

# Capacity Assessment of Community Clinic (CC) as an Information and Support Hub during Future Outbreaks: Lessons Learnt from the COVID-19 Outbreak

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**ABSTRACT:** The study delves into the potential of Community Clinics (CCs) in Bangladesh to function as crucial information and support hubs during pandemics and outbreaks. By examining both internal and external factors, including organizational structure, roles, responsibilities, infrastructure, skills, tools, existing organogram, government policies, and community clinic dynamics, the research assesses the capability of CCs in this role. Through a telephonic survey of 100 Community Health Care Providers (CHCP) and Key Informant Interviews (KII) with Community Based Health Care (CBHC) officials, valuable insights were gained. While the findings reveal that CCs may not be comprehensive treatment centers for pandemics, they can effectively serve as information and support hubs, aligning with their mandates. To enhance their efficiency in this role, upgrading the WASH sensitivity of CCs is recommended, along with other measures to improve their capacity during disease outbreaks. The study underscores the significance of recognizing CCs as vital assets in combating emerging health hazards, and strategic improvements can further strengthen their contributions in addressing public health challenges.

**Keywords:** Community Clinic; Health Hazard; Outbreak; Capacity Assessment; COVID-19 Pandemic; Information and Support Hub

## INTRODUCTION

Managing biohazard outbreaks or pandemics has been an issue of deep concern both at a national and global scale. However, it has received renewed attention after the COVID-19 pandemic. The total number of outbreaks has been reported to have risen worldwide since 1980 (Ka-WaiHui, 2006; Smith et al., 2014; Piret and Boivin, 2021). Casualties from these recurring infections have left a mark on history with their persistence (Smith et al., 2014; WHO, 2022a). The causes behind these emerging and re-emerging health threat episodes can be attributed to factors like globalization, climate change, increased human-animal interaction, etc. (Ka-WaiHui, 2006; Jones et al., 2008; Smith et al., 2014; WHO, 2022a). By 2030, it is estimated that climate change will result in USD 2 to 4 billion in health-related costs annually. There is a concern that developing nations with poor infrastructure may suffer disproportionately due to these emerging hazards (Caminade, McIntyre and Jones, 2019; WHO, 2022b).

Outbreaks, such as the 2009 H1N1 and COVID-19, took the form of a pandemic crossing the national borders and affecting a significant portion of the world population. The pandemic accelerates patient inflow to healthcare facilities requiring specialized services (Rubinson et al., 2013; Centers for Disease Control and Prevention, 2019; Kain and Fowler, 2019; Xue and Zeng, 2019). Not all outbreaks have the potential to grow into a pandemic. A large portion of outbreaks are contained within their regional origin or a specific group of people (i.e., 2017 and 2018 Ebola outbreak in Congo, Zika virus epidemic, West Nile virus outbreak, etc.) (WHO, 2019, 2022c; Centers for Disease Control and Prevention, 2022b, 2022a). Bangladesh, too, is often affected by outbreaks. Notable disease outbreaks to have repeatedly caused turmoil in Bangladesh's health sector are Chikungunya, recurring dengue outbreaks in monsoons, diarrheal outbreaks in winter and summer (Helemul Alam and Shaheen Mollah, 2019; Shirin et al., 2019; Ahmad, 2022; Amin et al., 2022).

The COVID-19 pandemic is the most recent outbreak to have rambled the entire world. The first case was identified in the Wuhan Province of China in 2019. The

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disease later crossed international borders and created havoc in most parts of the world, incurring the loss of over 6.6 million lives as of 1 December 2022, with the number still increasing with the evolution of its new variants (WHO, 2020c, 2022d). The number is still increasing with the evolution of its new variants. The patient influx reached such an extent that the strenuous efforts from health sectors of countries like the USA, India, Brazil, and Hong Kong, while other notable countries remained inadequate to control the situation (Geyman, 2021; Polancich et al., 2021; Bigoni et al., 2022). With the introduction of the vaccine, the situation improved significantly; however, vaccine equity still arises as a matter of concern. Only one out of four people were administered the first dose of vaccine in low-income countries, whereas the count rises to three out of every four people in higher-income countries. This issue has drawn critique, and efforts are needed to address this gap (Pilkington, Keestra, and Hill, 2022; UNDP, 2022).

Bangladesh has also faced the wrath of the COVID-19 outbreak. Institute of Epidemiology Disease Control and Research (IEDCR) identified its first cases of COVID patients on 8 March 2020 (DGHS, 2020). Due to the lack of previous experience in infectious pandemic management, the country went through a challenging time during the initial period. Actions like the mass traveling on public holidays, the entrance and isolation of overseas workers, and negligence in enforcing the Disaster Management Act 2012 and the Infectious Disease (Prevention, Control, and Elimination) Act 2018 for mobility restriction led to community transmission (Anwar, Nasrullah and Hosen, 2020; Julqarnine et al., 2020; Newage, 2020; Sayeed Al-Zaman, 2020). The unavailability, inadequacy of equipment, and inexperience of medical personnel contributed to the distinct rise of COVID confirmed cases, reaching a peak of 4000+ incidences in one day in June 2020. These factors also contributed to the lower recovery rate of the country compared to the neighboring ones like India and Pakistan (DGHS, 2020; Sayeed Al-Zaman, 2020; WHO, 2022d).

However, due to the nature of the infection and community-level transmission pattern of the virus, it has also become apparent that there is no alternative to develop strengths and resilience at the grass root level to fight this pandemic. Community Clinic (CC), the bottom-level medical service-providing entity of the Bangladesh government, can play a vital role in such a situation (CBHC, 2020). The Community Clinic is

a customized healthcare unit to support and improve rural-level community health. The journey of CCs started to ensure “Health for All” by providing primary health care even to the most inaccessible rural areas, and all their activities fall under Community-Based Health Care (CBHC) under the 4th Health and Population Sector Program (CBHC, 2020).

The Government of Bangladesh (GoB) has underlined the importance of manipulating the CC facilities to increase the adoption of preventive measures during the COVID-19 pandemic. These include frequent handwashing, maintaining social distancing, avoiding social gatherings, wearing masks in rural areas, and reducing the pressure of incoming patients on secondary and tertiary level hospitals. However, before adopting any measures involving the CCs, it is essential to assess the strengths and weaknesses of the CCs critically.

