Unlocking Patient Preferences for Community-based Health Facilities in Kapasia Upazila, Bangladesh: A Rating-based Conjoint Study

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ABSTRACT

Background: Understanding patient preferences is crucial for improving the quality and utilization of health services in community-based health facilities (CBHF). By taking into account the patient's perspective, needs, and values, the healthcare facility that serves the healthcare service users must be assessed. Therefore, when assessing and designing the healthcare facility, it might be useful to prioritize patients' needs, preferences, and values in many facets of a health program.

Objectives: This study aimed to identify patients' preferences towards community-based health facilities and to measure their preferences for these health facilities.

Materials and Method: The study participants were patients of the community clinic (CC) at Kapasia Upazila in Gazipur district. A rating-based Conjoint Analysis (CA) questionnaire was administered to the 434 patients. They were asked about the relative importance score (RIS) of six attributes along with 16 hypothetical scenarios that elicit preferences for the services of CBHF. The linear additive utility model was applied to evaluate the preference functions of each participant.

Findings: The result of the conjoint analysis showed that the healthcare provider was the most influential attribute for CC, contributing 47.13 % to the respondents' preference rating. Always availability of medicine at the clinic was the second most important attribute (RIS= 26.69%), followed by payment for health service (12.87%). Distance to the health center (5.45%), Waiting time till visit (5.39%) and community participation (2.47%) were least important. Moreover, the most substantial finding of the study is that patients choose that hypothetical scenario from where they get maximum utility. A single utility score indicates the level of desire for specific service features offered in a set of possible healthcare packages.

Conclusion: By understanding patient preferences and experiences, this study seeks to inform policy and practice aimed at strengthening CBHC services in Bangladesh. Findings will help build patient-centered approaches that meet varied populations' needs and priorities, advancing UHC.

Keywords: Community-based Healthcare, Conjoint Analysis, Patients' Preference, Bangladesh

INTRODUCTION

Achieving Universal Health Coverage (UHC) and emphasizing the importance of community-based healthcare are two significant ongoing worldwide health policy initiatives. According to the United Nations' 2015 Sustainable Development Goals (SDGs), the idea of universal health coverage is to make sure that everyone can access the healthcare they need, including high-quality health services as well as safe, effective and reasonably priced medications and vaccines, all without putting them in financial hardship (WHO, 2023). In Bangladesh, UHC is a policy priority as the government strives to meet SDG 3, with the target of achieving

UHC by 2032 (MoHFW, 2012). Bangladesh stands at a critical juncture in its healthcare journey, striving to ensure universal health coverage (UHC) for its populace. This includes providing financial protection against health-related expenses, ensuring access to high-quality essential healthcare services, and making essential medicines and vaccines safe, effective, and affordable. The pursuit of UHC necessitates not only equitable access to healthcare services but also a deep understanding of patient preferences and community dynamics. As healthcare systems increasingly recognize the importance of patient-centered care, understanding patient preferences is becoming more critical for ensuring that health services are effective and equitable (Hibbard & Greene, 2013). In this context, community-based health facilities play a crucial role in achieving UHC by adapting healthcare delivery to meet local needs.

Community-based health facilities offer healthcare services to underprivileged, low-income communities. These persons are more susceptible to chronic diseases that can be prevented and frequently have higher rates of chronic disorders like diabetes and hypertension (Shin et al., 2013). In Bangladesh, the community clinic (CCs) was started by the Ministry of Health and Family Welfare (MoHFW) in 1998, but it is now part of the Directorate General of Health Service (DGHS) and is carried out through community-based health care (CBHC) operational plan. CCs serve as a cornerstone of the Upazila health system and play a key role in delivering accessible care at the grassroots level (MoHFW, 2020). CBHC initiatives are being studied as a pragmatic approach to fulfilling the global goal of UHC. CCs in Bangladesh are a paradigm for improving equity in healthcare access for rural residents, particularly women and children. These clinics, particularly in underprivileged communities, address the gap between healthcare availability and patient expectations by tailoring services to local preferences.

