health policy of Bangladesh is to provide adequate and proper health service to the root-level people (National Health Policy, 2011). Therefore, the Health Ministry sends newly recruited medical officers to the union level: the villages. Yet, due to the shortage of doctors at the upazila level, many of their supervisors, UH&FPOs, bring the doctors to the UHC, and they are never seen by the patients in their assigned villages.

Lobbying

Rural postings are often bypassed by doctors with connections to the Medical Association, politicians, or high-ranking party officials. This practice intensifies the frustration of those sent to villages, who feel unfairly treated. Haque (2015), in his research paper, states that:

> Many positions of medical officers or doctors at upazila remain vacant due to political '*tadbir*' (influence-peddling) or due to the managed-transfer of a privileged doctor to a preferred location, which may result in a denial of services to citizens.

Inadequate Promotion Opportunities

Doctors are demotivated by the lack of promotion opportunities. At times, they feel underpaid and unrecognized for their hard work. They simply do the minimum possible to avoid a penalty. According to one doctor, Mr. D-7, "As doctors are not getting promotions on time and working in the same position for long periods, they have been socially dishonored and feel depressed and hopeless. Consequently, doctors try to avoid their duties and seek other, at times illicit, rewards to make up the loss."

Inadequate Logistic Support

Lack of basic amenities and inadequate logistic support make the doctors disinterested in rural placement. Moreover, to monitor whether the doctors are performing their duties regularly, a UH&FPO needs to visit the union sub-centers frequently. However, a UH&FPO has no vehicle support from the office. Therefore, they are not interested in visiting the USCs to monitor the doctors regularly.

Poor Communication System

There are some sub-centers in Ghatail upazila located in hill areas and 16 km distant from the upazila headquarters. However, transportation facilities are very poor and the roads are bad. A doctor explained, "During rainy seasons, the roads are often underwater. As there are no residential facilities in the USCs, we cannot stay there. Consequently, it makes it impossible to attend, and that is why some doctors remain absent."

Narrow Scope of Professional Development

A junior consultant (D-8) working in Ghatail UHC is highly depressed about his placement. During the interview, he shared:

> *I completed post-graduation in 2009, and after that, I was promoted to junior consultant from medical officer. I am a cardiologist but, because of the lack of logistical support, I cannot practice cardiology in the rural areas. Moreover, it is difficult for me to continue my study or professional training from my posting place, because it is too far from any medical college or large hospital in the cities.*

The doctor's interview suggests that there is limited scope of professional development in rural settings.

Stakeholders' Concerns

Ignorance Leads to Satisfaction

It was found at the union level that patients were happy with the treatment and medicines they were getting from the union sub-centers. As the people do not demand more, other stakeholders (i.e., local leaders, policymakers) do not feel any pressure. The 'SACMO' of the USCs are known as 'Doctors' in rural areas, so patients feel that they are visiting a doctor when they ask a SACMO for treatment, which they are really not. This ignorance also creates a problem. It was found from the patient register in a USC that about thirty to a hundred patients visit every day. It indicates that there is a necessity of doctors for better health services but because of ignorance, the people in the remote areas do not feel any urgency to see an MBBS doctor.

Lack of Monitoring from Stakeholders

There is an 'Upazila hospital management committee,' which is responsible for overseeing the services of the UHC. In most cases, these committees are of little effect. However, in one USC, which is more than 15 kilometers from the upazila headquarters and where transportation is very bad, the doctors are usually present and working. According to P1, a patient from a nearby village, "The reason behind this is that the local leaders and the senior citizens are very concerned about the doctors'

presence. They regularly visit that sub-center. If a doctor is absent, they immediately inform the UH&FPO." This example suggests that–doctors can be kept engaged in their village postings when the community values their presence. Active involvement by local leaders and elders helps ensure doctors remain committed to rural service.

6. Discussion

We found that all the independent variables have an impact on doctors' decisions to work at their rural postings or not to. Individual rationality—maximizing utility or benefit—makes doctors leave their rural posts for the urban areas. The policies or supervision has little effect on their decision. Doctors perceive that the facilities they need are available in the cities but unavailable in rural areas. The policy and supervision are not strong constraints on the doctors' maximization of utility. This is because the doctors can manage their supervisors, or the supervisors cannot monitor doctors in the rural areas due to poor transport facilities. Therefore, the doctors forsake their rural postings for the many benefits of city life.

According to Elster (1989, p. 14), "actions are explained by opportunities and desires—by what people can do and what they want to do." Doctors have the desire to gain extra benefit with their action, but if there is a restriction, then they cannot take that opportunity. Doctors' rational or utilitarian behavior can be restrained by an institutional mechanism. This is what we call a constraint on utility maximization. However, if there is institutional weakness, then doctors also tend to take the opportunity to maximize their benefit. We have found here that the institutions represent weak constraints on doctors' choice to leave their rural postings and work in the cities. Only where village communities are well-organized and strongly desire the service of qualified doctors can they pressure supervisors to keep doctors working in the village, but most villages do not care whether their doctors are qualified or not.

North (1990) argues, in institutional theory, that institutions consist of formal and informal rules. This study revealed that the formal rules are not very effective. Instead, informal practice prevails, such as supervisors demanding payment in exchange for ignoring formal rules or bringing doctors from remote areas to the USC. Similarly, Kamel (2018) stated that, "institutions have extensive influence on human behavior through rules and norms." Apart from rules and norms, institutions use some constraints to guide or control the individuals' behavior. North (1990) mentioned those as 'humanly devised constraints'. As Baniamin and Jamil (2017) stated, 'opportunistic behavior may become more prevalent where there is problematic governance and comparatively loose regulation.' This study found that due to lack of proper regulation and monitoring, doctors can have scope to behave opportunistically and head for the cities.

Peters (1999) states that, "a rational institution deals with its employees with constraints and incentives. On the other hand, a rules-based or normative institution supervises and controls the participants of an institution with rules and regulations." It is found in this study that the presence

of incentives at the upazila level is very little, which cannot motivate the doctors to stay in rural areas.

According to Elster (1989, p. 22), "when faced with several courses of action, people usually do what they believe is likely to have the best overall outcome." Certainly, the doctors are doing so because they have good reason to believe that the outcome for them and their families in the urban areas will be better than that of rural areas. However, Sato (2013) says that, "one of the main assumptions of the rational choice theory is that an actor chooses an alternative that maximizes his/her utility under subjectively conceived constraints, and those constraints may make possible alternatives impossible." Therefore, it can be inferred that, as institutional constraints are not functioning properly in the Bangladesh health system, the doctors are getting scope to behave rationally to maximize their benefits by ignoring the rules.

To answer the first research question, we found that income opportunity has an insignificant impact on disinterest in rural placement. Income from private practice does not depend solely on rural or urban placement. There are other factors like goodwill, length of service in a particular area, doctor-patient relationship, etc. Moreover, as there is a shortage of doctors in rural areas, opportunity for income is also there in the rural areas. However, the proximity of family residences from posting places and children's education is a great concern for them. As incentives given by the institution for doctors in rural areas are insufficient, doctors try to maximize their utilities by means other than serving in their rural placement.

Another assumption of this study was that institutional weakness may create a shortage of doctors in rural areas. We found that, in most cases, institutional weakness has a strong influence on doctors' behavior to avoid rural placement because there is no effective constraint. Lack of institutional support, poor residences, undefined promotion policy, cadre discrimination, inadequate logistics support, lack of personal security, poor monitoring, and limited scope of professional development are the major factors effecting doctors' decisions whether or not to serve in rural areas. Stakeholders' awareness has some impact in ensuring the presence of doctors in health facilities but most stakeholders do not care and are not aware.

7. Policy Interventions and Rural Health Workforce Strategies in South Asia

Member countries of the Southeaast Asian region have taken several initiatives to improve rural retention, including localized recruitment, compulsory rural service, rotational postings, salary enhancements and financial incentives, scholarships, housing facilities and transport support (KIT Institute and Universitas Padjadjaran, 2024).

India has introduced a regulatory measure that involves the mandatory placement of doctors in rural settings for a specific period of time against a bond (NHSRC, 2016). If anyone does not comply with the regulation , they face a financial penalty. Besides, they are practicing rotational posting in difficult areas, monetary compensation, local selection system, and conditional licensing to work only in rural areas and in the public sector. India's two states have created a cadre of rural

medical practitioners exclusively for working in primary health care in rural areas (Sundararamana & Guptaa, 2011).

Nepal, under the Rural Staff Support Programme (RSSP), recruits doctors through competitive scholarships, with a binding three-year service contract in remote hospitals. They receive three times higher salaries than the government rate, comfortable living quarters, internet access, and performance-based incentives (Zimmerman et al., 2015). On the other hand, Pakistan has taken different policies and incentive packages such as hard area allowance, pay for performance and performance-based allowances (De Bekker-Grob et al., 2012). Bangladesh can adopt these policy options to improve the situation.

8. Policy Implications

Based on in-depth interviews and country experiences, this study suggests some recommendations that can be adopted by the government. An effective incentive system (financial and non-financial) can be introduced to attract doctors in rural areas. Moreover, a penalty system can be an option to prevent the doctors from being absent. Besides, a strict monitoring system can help to reduce absenteeism in rural areas. There should be adequate institutional support for rural placement as well (basic amenities and residence, personal security, and infrastructure and logistics support should be adequate to retain the doctors in rural health facilities).

The study found that stakeholders can play an important role in controlling doctors' absenteeism. Hence, stakeholders (e.g., patients, local leaders, villagers, members of civil society) can be mindful of their responsibilities in lowering the absenteeism rate of doctors in rural health facilities. Moreover, this study tried to find the reasons behind the disinterest of doctors in rural placement from a theoretical point of view. Therefore, the researchers can have a new understanding of healthcare personnel's behavior from a theoretical perspective.

9. Conclusions

It is found that rural placement is a bad deal for doctors, not in monetary terms but in human terms. That is what we mean when we say the utility-maximizing choice for doctors from urban areas is to get out of the rural areas as quickly as possible. The one light at the end of the tunnel to solve the problem is the Indian study, with some support in the Bangladeshi data, which suggests that doctors from rural areas are quite happy to practice in their home districts. All the "problems" for urban doctors in the village—poor housing, poor security, no professional development, poor transport, etc.—are just normal life for these doctors and no problems at all. So, one solution would be for the government to send the doctors to their home districts. Sending the doctors to the rural areas without solving their problems will not bring any good at all. Therefore, institutional support should be increased to attract them to the rural settings. Besides, introducing an effective incentive and punishment system (financial and non-financial) for the rural doctors can be amid-term solution.

10. Limitations

A key limitation of this study is the reliance on data collected in 2017, as it was conducted as part of a master's thesis. However, the data have been updated through secondary literature. Therefore, future research is encouraged to extend these results using updated field-level data. Besides, it is essential to quantify economic or public health consequences of shortages of doctors in rural areas, which requires thorough investigation. In addition, the study is limited by its relatively small sample size, which may not fully capture the diversity of doctors' experiences across different regions.

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Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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Abbreviations

DGHS: Directorate General of Health Services
MBBS: Bachelor of Medicine and Bachelor of Surgery
MoH&FW: Ministry of Health and Family Welfare
NHSRC: National Health Systems Resource Centre
RTI: Right to Information
SACMO: Sub-Assistant Community Medical Officer
UHC: Upazila Health Complex
UH&FPO: Upazila Health and Family Planning Officer
USC: Union Sub-Centre

Footnotes

[i]District: Divisions are divided into 64 districts (Bangladesh National Portal, 2025).

[ii]Upazila: Upazila is an administrative set up at sub-district level in Bangladesh. For this study upazila and its' tier below refers to 'rural areas'. There are 495 upazilas in Bangladesh (Bangladesh National Portal, 2025).
[iii]Union: Union is the lowest tier of administrative unit in Bangladesh. There are 4,554 unions in Bangladesh (Bangladesh National Portal, 2025).
[iv]Ward: Ward is a unit under the unions.

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Socio-Economic Status of the Returnee Migrants: A Micro Study

Md. Moniruzzaman[1]

Abstract: This article is an extract of a research study conducted on the selected indicators of socio-economic status of the returnee migrants in Bangladesh. The study is mainly based on primary data collected from the 300 returnee migrants of Cumilla and Tangail districts through a sample survey method. The objective of this study is to investigate the role of remittance on returnee migrants, incorporating social relationship and social recognition as well as family relationships along with the socio-economic well-being. It is observed that a positive and significant relationship existed between household income and expenditure. The relationship between the consumption of both food items and non-food items with remittance is found to be positive and significant. Remittance has helped raise the quality of living standard of the wage earners' families. It is found that remittance is an important source of income for households, helping households to increase consumption and investment and to cope with socio-economic needs. The study highlights the socio-economic profile, pattern and use of remittance, income, expenditure, problems, social recognition, savings, investments, entrepreneurship, expectations, etc.

Keywords: Returnee, migrants, remittance, WEWB, RAISE, socio-economic well-being.
JEL Classification: J61, F22, O15.