Therefore, the study aims to assess the overall performance (strengths and capacities) of CCs and their operational challenges (weaknesses) to serve the community as any outbreak-dedicated information and support hub. As COVID-19 is the recent pandemic the country dealt with, the study tries to infer from the lessons learned from COVID-19 for potential future crisis management. This study makes a novel contribution by assessing the readiness of community clinics and their potential as information hubs during outbreaks. It fills a knowledge gap by exploring the unique role of community clinics, informing policy development, and providing practical insights for healthcare systems. This research enhances understanding and strategies for utilizing community clinics in future outbreak management, contributing to new knowledge creation in healthcare capacity assessment.

## THEORETICAL FRAMEWORK

Capacity, the constituent of a continuous process, is an organizational entity’s ability or power to carry out its functions effectively, efficiently, and sustainably (UNDP, 1998). OECD (2016) defined capacity as “the ability of people, organizations, and society to manage their affairs successfully.” As defined by UNDP, Capacity Assessment is “an analysis of desired capacities against existing capacities that offers a systematic way of gathering critical data & information on capacity assets and needs and serves as input for the formulation of a capacity development response.” Several factors come into the light during the capacity assessment process of

an entity. It includes aspects such as assessment level, and what capacities are being assessed. UNDP has proposed a capacity assessment framework similar to the configuration of a Rubik's cube, combining core issues, points of entry, and technical and functional capacities. However, this framework is designed for a broader context. Hence, several studies have specifically developed their customized assessment framework for the health sector. Nyarko et al. (2016) have employed specific parameters (type of ownership, essential medicine and equipment availability, and test facilities) in their assessment framework to assess the capacity of Ghana's healthcare facilities at different tiers. Winter et al. (2017) assessed the health facility capacity of newborn care in Bangladesh, Haiti, Tanzania, Malawi, and Senegal based on equipment, medicine, guidelines, and staffing parameters. The capacity pyramid of Potter and Brough (2004) represents the components of an entity as building blocks that ensure the capacity of that entity. Steier and Moxham (2020) proposed their capacity-load model with few additional parameters for COVID-19 dedicated healthcare facilities with this framework.

Furthermore, WHO (2020) has released interim guidance for a facility assessment tool to estimate the requirement of modification or investment in the context of the COVID-19 pandemic. However, the Community Clinic is a customized healthcare unit that aims to support and ensure rural community health. The structure and functionality of CC are unique and intentionally designed to be different from other larger conventional

healthcare units. Hence, none of these frameworks can be directly applied to our study. Therefore, conventional capacity assessment procedures and toolkits for COVID management have been modified and specially designed to assess CC's capacity.

Special attention has been given to the mandate of the CC while modifying the method during the capacity assessment. It would be unwise and irrational to evaluate the capacity to be compared on a scale that is not even supposed to be present in the facility (i.e., ICU and ventilation facilities are commonly expected to be present in a healthcare unit). These facilities are impractical in CCs, a product of a public-private partnership initially established to provide mere health education and later updated as a primary health care and referral unit. Therefore, the study has adapted from these developed frameworks and redesigned into a unique one where the parameters (Table 1) are adapted from the studies of a similar field but have been customized to fulfill the specific objectives of our study. The rationale behind adopting these frameworks is that it is in coherence with the ultimate output of evaluating the healthcare facility's service capacity, which corresponds to the objective of this study. The study aims to assess the capacity scenario of the CCs for any biological outbreak. As Bangladesh has been dealing with the COVID-19 pandemic, the study has designed its investigation considering the COVID scenario so that the findings can help to infer the scenario for any other biohazard outbreak.

**Table 1:** Parameters Selected for Capacity Assessment of Health Care Facilities

<b>Rubik cube alike framework of UNDP</b>	<b>Nyarko et al. (2016)</b>	<b>Winter et al. (2017)</b>	<b>Potter and Brough (2004)</b>	<b>Steier and Moxham (2020)</b>	<b>WHO (2020) checklist</b>
Core issues (institutional arrangement, leadership, knowledge and accountability)	Type of ownership	Equipment, medicine	Structure, system, roles, staff	Structure, system, roles, staff	Infrastructure
Points of entry (enabling environment, organizational level, and individual level)	Essential medicine and equipment availability	Guidelines and staffing parameters	Infrastructure, skills, and tools	Infrastructure, skills, and tools	Medicine, Equipment
Technical and functional capacities (stakeholders, vision, mandate, and budget management)	Test facilities			Cases, co-morbidity, immunity, etc.	Guidelines

## **Internal Factors**

### ***Organizational Structure, Roles, and Responsibilities***

Organizational structure refers to the relationship framework among the components of an entity. These components include a hierarchy of the officials, their roles, responsibilities and formal communication system, the flow of information, the operating procedures, decision-making procedures, etc. (Ahmady, Mehrpour and Nikooravesh, 2016; Daft, 2016; Daoli and Mohsenvand, 2017). It has been found in several studies that a harmonious relationship among the different components of an organization helps to attain the goals and aims of the organization. A clear distinction among the roles and responsibilities promotes coordination, reduces chaos, eliminates duplication or omission of tasks, and enhances the organization's efficiency.

### ***Infrastructure***

According to the "Continuity of essential health services: Facility assessment tool" of WHO, Electricity, availability of conventional water supply, hand washing facilities (crucial for the containment of COVID-19 spreading), and sufficient space for standard protocol maintenance are the parameters that have been selected for infrastructural capacity assessment (WHO, 2020b).

### ***Skills***

During the initial COVID-19 influx, one of the major challenges was the lack of a skilled workforce capable of dealing with the crisis. Most of Bangladesh's health sector workforce had no prior training or experience dealing with coronavirus. Developing employee skills is an essential requirement in the capacity-building process of any entity (Potter and Brough, 2004; Steier and Moxham, 2020).

### ***Tools***

Availability of beds, intensive care units, oxygen supply, round-the-day availability of doctors and nurses, safety kits abundance of patients and medical personnel are prevalent parameters in the checklist for COVID dedicated care assessment (Barasa, Ouma, and Okiro, 2020; WHO, 2020d). However, given the nature of

CCs' services, the selection of parameters in the study for tools regarding capacity was specially designed and kept limited considering the structure of CC.