Patient preferences are the individual's assessment of different aspects of health outcomes and are one of numerous preferences that may influence healthcare choices (Brennan & Strombom, 1998). The inclusion of the patient's perspective is crucial in both policy and healthcare decisions. Evaluating and creating healthcare services can be facilitated by prioritizing patients' values, needs, and preferences across different parts of a health program (Berhane & Enqusselasie, 2015). Healthcare interventions are usually designed based on assumptions about patients' needs without fully considering their preferences and expectations. This disconnect can lead to low utilization rates, even when services are available and accessible and can exacerbate existing health disparities. Therefore, the concept of patient preferences encompasses a spectrum of factors ranging from cultural beliefs and socioeconomic status to individual health behaviors and treatment expectations. Recognizing and incorporating these preferences into healthcare planning and delivery is pivotal for fostering patient-centered care and achieving sustainable health outcomes. CBHC initiatives could be unlocking patient preferences and tailoring services to local needs and contexts. In Bangladesh, where geographical and socio-economic disparities often pose challenges to healthcare access, community-based approaches serve as a vital bridge between healthcare providers and the communities they serve. Moreover, CBHC initiatives have demonstrated their efficacy in addressing prevalent health challenges in Bangladesh, including maternal and child health, infectious diseases, and non-communicable diseases (NCDs). Through community participation, these initiatives enhance health literacy and empower individuals to take ownership of their health. However, realizing the full potential of CBHC requires a multifaceted approach that encompasses policy support, capacity building, and sustainable financing mechanisms. This study contributes to the existing literature on healthcare access and utilization in rural Bangladesh by focusing on patient preferences, a relatively under-researched area. Most studies on rural healthcare in Bangladesh have focused on barriers to access or the quality of healthcare services, but few have examined the specific preferences of patients and how these preferences influence their healthcare choices. By filling this gap, the study provides new insights that can inform the development of more patient-centered healthcare policies and interventions.

In the context of Kapasia Upazila, understanding patient preferences can provide valuable insights into the specific attributes of healthcare services that are most important to the local population. This understanding can inform the design and implementation of healthcare services that are better aligned with patient needs, thereby improving satisfaction and utilization rates. Furthermore, patient-centered care, which emphasizes the importance of understanding and respecting patients' preferences and needs, has improved healthcare

outcomes. Thus, identifying the key factors that drive patient preferences is a critical step in enhancing the quality and accessibility of healthcare in rural areas. This study aimed to explore the imperative of unlocking patient preferences within the context of community-based health facilities in Kapasia Upazila, Bangladesh. From the patient's perspective, this study identifies the key attributes of community-based health facilities that influence patient preferences and assesses the relative importance of these attributes using rating-based conjoint analysis. Finally, this research presents utility scores for hypothetical scenarios of CBHC facilities to measure patient preferences.

MATERIALS AND METHODS

Study setting and design

A cross-sectional rating-based Conjoint Analysis (CA) was carried out in the CCs of eleven unions in Kapasia Upazila, Gazipur district. The Kapasia upazila is located in the northeast part of the country. Kapasia is a predominantly rural area, with a population of 3,42,162 spread across 11 unions and 231 villages (Banglapedia, 2023). The rural context poses distinct obstacles concerning healthcare accessibility and infrastructure, making it a prime area to study healthcare preferences at the community level. By using a simple random sampling technique 2 CCs were selected from each union. The rating-based CA elicits individual preferences by providing respondents with various choices based on pre-defined attributes and levels. This allows for the identification of highly rated combinations of attributes and levels (Pavlova et al., 2004). This study focused on the patients because they made the final decision about their healthcare.

Establishing attributes and levels

In a conjoint analysis, by using fractional factorial design several hypothetical profiles or scenarios of product or service are presented to the respondents. These hypothetical profiles or scenarios vary according to their attributes or characteristics. That means each profile comprises a specific combination of attributes, as well as the levels of attributes that determine the preferences of an individual for this profile (Singh et al., 1999).

This study is interested in how patients feel about the healthcare services offered by community-based health clinics. Thus, these attributes are important to patients when choosing healthcare facilities for their service. Six key attributes identified for CBHC facilities (CCs) were selected based on literature reviews, group discussions with health service users and reviews by experts, and pilot surveys: health care provider, patient payment for services, distance, waiting time, medicine availability and community participation (Kleij et al., 2017; Pavlova et al., 2004; Seghieri et al., 2014). The attribute values were chosen to represent the variety of conditions that patients could expect to have in Table 1.

Table 1: Attributes and Attributes level

Attribute	Level	Conceptual definitions
Health care provider (hcp)	Doctor (X_{11}) CHCP (X_{12})	Health care provider refers to getting service from general physicians or health staff such as community health care provider (CHCP), health assistant (HA) and Family welfare assistant (FWA).
Patient payment for service (pps)	tk 0 (X_{21}) tk 3 (X_{22}) tk 5 (X_{23}) tk 10 (X_{24})	Patient payment for service refers to service getting from CCs by paying a certain amount of money.
Distance to health center (dhc)	1 km (X_{31}) 3 km (X_{32}) 5 km (X_{33})	Distance between residence to CCs.