1.0 Problem Statement

In the context of a prominent labor-sending country like Bangladesh, migrant workers play a very crucial role. The remittance sent by migrant workers not only contributes to boosting the reserve of foreign currency but also improves the socio-economic status. Remittance is the second-highest source of foreign currency earnings after exports in Bangladesh. It also boosts capital formation through savings and investment. Remittance is instrumental in raising the living standard of the remitters' families. Overseas employment is very important because it not only reduces unemployment but also contributes significantly to the country's economy. Although Bangladesh started sending its labor force abroad from 1976, the number has expanded dramatically since 2007. Bangladesh sent as many as 16,075,487 migrant workers up to December 2023, and the figure for remittance stood at USD 297,138.16 million (BMET, 2024). It is argued that remittance is an important source of income for the households for increasing investments and coping with socio-economic shocks (Cuong, 2009). Remittance directly affects the lives of the migrants' families through the increase of consumption and investment in education, health, and other productive activities (BB, 2011).

[1] Bangladesh Institute of Governance and Management (BIGM), University of Dhaka (Affiliated),
E-mail: dr.moniruzzaman@bigm.edu.bd (Corresponding author)

~~Since the mid-1970s, around 6.7 million migrant workers have moved to more than 140 countries across the globe over a period of three decades. The remittance is mainly utilized for household consumption. It is evident from the study of Mamun and Nath (2010) that it has helped to reduce poverty in Bangladesh. Studies also demonstrated that remittance has macro-level impact on the national economy. Socio-economic status measures of economic and social aspects on an individual's or family's economic and social position based on income, education, occupation, skills level, savings, investment, etc.~~

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Since the mid-1970s, international labour migration has become an important feature of Bangladesh's socio-economic development. Over approximately three decades, an estimated 6.7 million Bangladeshi migrant workers migrated to more than 140 countries in search of employment opportunities. The remittances sent by these migrant workers have played a significant role in supporting household livelihoods and contributing to the national economy. At the household level, remittance income is primarily used to meet consumption needs, including expenditures on food, housing, education, healthcare, and other essential goods and services. Mamun and Nath (2010) found that remittance inflows have contributed to poverty reduction in Bangladesh by increasing household income and improving living standards. Previous studies have also demonstrated that remittances generate broader macroeconomic benefits by supporting foreign-exchange reserves, strengthening the balance of payments, and contributing to overall economic growth. In this context, socio-economic status refers to the combined economic and social position of an individual or household within society. It is generally assessed using indicators such as income, educational attainment, occupation, skill level, savings, investment, asset ownership, and access to economic opportunities. Consequently, examining changes in these indicators provides an important basis for assessing the extent to which migration and remittance income influence the socio-economic well-being of migrant households.

After completion of the job contract abroad, most of the migrant workers used to return to their home country and tried to reintegrate into the mainstream economy. But the issues of reintegration of the returnee migrants have been neglected over the years. The socio-economic status of the returnee migrants has not been properly addressed. The issue of the returnee migrants has not been addressed properly. A project, financed by the World Bank, has been launched, namely 'Recovery and Advancement of the Informal Sector Employment (RAISE): Reintegration of the Returning Migrants' for the reintegration. This paper is an extract of a household-level study focusing mainly on the impacts of remittance on the selected indicators of socio-economic status of the returnee migrants. The main research question of this paper is to show the extent of selected indicators of socio-economic status and challenges of the returnee migrants.

1.1 Objectives of the Paper

The broad objective of this paper is to investigate the impact of remittance on the selected socio-economic status of the returnee migrants. The specific objectives are as follows:

(i) To find out the impact of remittance on selected indicators for socio-economic well-being of returnee migrants;
(ii) To explore the challenges faced by the returnee migrants;
(iii)To recommend the way forward for reintegration of the returnee migrants.

1.2 Literature Review

A study by Siddique et al. (2012) revealed that South Asian countries like Bangladesh, India, Pakistan, and Sri Lanka are the major sources of labor supply to all over the world. The remittances sent by those workers play an important role in promoting economic development in these countries. Bangladesh earned a substantial amount of remittance, and workers' remittance inflow has increased nearly tenfold between 1997–1998 and 2018–2019 (Pradhan et al., 2012). The study of Buchenau (2008) showed that since the mid-1970s, labor migration has become an important element of survival for many households in Bangladesh. After migration, the migrants brought positive changes in their lives through sending remittances to families and relatives who have remained in their country of origin (Louka et al., 2006). They mentioned that developing countries in particular gained in terms of growth, investment, human capital accumulation, and poverty reduction. But the migration should be properly managed. In developing countries, migrants' remittances have made possible a dramatic improvement in the living conditions of millions of households in migrant-sending countries (Ratha, 2005).

A study by Yendaw et al. (2013) on 120 returnees in the Berekum Municipality, Ghana, assessed the socio-economic status of international return migrants to Ghana. They employed a quantitative approach involving both snowballing and simple random sampling techniques. The results showed that 84% of the returnees had acquired critical skills, particularly technical skills , while more than half (68.3%) upon return owned houses, and a large proportion acquired consumer durable goods. But respondents who lived and worked in European destinations had the highest asset-holding status compared to their counterparts in American and African destinations. They recommended that the government, through a multisectoral approach, should design and implement comprehensive programs such as post-arrival counseling and start-up support for returnees to ensure a maximum utilization of their skills and resources.

~~The study of Barrett et al. (2013) revealed that returnee migrants might experience social isolation and estrangement in addition to economic challenges, especially those who have spent extended periods abroad. Studies of Konzett-Smoliner (2016) and Mensah (2016) showed that the adverse living conditions, limited employment opportunities, and a sense of disconnection from Bangladeshi cultural norms can engender significant hardships for returnees. Similar findings in the studies of De Bree et al. (2010) and Vathi and Duci (2016) show that the returnees faced challenges in reestablishing familial relationships and integrating into social networks. Studies by Ruben et al. (2009) and Van Houte & Davids (2008) suggest that reintegration initiatives for returnee migrants may have limited success if they do not adequately address the specific social, psychological, and economic needs of the returnees.~~

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Existing research indicates that return migration may involve substantial social, psychological, and economic challenges. Returnees, particularly those who have lived abroad for extended periods, may experience difficulties readjusting to their societies of origin, including changes in social relationships, employment circumstances, and feelings of belonging. Research conducted in different migration contexts has shown that returnees may encounter difficulties in re-establishing family and community relationships and rebuilding social networks after return (De Bree et al., 2010; Konzett-Smoliner, 2016). Moreover, the sustainability of return and reintegration depends not only on economic opportunities but also on the extent to which returnees become socially and psychologically re-embedded within their communities of origin. Ruben et al. (2009) demonstrate that successful reintegration is influenced by a combination of individual circumstances and pre- and post-return conditions, while Van Houte and Davids (2008) emphasize that return-migration interventions should take migrants' own experiences and long-term reintegration prospects into consideration. These findings suggest that reintegration programs need to address the interconnected economic, social, and psychosocial needs of returnee migrants rather than focusing exclusively on financial or employment assistance.

The remittances have been causing a silent economic revolution in Bangladesh, receiving 12 percent of the official remittances flowing into South Asia (Bruyn & Kuddus, 2005). Remittance inflows to Bangladesh are increasing at an average annual rate of 19% in the past thirty years (Paul & Das, 2011). These remittances have become the most powerful means to improve the socio-economic condition of the families living in the country of migrated people (Hasan, 2006). It is found from most studies about remittance usage that remittances are spent on current consumption, health, and education, thus leading to improved standards of living for emigrant households (Azeez & Begum, 2009). Puri and Ritzema (2001) strongly argue that only a small percentage of remittances are used for savings, which is also termed 'investment' and which also has a strong multiplier effect. In contrast, Hassan et al. (2012) comment that remittance can be thought of as augmenting total disposable incomes of the households. The remittance plays a vital role in improving the status of households at the micro level as well as the development of the country at the macro level (Azeez & Begum, 2009). It augments investment, reduces poverty, improves school enrollment, and reduces infant mortality (Adida & Girod, 2011). Through remittance, the recipients' families generate different forms of economic activities, like small businesses, investment in real estate, purchase of agricultural land, etc. (Muhammad et al., 2010).

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Pradhan and Khan (2015) analyzed the contribution of remittance earnings to the quality of life in Bangladesh by using HDI, consisting of income, education, and life expectancy. They found that remittance is a considerable source of influence on the national economy. They used data for HDI and remittance earnings from 1981 to 2011. Islam (2010) mentioned in his 'Strategy Paper for

Reintegration of Returnee Migrants' that the Philippines adopted some successful ventures to reintegrate their workers, including female , and banks and financial institutions have extended various special packages for investment opportunities for the returnee migrant workers. In India, there are several effective organizations operated by the skilled returnee migrants. They are operating the ICT villages in Bangalore, which is well known as the second Silicon Valley.

A study report by BIGD, BRAC University identified the reintegration of returnee migrants of Bangladesh as a complex process, as they encounter various social and economic obstacles. The IOM reported in 2020 that most returnees had not planned their return; instead, they were compelled to return due to unfavorable circumstances, faced significant difficulties finding employment upon return, and often failed to utilize their saved funds productively. During the initial phase of the COVID-19 pandemic, 70% of returnees struggled to secure employment. According to a study on return migrants in 12 districts in Bangladesh, approximately 70% of surveyed migrants who returned from abroad between February and June 2020 are unemployed. According to the report, returning migrants experienced reintegration challenges, which included difficulties in securing employment, financial problems (lack of income and accumulating debt), and health-related issues. Unplanned, large-scale returns of unemployed migrant workers affect remittance-dependent communities across the country where each migrant worker supports three members of his/her household on average. The report, released in coordination with the Government of Bangladesh, listed findings from interviews with a total of 2,765 return migrants, including 1,486 international return migrants and 1,279 internal return migrants. The survey was conducted in May and July 2020 in 12 high migration-prone districts, seven of which share a border with India.

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BRAC's Returnee Migrants' Reintegration Project adopted a holistic approach, offering counseling, financial support, and skills training to returnees to facilitate a more sustainable and effective reintegration process. The BRAC Institute of Governance and Development (BIGD) evaluated the project to measure its impact on the returnees' prospects for remigration, employment, income, and overall well-being. Overall, economic reintegration, including both training and financial support, was found to be the most effective strategy for improving the financial situation of returnee migrants. Counseling primarily addressed psychological issues post-migration but did not have a significant impact on participants' economic situations (BIGD, BRAC, 2024).

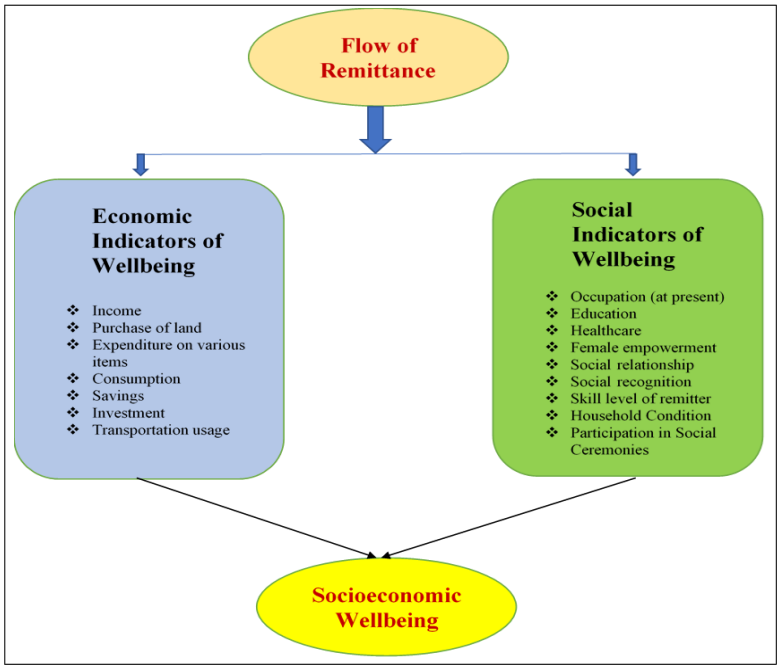
1.3 **Rationale of the Study**

The literature review revealed that there is scant research in this field. The present study is important because it explores the impact of remittance through primary data from the field level. It is expected that the roles of remittances in different socio-economic variables can be obtained as the evidence to answer the research question of this study. The current study has been selected based on reality, context, and one of the burning issues in Bangladesh.

1.4 **Conceptual Framework of the Study**

The study focuses on important socio-economic status indicators, including income, consumption, housing, healthcare, safe drinking water, sanitation facilities, education, savings, investment, social relationships, social recognition, female empowerment, etc. The conceptual framework of the impacts of remittance inflow has been constructed on the basis of previous works.

Figure 1: Conceptual Frameworks



The main focus of the study is to examine the role of remittance on socio-economic indicators previously mentioned in remittance-receiving households. Measuring the indicators of social and economic components of the conceptual framework's impact of remittance on the returnee migrants has been evaluated in this study.

2.1 Scope and Limitations of the Study

The micro-level study covers only 300 respondents equally drawn from four upazilas of two districts. Since there is no complete and published database of the returnee migrants, it is very hard

to select the respondents, particularly female returnee migrants. Another problem is comparing the findings with those of other sample surveys in this field.