## **External Factors**

External factors are those that an organization or a person cannot control but can substantially impact its operations or activities. These variables include the state of the economy, the political and legal situation, social and cultural aspects, technical advancements, and the physical environment. For an organization or a person, external influences can offer opportunities or risks; therefore, it is critical to recognize and understand them in order to manage any institution efficiently. For community clinics, governmental policies and the existing organogram of the institution are the external factors. These factors can contribute to ensuring standardized service delivery, resource allocation, accountability, and improve overall healthcare quality.

### ***Governmental Policies***

A set of principles, directives, and measures that the government adopts to accomplish particular aims and objectives is referred to as a policy. These laws are intended to control and impact various societal factors, including the economy, healthcare, education, and the environment. Governmental policies are often developed through a formal decision-making process and are carried out at various levels by different government organizations. Promoting the general welfare of the populace and ensuring the smooth operation of society are the primary objectives of governmental policies (Mas-Verdu et al., 2010).

### ***Organogram***

An organizational chart or organogram is a representation that shows how a company is structured. It displays the links and lines of power between each position in the organization's hierarchy. An organogram can assist in giving a succinct and clear summary of an organization's structure, making it easier for stakeholders, employees, and other interested parties to comprehend how the organization is designed and runs.

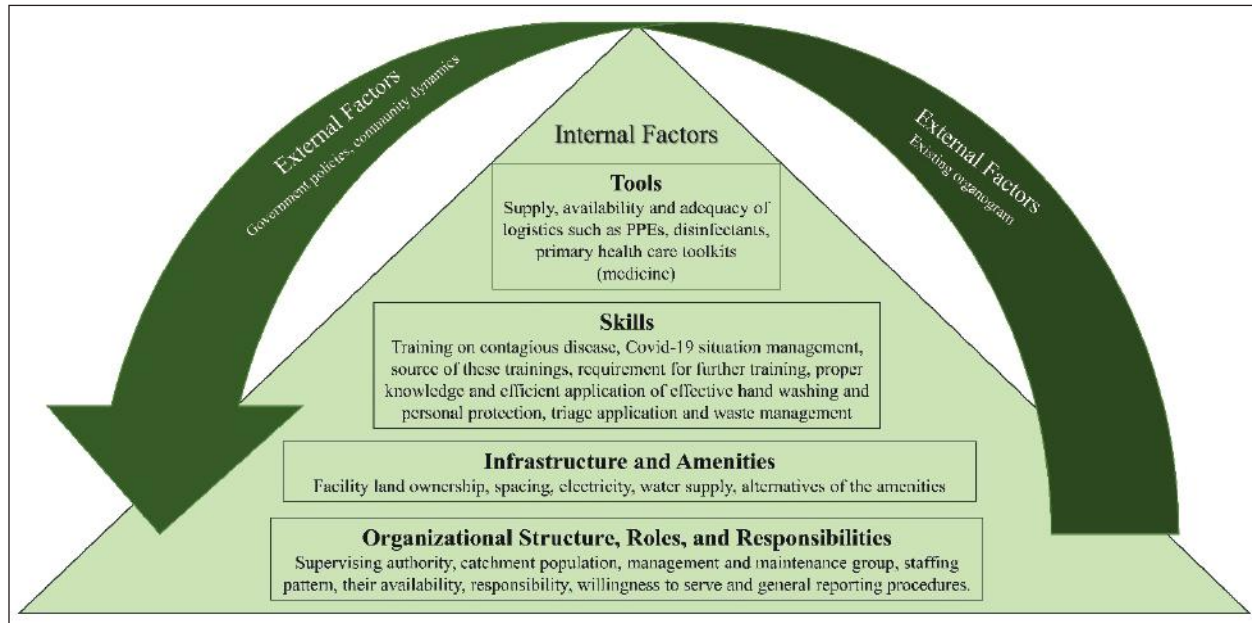


## MATERIALS AND METHODS

### Literature Review and Framework Development

The authors have conducted an extensive literature review to get an overview of the existing capacity

assessment frameworks for healthcare-providing institutes globally and to understand the mandate of the entity being studied. A customized and unique framework was developed utilizing existing frameworks through a literature review and expert opinion (Fig. 1) to assess Bangladesh's root-tier healthcare-providing sector based on its organogram and mandates.



**Figure 1:** Theoretical Framework for the Study

### Brief Overview of the Studied Entity

The revitalization of the Community Health Care Initiatives in Bangladesh (RCHCIB) program has brought about a structured approach to community clinics. Under this program, community clinics are now organized into a Community Group (CG) and three Community Support Groups (CSGs). While the local community may provide the land for these clinics, the government is responsible for their maintenance and operation. To recognize the contribution of land donors, they are granted lifelong membership and the position of Vice President within the Community Group. The leadership of the Community Group is entrusted to an elected local Union Parishad member, with at least one of the lead positions being held by a female. This ensures the active participation of women in decision-making processes. The Community Group (CG) plays a pivotal role in managing the activities of the community clinic. They oversee various management tasks, ensuring the clinic functions smoothly and remains accountable to