Waiting time till visit (wttv)	15 minutes (X_{41}) 30 minutes (X_{42}) 1 hour (X_{43})	It denotes the time while waiting to get the services at CCs
Availability of medicine (am)	Always available (X_{51}) Sometimes available (X_{52}) Not available (X_{53})	The general state of the obtainability of commonly used drugs.
Community participation (cp)	Yes (X_{61}) No (X_{62})	Active involvement of local communities

These attributes were examined and validated using feedback from patients and experts in the area, and they should differ depending on the type of service offered. These selected attributes were found to be significant to users in testing and appropriate for the development of new experiments and policies.

Experimental design

In this study, a full factorial design based on the CCs attributes, where three attributes had three levels, two attributes had two levels, and one attribute had four levels ($3^3 \times 2^2 \times 4^1$), which would have created 432 different scenarios, was deemed unfeasible (Bridges et al., 2011). This led to the creation of a fractional factorial design with orthogonal main effects using SPSS software version 24 to achieve a convenient number of scenarios for the questionnaire. Sixteen scenarios were generated by the minimal orthogonal array and as a check for the design's orthogonality, the correlation between the different attribute values was minimal.

Table 2: The combinations of attribute levels in the scenarios

	Identification of the scenarios															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Health care provider	X_{11}	X_{11}	X_{11}	X_{11}	X_{12}	X_{12}	X_{12}	X_{12}	X_{11}	X_{11}	X_{12}	X_{12}	X_{12}	X_{11}	X_{12}	X_{11}
Patient payment for service	X_{22}	X_{24}	X_{21}	X_{24}	X_{22}	X_{24}	X_{23}	X_{22}	X_{23}	X_{23}	X_{21}	X_{24}	X_{23}	X_{22}	X_{21}	X_{21}
Distance to health center	X_{33}	X_{32}	X_{32}	X_{31}	X_{31}	X_{33}	X_{32}	X_{32}	X_{31}	X_{33}	X_{31}	X_{31}	X_{31}	X_{31}	X_{33}	X_{31}
Waiting time till visit	X_{41}	X_{43}	X_{42}	X_{41}	X_{42}	X_{42}	X_{41}	X_{41}	X_{42}	X_{41}	X_{41}	X_{41}	X_{43}	X_{43}	X_{43}	X_{41}
Availability of medicine	X_{51}	X_{53}	X_{51}	X_{52}	X_{53}	X_{51}	X_{51}	X_{52}	X_{52}	X_{53}	X_{53}	X_{51}	X_{51}	X_{51}	X_{52}	X_{51}
Community participation	X_{61}	X_{61}	X_{62}	X_{62}	X_{62}	X_{61}	X_{62}	X_{61}	X_{61}	X_{62}	X_{61}	X_{62}	X_{61}	X_{62}	X_{62}	X_{61}

The attribute level combinations that were part of the survey are then designated with the letters A through P (Table 2). Every set of attribute levels determines a specific scenario that has an identical name. For instance, the scenario A is determined by the combination A. This scenario includes a doctor as a healthcare provider (level X_{11}), payment of tk 3 for service (level X_{22}), long distance between residence and CCs (level X_{33}), short waiting time (level X_{41}), always available medicine (level X_{51}), and active community participation (level X_{61}). The other scenarios are described similarly.

Selecting the sample and administering the questionnaire

A survey was performed to determine the healthcare-seeking preferences of patients in Kapasia, Gazipur. The survey took place at 22 CCs located in 11 unions between February and April 2019. Each CC was assigned a unique number that corresponded to its listing position. A simple manual method was used to randomly select CC from this list. This made sure that every clinic had an equal chance of being included in the study and that the selection process was impartial. Bridges et al. (2011) expressed that calculating sample size is difficult, especially for the conjoint analysis applications in health care. As usual, the sample size must be big enough to ensure reliability. The sample of 434 adults aged 18 years and above 60 were selected for this study.

A pilot study was conducted as a 'pre-test' of the survey tool, during which the rating scale was applied to a brief, representative sample (n=30). From the result of the pilot study, the irrelevant and difficult objects were removed and refined the questionnaire was based on the field experiences. The questionnaire was divided into three sections. In the first section (section A) demographic characteristics of the respondents. In section B, respondents were asked to rank how important they thought six attributes of CCs were, and section C rated the respondents' preference on several hypothetical scenarios of CCs. This study was concerned with the development of a measurement scale that allows quantifying the outcomes of users' priority to get services from community clinics obtained from ordinal data. For this purpose, in the questionnaire, each scenario had a rating from 1 to 5, where 1 represented very unimportant and 5 very important.