3.0 Methodology

2.1 Method of the Study

It is known that the research methodology is a process of studying how research is conducted scientifically or how a research problem is systematically solved (Kothari, 1990). The method of research establishes a general proposition of gathering and weighing evidence (Raj, 1987). The methodology of any study is mostly dependent on the nature and purposes of the research and its time limit and scope of work (Alam, 2003). Nowadays, researchers place high emphasis on the use of mixed methods. The current study is conducted with the use of mixed methods like surveys, Key Informant Interviews (KIIs) and analysis of secondary documents collected from different sources. This study is mainly descriptive and explanatory in nature. A mixed-method approach, i.e., both quantitative and qualitative approaches, has been used to justify the objectives and hypothesis of the study.

1.1 Data Sources and Techniques of Data Collection

The study is conducted mainly based on primary data collected from a field-level sample survey. A total of 300 returnee migrants from four Upazilas of two selected Districts of two Divisions have been selected as the sample.[1] Two districts have been selected based on the number of overseas migrants, and then four upazilas have been chosen purposively. The Unions have been selected randomly based on the discussion with local administration. From the discussion with RAISE Project, Wage Earners' Welfare Board, and Ministry of Expatriates' Welfare and Overseas Employment, it is revealed that the preparation of a complete database of Returnee Migrants is still underway. However, they suggested choosing Cumilla under Chattogram Division and Tangail under Dhaka Division as the said two districts are top districts in sending migrant workers abroad. The sample respondents for this study have been selected with an unknown sample method.

2.2 Sample Size Determination & Sample Distribution

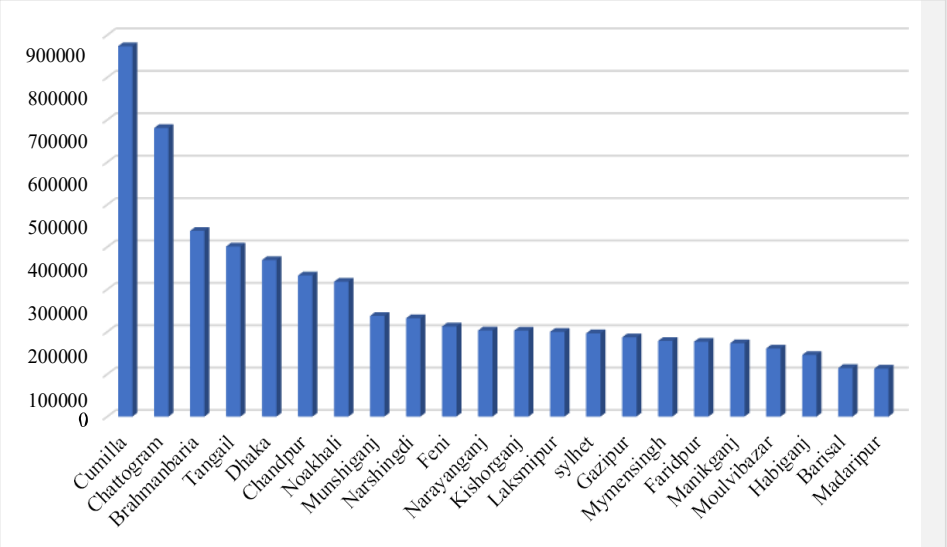
The study population comprises all returnee migrants—individuals who have returned to Bangladesh after working abroad. The precise number of returnee migrants currently residing in Bangladesh is unknown, but it can be estimated to be quite large. "Returnee migrants are not registered or tracked, making it further challenging to provide them with support services on arrival. Since there is no database, information about their location, occupation, and skills is not available (Khan & Omar, 2018)."[2] Cochran's formula allows us to calculate an ideal sample size given a desired level of precision, a desired confidence level, and the estimated proportion of the

[1] Location of the study area is shown in Appendix Table A1.
[2] International Organization for Migration. (n.d.). *Coming home: Reintegration of returnee migrants*. IOM Bangladesh. https://bangladesh.iom.int/news/coming-home-reintegration-returnee-migrants accessed on 14th May 2024.

attribute present in the population. Cochran's formula is usually used in a situation where the population size is too large (or infinite) or unknown.[1] Since the study population is unknown and large, the standard formula for determining sample size has been utilized. It is noted that a confidence level of 95% and a proportion of 0.5 are commonly used when dealing with a human population. The final estimated sample size, calculated using the following formula and given factors, is 300.

Sample size, $n = \frac{z^2 \times p \times (1-p)}{e^2}$ $= \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.0566)^2}$ $= 300$	Where, Standard normal deviation at 95% confidence level, z = 1.96 Estimated sample proportion, p = 0.5 Margin of error e = 0.0566

Figure 2: District Wise Overseas' Employment 2005-2023



Source: BMET 2024

[1]Ajireloja, J. (2023, April 27). *How to determine sample size for human-based study population*. Medium. https://medium.com/@josephajire/how-to-determine-sample-size-for-human-based-study-population-a52a651407c8

The distribution of respondents has been shown in **Table 1.** In Cumilla, from Daudkandi upazilla, 75 respondents were taken from 3 unions, namely Biteshwar, Gauripur, and Jinglatali. On the other hand, 75 respondents were interviewed from 3 unions of Homna, namely Garmora, Mathabanga, and Nilakhi. In Tangail, 75 respondents from 2 unions of Madhupur, namely Alokdia (38) and Golabari (37), and 75 respondents from 2 unions of Tangail Sadar, namely Gharinda (38) and Karatia (37). In addition to the primary respondents, officials of BMET, Ministry of Expatriates' Welfare and Overseas Employment, UNOs, Upazila Parishads' Chairmen, and the Chairmen of the respective Union Parishads have been interviewed through a structured KII checklist. Information has also been collected from secondary sources such as published official statistics, reports, documents, laws, ordinances, books, articles, and periodicals of relevant sources.

Table 1: Sample Distribution of the Respondents

District	Upazilla	Union	Male	Female	Total
Cumilla	**Daudkandi**	Biteshwar	**23**	2	25
		Gauripur	**25**	0	25
		Jinglatali	**23**	2	25
	Sub-total		**71**	**4**	**75**
	Homna	Garmora	**23**	2	25
		Mathabanga	**24**	1	25
		Nilakhi	**23**	2	25
	Sub-total		**70**	**5**	**75**
Tangail	**Madhupur**	Alokdia	34	4	38
		Golabari	35	2	37
	Sub-total		**69**	**6**	**75**
	Tangail Sadar	Gharinda	**35**	3	38
		Karatia	**35**	2	37
	Sub-total		**70**	**5**	**75**
Total			**280**	**20**	**300**

Source: Researcher's Own

2.2 Socio-Demographics of the Respondents

The socio-demographics of the respondents include gender, religion, marital status, age, language competency, educational qualification, household size, etc. It is found that about 93.3% of the respondents are male, while only 6.7% are female. Regarding religion, 97.7% of respondents are Muslim and only 2.3% are Hindu. About 97% of respondents are married, 2.3% are unmarried, and only 0.7% are widowed.

Table 2: Socio-Demographics of the Respondents

Indicators	Number	Percent (%)
Gender		
Male	280	93.3
Female	20	6.7
Total	**300**	**100**
Religion		
Muslim	293	97.7
Hindu	7	2.3
Total	**300**	**100**
Marital Status		
Married	291	97.0
Unmarried	7	2.3
Widow/Widower	2	0.7
Total	**300**	**100**

Source: Field Survey, 2024

Table 3 shows the distribution of the respondents by age. About 35% of respondents are from age group 35-44 years, 34.7% from age group 45-54 years, 10.3% from age group 55-64, and 17.3% from age group 25-34 years. If we consider the age of the returnee migrants, the majority of them fall under the age group of 25-54 years (87%), meaning that they are in the category of active labor force. They may be employed in the productive sector. The average age of the respondents is 42 years; in Daudkandi it is 41.76 years, 43.19 years in Homna, 44.75 years in Madhupur, and 42.13 years in Tangail Sadar.

Table 3: Distribution of Respondents by Age

Age Group	Daudkandi (%)	Homna (%)	Madhupur (%)	Tangail Sadar (%)	Total (%)
18 – 24	1.3	1.3	0.0	4.0	**1.7**
25 – 34	17.3	21.3	13.3	17.3	**17.3**
35 – 44	42.7	29.3	36.0	32.0	**35.0**
45 – 54	29.3	34.7	34.7	40.0	**34.7**
55 – 64	9.3	13.3	12.0	6.7	**10.3**
65+	0.0	0.0	4.0	0.0	**1.0**
Total	**100**	**100**	**100**	**100**	**100**
Average	**41.76**	**43.19**	**44.75**	**42.13**	**42.96**

Source: Field Survey, 2024

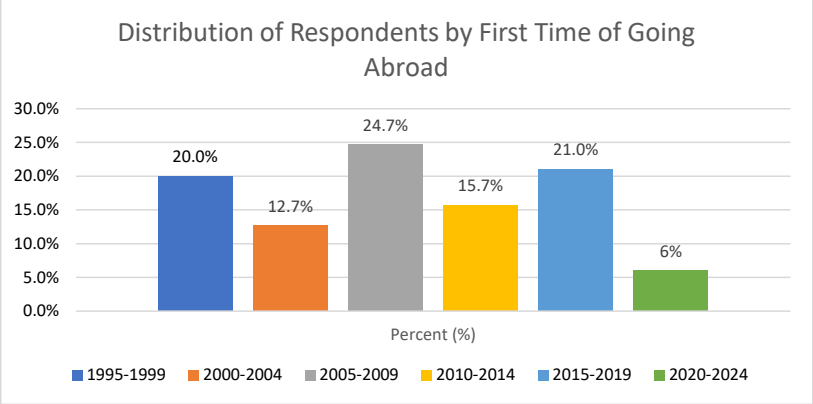
Table 4 shows the year of the journey of the respondents to CoD for the first time. In Tangail Sadar, 14 respondents identified as having gone abroad as migrant workers in 1995-1999, followed by 13 in 2000-2004, 21 in 2005-2009, 7 in 2010-2014, 15 in 2015-2019, and 5 in 2020-2024. In Madhupur, 10 respondents identified that they went abroad as migrant workers in 1995-1999, followed by 8 in 2000-2004, 17 in 2005-2009, 11 in 2010-2014, 24 in 2015-2019, and 5 in 2020-2024. In Daudkandi 14 respondents identified that they went abroad as migrant workers in 1995-1999, followed by 11 in 2000-2004, 17 in 2005-2009, 15 in 2010-2014, 15 in 2015-2019, and 3 in 2020-2024. In Homna, 22 respondents identified as having gone abroad as migrant workers in 1995-1999, followed by 6 in 2000-2004, 19 in 2005-2009, 14 in 2010-2014, 9 in 2015-2019, and 5 in 2020-2024.

Table 4: Distribution of Respondents by Year of Journey to CoD

Year	Daudkandi	Homna	Total Cumilla	Madhupur	Tangail Sadar	Total Tangail
1995- 1999	14	22	36	10	14	24
2000-2004	11	6	17	8	13	21
2005-2009	17	19	36	17	21	38
2010-2014	15	14	29	11	7	18
2015-2019	15	9	24	24	15	39
2020-2024	3	5	8	5	5	10
Total	**75**	**75**	**150**	**75**	**75**	**150**
Average Staying Years	**7.21**	**8.45**	**-**	**9.96**	**5.8**	**-**

Source: Field Survey, 2024

Figure 3: Distribution of the Respondents by First Time of Going Abroad



The educational qualification of the respondents is shown in **Table 5**. The majority of them (35%) are from the class 6-9 level of education, followed by 30% from the class 1-5 level, and SSC or equivalent is only 15.7%, while informal education is 15.3%.

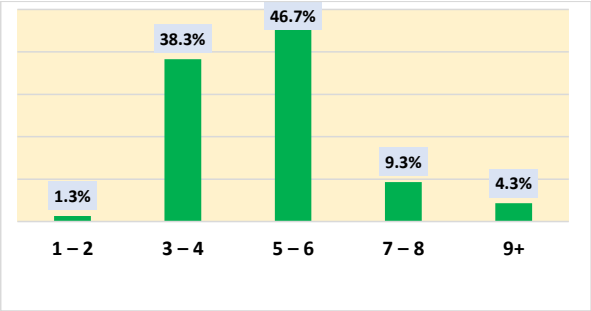
Table 5: Distribution of Respondents by Educational Qualifications

Levels of Education	Daudkandi (%)	Homna (%)	Madhupur (%)	Tangail Sadar (%)	Total (%)
Informal Education	13.3	14.7	21.3	12.0	**15.3**
Class 1 – 5	21.3	34.7	46.7	17.3	**30.0**
Class 6 – 9	41.3	41.3	22.7	34.7	**35.0**
SSC or equivalent	14.7	5.3	6.7	32.0	**14.7**
HSC or equivalent	4.0	2.7	0.0	2.7	**2.3**
Qaumi Madrasah Education	1.3	1.3	2.7	0.0	**1.3**
Graduate or equivalent	2.7	0.0	0.0	1.3	**1.0**
Engineering	1.3	0.0	0.0	0.0	**0.3**
Total	**100**	**100**	**100**	**100**	**100**

Source: Field Survey, 2024

Figure 4 shows the household size of the respondents' families. The average household size of the respondents is estimated at 5.14. The average household size in rural areas obtained from the HIES 2022 is 4.30 (male 2.15 and female 2.14) and the average household size in urban areas of Bangladesh is found to be 4.26 (male 2.14 and female 2.12). About 46.7% of respondents have household size 5-6 where 38.3% have 3-4 members. About 85% of respondents have 3-6 family members.

