## **Original Research Article**

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# Assessment of factors influencing health care service utilization in rural area of Bangladesh

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## **ABSTRACT**

**Background:** Access to health care services is one of the important preconditions for ensuring good health that is influenced by many socio-demographic characteristics of the individual population as well as policy interventions. The main objective of this study was to identify the factors that determine healthcare service utilization in rural area of Bangladesh.

**Methods:** A cross-sectional descriptive study was carried out in the Rangpur union of Dumuria Upazila of Khulna division in Bangladesh. Data were collected from 195 household heads administering a structured questionnaire. The study applies principal component analysis (PCA) for determining the factors that affect health care services utilization.

**Results:** Need factors (chronic diseases, disability, child sickness, and old aged parents) play the pivotal role to utilize the health care services. The second important factor that contributes to access to health care services is enabling factors consisting of income, distance to the nearest health care center, health cards/health insurance, land ownership, types of latrine use, and membership in a community group. The predisposing factors i.e. age, sex, religion, occupation and education have the least significant role in utilizing health care services.

**Conclusions:** Utilization of health care services depends mostly on the perception and attitudes of people towards disease and disability. So, policy interventions should be taken to raise awareness among people along with regular monitoring of the activities of health care providers.

Keywords: Access, Health care services and utilization, Need factors

## INTRODUCTION

It is widely established that good health is one of the most essential indicators of human development. So, facilitating proper health service is a prerequisite for furthering human development and without giving proper health care services, human development is not possible. But, ensuring proper health care service and utilizing the remaining health services is the most complex behavioral phenomenon. Therefore, health care service utilization is an important issue to be discussed in the public health

domain. In the public health context, it is very significant to examine the factors that affect health-seeking behavior and health services utilization from individual to community level.<sup>2</sup> Inequalities in access to health care services has been taken considerable attention by various scholars in the present public health research sphere.<sup>3</sup> WHO pointed out that providing at least basic health services for the poor and underprivileged without any barriers ensuring, physical accessibility or acceptability of services universally is meant to be health services utilization.<sup>4</sup>

But still, in developing countries, people have less access to proper health care services comparing to developed countries it is thus prime challenges for developing countries to ensure adequate health services for all its citizens particularly for the underprivileged without any differentiation.<sup>5</sup>

In Bangladesh, there exist well-arranged three tires of primary health care services, i.e. Upazila Health Complex (UHC) at the sub-district level, union health and family welfare centres (UHFWC) at the union (collection of few villages) levels and community clinic (CC) at the village level. But due to a lack of proper management and adequate facilities, these services are not reached to the marginalized people. Health care services utilization largely depends on some circumstantial and social factors that determine the extent of health service utilization.

In this current study, socio-economic and demographic factors were analyzed with the help of the Andersen–Newman behavioral model which is very common and widely accepted to examine the factors related to health services utilization. Previous study by Li et al pointed out that need factors played a significant contribution to the use of existing health services utilization than enabling or predisposing factors in China whereas in Korea predisposing and need factors influence to receive existing health services than that of enabling factors.<sup>7,8</sup>

The main rationale of conducting the study is the growing inequalities of health services utilization particularly in developing countries like Bangladesh where the poor people are likely to be faced disparities in entertaining health services. Previous studies in Pakistan, Uganda, Korea, Nigeria and also many other developing countries found that health disparities in utilization of health care service is responsible for worsening the overall health status of the disadvantaged. So, the present was undertaken to determine the factors that affect health care services utilization in rural area.

## **METHODS**

## Setting

Following a cross-sectional research design, this study was conducted in the Rangpur Union of Dumuria Upazila under Khulna Zilla from March 1 to March 31, 2018. It is a rural area where more than 80 percent of residents are economically dependent on agriculture. This area was selected purposively among the 14 unions of Dumuria Upazila. The people of this union are heavily reliant on the UHC, CC and UHFWC for the emergency health care services. Besides, people of this area also utilize traditional healing practices. The transportation system for reaching in the health care centers include van, rickshaw, boat, motorcycle, easy bike as the roads are narrow and without brick or concrete. In order to get major surgical interventions and physical check-ups for critical diseases, people have to go to the divisional cities.