Data Collection

The study participants were picked from the twenty-two selected CCs in Kapasia. The survey was conducted once the respondent's participation was confirmed. A systematic sampling technique was used to choose the respondents from among the patients of certain CCs. Every third person who took service from CC was part of this study. If the third patient declined to participate, they were omitted from the study and the subsequent patient was interviewed. The researcher initiated the task by introducing the study to the patients and the survey procedures throughout the surveys. Oral informed consent was obtained from the respondents and the interviews were administered to them after they had the service.

Fig 1: Example of rating-based CA question used in the survey

Scenario 1
• Doctor as a health care provider
• Tk 5 payment for service of CC
• 5 km distance to health center
• 15 minutes waiting time till visit
• No medication available
• No community participation exists

What is your preference level for CC?
(Please tick box below)

☐ 1 = very low
☐ 2 = low
☐ 3 = moderate
☐ 4 = high
☐ 5 =very high

Model Estimation

Ryan (1996) demonstrated the final stage of CA which includes an assessment of the utility or preference function that determines the association among the attributes and preferences of service by the use of regression analysis. In this study, the linear additive utility model was used to evaluate the preference functions of each respondent. The dependent variable is the rating of scenarios, and the independent variables are the attribute levels that are being rated. For instance, in Figure 1, the respondent will rate Scenario 13 of CC in terms of doctor as a health care provider, Tk 5 payment for service of CC, 5 km distance to health center, 15 minutes waiting time till visit, whether there is no medication available and no community participation exists. Conjoint analysis assumes that the total preference is equal to the additive sum of the part-worths. Therefore, a simple equation (disregarding the constant term and errors) for computing the total utilities can be expressed as:

$$U = \sum_{i=1}^{m} \sum_{j=1}^{n} u_{ij} v_{ij} \dots \dots \dots \dots (1)$$

Where

U = Total utility of a scenario

u_{ij} = The part-worth contribution or the utility value of attribute i (i, i = 1, 2, . . . m) at level j (j, j = 1, 2, . . . n) and $\sum u_{ij} = 0$

v_{ij} = is a dummy variable. When level j of attribute i exists, $v_{ij} = 1$, otherwise $v_{ij} = 0$

i = 1,2…, m = number of attributes

j = 1,2…, n = number of levels of attributes i

Having assumed a linear additive utility function, the baseline model of this study was specified as follows:

Total U = C + Uhcp + Upps + Udhc + Uwttv + Uam + Ucp ………… (2)

To get total utility scores for various mixtures of attributes, first, estimate a regression equation, and after that put in the attributes level for a particular combination in that equation. Then the estimated regression coefficients are interpreted as the part-worth utilities or partial utilities scores for the levels that make up the overall rating score of the profiles (Lan, 2011). The data was analyzed using the CA process in SPSS. This analysis produces a utility score, known as a part-worth, for each level of the attribute. The utility scores, which refer to the coefficients of linear regression, offer a numerical measure of the preference for each level of an attribute, where higher values indicate a greater preference. In addition to this, this method still serves the purpose of evaluating the relative importance weights of different attributes.

The theoretical validity of the study was examined by exploring the uniformity of respondents' assessments in the conjoint analysis activity. In the CA and OLS regression, when estimating part-worth utilities, Pearson's correlation coefficients R or Kendall's Tau coefficients offer a realistic measurement for respondent's consistency.

In this study (table 3), the correlation between the observed and estimated preferences, as measured by Pearson's R = 0.999 and Kendall's tau = 0. 962, suggests that there is a significant level of agreement between the averaged profile ratings and the estimated utility derived from the linear additive regression model. The model's goodness-of-fit can be deemed satisfactory.

FINDINGS AND ANALYSIS

Respondents' characteristics

The study involved a total of 434 respondents: 364 (83.9%) were female and 70 (16.1%) male. The majority of the sample consisted of respondents aged between 25 and 40 years, accounting for 50.5% (mean age 38.26 years). Only 6.9% of the respondents reported having no formal schooling and 63.1% earned 5001 to 10,000 tk per month. In terms of occupation, the majority was observed among housewives (66.1%), followed by individuals engaged in cultivation (10.8%) and day laborers (10.6%). Moreover, most respondents self-assessed their health status as good (60.8%) or fair (30%), and 35% visited CCs twice during the six months before the survey. Table 3 presents an overview of the baseline characteristics.