Figure 4: Distribution of the Respondents by Household Size



Average HH Size: 5.14

Source: Field Survey, 2024

2.4 Occupation and Income of the Respondents

Types of Works

About 35% of returnee migrants worked as Cleaners/Security Guard/General Laborer/Road Construction/Housemaid, 25.6% as Mason/Rod Mistry, Agricultural Laborer (6.7%), Driver (5%), Electronics Mechanic, Pipe & Filter Mechanics (4%), carpenter (3%), garment workers (2.7%)

Table 6: Distribution of the Respondents by the Types of Works

Type of Works	Percent (%)
General Laborers*	35.0
Mason/Rod Mistry	25.6
Agricultural Laborer	6.7
Driver	5.0
Store Employee	5.0
Painter & Carpenter	7.3
Tailor	3.7
Garment worker	2.7
Electronics Mechanic, Pipe & Filter Mechanics	7.3
Cook	2.0
Business (Hotel/Fruit/ Recycled Materials)	1.3
Other (Workshop Worker, Park Supervisor /Labor Foreman/Store Manager, Welding Mistry, Barber)	3.7
Didn't get any job	2.3

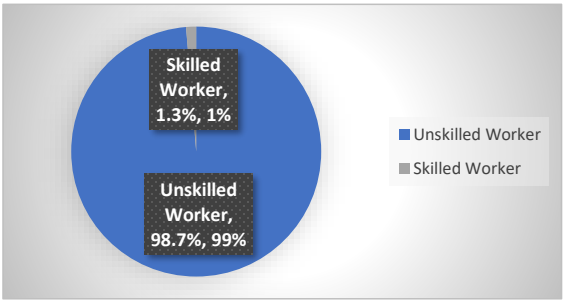
* Cleaners/Security Guard/Construction Workers/Housemaid

***Multiple Responses*

Source: Field Survey, 2024

Figure 5 shows that 98.7% of returnee workers went to CoDs for the first instance as unskilled workers.

Figure 5: Worker Category During First Time Migration



Source: Field Survey, 2024

3.0 Major Findings and Analysis

3.1 Previous and Present Occupation of the Respondents

The comparison between current and previous occupation has been shown in **Table 7.** Agriculture has slightly increased from 24.3% to 25%, Day Laborer has significantly declined from 19.3% to 11.7%; Students/Unemployed decreased substantially from 14.3% to 4.3%; Business has remarkably increased from 13.3% to 19.7%; Carpenter/ Welder has increased from 10.3% to 15%; Driver (Auto, CNG, Pickup) category has significantly increased from 7.3% to 13%; and Farming (Fish/ Chicken) increased from 1.7% to 5.7%.

Table 7: Distribution of the Respondents by Comparison of Occupation

Occupation	Before		Current	
	Number	%	Number	%
Agriculture	73	**24.3**	75	**25.0**
Day Laborer	58	**19.3**	35	**11.7**
Student/Unemployed	43	**14.3**	13	**4.3**
Small Business	40	**13.3**	59	**19.7**
Carpenter/Welding	31	**10.3**	45	**15.0**
Driver	22	**7.3**	39	**13.0**
Tailor/Boutique Craftsman	11	**3.7**	19	**6.3**
Private Job	7	**2.3**	0	**0.0**
Farming	5	**1.7**	17	**5.7**

Occupation	Before		Current	
	Number	%	Number	%
Garment Worker	5	**1.7**	4	**1.3**
Sanitary/Tiles Mechanic	5	**1.7**	9	**3.0**
Barber	0	**0.0**	1	**0.3**

Source: Field Survey, 2024

3.2 Income of the Respondents

Table 8 shows the distribution of the respondents by average monthly household income. About 27.3% has average household income in BDT 16000-19999, followed by BDT 20,000-24,999 (25%), BDT 25,000+ (20%). The mean monthly household income is BDT 20,355 and standard deviation is 7,530. As per HIES 2022, average monthly income per household is BDT 32,421.57. The highest monthly average household income, BDT 21,873, is found in Tangail Sadar, followed by Homna (BDT 21,327), Madhupur (BDT 20,100) and Daudkandi (BDT18,120).

Table 8: Distribution of the Respondents by Average Monthly Household Income

Average Monthly Income (in BDT)	Daudkandi (%)	Homna (%)	Madhupur (%)	Tangail Sadar (%)	Total (%)
8000 – 9999	6.7	0.0	0.0	2.7	2.3
10000 – 11999	9.3	4.0	4.0	0.0	4.3
12000 – 13999	13.3	12.0	5.3	16.0	11.7
14000 – 15999	8.0	5.3	12.0	9.3	8.7
16000 – 19999	29.3	30.7	32.0	17.3	27.3
20000 – 24999	24.0	22.7	36.0	20.0	25.7
25000+	9.3	25.3	10.7	34.7	20.0
Total	100	100	100	100	100
Mean	**18,120**	**21,327**	**20,100**	**21,873**	**20,355**
Standard Deviation	**6,552**	**7,929**	**7,348**	**7,803**	**7,530**

Source: Field Survey, 2024

3.3 Expenditure of the Respondents

Table 9 shows the distribution of the respondents by average monthly household expenditure. About 26.0% has reported that their average monthly household expenditure is BDT 14,000 – 15,999, followed by BDT 20,000-24,999 (21.3%), and BDT 25,000+ (18.3%). The mean monthly household expenditure is BDT 17,374, and standard deviation is 6,683. As per HIES 2022, average monthly expenditure per household is BDT 31,500.

Table 9: Respondents' Average Monthly Household Expenditure

Average Monthly Expenditure (In BDT)	Daudkandi (%)	Homna (%)	Madhupur (%)	Tangail Sadar (%)	Total (%)
8000 – 9999	12.0	2.7	4.0	4.0	5.7
10000 – 11999	16.0	13.3	5.3	14.7	12.3
12000 – 13999	12.0	6.7	12.0	12.0	10.7
14000 – 15999	30.7	29.3	34.7	10.7	26.3
16000 – 19999	2.7	2.7	8.0	8.0	5.3
20000 – 24999	18.7	25.3	25.3	16.0	21.3
25000+	8.0	20.0	10.7	34.7	18.3
Total	**100**	**100**	**100**	**100**	**100**
Mean	15,141	18,267	17,013	19,076	**17,374**
Standard Deviation	5,534	7,297	5,612	7,494	**6,683**

Source: Field Survey, 2024

3.4 Income – Expenditure Nexus

A bivariate linear regression is estimated to show the association between household income and expenditure when the model is $\mathbf{E = \alpha + \beta Y + \varepsilon}$. In this equation, E represents the monthly average household expenditure; Y represents the monthly average household income; and ε represents the stochastic error term.

$$\mathbf{E = 117.89 + 0.161Y}$$

t-ratio is 2.81 and p-value is 0.00

The estimated regression equation shows that expenditure increases by 0.16% for every 1% increase in income. This positive relationship is highly significant, since t-ratio is 2.81, which is higher than the table t-value of 1.67 and the p-value is 0.00. Therefore, the null hypothesis is rejected. The following hypothesis has been tested:

H_0: No significant association between household income and expenditure

H_1: Significant association between household income and expenditure

3.5 Social Indicators

3.5.1 Types of Housing

Type of housing is considered as an important indicator of standard of living and well-being. The distribution of the respondents by the types of households with a comparison of before and after migration has been shown in **Table 10**. Regarding the roofing materials of house structure, Concrete (brick and cement) has seen significant increase from 2% to 11.3%. On the other hand, Tin/CI sheet/GI sheet has decreased from 96.7% to 88.3%. In regards to the wall materials of house

structure, Concrete (brick and cement) has significantly increased from 2.7% to 18.3%. On the other hand, Tin/CI sheet/GI sheet has decreased from 90.7% to 79.7%, and Jute stick has disappeared.

Table 10: Distribution of Respondents by the Types of Housing

Type of Dwelling	Cumilla		Tangail		Total	
	Before	Current	Before	Current	Before	Current
Roofing Materials (House Structure)						
TIN/CI Sheet/GI Sheet	95.3	87.3	98.0	89.3	**96.7**	**88.3**
Concrete (Brick & Cement)	3.3	12.7	0.7	10.0	**2.0**	**11.3**
Mud	0.7	0.0	0.7	0.0	**0.7**	**0.0**
Chhan/Straw	0.7	0.0	0.7	0.7	**0.7**	**0.3**
Total	**100**	**100**	**100**	**100**	**100**	**100**
Wall Materials (House Structure)						
TIN/CI Sheet/GI Sheet	94.0	80.0	87.3	79.3	**90.7**	**79.7**
Soil/Mud	2.0	18.7	9.3	18.0	**5.7**	**2.0**
Concrete (Brick & Cement)	3.3	1.3	2.0	2.7	**2.7**	**18.3**
Jute Stick	0.7	0.0	1.3	0.0	**2.0**	**0.0**
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Field Survey, 2024

3.5.2 Other indicators

Other indicators have been shown in **Table 11**. It is found that 99% of respondents used tubewell as the daily source of drinking water, which has decreased to 96.7%, supply water has increased from 1% to 2.7% while use of bottled water increased to 0.7% from no use.

Regarding the use of daily cooking fuel, it is observed that wood/bamboo/straw has decreased from 94% to 83%, use of cylinder gas has increased to 20% from zero, use of supply gas line has increased from 6% to 18.8%. Regarding toilet facilities, the use of non-sanitary/pit toilet has declined to 66.3% from 77%, sanitary-1 (with Water Seal + Safe Drainage System + Hand Washing Facilities) has increased from 14% to 23%, sanirary-29 (with seal water) from 8% to 10.3% and kacha toilet has declined from 1% to 0.3%. National grid as the source of electricity has increased from 93.3% to 100%. This signifies the outcome of the initiatives taken by the present government to ensure electricity for all.

Table 11: Distribution of Respondents by Other Socio-economic Indicators

Key Indicators	Before Going Abroad (%)	Current Status (%)
Source of Daily Drinking Water		
Tubewell (Deep/Shallow)	99.0	96.7
Tap/Pipe (Supply Water)	1.0	2.7
Bottled Water	0.0	0.7
Total	**100**	**100**
Source of Daily Cooking Fuel		
Wood/Bamboo/Straw	94.0	83.0
Cylinder Gas	0.0	20.0
Line Gas Supply	6.0	18.7
Electricity	0.0	0.7
Toilet Facilities		
Non-sanitary/Pit Toilets	77.0	66.3
Sanitary-1 (with Water Seal + Safe Drainage System + Hand Washing Facilities)	14.0	23.0
Sanitary-2 (with Water Seal)	8.0	10.3
Kucha/Hanging Toilet	1.0	0.3
Total	**100**	**100**
Source of Electricity		
National Grid	93.3	100.0
No Electricity Facility	6.7	0.0
Total	**100**	**100**

Source: Field Survey, 2024
**Multiple Responses*

Table 12 draws a comparison among productive assets, furniture, and electronic items between the period before going abroad and the current situation. The number of Cows/Goats/Horses has increased from 21.7% to 28%, followed by small poultry farm which increased from 9.3% to 15.3%, small shop from 3.3% to 9.3%, small fish farm increased from 2.3% to 3.3%, motorcycle from 1% to 2.7%, Rickshaw/Auto-rickshaw/CNG increased from 1.3% to 3.7%, Truck (Vehicle) increased from 0% to 0.3%.

Regarding furniture and electronic items, the number of respondents who have Wooden Bed/Cupboard-Almirah /Showcase/Dressing Table has increased from 68.3% to 97.3%, for electric fan it has increased from 35.7% to 88.3%, for mobile phone it has increased from 18.7%

to 98.3%, from 2.3% to 81.0% for fridge, 15.3% to 36.0% for TV and rice cooker from 0% to 3.7%.

Table 12: Distribution of Respondents by Other Socio-economic Indicators

Key Indicators	Before Going Abroad (%)	Current Status (%)
Productive Assets*		
Cows/Goats/Horses	21.7	28.0
Small Poultry Farm	9.3	15.3
Small Shop	3.3	9.3
Small Fish Farm	2.3	3.3
Motorcycle	1.0	2.7
Rickshaw/Auto-rickshaw/CNG	1.3	3.7
Truck (Vehicle)	0.0	0.3
Various Furniture & Electronic Items*		
Wooden Bed/Cupboard-Almirah /Showcase/Dressing Table	97.3	97.3
Fan	35.7	88.3
Mobile Phone	18.7	98.3
Fridge	2.3	81.0
TV	15.3	36.0
Rice Cooker	0.0	3.7

Source: Field Survey, 2024
**Multiple Responses*

3.6 Comparison of Financial Situation Before and After Migration

An important indicator of well-being is the comparison of financial situation before and after migration. **Table 13** shows the Financial Situations of the Respondents Before and After Migration.