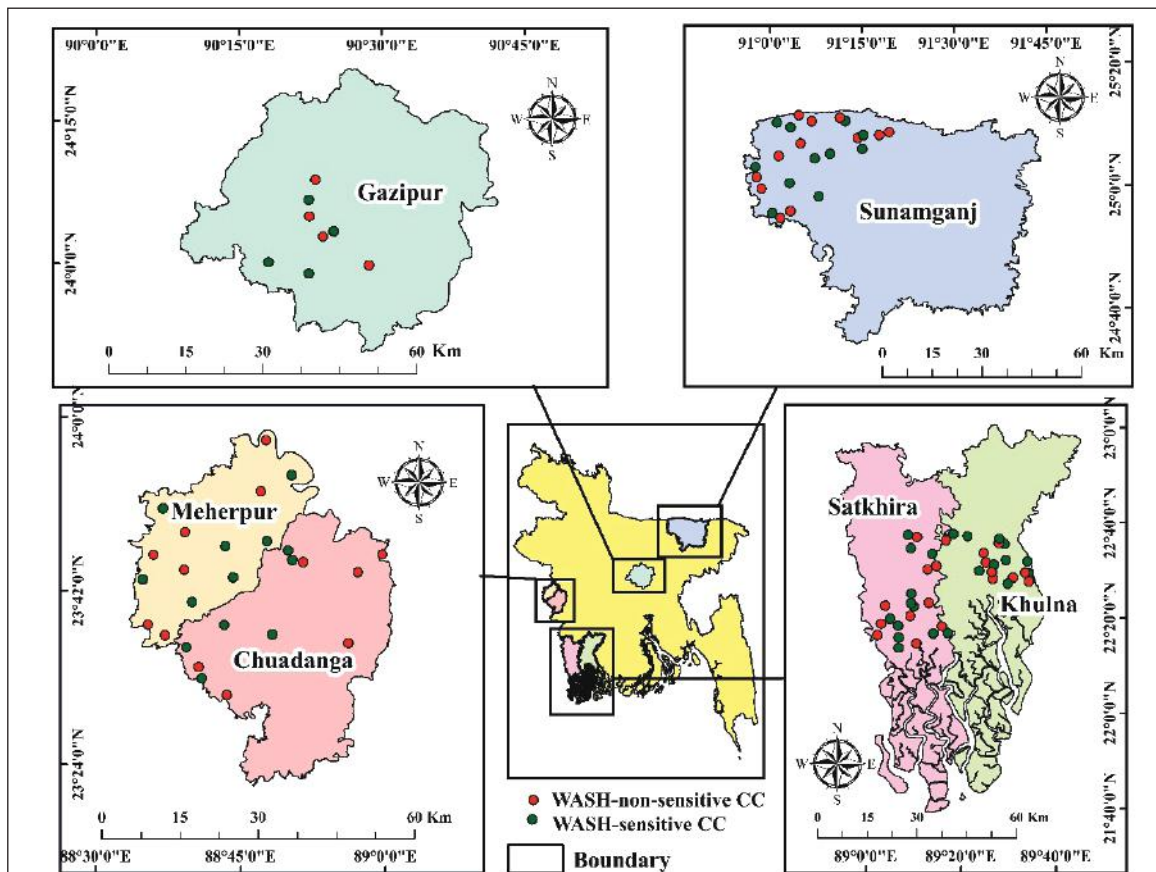
the community. To ensure comprehensive coverage of the catchment area, three Community Support Groups (CSGs) have been established. Each CSG consists of 15 members, with at least one-third being female. This ensures that the services provided by the community clinic reach all segments of the community. To monitor and evaluate the clinics, officers from the Directorate General of Health Services (DGHS) conduct physical visits. This ongoing monitoring and evaluation process helps maintain quality standards and identify areas for improvement. Community clinics are staffed by dedicated healthcare professionals, including full-time Community Healthcare Providers (CHCPs), as well as part-time, well-trained Family Welfare Assistants (FWAs) and Health Assistants (HAs). This diverse healthcare team ensures efficient delivery of a range of services to the community. Community clinics have a multifaceted role, particularly in pandemic situations. They provide primary healthcare services, distribute necessary medicines to enhance community immunity, raise awareness and promote health

education to contain outbreaks, refer patients requiring specialized pandemic-related treatment, report special cases to higher authorities, and actively participate in vaccination programs.

### Sample Selection and Data Collection

CHCPs were chosen from WASH-sensitive and WASH-

non-sensitive CCs (50 from each group) to avoid bias and enable fair comparisons. The samples were drawn from specific districts, including Sunamganj, Khulna, Meherpur, Satkhira, Gazipur, and Chuadanga, ensuring representation of both WASH-sensitive and WASH-non-sensitive Community Clinics (Fig. 2). Despite similar arrangement patterns, differences between CCs were attributed to WASH sensitivity, prompting further investigation.



**Figure 2:** Study Area

WASH-sensitive community clinics in Bangladesh prioritize Water, Sanitation, and Hygiene practices. They ensure access to clean water, proper sanitation, and effective waste management. By implementing established policies, staff training, and engaging patients, these clinics promote good hygiene practices. Collaboration with WASH stakeholders and continuous monitoring ensure compliance and improvement in CCs' performance.

For data collection, a semi-structured questionnaire was developed, and CHCPs were interviewed through telecommunication due to the ongoing pandemic.

The telephonic survey proved suitable for gathering information on organizational structure, roles and responsibilities, tools, infrastructure, and skills during the COVID-19 pandemic. It enabled safe, accessible data collection from a diverse range of primary healthcare providers, ensuring efficiency and timely completion. The flexibility of telephone interviews allowed for probing and clarification, ensuring that adequate information was collected on specified parameters. Additionally, ten Key Informant Interviews (KIIs) were conducted face-to-face, with respondents being officials from CBHC. The questionnaire survey data, along with the KIIs, were analyzed. While no field validation was

carried out, information from respondents was cross-checked with the facility registry of the Community-Based Health Care (CBHC) to review any discrepancies, ensuring data accuracy and reliability (Fig. 3).

Prior to conducting the survey and interviews, the questionnaire underwent a thorough review by a team of experts. These experts included academia, healthcare professionals, and development sector professionals. This process ensured adherence to ethical principles, safeguarding participants' rights and confidentiality. A comprehensive risk assessment was also conducted to identify and address potential risks to both participants and researchers throughout the data collection process. This careful approach upheld ethical integrity and ensured safety for all involved parties during the study.

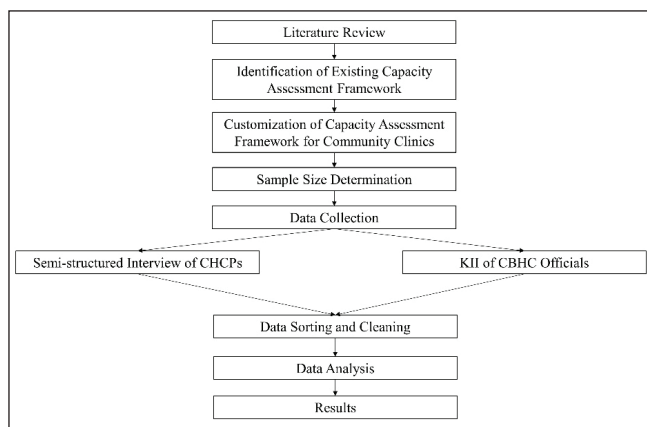
### Data Analysis

The data were finally analyzed through descriptive statistics in 4 different arenas: Organizational structure, roles and responsibilities, Infrastructure, Skills, and Tools. Pearson's  $X^2$  test was run to analyze the association of WASH Sensitivity with better infrastructural capacity.

$$X^2 = \sum \frac{(O_i^2 - E_i^2)}{E_i}$$

Here, is Chi-squared,  $O_i$  is the observed value (actual value), and  $E_i$  is the expected value.