#### **Participants**

The adult residents aged 18 years and above of both sexes who have visited at least once in UHC or CC for any primary health care service during January 1 to February 28, 2018 were considered for the study subject. There were 4105 people of the above criteria visited in these two places. So, the study population was 4105 comprising 3284 males and 821 females. Using the formula of Taro-Yamane (1967) 195 samples was determined with 7% confidence interval (margin of error). 12 Two data collectors visited the households of people having the above criteria and explained the study aim and assured them that their identity would be kept confidential. Their verbal consent was sought before the collection of data. So, the people who gave verbal consent to participate in the study were interviewed using a pre-structured questionnaire. The questionnaire was pre-tested before the actual data collection begun and was approved by the development studies discipline of University. The completeness questionnaire was checked just immediately after the interview.

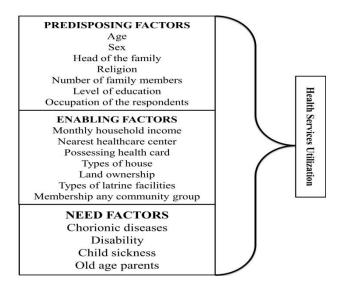


Figure 1: Conceptualization of factors affecting health care service utilization.

## Conceptualization of the factors with variables

The Andersen-Newman health behavior model has three chief components or factors, which later elaborated with several contributing variables or factors that influence and affect people's potentiality to avail the prevalent health services. Predisposing factors are those that reflect the individual's socio-demographic factors like age, sex, religion, number of family members, education, and occupation, beliefs, and attitudes). The enabling factors are the individual's or household's preference to receive the health services like family income, health insurance or card, land ownership, types of houses and latrines and membership. Need factors denote the health status or perceived health outcomes

which stimulate to take action as an urgent basis i.e. chronic diseases perceived self-health disability, children's sickness, old aged parents, etc.). 8,14,15

To conventionalize the model in the Bangladeshi context some exceptional variables like (membership of a community or political groups, land ownership, latrine use) are introduced newly. The factors with variables are delineated in (Figure 1).

#### Statistical analysis

The study applied two major analytical methods to assess the factors. First, frequency and principal component analysis (PCA) was run to determine the most contributing factors of utilizing the existing health care services.

When the data contains different measurement attributes PCA is an appropriate method to orthogonal transform of the raw data and need to reduce the variables to explain the association or to determine which variables explain the relationship PCA is used. 11 When the correlation matrix is not enough to describe the relationship then PCA is suitable to expose the findings. Generally, the factors with greater eigenvalues denote the maximum numbers are likely to be extracted. The Eigenvalue lies (0) to 1).11 In this study, Eigenvalue has been presented through a scree plot, whose horizontal Y-axis directs the number of components and their Eigenvalue in vertical X-axis. An Eigenvalue of 1 simply carries the meaning that the variables describe at least an average volume of the variance, while a factor with less than 1 Eigenvalue means the variables are not well acknowledged with an average amount to elucidate the variance.<sup>16</sup>

The Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity were considered where the value of KMO remains (0 to 1). A value of 0 denotes that the correlation is likely to be unsuitable whereas the value adjacent to 1 means the correlations are fair and trustworthy for the factors. Kaiser recommends the value greater than (0.50) can take as considerable if the value obtained below (0.5) researcher suggested going further enumerate more data set or reconsider the determined variables. To examine the communalities in the extraction phase is important. Because it represented by the sum of the squared loadings for a variable across factors with a range of (0 to 1) and value close to 1 means that all of the variances in the estimated model is explained by the factors (variables). To

Factor loadings demonstrated the correlation between the factors and the original variables which then means factor loading with higher value means the factors have strong influences of the variable on the factors and closely associated with the factors. <sup>11</sup> The range of factor loadings remain (-1 to +1), and the value close to zero represents lack of association, whereas the value near to (-1 to +1) indicates strong and fair associations. <sup>11</sup> However, the

negative value exerts the opposite direction between the variables.