Table 13: Financial Situations of the Respondents Before and After Migration

Category	Daudkandi (%)		Homna (%)		Madhupur (%)		Tangail Sadar (%)		Total (%)	
	Before	Current	Before	Current	Before	Current	Before	Current	Before	Current
Lower Class	25.3	13.3	18.7	2.7	10.7	2.7	13.3	9.3	**17.0**	**7.0**
Lower Middle Class	46.7	45.3	54.7	66.7	73.3	81.3	74.7	70.7	**62.3**	**66.0**

Middle Class	28.0	33.3	26.7	29.3	16.0	16.0	12.0	20.0	**20.7**	**24.7**
Upper Middle Class	0.0	8.0	0.0	1.3	0.0	0.0	0.0	0.0	**0.0**	**2.3**
Upper Class	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Field Survey, 2024

It is revealed that the status of lower class has declined from 17% to 7%; lower middle class increases from 62.3% to 66%; middle class increases from 20.7% to 24.7%; and upper middle class increases from 0 to 2.3%. It is to be noted that no upper class is found in any study area before or after migration. In the case of Daudkandi, it is found that the status of lower class has declined from 25.3% to 13.3%, lower middle class decreases slightly from 46.7% to 45.3%, middle class increases from 28% to 33.3%, and upper middle class increases from 0 to 8.0%. In the case of Homna, it is found that the status of lower class has declined from 18.7% to 2.7%, lower middle class increases from 54.7% to 66.7%, middle class increases from 26.7% to 29.3%, and upper middle class increases from 0 to 1.3%. It is found in Madhupur that the status of lower class has declined from 10.7% to 2.7%, lower middle class increases from 73.3% to 81.3%, middle class is unchanged, and no upper middle class is found. In the case of Tangail Sadar, it is found that the status of lower class has declined from 13.3% to 9.3%, lower middle class decreases from 70.7% to 70.7%, middle class increases from 12% to 20%, and no upper middle class is found.

H_0: No significant difference of financial situation between before and after migration

H_1: Significant difference of financial situation between before and after migration

Table 14 and **Table 15** show the ANOVA and Tests of Homogeneity of Variances. The test results show that F-statistic is 62.45 and the level of significance (p-value) is 0.000 meaning that the null hypothesis is rejected and the alternative hypothesis of significant differences of financial situation between before and after migration is accepted.

Table 14: ANOVA

Financial Situation before Migration and After Migration					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	43.641	3	14.547	62.446	.000
Within Groups	68.955	296	.233		
Total	112.597	299			

Source: SPSS Output

Table 15: Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Financial Situation before Migration and After Migration	Based on Mean	7.719	3	296	.000
	Based on Median	3.303	3	296	.021
	Based on Median and with adjusted df	3.303	3	279.81	.021
	Based on trimmed mean	6.631	3	296	.000

Source: SPSS Output

3.7 Regression Analysis

A simple linear regression technique has been employed to depict the relationship between remittance and major indicators of well-being, such as consumption of food items and remittance, consumption of non-food items and remittance, and income and remittance. A multivariate regression model is estimated with average monthly income of the family (Y) as the dependent variable and age, marital status, number of family members, education, and money sent as remittance as independent variables.

Consumption of Food Items and Remittance

$$CF = \alpha + \beta R + \varepsilon$$
$$CF = 6995.48 + 0.207R$$
[where t = 3.53, Sig. = 0.000]

The β coefficient of the independent variable, remittance, is positive, meaning that remittance has a positive relationship with the consumption of food items. A one percent increase in remittance leads to a 0.21% increase in consumption of food items. The following hypothesis has been tested:

H_0 = No significant relationship between consumption of food items and remittance
H_1 = Significant relationship between consumption of food items and remittance

The null hypothesis is rejected since t = 3.53 and Sig. = 0.000. Therefore, the alternative hypothesis is accepted, meaning that there is a significant relationship between consumption of food items and remittance.

Consumption of Non-Food Items and Remittance

$$CNF = \alpha + \beta R + \varepsilon$$
$$CNF = 7007.11 + 0.44R$$
[where t = 8.159, Sig. 0.000]

The β coefficient of the independent variable, remittance, is positive, meaning that remittance has a positive relationship with the consumption of non-food items. The following hypothesis has been tested:

H_0 = No significant relationship between consumption of non-food items and remittance

H_1= Significant relationship between consumption of non-food items and remittance

The null hypothesis is rejected since t = 8.159 and Sig. = 0.000. Therefore, the alternative hypothesis is accepted, meaning that there is a significant relationship between consumption of non-food items and remittance.

Income & Remittance

$$Y = \alpha + \beta R + \varepsilon$$
$$Y = 14002.58 + 0.43R$$
[where t = 7.98, Sig. 0.000]

The β coefficient of the independent variable, remittance, is positive and statistically significant, meaning that remittance has a positive relationship with income. One percent increase in remittance leads to 0.43% increase in income. The following hypothesis has been tested:

H_0 = There is no significant relationship between income and remittance

H_1= There is significant relationship between income and remittance

The null hypothesis is rejected since t = 7.98 and Sig. = 0.000. Therefore, the alternative hypothesis is accepted, meaning that there is a significant relationship between income and remittance.

Multivariate Regression Model

~~A multivariate regression model is estimated with average monthly income of the family (Y) as dependent variable, and age, marital status, number of family members, education, and money sent as remittance as independent variables.~~

To examine the factors influencing household income, a multivariate regression analysis was conducted using the family's average monthly income as the dependent variable. The explanatory variables included the respondent's age, marital status, household size, educational attainment, and the amount of remittance received.

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Y = Income, A = Age, E = Education, M = Marital Status, FM = Number of Family Members, OM = Occupation before migration, R = Remittance Sent.

$$Y = \alpha + \beta_1 A + \beta_2 E + \beta_3 M + \beta_4 FM + \beta_5 OM + \beta_6 R + \varepsilon$$

$$Y = -7422.218 + 0.183A + 0.108E + 0.240M + 0.139FM + 0.071OM + 0.129R$$

(3.30)	*(1.92)*	*(4.46)*	*(5.80)*	*(1.29)*	*(2.32)*
(0.01)	*(0.05)*	*(0.00)*	*(0.00)*	*(0.19)*	*(0.02)*

All the independent variables are positively related to the dependent variable. The estimated coefficients are statistically significant except occupation before migration. The ANOVA shows the F-statistic is 12.311 and the level of significance is 0.00.

4.0 Recommendations

This micro study faces a number of difficulties while gathering information from the respondents. The following recommendations have been made to improve the status of the respondents:

- A complete database for the returnee migrants is required so they can be traced easily for study or assistance purposes.
- Sustained efforts are required for creating more comprehensive support services for the returnee migrants through more access to education and training opportunities. Governments and related organizations should provide necessary training and support to the returnee migrants for proper management and investment of remittance, so that they can utilize their hard-earned foreign currency effectively.
- Capacity building of the District Employment and Manpower Offices and Probashi Kalyan Desks at DC Offices should be strengthened for rendering services to the returnee migrants more efficiently. Probashi Kalyan (migrant welfare) desks are to be established at the Deputy Commissioner's Offices in 64 districts as well as UNO offices at the Upazila level.
- Different language and soft skills of returnee migrants should be improved to prepare them for remigration.
- Loans and microcredit are also to be extended to the returnee migrants for the development of entrepreneurship.
- The reintegration programs of other labor-sending neighboring countries can be replicated in Bangladesh.
- Returnee migrants in Bangladesh may be assisted by the government through the projects and ventures for reintegration. The most effective and needful service is counseling on how to invest and utilize the savings from remittance.
- A one-stop service center may be established to extend need-based information to migrants expediting the use of their hard-earned remittances through a hassle-free system.

- Most of the female migrant workers are illiterate or less educated, which makes them more vulnerable to exploitation. Therefore, special efforts for women migrants should be taken into consideration with priority.

4.1 Conclusion

This micro-level study has been conducted based on 300 returnee migrants. A comprehensive and in-depth study is required for an effective reintegration process. A complete database with basic information is required for proper policy intervention. The Ministry of Expatriates' Welfare and Overseas Employment should take the lead in conjunction with other ministries to reintegrate the returnee migrants. The empowerment of the migrant workers may be possible through ensuring appropriate social and economic reintegration. In order to capitalize on the acquired skills, expertise, and knowledge of returnee migrants, it is essential to create an enabling environment so that they can make the best use of economic and social opportunities. There is an urgent need for the finalization and implementation of the provisions outlined under the 'National Reintegration Policy for Migrants 2024,' because it outlines a framework for the provisions of well-planned and integrated interventions to support the sustainable reintegration of all Bangladeshi returnee migrants, both male and female.

Within the limited scope of this study, it is not possible to include the majority of returnee migrants, particularly the female returnee migrants, and to address all aspects of their well-being. Programs of other countries for returnee migrant workers and possible replication in the country may be an effective option. Strategies for the reintegration process of the returnee migrants may be adopted for both short-term and long-term perspectives. A long-term plan is required for a sustainable reintegration process, which could be implemented in successive projects and policy initiatives.

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Stakeholder Perceptions on Dog Bite & Associated Risk Prevention and Management Strategies: A Quantitative Study in Rural Bangladesh

Md. Zobidul Kabir[1], Md. Shahadat Hossain[2]

Abstract

Dog bites represent a persistent public health challenge, particularly in rabies-endemic regions such as Bangladesh. This quantitative study investigated the knowledge, attitudes, and practices of key community stakeholders regarding dog bite prevention and management strategies in Rajarhat, Kurigram, Bangladesh. Data were collected from 395 Community Animal Health Workers and 395 Community School Teachers using a structured questionnaire with Likert-scale items. Descriptive statistics (means, medians, and standard deviations) were employed to characterize perceptions, and Pearson Correlation analysis was performed to test the hypothesized relationship between prevention/management strategies and dog bite risk. Findings revealed significant gaps in community knowledge concerning rabies, dog bite infections, and management. However, stakeholders strongly perceived a substantial role for various strategies, including modern treatment, mass dog vaccination and sterilization, proper disposal of rabid animals, national guidelines, comprehensive education, epidemiological surveillance, environmental health programs, pet registration, advocacy, and intersectoral coordination. The Pearson Correlation analysis demonstrated a statistically significant positive relationship ($P<0.001$) between perceived prevention/management strategies and dog bite risk. These results underscore the critical need for integrated public health interventions that enhance community knowledge and effectively implement recognized prevention and management practices to reduce dog bite incidences in rural Bangladesh.

Keywords: Dog bite prevention, dog bite management, stakeholder perceptions, knowledge, attitudes, practices, public health, Bangladesh, quantitative study, Pearson correlation.

1. Introduction

Dog bites are a significant global public health issue, resulting in diverse injuries, infections, psychological trauma, and, crucially, the transmission of rabies in endemic areas (Gilchrist et al., 2008; Macpherson et al., 2013). In Bangladesh, the problem is particularly acute, with an estimated 200,000 animal bite cases and over 2,000 human rabies deaths reported annually (Hossain et al., 2012). Despite this substantial burden, organized surveillance systems for dog bite injuries and rabies remain underdeveloped, contributing to a scarcity of reliable local data.

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[1] Department of Livestock Services (DLS), Bangladesh, Dhaka. E-mail: badhonbir@gmail.com; badhonbir1977@gmail.com (Corresponding author)
[2] Department of Basic Science and Humanities, Rangpur Engineering College, Rangpur.

Effective dog bite prevention and control are complex, requiring a multi-pronged approach that extends beyond managing dog populations to include robust public health interventions. The success of such interventions is heavily reliant on the knowledge, attitudes, and practices (KAP) of the affected communities and key stakeholders (Dhand et al., 2012; Matibag et al., 2009). Understanding how different community groups perceive current risks and the effectiveness of various prevention and management strategies is crucial for designing and implementing effective public health programs.

This study aims to address this critical knowledge gap by quantitatively investigating the perceptions of key community stakeholders—Community School Teachers and Community Animal Health Workers—in Rajarhat, Kurigram, Bangladesh. Specifically, it explores their knowledge, attitudes, and practices regarding dog bite prevention and management and quantifies the perceived relationship between these strategies and the overall risk of dog bites. The insights gained from this research are vital for informing the development of targeted, context-specific public health interventions and policies to mitigate dog bite incidences and associated risks in rural settings.

The rationale for this study stems from the critical need to engage community-level 'gatekeepers'—specifically school teachers and animal health workers—who are the primary influencers in rural settings. While existing national policies focus on reactive clinical treatment, there is a vacuum in understanding how these stakeholders perceive proactive management. By investigating Rajarhat Upazila, a region specifically selected for its high stray dog density and historically limited access to centralized healthcare, this study provides empirical evidence to bridge the gap between central policy design and rural grassroots implementation.

2. Literature Review

Effective dog bite prevention and management hinge on a comprehensive understanding of various strategies and the community's engagement with them. This review examines the existing literature on knowledge, attitudes, and practices regarding dog bite prevention, as well as the perceived effectiveness of different management interventions.

2.1. Knowledge, Attitude, and Practices (KAP) in Dog Bite Prevention

Community knowledge, attitudes, and practices are fundamental for the prevention and control of rabies and dog bites in both humans and animals (Dhand et al., 2012). Studies from various countries have documented significant gaps in public awareness concerning rabies, dog bite infections, and proper post-bite management (Agarwal & Reddaiah, 2020; Chowdhury et al., 2013). This lack of awareness can lead to delayed or inappropriate responses to bite incidents, increasing the risk of severe outcomes, including rabies fatalities. Children, in particular, often lack proper knowledge about safe interactions with dogs and the associated risks (Dixon et al., 2012).