Table 3: Baseline Characteristics of the study population (n = 434)

Respondents' Characteristic	N	(%)
Sex		
Male	70	16.1
Female	364	83.9
Age		
18-24 years	52	12.0
25-40 years	219	50.5
41-60 years	153	35.3
60 years above	10	2.3
Mean (+ standard deviation)	38.26 (11.12)	

Marital Status		
Single	6	1.4
Married	403	92.9
Divorced/ Separated	7	1.6
Widow/Widower	18	4.1
Education		
No Education	30	6.9
Primary	194	44.7
Secondary	161	37.1
Higher Secondary	49	11.3
Occupation		
Cultivation	46	10.6
Day labor	47	10.8
Service	20	4.6
Business	20	4.6
Student	12	2.8
Housewife	287	66.1
Monthly family Income		
Up to BDT 5000	48	11.1
BDT 5001-10000	274	63.1
BDT 10001-20000	103	23.7
BDT 20000+	9	2.1
Self-Assessed Health Condition		
Poor	40	9.2
Fair	130	30.0
Good	264	60.8
Frequency of Visit CC		
None	109	25.1
Once	125	28.8
Twice	172	39.6
More than twice	28	6.5

Source: Author's survey

RESULT OF CONJOINT ANALYSIS

In a conjoint analysis, respondents estimate the value or utility score or preference score of a product or service by conjoining the different utility values derived from different attributes (Hair et al., 2013; Schaupp & Bélanger, 2005). In this research, every set of attribute levels obtained from orthogonal design provides various kinds of users' preferences for the service of a community clinic. Based on the users' perception of the combinations, they rated the sixteen alternatives. Partial utility values are the result of the conjoint analysis. This could be explained by the overall privileges or utility related to each level of each attribute which is estimated from conjoint analysis, used to describe a product or service. Using the conjoint procedure, after analyzing the data a utility value, partial utility value for each level of the attribute, correlation coefficients, and relative importance of attributes are computed. The part-worth utilities, like regression coefficients, deliver a quantitative measure of the preference for each attribute level with higher values related to higher preference.

Table 4 displays the partial values (part-worth scores) of utility, standard errors, the relative importance of attributes and correlation coefficients. A higher utility value indicates a higher preference. The constant value of 3.085 can be seen as the fundamental utility, whereas the attribute levels deviate from it in both positive and negative directions. The sign, whether positive or negative, indicates the direction of the linear relationship between the value of the attribute level and the preference for it.

Accordingly, this result explored that the doctor as a health care provider gets the highest utility value and a CHCP gets the lowest utility value (1.285 and -1.285 respectively). Unexpectedly, utility increases with increasing 'patient payment for service'. Regarding patient payment for service, payment of Tk 5 was given higher preference (0.362), followed by Tk 10 (0.162) than payment for service of Tk 0 and Tk 3 (-0.277 and -0.248 respectively). As expected, the availability of medicine and distance have an inverse relationship with utility. The always availability of medicine was most preferred (0.792), followed by sometimes availability of medicine and not availability of medicine. Again, 1 km distance from the residence to the community clinic had a higher utility value than the other level of this attribute (0.054 compared to 0.025 and -0.079).
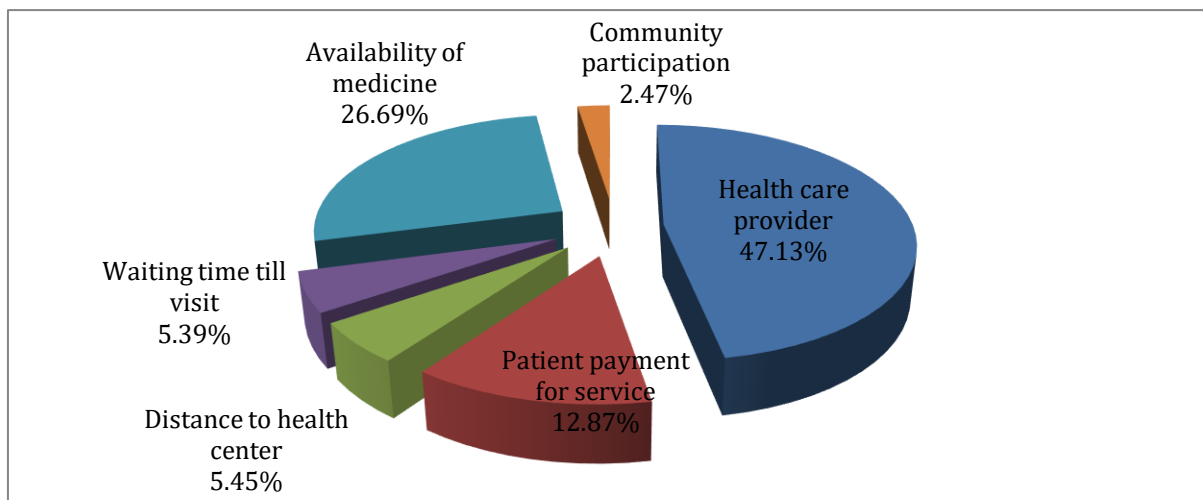
Table 4: Conjoint analysis's outcome