The descriptive analysis and Pearson's  $X^2$  test were carried out using the statistical data analysis test software Statistical Package for the Social Sciences (SPSS) version 23.0.



**Figure 3:** Methodological Framework of the Study

## RESULT

The following section will explain the findings from the field and present the findings consistent with the theoretical framework.

### Organizational Structure, Roles, and Responsibilities

Community Clinic operates under the direct supervision of Community Based Health Care (CBHC). Each CC is assigned a full-time Community Health Care Provider (CHCP). The CHCP is mainly responsible for providing primary care and the overall management of the CC. In addition, one Health Assistant (HA) and Family Welfare Assistant (FWA) are designated to be present three days a week, alternatively at the unit.

The findings from the survey reveal that CHCPs were regularly present in 80% of the CCs during the reference period/lockdown period. Moreover, 67% CHCPs have claimed continuous service provision even during the holidays (Ramadan month and Eid Holidays) to cope with the outbreak. Reportedly, 100% of the CCs provided their regular primary healthcare during the pandemic. In the absence of CHCPs, the HA and the FWA compensated for the absence and kept the activities in regular order.

In the early months of the lockdown, the number of patients was less than that in regular times (March 2020-April 2020). However, it returned to normal after two months of the lockdown (from May 2020). The number of patients doubled in some 20% of the CCs in the later months (From May 2020). 70% of the CCs reportedly provided essential immunity booster medicine to the local community, which includes paracetamol, vitamins (B complex, C, and D), zinc, antihistamines, and antibiotics. All the CCs disseminated (March to time of data collection, Mid-June 2020) information about the causes of COVID-19 and mandatory practices, i.e., hand-washing, wearing face masks outside, maintaining social distancing, etc., to name a few for staying safe from the virus. The CHCPs distributed leaflets, provided face-to-face consultations, and displayed posters in public places to accomplish this task.

During this time, it was also found that CCs referred 89% of the patients with COVID-19 symptoms to the nearby Upazila Health Complex (UHC). However, some

CHCPs lacked a clear understanding of the referral and reporting procedures of COVID symptomatic cases. 46% of the CCs used the CMED app, 32% of the CCs reported to the Thana health office, and 30% of the CCs reported the cases to UHC. This condition implies a need for improved coordination among different branches under the Ministry of Health and Family Welfare of

the GoB. The CHCPs felt the need for more explicit guidelines about the operating procedures during the crisis. The respondents also showed a sincere interest in receiving special training to handle COVID positive patients and deal with emergencies at the community level.

**Table 2:** Findings for Organizational Structure, Roles, and Responsibilities

	Parameters	Percentage (%)	
Organizational structure, roles, and responsibilities	Presence of CHCPs during lock-down	Regular presence	80
		Irregular presence	20
	Service during Holidays (Ramadan and Eid)		67
	Primary health care provided during COVID		100
	Medicine provided to community people		70
	Referral patients with COVID-like symptoms to UHC		89
	Reporting of COVID cases	UHC	30
		CMED	46
		Thana Health Officer	32
	Interested to participate in the Vaccination program		100

### Infrastructure

The Community Clinic is built on donated land of the community and has limited space. However, space sufficiency in the clinics is a matter of concern for executing standard operating procedures; this includes maintenance of social distancing, the reserve of disinfectants and protective equipment, and consultation of COVID-suspecting patients in separate rooms (WHO, 2020b). Inadequate space can substantially increase the risk of infection due to SoP violation. Enquired opinions of CHCPs regarding the space sufficiency in their facility revealed that only 24% are confident about their enough spacing.

The survey reveals that 86% of the CCs have active electricity connections, while the rest run without electricity. Rural electricity, solar panel, and national grid line have been power sources of 74%, 22%, and 1% of CCs, respectively. However, the condition of the electrical supply is subpar in most of the CCs. However, the condition of electricity is inferior in most of the CCs. Nearly one-quarter of the respondents have mentioned severe problems like frequent load-shedding, irregular

supply, partial electricity connection setup arrangement from rural or national grids, limitations of solar panel operability, etc.

The study found that 47% of the CCs have to collect water manually from a pond, river, or tube well. Water is collected from these sources mainly for sanitation purposes. It was also found that 9% of the CCs harvest rainwater while a small portion of the respondent, about 3%, purchase water from the market. 47% of the clinics have conventional water supply facilities that use mechanized processes to draw water, while the rest store their water in buckets or drums. Regarding the hand washing facilities, 61% of the CCs have basins within their facilities for handwashing, of which 84% were functional. CCs with no functional basins use water through mugs from the stored water in a bucket and carry out hand washing. 98% of the CCs have affirmed their arrangement of hand washing and use of soaps, despite using alternative adjustments.



**Table 3:** Findings for Infrastructure and Amenities

	Parameters	Percentage (%)	
Infrastructure and Amenities	Electricity Source (*multiple source users)	Rural electricity	74
		Solar panel	22
		National Grid	1
		No electricity	14
	Insufficient supply of electricity		24
	Source of water facility	Manual water collection	47
		Purchase of water	4
		Mechanized extraction	3
		Rainwater harvesting	9
	Availability of conventional water supply		47
	Handwashing facility	Availability of basin	61
		Functional basins among available ones	84
		Handwashing facility and use of soap	98
Space sufficiency		24	

### ***Association of Infrastructural Capacity with Sensitivity to WASH Facility***

As the respondents were selected from both WASH-sensitive and WASH-non-sensitive CCs, the findings of the study highlight a distinct contrast between healthcare facilities categorized as WASH-sensitive and non-sensitive, shedding light on their respective adherence to protocols and the availability of essential amenities.