2.2. Dog Bite & Associated Risk Prevention and Management Strategies

A range of interventions has been proposed and implemented globally to reduce dog bite incidence and manage their consequences:

Modern Treatment and Post-Exposure Prophylaxis (PEP): Immediate and proper wound cleansing followed by vaccine therapy and rabies immunoglobulin is effective in preventing rabies after exposure (WHO, 2013). However, access and completion of PEP can be challenging in low-income and remote areas (Hampson et al., 2015).

Mass Dog Vaccination (MDV): Vaccinating domestic dogs is the most cost-effective strategy for preventing human rabies cases, as dogs are the source of over 99% of human infections (WHO, 2013a).

Dog Population Management (DPM): Strategies like sterilization/neutering reduce the overall dog population and can decrease aggressive behaviors related to reproduction and territoriality (Reece et al., 2013).

National Guidelines and Policy Frameworks: The development and implementation of comprehensive national guidelines are essential for a coordinated and standardized approach to dog bite prevention and management (Ozanne-Smith et al., 2001).

Comprehensive Education and Training Programs: Educating various stakeholders, including dog owners, children, community members, and professionals, on dog behavior, bite prevention, and first aid is vital (Meints & Keuster, 2009).

Epidemiological Investigation and Surveillance: Robust surveillance systems are necessary to monitor bite incidence, identify risk factors, and evaluate the effectiveness of interventions (Ozanne-Smith et al., 2001).

Advocacy, Communication, and Social Mobilization (ACSM): These strategies are critical for raising public awareness, fostering positive attitudes towards prevention, and promoting behavior change (Matibag et al., 2009).

Global and National Perspectives on Rabies Management: Rabies remains a neglected tropical disease, causing approximately 59,000 human deaths annually worldwide, with 99% of cases transmitted via dog bites (WHO, 2018). The international community, through the "Zero by 30" global strategic plan, emphasizes that mass dog vaccination (MDV) is the most cost-effective intervention to break the transmission cycle at the source. In Bangladesh, the transition from dog culling to a "One Health" approach—comprising MDV and sterilization—has shown promise in urban centers but faces implementation gaps in rural areas (Alam et al., 2020). Previous research indicates that while clinical knowledge is increasing, there is a significant "communication gap" among community gatekeepers. As highlighted by Ghosh et al. **(2020)**, the efficacy of national policies depends on the grassroots awareness of teachers and animal health workers. This study addresses this gap by quantifying the perceptions of these key stakeholders in a rural context.

Current literature on rabies in Bangladesh: Current literature on rabies in Bangladesh highlights a persistent challenge in converting awareness into practice. Recent scholarship (Mamun et al., 2024) indicates that even among pet owners, zoonotic disease prevention

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practices remain inconsistent. This risk is exacerbated in rural economies where dog bites also impact livestock productivity, as noted by Noman et al. (2021). Although foundational research (Alam et al., 2020; Ghosh et al., 2016) has established the general public's fear of rabies, there is a distinct research gap regarding the perceived efficacy of institutional management strategies among community educators and veterinary practitioners. This study addresses this gap by evaluating the readiness of these stakeholders to support integrated 'One Health' interventions, moving beyond simple awareness toward systemic management.

Despite several studies on dog bite incidents, there is a lack of research specifically focusing on the comparative perceptions of animal health workers and teachers. This study addresses this gap to inform community-based policymaking.

This study seeks to quantitatively assess the perceptions of key community stakeholders regarding the effectiveness of these diverse prevention and management strategies, providing local evidence to inform policy and program development in rural Bangladesh.

3. Methodology

3.1. Study Design

This study employed a non-experimental, descriptive-correlational research design, utilizing quantitative methods (Creswell & Clark, 2011). The primary objective was to explore and quantify the perceptions, knowledge, attitudes, and practices of community stakeholders regarding dog bite prevention and management in Rajarhat, Kurigram, Bangladesh.

3.2. Population, Sample, and Sampling Procedure

A purposive sampling technique was used for respondent selection. Based on information from the Upazila Education Office and Upazila Livestock Office, the total population for each group was 460. Using both Yamane's mathematical formula ($n = \frac{N}{1+Ne^2}$) and a random sampling formula ($n = \frac{Z^2 pq}{e^2}$), a sample size between 215 and 384 was suggested for each stakeholder group with a 95% confidence level and 5% margin of error. To enhance research effectiveness, 395 respondents were selected for each stakeholder group, totaling 790 respondents. The distribution of these respondents across the seven unions of Rajarhat is detailed in Table 1.

3.2.1. Study Area Selection and and Purposive Sampling: The study was conducted in Rajarhat Upazila under the Kurigram district of Bangladesh. This area was purposively selected based on its high vulnerability to zoonotic diseases and its classification as a high-risk zone for rabies. According to the National Rabies Elimination Strategy, rural districts like Kurigram face a significant public health burden due to a high density of free-roaming dogs, with an estimated dog-to-human ratio of 1:12 in rural Bangladesh (Tenzin et al., 2015).

Furthermore, data from the Directorate General of Health Services (DGHS, 2022) indicates that Kurigram reports a high frequency of animal bite cases but suffers from limited access to

centralized Post-Exposure Prophylaxis (PEP). This "selected area" serves as a representative model for the "poverty-prone" northern regions of Bangladesh where human-canine conflict is a daily reality, making it a scientifically grounded site for investigating stakeholder perceptions on prevention and management (Ministry of Health and Family Welfare, 2020).

3.3. Instrumentation Data were collected using a structured questionnaire, which was developed through a comprehensive literature review, supervisor input, and advice from relevant government and community stakeholders. The questionnaire primarily utilized Likert and Likert-type scales to capture beliefs, knowledge, and practices (Huck, 2007).

For the purpose of this paper, different questions were developed to explore various dimensions and perspectives of dog bite prevention and management connected with dog bites and associated risks. These questions assessed:

- Knowledge, attitude, and practices about dog bite prevention and management (5-point Likert scale: 1=Strongly Disagree, 5=Strongly Agree).
- Perceived role of various prevention and management strategies (5-point Likert scale: 1=No Role, 5=Substantial Role), with specific questions for Community Animal Health Workers and Community School Teachers.
- Hypothesis testing questions for the relationship between dog bite prevention/management and dog bite risk (5-point Likert scale: 1=Substantial association, 5=No association).

3.4. Data Collection Procedure

Survey data were collected from April 2020 to August 2020 through a combination of mobile phone, telephone, e-mail, direct face-to-face contact, workshops, seminars, and focus group discussions. Focus Group Discussions (FGDs) were used to validate the quantitative findings. All participants provided informed consent, and strict confidentiality of their responses was maintained.

3.4.1. Data Collection and COVID-19 Protocols:

Primary data (*n*=790) were collected between April and August 2020. Despite the nationwide COVID-19 lockdown, data integrity was maintained through a team of three (3) local volunteers. These collectors underwent a 3-day intensive training session, conducted by the primary researcher. The training focused on structured interviewing, data ethics, and health safety protocols. A hybrid collection model was used: approximately 60% of participants were reached via telephone and e-mail, while 40% were interviewed in person in open outdoor spaces following strict physical distancing and mask mandates.

3.5. Data Analysis

Collected data were transferred to SPSS (version 20.0, SPSS Inc., Chicago, IL) for quantitative analysis. Descriptive statistics (frequency distributions, percentages, means, and standard deviations) were used to summarize perceptions. The Pearson Correlation test was employed as the inferential statistic to assess the relationship between 'dog bite and associated risk at the community level' (dependent variable) and 'different dimensions/perspectives of dog bite prevention and management at the community level' (independent variable). A significance level of $P<0.01$ was set for rejecting the null hypothesis.

3.5.1. Reliability and Validity Testing:

To ensure the scientific consistency of the instrument, a reliability test was performed using Cronbach's alpha. The resulting coefficient was found to be 0.82, which is significantly above the recommended threshold of 0.70, confirming high internal reliability. Face validity was ensured through a pilot test with 30 participants and review by a panel of public health experts.

3.6. Research Ethics

The study adhered to all ethical considerations, including obtaining informed consent, ensuring participant confidentiality, guaranteeing voluntary participation, and avoiding plagiarism (Maree, 2007).

4. Results

4.1. Demographic Profile of Respondents

This section describes the demographic characteristics of the Community Animal Health Workers and Community School Teachers who were the respondents of the survey instruments. The complete demographic profile of the respondents in this study is shown in Table 1.

Table 1: Demographic Profile of Respondents

Subject Characteristic	Group 1		Group 2	
	f	**Percent**	***f***	**Percent**
Current career status				
Community Animal Health Worker	-	-	395	100.0
Government Primary School Teacher	225	56.96	-	-
Non-Government Primary School Teacher	-	-	-	-
Government High School Teacher	20	5.06	-	-
Non-Government High School Teacher	110	27.85	-	-
Madrasa Teacher	40	10.13	-	-
Total	395	100.0	395	100.0
Area/Union at Rajarhat, Kurigram				
Rajarhat	61	15.44	61	15.44
Chakirposher	65	16.46	65	16.46
Gharialdanga	54	13.67	54	13.67
Biddyananda	44	11.14	44	11.14
Chinai	49	12.41	49	12.41
Umor majid	54	13.67	54	13.67
Najim khan	68	17.21	68	17.21
Total	395	100.0	395	100.0

Community Animal Health Workers (Group 2): All 395 respondents (100%) were Community Animal Health Workers (Table 1).

Community School Teachers (Group 1): Of the 395 respondents, 225 (56.96%) were Government Primary School Teachers, 20 (5.06%) Government High School Teachers, 110 (27.85%) Non-Government High School Teachers, and 40 (10.13%) Madrasa Teachers (Table 1). Across both groups, all respondents (100%) expressed the position that proper action and effective national guidelines are essential to create public awareness and prevent dog bites and associated risks (Table 1).

Section 4.2: Perceptions on Knowledge, Attitude, and Practices (KAP) about Dog Bite & Associated Risk

The findings from the research titled "Stakeholder Perceptions on Dog Bite & Associated Risk Prevention and Management Strategies: A Quantitative Study in Rural Bangladesh" highlight critical knowledge gaps and the perceived effectiveness of strategic interventions. The study utilized a five-point Likert scale (where 1 = Strongly Disagree/No Role and 5 = Strongly Agree/Substantial Role) to gauge the perceptions of 790 stakeholders.

Stakeholders (Community School Teachers and Animal Health Workers) largely agreed that there are critical information gaps regarding rabies and dog bite risks, particularly among children and common community members.

Table 2: Perceived Knowledge Gaps and Awareness Levels

Serial	Statement / Perception Description	Mean	Median	STD
1	Children's lack of information about rabies, infections & complications	4.4479	5.0000	0.85649
2	Community people's lack of information about rabies & infections	4.5703	5.0000	0.80485
3	Butchers' lack of information regarding rabid animals	4.6120	5.0000	0.78028
4	Children's lack of information about biting dog characteristics	4.7578	5.0000	0.62226
5	Community people's lack of information about biting dog characteristics	4.4896	5.0000	0.75327
6	Children's lack of information about risk factors of dog bites	4.7448	5.0000	0.62788
7	Community people's lack of information about risk factors of dog bites	4.8854	5.0000	0.31893
8	Community's lack of information about dog bite management for humans	4.8307	5.0000	0.45702
9	Community's lack of information about dog bite management for farm animals	4.8958	5.0000	0.30588

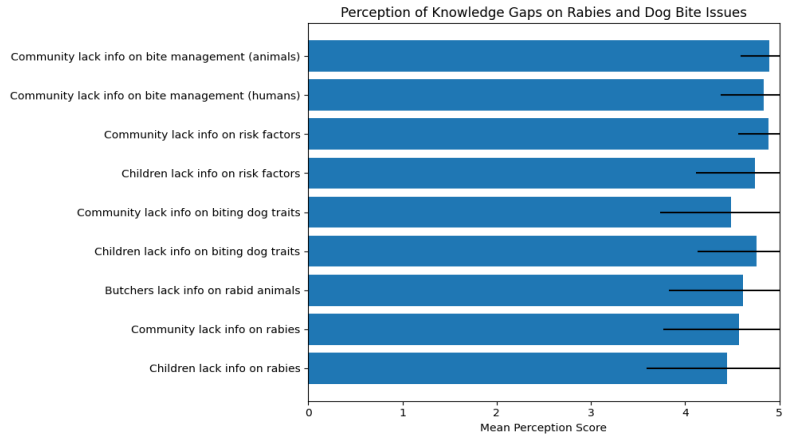


Figure 1: Descriptive Statistics of Respondent Perceptions on Perceived Knowledge Gaps and Awareness Levels

Overall, Figure 1 shows that all mean scores are high (approximately 4.3–4.9 on a 5-point scale)**,** indicating a strong consensus among respondents that significant knowledge gaps exist**.** Figure 1 clearly demonstrates a widespread and serious lack of knowledge across multiple groups regarding rabies and dog bite prevention and management. These findings underscore the urgent need for targeted awareness campaigns, education programs, and risk communication strategies**,** particularly focusing on communities, children, and high-risk occupational groups.

These findings represent the perceived knowledge gaps and awareness levels within the community, where respondents used a Likert scale to indicate their level of agreement. Respondents largely agreed or strongly agreed that there are significant knowledge gaps within the community:

General Awareness (Children): "Children were not properly known as well as not well-informed about rabies, dog bite infections & diseases, and other complications connected with Dog bites and associated risks" (Mean = 4.4479, Median = 5.0000).