		Utility Estimate	Standard Error	Importance Values
Health care provider	Doctor CHCP	1.285 -1.285	0.027 0.027	47.133
Patient payment for service	Tk 0 Tk 3 Tk 5 Tk 10	-0.277 -0.248 0.362 0.163	0.047 0.047 0.047 0.047	12.867
Distance to health center	1 km 3 km 5 km	0.054 0.025 -0.079	.036 0.043 0.043	5.451
Waiting time till visit	15 minutes 30 minutes 1 hour	0.031 0.076 -0.106	0.036 0.043 0.043	5.392
Availability of medicine	Always available Sometimes available Not available	0.792 -0.115 -0.677	0.036 0.043 0.043	26.689
Community participation	Yes No	0.035 -0.035	0.027 0.027	2.468
(Constant)		3.085	0.032	
Pearson's R Kendall's tau	**Value** .999 .962	**Sig.** .000 .000		

The relative importance of attributes is those that estimate and specify the attributes that are important to influence respondents' preferences. Higher utility ranges of attributes are observed to have a greater impact on overall preference than attributes with smaller utility ranges (Lan, 2011).

Therefore, these values allow for comparing the relative importance of the attributes. As presented in Table 4 and Fig 2, the health care provider is of greatest concern to the respondents and has the highest importance value of 47.13% followed by availability of medicine (26.69%), patient payment for service (12.87%), distance to health center (5.45%), waiting time till visit (5.39%) and lastly by community participation (2.47%).

Fig 2: The influence of each attribute to overall preference

Correlation coefficients

In Table 4, correlation coefficients, Pearson's R = 0.999 and Kendall's tau-c = 0.962 represent on the whole extremely high correlations (very strong positive linear relationship) for the conjoint analysis model of this research. This shows that the goodness-of-fit of the model is satisfactory. P-values are the test of statistics for checking the inner consistency among the attribute levels. The p-values (0.000 and 0.000) are less than the level of significance of 0.05. Hence it can be concluded that the attribute levels of this research are internally consistent. Thus, the result of this significance test verifies the high reliability of the model.

Total utility of experimental scenarios

The sum of the part-worth utility values determines the scenarios' overall utility score or preference. Ranking these total utility values reveals the respondents' preference for the experimental scenarios in an arranged order, providing insight into their overall preferences. Table 5 displays the total utility of 16 scenarios along with their rankings.

Among sixteen scenarios, Scenario P was the highest preferable scenario. The total utility of this scenario is 5.000, and this utility value is considerably greater than the other values. This was expected because the respondents chose a scenario formed by the most desirable attributes level of community clinic's service (doctor as a health care provider, residence within 1km from the health center, 15 minutes waiting time to get health service, medicine is always available and existing of active community participation). Scenario C was the second-highest utility scenario. This scenario was "one stair down" related to Scenario P, where the respondents trade off the distance from the health center (3 km distance from the health center), 30 minutes waiting time, and active participation of community members to get service from a doctor at free cost and still availability of medicine at all times. The third was Scenario A, where the respondents exchanged 5 km distance from the health center and 3tk payment of service similar to getting service from a doctor, availability of medicine at all times along with active participation of community members.

Randomly taking another two scenarios for comparison, for example, Scenarios B and K which was possibly predictable? Scenario B, for which the respondents were willing to pay a relatively higher price (Tk 10) and willing to wait 1 hour to get service from a doctor. As well as no medicine was available in this scenario. This indicates a trade-off pattern was observed in this scenario. Whereas Scenario K indicates that the respondents chose a short distance, less waiting time, a low price, and active community participation, though it was ranked lower. Again, between Scenarios E and O, Scenario O was "one stair up" from Scenario E. In these scenarios, the doctor as a health care provider and always availability of medicine- the most expected attributes to the respondents were absent but contained comparatively a favored attribute level (sometimes availability of medicine) thus providing slightly higher utility value.

Similarly, though Scenario K had some preferable attributes (1 km distance to health center, 15 minutes waiting time, and active community participation) than Scenario L, it ranked sixteenth with a utility value of 0.966. While Scenario L ranked the eleventh with a utility value of 2.805. It was anticipated because respondents picked this for another most favored level of attribute always availability of medicine.