#### RESULTS

Table 1 demonstrates the socio-demographic characteristics corresponding to factors of health care utilization of the participants. The age of the respondents was (25 to 77) with an average of (49.42±9.18) years. 1 Majority of the households (77.9%) were male-headed whereas 22.1% female-headed household's participants participated in the data acquisition. Most household (73.8%) had at least four or five family members. Among the entire participants, (39.0%) were just completed the primary level of education, while still (35.4%) didn't own any formal education in the lifetime. Farmer profession (39.5%) dominate over the other professions. In terms of, enabling factors, (75.9%) household didn't have any health insurance or health cards while than half of the household income was in the range (5000 to 10000 BDT), further, 75.4% household had less than half acre arable land on their own.<sup>8</sup> As for need factors, (51.8%) participants answered that they had no chronic illness, but respondents with at least one chronic illness accounted for (20.0%). Large majority of the households (90.3%) had not any kind of disability. Slightly more than onethird (36.4%) households had children suffering from illness and 22.6% families had old aged parents suffering from different aged diseases (Table 1).

Primarily this study took 18 variables (predisposing=7; enabling=7 and need=4) to examine the effects of health services utilization. Seven (7) factors pull out by PCA analytical model that this 7-factors exemplify the underlying dimensions distinctive in the predetermined (18) variables. <sup>16</sup> Allowing for (0.60) significant the first factor substantially loaded five variables, second factors loaded two variables, three-two (negatives), two on each of the four and five factors, six-one(negatives) and sevenone variables encountered. And a total of four variables are unmanageable for its low-value achievement. However, the value of communalities over (0.60%) is comfortable to interpret the importance of the variables although Kaiser recommends the researcher may consider The Table 2 also pointed out the communalities value. The extracted table shows that off the 18-variables eight-variables are above with (0.60%) communalities value, whereas 8-variables are staving above with the value (0.50%). Therefore, this means, a total of 16 variables are likely to be considered as the important variables whether if we consider Kaiser (1974) suggestion (0.050) as significant, or other way 8variables are significantly important at (0.60%). <sup>17</sup> The KMO measure of sampling adequacy presents the appropriateness of this model for this study. Attention required that the value is above (0.663), which, therefore, means the variables and model is best fitted. In addition, the significant value is less than pre-assigned (p<0.05) value. Further, the total variance of this model explained by the seven factors is (61.377%). The percentage of each of the factors extraction sums of squared loadings and the rotation sums of squared loadings value is quite sound and interpretative. The first factor obtained the highest variance (17.558%) but after rotation it has slightly decreased at (16.880%), second factors explained (9.222%-8.313%), third factors (8.215%-8.098%), four

factors (7.515%-7.984%), five acquired (7.177%-6.905%), six obtained (6.000%-6.738%), and last seven factors attained (5.691%-6.459%). It is obvious that after rotation the value of factors (4, 6, and 7) increased (Table 2).

Table 1: Socio-demographic characteristics of the participants.