General Awareness (Community): "Community people were not properly known as well as not well-informed about rabies, dog bite infections & diseases, and other complications connected with Dog bites and associated risks" (Mean = 4.5703, Median = 5.0000).

Occupational Gaps (Butchers): "Butchers were not properly known as well as not well-informed about rabid animals" (Mean = 4.6120, Median = 5.0000).

Occupational Risk: Indicates a specific hazard for those handling animals, which could lead to non-bite transmissions.

Child Vulnerability (Characteristics): "Children were not properly known or well-informed about biting dog characteristics" (Mean = 4.7578, Median = 5.0000).

High Vulnerability: Stakeholders perceive children as being at extreme risk due to their inability to read dog body language.

Dog Characteristics (Community): "Community people were not properly known or well-informed about biting dog characteristics" (Mean = 4.4896, Median = 5.0000).
Child Vulnerability (Risk Factors): "Children were not properly known as well as not well-informed about risk factors of dog bites and associated risks" (Mean = 4.7448, Median = 5.0000).
Community Risk Factors: "Community people were not properly known as well as not well-informed about risk factors of dog bites and associated risks" (Mean = 4.8854, Median = 5.0000).
Substantial Gap: Reflects a general lack of basic public health awareness regarding how dog bites occur.
Human Case Management: "Community's lack of info about dog bite management for humans" (Mean = 4.8307, Median = 5.0000).
Management of Farm Animals: "Community's lack of knowledge on dog bite management for farm animals" had the highest perceived gap with a mean of 4.8958 and a median of 5.0000.
Critical Gap: This is the highest perceived deficiency, suggesting a severe lack of veterinary first-aid knowledge in rural areas.

Section 4.3: Perceptions on Dog Bite Prevention and Management Strategies
This section evaluates strategies that stakeholders believe play a "moderate to substantial role" in reducing the incidence and impact of dog bites in rural localities.
Table 3: Perceived Role of Prevention and Management Strategies

Table 3.1. Community Animal Health Worker's perception:

Serial	Strategy / Action Item Description	Mean	Median	STD
1	Modern treatment practices for dog bite cases in humans	4.5781	5.0000	0.78315
2	Modern treatment practices for dog bite cases in farm animals	4.5859	5.0000	0.77114
3	Practices of Mass Dog Vaccination (MDV) (Pre-exposure)	4.5807	5.0000	0.78013
4	Mass vaccination (i.e., Pre-exposure vaccination) of rabies for farm animals/ruminants	4.5703	5.0000	0.80485
5	Sterilizing/neutering techniques for community/street dogs	4.4870	5.0000	0.75841
6	Proper disposal management of rabid animals	4.8828	5.0000	0.32206

7	Proper quarantine management for community dogs by DLS	4.6927	5.0000	0.58417
8	Proper legislation for institutional arrangement of feed in environment/localities for community/street dog population	4.5703,	5.0000	0.80485

Respondents consistently perceived a "moderate to substantial role" for various prevention and management strategies:

Practices of modern treatment: "Practices of modern treatment for dog bite cases in the case of human beings had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5781, Median = 5.0000).
"Practices of modern treatment for dog bite cases in the case of Farm animals/Ruminants had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5859, Median = 5.0000).
Practices of mass vaccination: "Practices of mass dog vaccination (MDV) (i.e., pre-exposure vaccination) against Rabies had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5807, Median = 5.0000).
"Practices of mass vaccination (i.e., pre-exposure vaccination) of rabies for farm animals/ ruminants had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5703, Median = 5.0000).
Practices of sterilizing/neutering techniques: "Practices of sterilizing/neutering techniques for community/street dogs had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.4870, Median = 5.0000).
Practices of proper disposal management: "Practices of proper disposal management of Rabid animals had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.8828, Median = 5.0000).
Practices of proper quarantine management: "Practices of proper quarantine management for community/street dogs by DLS authority had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.6927, Median = 5.0000).
Animal welfare concept: "Considering animal welfare concept, proper legislation for concerned institutional arrangement of feed in environment/localities for community/street dog population had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5703, Median = 5.0000).

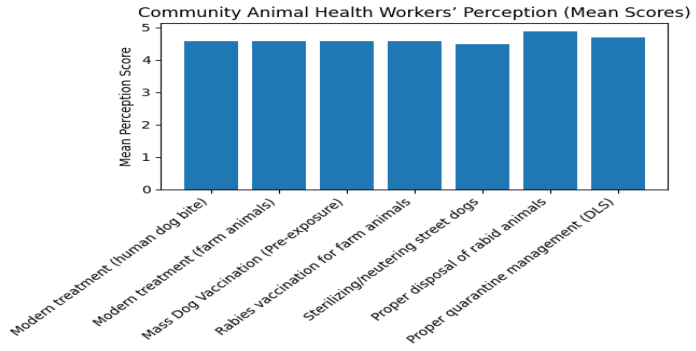


Figure 2: Descriptive Statistics of Community Animal Health Worker's perception on Prevention and Management Strategies

Figure 2 illustrates the mean perception scores of Community Animal Health Workers regarding different rabies prevention and control strategies. All items received high mean scores (above 4.4), indicating a strong positive perception. Proper disposal management of rabid animals received the highest mean score (4.88), while sterilizing/neutering techniques for community dogs received the comparatively lowest score (4.49), though still indicating a high level of agreement.

Table 3.2. Community School Teacher's perception:

Serial	Strategy / Action Item Description	Mean	Median	STD
1	Development of national guideline for dog bite prevention	4.5521	5.0000	0.81970
2	Comprehensive education/training programs for stakeholders	4.5599	5.0000	0.81666
3	Epidemiological investigation and effective surveillance program	4.5443	5.0000	0.83542
4	Environmental health program for street dog populations	4.8932	5.0000	0.30922
5	Pet animal registration along with vaccination program	4.8229	5.0000	0.38222

6	Advocacy, communication, and social mobilization (ACSM)	4.5729	5.0000	0.80371
7	Dog Population Management (DPM)	4.6589	5.0000	0.63056
8	Coordination between 'Dept. of Health' and 'Dept. of Livestock'	4.8828	5.0000	0.32206
9	Strategic guideline for behavior change communication (BCC)	4.6250	5.0000	0.66230
10	Societal advertisement by business organizations and media	4.8151	5.0000	0.38872

Respondents consistently perceived a "moderate to substantial role" for various prevention and management strategies:

National Framework: "Development of national guideline for dog bite prevention and management had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5521, Median = 5.0000).

Stakeholder Training: "Comprehensive education and training program among concerned stakeholders had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5599, Median = 5.0000).

Surveillance: "Epidemiological investigation as well as effective surveillance program' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5443, Median = 5.0000).

Environmental Health: "Environmental health program associated with community/street dog population' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.8932, Median = 5.0000).

Animal welfare concept: "Considering animal welfare concept, proper legislation for concerned institutional arrangement of feed in environment/localities for community/street dog population had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5703, Median = 5.0000).

Registration and Vaccination: "Pet animal registration along with vaccination program' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.8229, Median = 5.0000).

ACSM: "Advocacy, communication and social mobilization (ACSM) had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.5729, Median = 5.0000).

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Population Control: "Dog population management (DPM)' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (**Mean = 4.6589**, **Median = 5.0000**).

Public- private partnership: "Public- private partnership for Behavior Change Communication (BCC) had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities " (Mean = 4.5391, Median = 5.0000).

Communication Strategy (BCC): "Strategic guideline for effective behavior change communication (BCC) program' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.6250, Median = 5.0000).

Institutional Coordination: "Effective and strong coordination and liaison activities between 'Department of Health Services' and 'Department of Livestock Services' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.8828, Median = 5.0000).

Institutional Necessity: Reflects a strong endorsement for a "One Health" approach to zoonotic disease control.

Strategic guideline for waste disposal management: "Strategic guideline for waste disposal management of Rabid animal had a 'moderate to substantial role' for prevention of dog bite and associated risk in the localities" (Mean = 4.5495, Median = 5.0000).

Public Awareness (Media): "Societal advertisement by business organizations as well as electronic and printing media' had a 'moderate to substantial role' for the prevention of dog bites and associated risks in the localities" (Mean = 4.8151, Median = 5.0000).

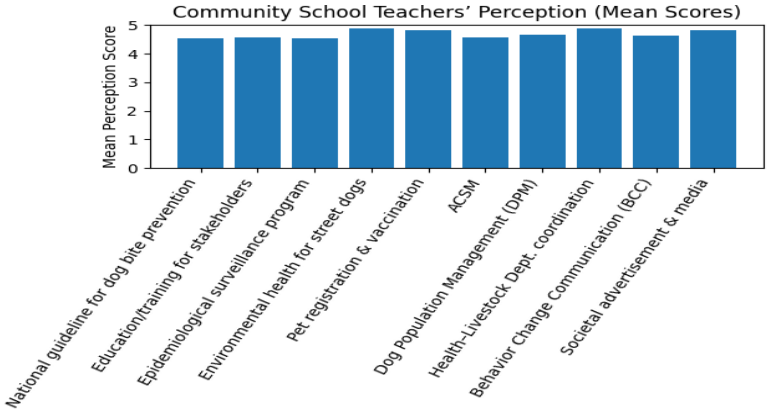


Figure 3. Mean perception scores of Community School Teachers regarding on Prevention and Management Strategies

Figure 3 presents the mean perception scores of Community School Teachers toward various rabies prevention and control strategies. All strategies received high mean scores (≥4.54),

indicating strong positive perceptions. The highest mean score was observed for the environmental health program for street dog populations (4.89), followed by coordination between the Department of Health and the Department of Livestock (4.88). This reflects strong support for integrated and environmental approaches to rabies control.

4.4. Hypothesis Testing: Relationship between Dog Bites & Associated Risks and Prevention/Management Practices

Pearson Correlation Test was conducted using SPSS to test the null hypothesis. P values less than the significance level of 0.01 lead to rejection of the null hypotheses. P values greater than the significance level of 0.01 lead to acceptance of the null hypothesis. Pearson Correlation test results are illustrated below.

Table 2: Table 4.1. Descriptive Statistics

	Mean	Std. Deviation	N
Dog bite and associated risk at community level	2.1215	.59218	395
Different dimensions/perspectives of dog bite prevention and management at community level	2.1167	.29274	395

Table 3: Table 4.2. Hypothesis testing for *Ha*: Correlations between 'dog bite and associated risk at community level' and 'different dimensions/ perspectives of dog bite prevention and management at community level'**.**

		Dog bite and associated risk at community level	Different dimensions/ perspectives of dog bite prevention and management at community level
Dog bite and associated risk at community level	Pearson Correlation	1	.266**
	Sig. (2-tailed)		.000
	N	395	395
Different dimensions/ perspectives of dog bite prevention and management at community level	Pearson Correlation	.266**	1
	Sig. (2-tailed)	.000	
	N	395	395

****. Correlation is significant at the 0.01 level (2-tailed).**

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The alternative hypothesis (Ha) tested was: "There is a relationship between 'dog bites and associated risks at community level' and 'different dimensions/perspectives of dog bite prevention and management at community level." The Pearson Correlation Test revealed a significant positive correlation (r = 0.266, P = 0.000) between 'dog bite and associated risk at the community level' and 'different dimensions/perspectives of dog bite prevention and management at the community level' (Table 4.2) (Table 3). As the p-value (0.000) is less than the significance level of 0.01, the null hypothesis was rejected, confirming a statistically significant relationship.

5. Discussion

The results indicate that the most severe knowledge gap pertains to the management of dog bites in farm animals (Mean = 4.8958) and general risk factors (Mean = 4.8854). These high mean scores suggest that stakeholders "Strongly Agree" that current community awareness is insufficient. This aligns with findings by Hossain et al. (2012), who noted that while rabies is endemic in Bangladesh, lack of organized surveillance and community education results in over 2,000 deaths annually. Similar to findings in India by Sudarshan et al. (2006), where 96.2% of rabies cases originated from dogs, the lack of victim awareness regarding dog behavior is a primary driver of injury. Dixon et al. (2012) also observed that there is often no statistical relationship between socio-demographic factors and dog-bite knowledge, emphasizing the need for universal education programs.

The high mean score for children's lack of information (Mean = 4.7578) aligns with global findings that children are the primary victims of dog bites due to their inability to interpret dog body language (Ozanne-Smith et al., 2001). The perceived vulnerability of children is supported by Ozanne-Smith et al. (2001), who identified that the epidemiology of dog bites is heavily skewed toward pediatric victims due to a lack of preventive education.

The high priority for Environmental Health (Mean = 4.8932) and DPM (4.6589) is validated by Reece et al. (2013), whose study in Jaipur, India, proved that reducing street dog density through sterilization and vaccination significantly reduces human bite incidents. The perceived importance of mass dog vaccination and population management is supported by Reece et al. (2013), who found that a systematic sterilization and vaccination program in Jaipur, India, led to a significant decline in dog bite incidents by reducing territorial fights and maternal protective behavior. Furthermore, Matibag et al. (2009) argued that the success of any rabies control program is directly dependent on community awareness and participation.