Within the subset of facilities deemed protocol-following, 36% WASH-sensitive facilities and 32% non-WASH-sensitive facilities reported their commitment to adhering to recommended protocols. This suggests a comparable dedication to protocols across both sensitivity categories. When it comes to water supply within toilets, WASH-sensitive facilities exhibited a significantly higher prevalence, with 82% reporting its presence, as opposed to 30% in the non-WASH-sensitive category. Analyzing handwashing facilities, an interesting pattern emerges. In the WASH-sensitive group, 82 facilities boasted available basins for handwashing, while 98% facilities—across both

sensitivity categories—indicated the consistent use of soap during handwashing. Furthermore, 93% WASH-sensitive facilities reported functional basins, compared to 65% in the non-sensitive group among the available basins. Examining waste management practices, both sensitivity categories illustrated relatively comparable numbers. However, in the case of waste disposal, 74% WASH-sensitive facilities reported of dumping their waste to dedicated bins, while 70% non-sensitive facilities adhered to the same practice (Fig. 4). These findings underscore the overarching commitment to certain core aspects of WASH practices across both sensitive and non-sensitive healthcare facilities. While WASH-sensitive facilities showcased a marginally stronger presence in terms of water supply and functional handwashing basins, the overall parity in waste management practices highlights a consistent effort to maintain hygiene standards across sensitivity categories.

Moreover, a Pearson's Chi-squared test was carried out to identify the association of infrastructural capacity with sensitivity toward WASH facilities. Gender-sensitive toilet facilities, sustainable water management

capacity, upgraded handwashing capacity, and availability of electricity showed significant association with sensitivity to WASH facilities (Table 4). These parameters can actively contribute to efficient sample

collection (e.g., urine and stool sample collection), hygiene maintenance during contagious outbreaks, and efficient storage of emergency medicines and vaccines.

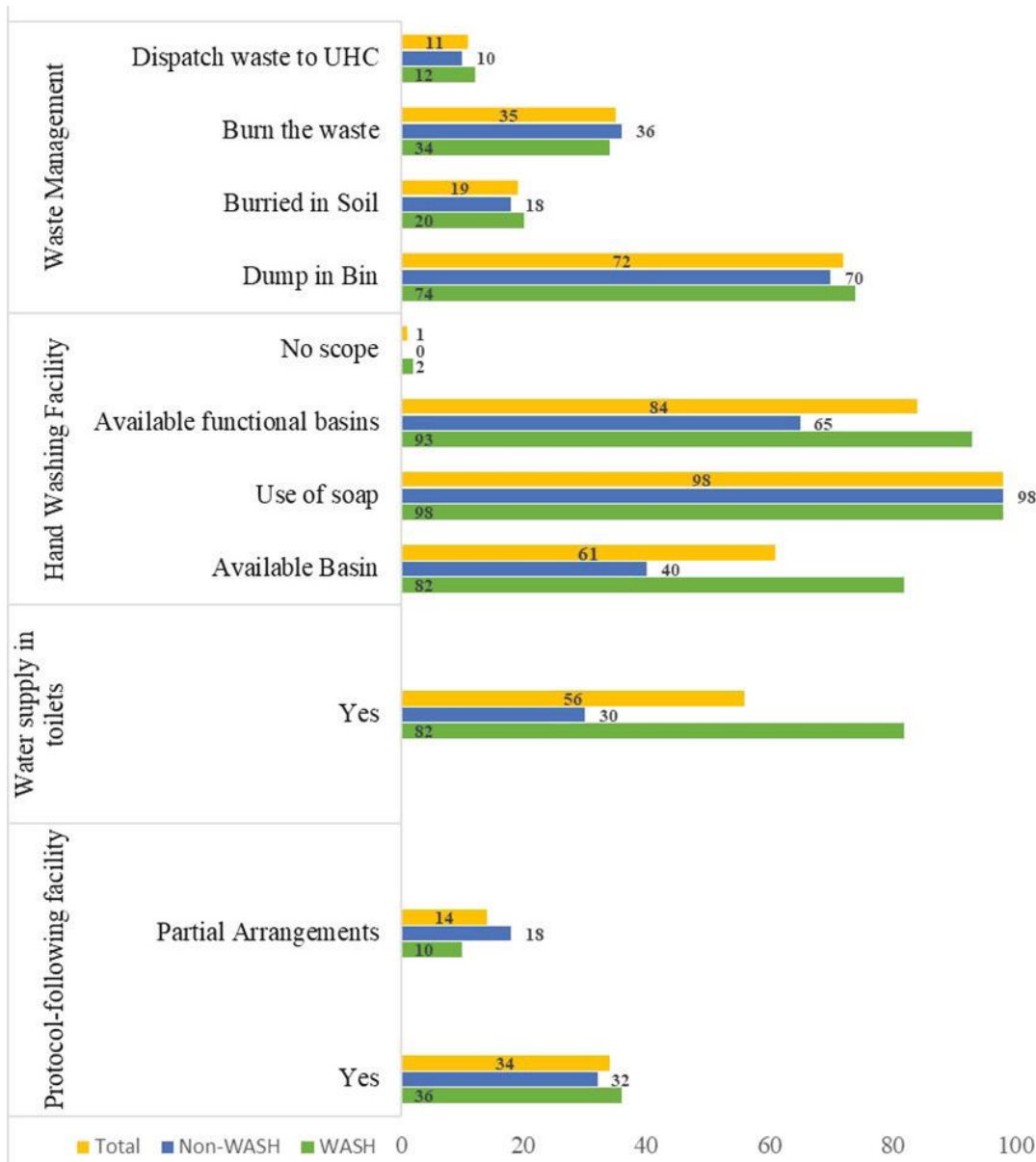


Figure 4: WASH Facility-wise Capacity Scenario of CCs (in %)

**Table 4:** Association of Association of Infrastructural Capacity with Sensitivity to WASH Facility

	Percentage (%)		X <sup>2</sup>	df	P-value
	WASH	Non-WASH			
Gender-sensitive toilet facilities	66.7	33.3	9.091	1	<u>0.003***</u>
Sustainable water management capacity	73.2	26.8	27.435	1	<u>0.000***</u>
Upgraded handwashing capacity	67.2	32.8	18.537	1	<u>0.000***</u>
Availability of electricity	56.8	43.2	5.198	1	<u>0.023**</u>

\*\*\*Values are significant at a 1% level of significance

\*\*Values are significant at a 5% level of significance

## Skills

The findings from the survey revealed that a large proportion of the CHCPs have received training and guidance on contagious disease and COVID management. Most CHCPs have received this training

from the government, while some NGOs were also involved in this procedure. The guidance has been developed following the guidelines of the World Health Organization.