Table 5: Total utility of the hypothetical scenarios

Scenario	Health care provider	Payment for service	Distance to HC	Waiting time till visit	Availability of medicine	Community participation	Total Utility	Rank or Preference
A	Doctor	Tk 3	5 km	15 minutes	Always	Yes	4.901	3
B	Doctor	Tk 10	3 km	1 hour	No medicine	Yes	3.81	8
C	Doctor	Tk 0	3 km	30 minutes	Always	No	4.951	2
D	Doctor	Tk 10	1 km	15 minutes	Sometimes	No	4.468	6
E	CHCP	Tk 3	1 km	30 minutes	No medicine	No	0.97	15
F	CHCP	Tk 10	5 km	30 minutes	Always	Yes	2.787	12
G	CHCP	Tk 5	3 km	15 minutes	Always	No	2.975	9
H	CHCP	Tk 3	3 km	15 minutes	Sometimes	Yes	1.528	13
I	Doctor	Tk 5	1 km	30 minutes	Sometimes	Yes	4.782	5
J	Doctor	Tk 5	5 km	15 minutes	No medicine	No	3.972	7
K	CHCP	Tk 0	1 km	15 minutes	No medicine	Yes	0.966	16
L	CHCP	Tk 10	1 km	15 minutes	Always	No	2.805	11
M	CHCP	Tk 5	1 km	1 hour	Always	Yes	2.937	10
N	Doctor	Tk 3	1 km	1 hour	Always	No	4.827	4
O	CHCP	Tk 0	5 km	1 hour	Sometimes	No	1.188	14
P	Doctor	Tk 0	1 km	15 minutes	Always	Yes	5.000	1

It was also noted that some scenarios in Table 5 have nearly equal utility. Scenario K was ranked the sixteen with a utility value of 0.966 whereas Scenario E was ranked the fifteen with a utility value of 0.97. This meant that respondents could have a similar preference between two scenarios with various combinations of attribute levels. It can be expected that users may shift to a different attribute combination of CC's scenario that provides the same utility value if their preferred one is not available.

DISCUSSION

Using rating-based CA, this study examined users' preferences for healthcare services provided by CCs, emphasizing patients' priorities, their willingness to pay, and the relative attribute impact on CCs. Respondents' sociodemographic characteristics were also identified as important factors influencing peoples' healthcare-seeking preferences. Respondents of the present study placed different weights on attributes. The outcomes of this study found that most of the respondents placed the highest importance on health care providers for getting health care service from CC. According to MOHFW, it was planned that each CC will remain under the direct supervision of an MBBS doctor posted either at the union or Upazila level (Normand et al., 2006). But in reality, it does not work. Moreover, people strongly preferred a doctor as a health care provider over the CHCP at CCs. The possible reason for this outcome could be that due to the lack of a regular physician, the attribute health care provider seems to get the highest priority for receiving service from CCs. Most of the health service users also seemed to be displeased with the lack of physicians at CCs. Seddiky (2020) opined that MBBS doctors are the local patients' main concern regarding the quality of services provided at the CC in Bangladesh. This outcome is similar to other studies conducted by (Umunna, 2012; Zhu et al., 2019), where the provider's type was the key condition in the selection of a healthcare provider. In addition, a study conducted in Haryana also revealed good doctors turned out to be the most preferred cause

in choosing a certain hospital (Ankur & Kumar, 2015; R. G. Singh & Shah, 2011). Smith et al. (2004) stated that the doctor is considered the most valuable healthcare provider in local communities. Different results were found in the study conducted by Dixon et al (2015), where the type of career appears less important.

The respondents considered the availability of medicine to be the second most significant attribute. It is evident that the availability of medicines is consistently a crucial concern, particularly for the rural population in developing nations. The possible cause could be a shortage of medicines in health facilities, forcing patients to buy medicines outside of the health facilities. This is in line with several studies (Abodunrin et al., 2011; Berhane & Enqusselasie, 2015; Hanson et al., 2005; Zhang et al., 2020), were found that the drugs available at the hospital are the main ones to choose a health care facility. Mannan (2013) also revealed that access to drugs appears to be the key factor in patient perception of public hospital facilities.

In the present study, patient payment for service was another important determinant of consumer preference for getting health care services from CC. This could be explained by the fact that people in rural areas are generally sensitive to prices. A similar perception was found in a study of Bulgaria conducted by Pavlova et al. (2004). On the contrary, it was not found to be the case in South West Nigeria (Abiodun & Olu-Abiodun, 2014).

Apart from these, dissimilarity with Abrahim (2016) and Zhang et al. (2020), geographical accessibility, i.e., distance to health center from the residence was found relatively less important for people's preferences. In turn, this finding is congruent with the study by Ankur and Kumar (2015) where 'nearness to the hospital' was the fourth preference for choosing healthcare facilities. The reason behind this might be that most of the respondents traveled from their community to the closest CCs, which seemed to be more suitable to them for obtaining PHC.