The strong stakeholder agreement on departmental coordination (Mean = 4.8828) supports the WHO (2013b) recommendation for multisectoral initiatives to manage the zoonotic burden of rabies.

The call for a "National Guideline" (Mean = 4.5521) suggests that stakeholders feel current efforts are fragmented. Nationally, this supports the Government of Bangladesh's ongoing "National Rabies Elimination Strategy," which aims for zero deaths by 2030.

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This quantitative study provides valuable insights into the perceptions of key community stakeholders regarding dog bite prevention and management strategies in rural Bangladesh. The findings highlight a critical paradox: while stakeholders recognize the importance and effectiveness of various prevention measures, they also perceive significant knowledge gaps within the community regarding rabies, dog bite infections, and appropriate management. This aligns with existing literature indicating poor KAP among the public in rabies-endemic areas (Agarvval & Reddaiah, 2020; Chowdhury et al., 2013).

The strong consensus among both Community Animal Health Workers and Community School Teachers on the "moderate to substantial role" of strategies such as mass dog vaccination, sterilization, proper disposal of rabid animals, and modern treatment underscores a shared understanding of effective animal-centric interventions. This reinforces the importance of integrated dog population management (DPM) as a cornerstone of dog bite and rabies control.

Furthermore, the high perceived importance of public health interventions like national guidelines, comprehensive education, epidemiological surveillance, environmental health programs, pet registration, advocacy, and inter-sectoral coordination indicates a holistic awareness among stakeholders of the multi-faceted nature of the problem. These findings resonate with recommendations from international bodies and previous research emphasizing the need for comprehensive strategies that combine animal control with human education and policy support (Ozanne-Smith et al., 2001; Matibag et al., 2009).

The statistically significant positive correlation (r = 0.266, P<0.001) between perceived prevention/management strategies and dog bites & associated risks provides quantitative validation that these perceived effective measures are indeed crucial for mitigating the problem. This suggests that strengthening the implementation of these strategies, coupled with targeted efforts to bridge the identified knowledge gaps, could lead to a tangible reduction in dog bite & associated risk incidences. The collective agreement among diverse stakeholders on these points provides a strong foundation for developing collaborative and effective public health programs tailored to the rural context of Bangladesh.

Scientific Synthesis of Findings: The quantitative analysis revealed a statistically significant positive correlation (r = 0.266, P<0.001) between perceived management strategies and the reduction of dog-bite risks. This moderate correlation indicates that as stakeholders' awareness of institutional interventions (such as pet registration and surveillance) increases, the perceived community risk decreases. This aligns with the WHO (World Health Organization, 2018) framework, which suggests that community confidence in public health systems is a prerequisite for successful disease elimination.

Furthermore, the study identified a high mean score (4.74) for the "lack of information for children" as a risk factor. This is consistent with international epidemiological data showing that children under 15 are the primary victims of dog bites due to their inability to interpret canine "warning signals" (Ozanne-Smith et al., 2001). The findings suggest that current management strategies in Rajarhat must move beyond clinical treatment toward a behavioral and educational prevention model.

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6. Conclusion

This quantitative study conclusively demonstrates a significant relationship between perceived dog bite prevention and management strategies and the associated risk of dog bites in rural Bangladesh. Key community stakeholders recognize the substantial role of a wide array of interventions, including animal vaccination and population management, along with comprehensive public health measures. However, the study also highlights critical deficiencies in community knowledge regarding dog bite & associated risk and rabies prevention and management. These findings underscore the urgent need for integrated, multi-sectoral public health initiatives that prioritize both the effective implementation of proven prevention strategies and extensive community education to enhance knowledge, attitudes, and practices, ultimately aiming to reduce the burden of dog bites & associated risk and rabies in communities like Rajarhat, Kurigram.

7. Recommendations for Policy and Practice

Based on the quantitative findings of this study, which indicate a significant correlation between integrated management strategies and reduced dog bite risk ($P<0.001$), the following evidence-based recommendations are proposed for public health practitioners and policymakers in Bangladesh and similar rabies-endemic regions:

Standardize National Response: Develop and disseminate a unified National Guideline for Dog Bite Prevention and Management to ensure standardized clinical protocols and reporting across rural regions.

Operationalize 'One Health': Establish a formal coordination mechanism between the Department of Health Services (DGHS) and the Department of Livestock Services (DLS) to synchronize human medical treatment with veterinary interventions like mass dog vaccination.

Targeted Pediatric Education: Integrate specific training into school curricula that teaches children how to interpret dog body language, addressing the high perceived vulnerability of pediatric populations.

Proactive Population Management: Implement an integrated Dog Population Management (DPM) strategy focusing on the following:

- Mass Dog Vaccination (MDV): Targeting minimum 70% coverage to break transmission cycles.
- Sterilization and Registration: Using neutering to reduce aggression and mandatory registration to promote responsible pet ownership.

Establish Hotspot Surveillance: Create an epidemiological surveillance system to collect data on bite incidents and dog characteristics, allowing authorities to identify and target high-risk "hotspots."

Enhance Veterinary First Aid: Launch community-based training specifically for farm animal management, as this was identified as the single largest knowledge gap in the study.

Community Awareness Campaigns: Utilize Public-Private Partnerships and media to shift public perception of dog bites from "unavoidable accidents" to "preventable health events" through Strategic Behavior Change Communication (BCC).

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Appendix A
SURVEY INSTRUMENTS

Different Perspectives of Dog Bites and Associated Risks: An Exploratory Study at Rajarhat, Kurigram in Bangladesh

SECTION 1: About You and Your Professional Career

Directions: Please respond to the following questions about yourself and your career.

1. Are you a School Teacher or a Community Animal Health Worker at Rajarhat, Kurigram in Bangladesh?

- No
- Yes

2. If Yes to Question No.1, what is your current career status?

- Government Primary School Teacher
- Non-Government Primary School Teacher
- Government High School Teacher
- Non-Government High School Teacher
- Madrasa Teacher
- Community Animal Health Worker

3. If Yes to Question No.1, please answer: are you interested to answer different questions on different Perspectives of Dog Bite and Associated Risk at your community/locality level?

- No
- Yes

4. If Yes to Question No.1 & No.2, please answer in which Union/Area do you live?

- Rajarhat Union (Area.....)
- Chakirposher Union (Area.....)
- Gharialdanga Union (Area.....).
- Biddyananda Union (Area.....).
- Chinai Union (Area.....).
- Najimkhan Union (Area.....)
- Umor Majid Union (Area.....)

5. Which of the following best describes your position on different Perspectives of Dog Bite and Associated Risk at your community/locality level? (Check all that apply)
   - Proper action and effective national guideline are very essential to create effective public awareness on different Perspectives of Dog Bite and Associated Risk so that it could be effectively prevented Dog Bite and Associated Risk at your community/locality level.`
   - No action is required because the community people are well informed as well as properly aware about dog bite and associated risk
   - I do not have a position
   - I do not care
   - Other position (specify)_____

SECTION 2: Different dimensions/ perspectives of dog bite prevention and management connected with dog bite and associated risk at community level

Question No 1. Please indicate the extent to which you agree or disagree with the following statements on 'Knowledge, attitude and practices about dog bite prevention and management at your localities'.

Use the scale of 1-5 where 1 = Strongly Disagree and 5 = Strongly Agree for your responses.

Statements	**Strongly Disagree (SD=1)**	**Disagree (D=2)**	**Not Sure (NS=3)**	**Agree (A=4)**	**Strongly Agree(SA=5)**
Children's are not properly known as well as not well-informed about Rabies, dog bite infections & diseases and other complications					

connected with Dog bite and associated risk					
Community people are not properly known as well as not well-informed about Rabies, dog bite infections & diseases and other complications connected with Dog bite and associated risk	□	□	□	□	□
Butchers are not properly known as well as not well-informed about Rabid animal	□	□	□	□	□
Children's are not properly known as well as not well-informed about biting dog characteristics	□	□	□	□	□
Community people are not properly known as well as not well-informed about biting dog characteristics	□	□	□	□	□
Children's are not properly known as well as not well-informed about risk factors of dog bite and associated risk	□	□	□	□	□
Community people are not properly known as well as not well-informed about risk factors of dog bite and associated risk	□	□	□	□	□
Community people are not properly known as well as not well-informed about dog bite management for dog bite in case of human being	□	□	□	□	□
Community people are not properly known as well as not well-informed about dog bite management for dog bite in case of Farm animals/ Ruminants (e.g. Cattle, Sheep, and Goat etc.)	□	□	□	□	□

Question No 2. Please indicate the extent to which you agree or disagree with the following statements on 'Dog bite prevention and management at your localities'.
(This Question No 2 is allocated/ fixed only for Community animal Health Workers)
Use the following scale of 1-5 where 1 = No Role and 5 = Substantial Role.

Statements	**No Role (N=1)**	**Minimal (Mi=2)**	**Not Sure (NS=3)**	**Moderate (Mo=4)**	**Substantial Role (SR=5)**
Practices of modern treatment for dog bite cases in case of human beings	□	□	□	□	□
Practices of modern treatment for dog bite cases in case of Farm animals/ Ruminants (e.g. Cattle, Sheep, and Goat etc.)	□	□	□	□	□
Practices of mass dog vaccination (MDV) (i.e. Pre-exposure Vaccination) against Rabies	□	□	□	□	□
Practices of mass vaccination (i.e. Pre-exposure vaccination) of rabies for farm animals/ ruminants (e.g. Cattle, Sheep, Goat etc.)	□	□	□	□	□
Practices of sterilizing/ neutering techniques for community/ street dogs at community level	□	□	□	□	□
Practices of proper disposal management of Rabid animals at community level (including pet and farm animals)	□	□	□	□	□
Practices of proper quarantine management by DLS authority for dog bite cases in case of farm animals/ ruminants (e.g. Cattle, Sheep, Goat etc.)	□	□	□	□	□

Question No 3. Please indicate the extent to which you agree or disagree with the following statements on 'Dog bite prevention and management at your localities'.
(This Question No 2 is allocated/ fixed only for Community school teacher's)
Use the following scale of 1-5 where 1 = No Role and 5 = Substantial Role.

Statements	No Role (N=1)	Minimal (Mi=2)	Not Sure (NS=3)	Moderate (Mo=4)	Substantial Role (SR=5)
Development of national guideline for dog bite prevention and management	□	□	□	□	□

Comprehensive education and training program among concerned stakeholders	□	□	□	□	□
Epidemiological investigation as well as effective surveillance program	□	□	□	□	□
Environmental health program associated with community /street dog population	□	□	□	□	□
Considering animal welfare concept, proper legislation for concerned institutional arrangement of feed in environment/ localities for community / street dog population	□	□	□	□	□
Pet animal registration along with vaccination program	□	□	□	□	□
Advocacy, communication and social mobilization (ACSM)	□	□	□	□	□
Dog population management (DPM)	□	□	□	□	□
Public- private partnership for Behaviour Change Communication (BCC)	□	□	□	□	□
Effective and strong coordination and liaison activities between 'Department of Health Services' and Department of Livestock Services'	□	□	□	□	□
Strategic guideline for waste disposal management of Rabid animal	□	□	□	□	□
Strategic guideline for effective behaviour change communication (BCC) program	□	□	□	□	□
Societal advertisement by business organization as well as electronic and printing media	□	□	□	□	□

Question No 4: Please indicate the extent to which you agree with the following statements for hypothesis testing on relationship between 'dog bite and associated risk at community level' and 'Different dimensions/ perspectives of dog bite prevention and management at community level'. Use the scale of 1-5 where 1= Substantial association, 2= Moderate association, 3= Not sure, 4= Minimal association, 5= No association; for responses of respondents.

Statements for Concept 1: Different dimensions/ perspectives of dog bite prevention and management at community level	No association	Minimal association	Not sure	Moderate association	Substantial association
How **aware** perceived are you with the effect of 'mass dog vaccination (i.e. Pre-exposure Vaccination) against rabies' on 'dog bites and associated risk' at community level?	□	□	□	□	□
How aware are you with the effect of 'mass vaccination (i.e. Pre-exposure vaccination) of rabies for farm animals/ ruminants (e.g. Cattle, Sheep, Goat etc.)' on 'dog bites and associated risk' at community level?	□	□	□	□	□
How **aware** are you with the effect of 'sterilizing/ neutering techniques for community/ street dogs' on 'dog bites and associated risk' at community level?	□	□	□	□	□
How **aware** are you with the development of 'national guideline for dog bite prevention and management' on 'dog bites and associated risk' at community level?	□	□	□	□	□
How **aware** are you with the effect of 'epidemiological investigation as well as effective surveillance program' on 'dog bites and associated risk' at community level?	□	□	□	□	□
How **aware** are you with the effect of 'pet animal registration along with vaccination program' on 'dog bites and associated risk' at community level?	□	□	□	□	□
How **aware** are you with the effect of 'advocacy, communication and social mobilization (ACSM)' on 'dog bites and associated risk' at community level?	□	□	□	□	□

Statement for concept 2: Dog bite and associated risk at community level	No association	Minimal association	Not sure	Moderate association	Substantial association
How would you rate your overall perception with the dog bite and associated risk connected with the concerned different dimensions/ perspectives of dog bite prevention and management at community level?	□	□		□	□

Please provide any comments that you would like to share:

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Thank you for completing the survey