**Table 5:** Findings for Skills

	Parameters	Percentage (%)	
Skills	Training on	Contagious disease	75
		COVID management	77
	Source of training	Government	97
		NGOs	3
	Need for further training		97
	Aware and user of proper handwashing procedure		100
	The practice of wearing safety gears	Completely wears	38
		Partially wears and re-use them	48
	The practice of prioritized patient handling		70
	Waste Management practice	Dumped in a bin with cover	72
		Disposed in soil	72
		Burnt	35
		Non-biodegradable sent to UHC	11

97% of the CHCPs feel the urge for further training. Even though all the CCs do not have proper hand washing facilities, all CHCPs were aware of proper hand washing procedures and practiced them daily. They have arranged alternatives at their own expense out of necessity. CHCPs were ready to adapt according to the situation with their existing knowledge. However, only 38% of the CHCPs were found to regularly use safety gear when providing health services to the community.

Conventional triage is not practiced in any of the CCS. Nevertheless, prioritization of patients based on age, gender, pregnancy, the seriousness of the condition, etc., is strictly considered and followed in 70% of the CCs. Also, dealing with medical waste poses the threat of potential infection and health hazards. The type of waste identification, segregation, and dumping require cautiousness from the CHCPs. Hence, they need a strong awareness of these criteria. Several waste disposal approaches were being practiced in the clinic prior to the COVID-19 pandemic: dumping in bins with cover (72%), depositing in soils (35%), burning of the wastes (35%), and sending non-biodegradable wastes to Upazila Health Complex (11%). CHCPs believe they can perform even better in outbreak management if they receive a specified training program for the outbreak at the initial phase.

## Tools

The checklist for assessing COVID dedicated care units includes parameters such as bed availability, intensive care units, oxygen supply, round-the-clock availability of medical personnel, and abundance of safety kits for patients and staff (Barasa, Ouma, and Okiro, 2020; WHO, 2020d). Due to the unique nature of CC's services, the study designed and limited the parameters in the capacity assessment tools, considering the structure of CCs.

The study found that all CCs surveyed were provided with some form of personal protective equipment (PPE) and facemasks. In the study, some CCs received gloves (75%), sanitizers (42%), disinfectants and soaps (19%). However, a significant number of CCs did not receive these essential protective items. The respondents assume that the lack of these essentials could be attributed to increased demand, limited resources, lockdown, disrupted supply chain, etc. Most of these items were received from CBHC with nominal contributions from NGOs. Nevertheless, it was noted that the number of PPEs, masks, and other protective tools was insufficient at the time of the interview.

**Table 6:** Findings for Tools

	Parameters	Percentage (%)	
Tools	Protective gear and equipment	PPE	100
		Mask	99
		Sanitizer	42
		Disinfectant and soap	19

## DISCUSSION

The study findings demonstrate that despite facing significant constraints, Community Clinics (CCs) in Bangladesh have effectively fulfilled their mandated functions, including spreading awareness, providing primary-level healthcare, and referring patients to higher-tier facilities. This resonates with the observations made by Sultana (2019), who also highlighted the notable improvements in health status achieved by Bangladesh, particularly in achieving health-related Millennium Development Goals (MDGs) and improving key health indicators. However, major drawbacks such as

inadequate infrastructure, irregular electricity supply, and limited spacing hinder their performance, and the quality of infrastructure is deteriorating over time. These findings are consistent with the concerns raised by Al-Zaman (2020) regarding the healthcare crisis in Bangladesh during the COVID-19 pandemic and the impact of poor governance, inadequate healthcare facilities, and weak public health communication.

External factors like the existing organogram, community dynamics, and government policies also influence CC operations. While Community Group (CG) and Community Support Group (CSG) members, being



unpaid volunteers, are responsible for maintenance, their lack of direct accountability affects service quality. Active community participation can mitigate negligence in maintenance. This corresponds to the observations made by Islam and Biswas (2014), who emphasized the reliance of the health system in Bangladesh on the public sector for financing and setting overall policies and service delivery mechanisms.

Both survey and KII findings indicate a strong presence of enthusiasm in the CHCPs, who are often overburdened. However, Community Clinic staffs are accountable to different authorities (GoB, 2018a). Separate reporting authority of the staff (CHCP under CBHC, HA under DGHS, and FWA under DGFP) impedes coordination and affects the quality of service. If they are brought under on chain of command, the chaotic reporting pattern could be resolved. It will increase the attendants' accountability and transparency, eventually improving the quality of service provided by CCs. The provision of more human resources with technical expertise (frequent visits of doctors or medical professionals) can immensely expand healthcare services and enrich their quality. An inadequate supply of protective gear is another major hindrance, which can be resolved with preemptive need assessment and a strong supply chain. The severe scarcity of disinfectants and soaps can be attributed to surging demand due to the pandemic, which overwhelmed supply chains. Lockdowns and workforce shortages disrupted manufacturing and distribution processes.