|                      | Variables                          | Categories                   | N (%)         |
|----------------------|------------------------------------|------------------------------|---------------|
|                      | Age                                | Mean (±SD)                   | 49.42 (±9.18) |
|                      |                                    | Male                         | 152 (77.9)    |
|                      | Sex                                | Female                       | 43 (22.1)     |
|                      | Head of the family                 | Husband                      | 185 (94.9)    |
|                      |                                    | Wife                         | 10 (5.1)      |
|                      |                                    | Islam                        | 4 (2.1)       |
|                      | Religion                           | Hindu                        | 191 (97.1)    |
|                      | Number of family members           | >3                           | 23 (11.8)     |
|                      |                                    | 4-6                          | 144 (73.8)    |
|                      |                                    | Above 7                      | 28 (14.4)     |
| Predisposing factors |                                    | Illiterate                   | 69 (35.4)     |
| Tredisposing factors | Level of education                 | Primary                      | 76 (39.0)     |
|                      |                                    | Secondary                    | 35 (17.9)     |
|                      |                                    | •                            |               |
|                      |                                    | Higher secondary Graduate    | 8 (4.1)       |
|                      |                                    |                              | 7 (3.6)       |
|                      |                                    | Unemployed                   | 9 (4.6)       |
|                      |                                    | Day labour<br>Service holder | 37 (19.0)     |
|                      | 0                                  |                              | 10 (5.1)      |
|                      | Occupation of the respondents      | Housewife                    | 29 (14.9)     |
|                      |                                    | Business                     | 33 (16.9)     |
|                      |                                    | Farmer                       | 77 (39.5)     |
|                      |                                    | ≥5000                        | 5 (2.6)       |
|                      |                                    | 5001-10000                   | 101 (51.8)    |
|                      | Monthly income (BDT) in Rs.        | 10001-15000                  | 72 (36.9)     |
|                      |                                    | 15001-20000                  | 12 (6.2)      |
|                      |                                    | ≤20001                       | 5 (2.6)       |
|                      |                                    | 0-1 km                       | 7 (3.6)       |
|                      | Distance to the nearest healthcare | 2-3 km                       | 95 (48.7)     |
|                      | center                             | 3-4 km                       | 65 (33.3)     |
|                      |                                    | Above 5 km                   | 28 (14.4)     |
| Enabling factors     | Health card/insurance              | Yes                          | 47 (24.1)     |
| Enabling factors     |                                    | No                           | 148 (75.9)    |
|                      | Types of house                     | Rudimentary                  | 151 (77.4)    |
|                      |                                    | Cement/Tin                   | 44 (22.6)     |
|                      | Land ownership                     | Less than 0.50 Acre          | 147 (75.4)    |
|                      |                                    | 1-Acre                       | 38 (19.5)     |
|                      |                                    | Above 2-Acre                 | 10 (5.1)      |
|                      | Types of latrine facilities        | Traditional septic latrine   | 162 (83.1)    |
|                      | Types of farme farmines            | Flush toilets                | 33 (16.9)     |
|                      | Membership any community group     | No                           | 142 (72.8)    |
|                      |                                    | Yes                          | 53 (27.2)     |
|                      | Chronic diseases                   | Yes                          | 39 (20.0)     |
|                      | Cinolic diseases                   | No                           | 101 (51.8)    |
|                      | Disability                         | Yes                          | 19 (9.7)      |
|                      |                                    | No                           | 176 (90.3)    |
|                      | Child sinkness                     | Yes                          | 71 (36.4)     |
| Need factors         | Child sickness                     | No                           | 124 (63.6)    |
|                      | Old aged parents                   | Yes                          | 44 (22.6)     |
|                      |                                    | No                           | 151 (77.4     |
|                      |                                    |                              |               |

Table 2: Factors, influential variables, and their factor loading and communalities.

| Factors | Influential variables          | Model components | Factor loading | Communalities |
|---------|--------------------------------|------------------|----------------|---------------|
|         | Types of house                 | Enabling*        | 0.879          | 0.797         |
|         | Land ownership                 | Enabling*        | 0.647          | 0.502         |
|         | Types of latrine facilities    | Enabling*        | 0.916          | 0.860         |
| 1       | Membership any community group | Enabling         | 0.446          | 0.555         |
|         | Disability                     | Need*            | 0.787          | 0.715         |
| 2       | Religion                       | Predisposing*    | 0.666          | 0.477         |
|         | Respondents' occupation        | Predisposing*    | 0.716          | 0.570         |
|         | Household monthly income       | Enabling         | 0.420          | 0.465         |
| 3       | Sex of the respondents         | Predisposing     | -0.737         | 0.589         |
|         | Head of the family             | Predisposing     | -0.669         | 0.531         |
| 4       | Nearest healthcare center      | Enabling*        | 0.679          | 0.549         |
|         | Child sickness                 | Need*            | 0.771          | 0.644         |
| 5       | Age of the respondents         | Predisposing*    | 0.812          | 0.750         |
|         | Number of family members       | Predisposing*    | 0.600          | 0.609         |
| 6       | HH diseases                    | Need*            | 0.756          | 0.694         |
|         | Possessing health card         | Enabling*        | 0.771          | 0.625         |
| 7       | Level of education             | Predisposing     | 0.394          | 0.548         |
|         | Old aged parents               | Need             | -0.474         | 0.568         |

Kaiser-Meyer-Olkin measure of sampling adequacy 0.663; Chi-Square: 685.303; Sig. 0.000; Total variance explained by 7 factors: 61.34%. \*The value acheived score above (0.5) of PCA in both two forms communalities and after rotation (factor loading).