An interesting finding is that waiting time has a low priority among the respondents in the present study. Perhaps it is because current research was taken in a community clinic where an emergency patient did not go to get health service usually. Gabrani et al. (2020), Hanson et al. (2005), and Pavlova et al. (2004) also found a similar result, where the waiting time is not of high importance. However, contrary to this finding, several researchers Abiodun and Abiodun, (2014); Dassah et. al., (2018); Jouyani et al. (2013), Scott et al. (2003) and Zhang et al. (2020) displayed that waiting time is a high priority for eliciting preferences of the community. According to their result increasing the waiting time reduced utility.

Finally, even though 'community participation' is necessary for developing and operating CCs, the study result found its' small effect on health service users' preference for CCs. Community participation appeared less important than most of the other attributes. The reason behind this could be the majority of respondents did not know anything about the involvement of community groups at CCs and how it works. This is contrary to the study in Saudi Arabia where more than 95% of the community respondents agreed about the importance of community participation at the PHC level (al-Mazroa & al-Shammari, 1991).

From the results of CA, it could be seen that doctors as a" type of health care provider' got the highest priority in respondents' preference. Health service users may be ready to pay more or sacrifice always availability of medicine for a doctor as a health care provider. This indicates the type of healthcare provider is prioritized in users' tradeoffs. Besides, though a scenario had some preferable attributes to other scenarios, the utility value of the first scenario may be less than other scenarios. It might be because respondents picked the second scenario for another most favored attribute level, i.e., comparing scenarios 11 and 12. This result indicates that a group of respondents may seek another most favored attribute level i.e., always availability of medicine.

In General, the order of preference for the scenarios means that the respondents go to the community clinic on the of basis utility-maximizing to get the services. This means that they target the CC service that gives the greatest benefit with the doctor as a health care provider, and their choices are designed by compromising some attributes to others to achieve the combinations that yield the highest utility.

STUDY LIMITATIONS

Several limitations should be considered for future research. Firstly, this study focused solely on Kapasia Upazila, and the sample may not fully represent a broader population. Future studies could address this by using larger samples from more diverse population segments. Second, although the survey included a high proportion of women, this might reflect the demographic of healthcare seekers at the community clinics. Lastly, this study collected data exclusively from health service users. Future research could expand by incorporating perspectives from other key stakeholders, such as healthcare personnel (doctors, CHCP/HA/FWA), community members, and officials from the MoHFW.

CONCLUSION AND POLICY IMPLICATIONS

Conclusion

Healthcare is a human right and a foundation of sustainable development. Quality healthcare is inconsistent in many low- and middle-income countries like Bangladesh, especially in rural areas. Geographic remoteness, poor healthcare infrastructure, and a shortage of educated healthcare providers make healthcare access difficult for rural communities. Kapasia Upazila in Bangladesh's Gazipur District illustrates rural healthcare access issues. The current study used a rating-based conjoint analysis to unlock patient preferences for community-based health facilities and relative attribute impacts on patients' preferences. Among the six attributes studied, the healthcare provider emerged as the most significant factor, with doctors receiving the highest utility value, while CHCPs received the lowest. Interestingly, patient payment for services displayed a positive correlation with utility, with a preference for modest fees. The availability of medicine and proximity to the clinic also played critical roles, with the highest preference given to scenarios where the medicine was always available and the clinic was within 1 km. By identifying the attributes of healthcare services that are most important to patients, the study provides actionable insights to guide the design and delivery of healthcare services. The insights gained from this study could be used to inform the design of community-based healthcare interventions in other rural areas of Bangladesh or similar contexts in other low- and middle-income countries.

Policy Implications

Patients' preferences and opinions are now more important in policymaking. Understanding their choices for community-based health facilities helps improve healthcare services. Key policy suggestions from the study include:

1. The Ministry of Health and Family Welfare (MOHFW) should consider strategies for assigning doctors to Upazila Health Complexes (UHC) or Union Health & Family Welfare Centers (UH&FWC), with scheduled visits to community clinics. Skilled healthcare assistants (CHCP, HA, FWA) can assist the doctors. Alternatively, interns from medical colleges could start their practice at community clinics.
2. Adequate budgeting for medicines in community clinics is essential for improving services. The government should ensure that all CBHC facilities have enough medicine, technical support, and logistical resources to ensure smooth service delivery.
3. Many patients are willing to pay a small fee for the services they expect from community clinics. Policymakers could consider this, and the government could reduce the cost of CBHC facilities by sharing the financial burden with the local community.
4. Community participation activities need to be progressively executed to understand the views and expectations of more and more patients regarding the services of CBHC facilities.

Conflict of Interest Statement: The author declares no conflict of interest in this study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

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