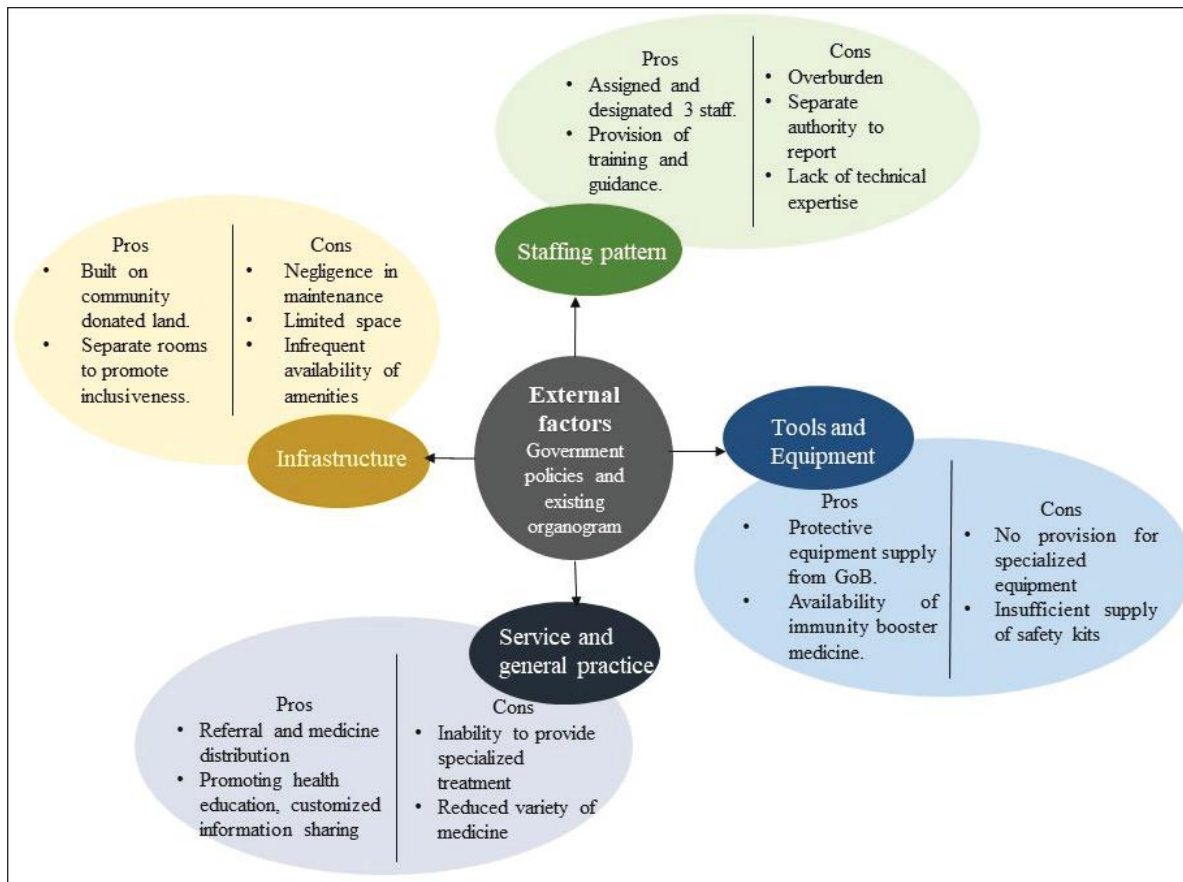
The Government of Bangladesh has several policies, including the National Health Policy 2011; the Health, Nutrition, and Population Sector Program (2017-2022); the Community Clinic Health Assistance Trust Act (2018); the Social Safety Net Program (SSNP) that emphasize the establishment and operation of community clinics throughout the country (GoB, 2011, 2017a, 2017b, 2018b). By examining these policies, it was found that they highlight the importance of

the community clinic establishment and their roles in raising awareness among the population on health-related issues. These facilities are designed only to provide basic primary healthcare and health education assistance.

The theoretical framework served as a guiding foundation, providing valuable insights into the factors influencing the service quality of Community Clinics (CCs). This framework comprehensively addressed both internal and external factors that play crucial roles in shaping the effectiveness of CCs in delivering healthcare services. While the study successfully assessed the CCs' capabilities in fulfilling their designated responsibilities remarkably, focusing on spreading awareness, providing primary-level healthcare, and supporting immunity boosters, it also explored their potential as information and support hubs with the capacity to cater to even greater needs.

However, when considering CCs' role in responding to pandemics, it becomes evident that they face certain limitations. Unlike primary healthcare centers in countries like India, Pakistan, Nepal, and others, which are equipped to function as treatment facilities during pandemics, CCs in Bangladesh are specifically designed to provide only basic healthcare and prioritize health education. Therefore, while CCs have proven instrumental in their current roles, proposing them as dedicated treatment facilities during pandemics may not be feasible due to their primary focus on basic healthcare and health education. Nonetheless, CCs with existing WASH facilities can better serve pandemic-dedicated patients due to their improved infrastructural arrangements. Hence, they can provide better opportunities to follow standard protocol and serve outbreak-affected patients (Table 4).

For better visualization and comprehension, the findings of the study are re-arranged into one frame through a strength and weakness analysis lens emphasizing external and internal factors as per the framework (Fig. 5).



**Figure 5:** Findings of the Study within One Frame

## CONCLUSIONS

The CCs, the root tier healthcare unit of Bangladesh, are quite different in nature than the conventional global healthcare units. Though several frameworks and toolkits are available for capacity assessment of conventional healthcare units, no specific frameworks exist for this unique root-tier healthcare facility. The study designed its framework and questionnaire considering the limited yet mandated activities of the CC. The findings of the study demonstrate the active engagement of the CCs in COVID management through their attributed tasks such as the regular operation of CCs, primary healthcare, referral to UHC, awareness raising, medicine distribution, identification of COVID-suspected patients and reporting the cases to upper-tier. However, despite such active engagement, setting CC as an outbreak/pandemic dedicated treatment center is impossible due to resource constraints, infrastructural conditions, and policy-related bindings. Instead, the CCs can be promoted and used as information and support hubs within their mandate limits. Fortunately, the willingness of the CHCPs to

take further training in outbreak patient handling and participation in vaccination programs is a positive attitude, and policymakers may utilize their interest to support efficient healthcare for the rural people in this deadliest epidemic situation. Additionally, policy-related shortcomings must be addressed to boost the efficiency of the healthcare quality of CC. Several suggestions from CHCP interviews, KII, and expert discussions for this are 1) accountability and reporting of all three staff to the same authority, discouraging general reporting procedure, 2) instead of voluntary engagement of CSGs for the maintenance of CCs, the minimal payment system can be adopted to encourage and ensure their activity, 3) at least, basic facilities and amenities (WASH, electricity supply) should be ensured in the CCs (with the scope of vaccines to be stored in the prescribed manner during vaccination programs), 4) sufficient amount of PPEs, safety gears, disinfectants should be supplied to the CC to safeguard the staff, 5) temporary testing booths can be set up in the CC territory; in that case, appropriate training programs must be launched, and ample amount of logistic is needed to be supplied.

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