Table 3: The relative importance of the model components.

| Model component | No. of variables | No of influence variables by factor leadings N (%) | Rank |
|-----------------|------------------|--|------|
| Predisposing    | 7                | 4 (57.14)  | III  |
| Enabling        | 7                | 5 (71.43)  | II   |
| Need            | 4                | 3 (75)   | I    |

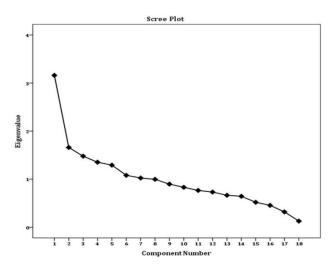


Figure 2: Screen plot.

The scree plot exerts here, horizontal Y-axis directs the number of components and their Eigenvalue in vertical axis-X. It is worth pointing out that at least seven factors are stood above the determined Eigenvalue (1). The first factors achieved (3.160) eigenvalue and the value of the

rest of stay somewhere lie between (1 to above) (Figure 2).

The obtained results of this study demonstrate that each of the components of the model is correlated with the outcome variables of the household's health services utilization. However, need (3 out of 4=75%) factors were comparatively important factors while enabling (5 of 7=71.43%) and the least important predisposing (4 of 7=57.14%) simply (need>enabling>predisposing) (Table 3).

### DISCUSSION

The strength of this carried out research is that the variables of three model components are found significantly associated, which is evident by the higher factor loadings recorded with the KMO value above (0.663) which means the model is appropriately fitted having high significant value (p<0.000). Further, most of the communality's values are above (0.50 or 0.60).

In corroborate with other previous studies, this study also exerts that the predisposing factors are experienced with the highest significant factor loadings. Of the seven predisposing variables four variables are derived with high factor loadings value. Very similar studies conducted in Europe and China had found similar results where sex, age, number of a family member, level of education and occupation are significantly associated with health service utilization.<sup>7,18-21</sup> However, the present study had not found any association of individual sex, level of education, family head with utilizing the health services which they need. This is to be the possible reasons of the social context where most of the rural people of Bangladesh are not aware of their health condition or needs. As a result, these factors didn't observe as the possible factors to utilize health services. It is evident from many studies that sex is responsible for preferring health-seeking behavior.<sup>22</sup> But as a patriarchal society, in Bangladesh to some extent women are not free to go anywhere for taking health service for their own or for family members. Alike some previous studies, in this study, enabling factors like types of house, land ownership, types of latrine facilities, proximity of healthcare centers and possessing health card are found significantly associated with the health services utilization. 11,23,24 Proximity to reach the health center is positively associated factors utilizing the existing health services.

In terms of need factors, due to chronic diseases, disability and child sickness people were urgently contacted to doctors for getting services that are consistent with some previous studies that chronic disease is associated to health care service utilization.<sup>7,25</sup>

Based on the findings it is alarming that still a large portion of people of Bangladesh are out of proper medical facilities. Possibly this is due to the low economic establishment, education, accessibility to information regarding health services, along with poor awareness persist among rural people. People living in the rural area till believe some traditional methods (i.e. traditional healer, talisman, amulet, and *jhar-fuk*) for healing any illness.

The main strength of this study is; the data which this study denotes here is primary data so there is no way to be biased for presenting the real picture. Further, most of the used variables or factors in this study effectively elucidated the way of health services utilization.

This study was conducted in a village only as a result, it may not be possible to generalize for the entire rural context of Bangladesh is its significant limitation.

## **CONCLUSION**

Utilization of health care services largely depends on the perception and attitudes of people towards disease or illness. But it is also conditioned to the ability to purchase or avail the healthcare services with economic viability as well as social and physical accessibility to health care

facilities. So further measures should be taken to uplift the socioeconomic conditions of rural people, improve the communication system, set up available health centers within the shortest possible distance by the local government authority in line with national efforts.

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