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Healthcare-Seeking Pathways and Referral Patterns Among Patients Attending Cumilla Medical College Hospital, Bangladesh: A Cross-Sectional Study

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Short Report

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Posted Date: September 23rd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11119424/v1

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Additional Declarations: The authors declare no competing interests.

Healthcare-Seeking Pathways and Referral Patterns Among Patients Attending Cumilla Medical College Hospital, Bangladesh: A Cross-Sectional Study

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Manuscript draft – prepared for Computer and Public Health Data Analysis Lab course assignment, September 2026

Abstract

Background: Patients in Bangladesh's plural health system frequently consult more than one provider before reaching definitive care, but the pathways and referral patterns behind hospital arrival are rarely documented at the facility level.

Objective: To describe the proportion of patients who sought care elsewhere before arriving at the study hospitals, identify factors associated with this pathway, and describe patterns of formal referral and reasons for delay.

Methods: A cross-sectional survey of 342 patients (or their guardians, for pediatric patients) was conducted at Cumilla Medical College Hospital using a Bangla KoboToolbox questionnaire administered by 38 trained Summer 24 and Fall 24 batch BPH student data collectors. Descriptive statistics, chi-square tests, and independent-samples t-tests were used to examine factors associated with prior care-seeking.

Results: 183 of 342 patients (53.5%) had sought care from another provider before arriving at the study hospital. This pathway was significantly associated with the main health problem ($p=0.030$), illness duration ($p=0.004$), who advised the current visit ($p<0.001$), formal referral status ($p<0.001$), main reason for the current visit ($p=0.001$), distance from home ($p=0.001$), travel time ($p=0.002$), and transport mode ($p<0.001$), but not with gender, residence, or first-visit status. Patients with prior care-seeking were on average older (35.3 vs 31.0 years, $p=0.024$). Only 77 patients (22.5%) reported a formal referral to the current hospital. Financial constraints (34.2%) and perceiving symptoms as not serious (30.7%) were the most common reasons for delaying care.

Conclusion: Multi-step healthcare-seeking before hospital arrival was common and was patterned by illness- and access-related factors rather than demographic characteristics, consistent with need- and enabling-factor pathways described in Andersen's Behavioral Model. Strengthening formal referral linkages and addressing financial and distance barriers could streamline care pathways in this setting.

Keywords: healthcare-seeking behavior; referral pattern; cross-sectional study; Bangladesh; Andersen's Behavioral Model

1. Introduction

Bangladesh's health system is plural: alongside government hospitals and upazila health complexes, patients routinely draw on private clinics, pharmacies, informal drug sellers, and traditional or homeopathic practitioners. Families in rural and semi-urban settings commonly consult more than one type of provider before reaching a facility that offers definitive or specialist care, and this stepwise pattern shapes delay, cost, and the eventual point of hospital contact.

Community-based studies from rural Bangladesh have repeatedly found that a substantial share of people with a reported health complaint do not seek any formal care at all, and that even among those who do, fewer than half go directly to a health facility – many stop first at a pharmacy or an informal provider. Distance to the nearest facility and the severity or number of symptoms have been identified as consistent correlates of whether and how people seek care. Similar plural-provider patterns have been documented for maternal and obstetric complications, where families in rural areas typically approach informal providers, such as village doctors or homeopaths, before formal facility-based care.

What is less documented is the pathway among patients who do eventually arrive at a hospital: how many had already sought care elsewhere, what distinguishes those with a longer pathway from those who came directly, and how much of hospital arrival is the result of a formal referral versus a self- or family-directed decision. Understanding this pattern at the point of hospital contact is relevant for referral-system planning in a district such as Cumilla, where patients can choose among government, private, and community-level providers.

This study therefore aimed to: (1) determine the proportion of patients attending Cumilla Medical College Hospital who had sought care from another provider before this visit; (2) identify sociodemographic, illness-related, and access-related factors associated with this care-seeking pathway; and (3) describe the pattern of formal referral to the current hospital and the reasons patients gave for delaying care.

2. Methods

2.1 Study Design

This was a cross-sectional, hospital-based survey.

2.2 Setting

The study was conducted among patients attending government Cumilla Medical College Hospital, Cumilla district, Bangladesh. [29 August 2026] Data were collected in person at the study hospital using a structured, Bangla-language questionnaire built in KoboToolbox.

2.3 Participants

Eligible participants were patients presenting for care at the study hospital during the data-collection period (or, for pediatric patients, the accompanying parent/guardian answering on the patient's behalf), who consented to participate. Respondent ages ranged from 1 to 80 years, reflecting this mixed patient/guardian-reported sample. A total of 342 completed responses, collected by 38 trained BPH student data collectors largely through convenience recruitment at hospital sites, were included in this analysis.

2.4 Variables

The primary outcome variable was prior care-seeking (“PriorCare”): whether the patient had sought care from any other provider before this visit (yes/no). A secondary outcome was formal referral status to the current hospital (yes/no/not sure). Exposure variables included gender, residence (rural/urban), age, main health problem, duration of the problem, whether this was the patient's first visit for the problem, distance from home, travel time, mode of transport, transport cost, who advised

the current visit, and the main reason given for coming to this hospital. Among patients reporting prior care-seeking, the first provider consulted, number of providers consulted, and outcome of that prior care were also described.

2.5 Data Sources and Measurement

All variables were self- or guardian-reported using a pre-tested, structured Bangla questionnaire administered face-to-face and recorded directly in KoboToolbox by trained data collectors.

2.6 Bias

Hospital-based, convenience recruitment likely overrepresents patients with more complex or symptomatic presentations relative to the general community and may not capture patients who sought no care at all. First-provider, number-of-providers, and prior-outcome variables were only applicable to, and answered by, the 183 patients who reported prior care-seeking; their approximately 46–47% missingness in the full sample therefore reflects questionnaire skip logic rather than non-response, and these variables are summarized only among the relevant subgroup. Self-reported transport cost and illness duration are subject to recall bias, particularly for the wide range of transport-cost values observed.

2.7 Study Size

As a standard reference point, a minimum sample of 380 would be required to estimate a population proportion within ±5% at 95% confidence, assuming maximum variability ($p=0.5$); the achieved sample of 342 provides a 95% confidence interval half-width of approximately ±5.3% around a 50% proportion, which is comparable precision for the descriptive and bivariate analyses reported here.

2.8 Quantitative Variables

Age and transport cost were treated as continuous variables. Both departed significantly from a normal distribution on the Shapiro-Wilk test ($p<0.001$ for each), and transport cost was markedly right-skewed with 16 values flagged as outliers by the 1.5×IQR rule (Figure 1). Median, interquartile range (IQR), Q1, and Q3 are therefore reported as the primary summary statistics for both variables, consistent with STROBE guidance for non-normally distributed data; mean and SD are also reported for reference and because the independent-samples t-test for age was retained given the large sample size.

2.9 Statistical Methods

Categorical variables are summarized as frequencies and percentages. Continuous variables are summarized as median (IQR, Q1–Q3) given non-normality, with mean (SD) reported alongside. Normality was assessed using the Shapiro-Wilk test together with histograms, boxplots, and Q-Q plots. Bivariate associations between categorical factors and prior care-seeking were assessed using Pearson's chi-square test of independence; independent-samples t-tests compared mean age between groups. Reasons for delay were analyzed as a multiple-response set, with percentages calculated out of all 342 respondents. Statistical significance was set at $p<0.05$. Univariate descriptive statistics were generated in IBM SPSS Statistics; bivariate chi-square tests, t-tests, and normality diagnostics were computed in MS Excel.

3. Results

3.1 Participants

A total of 342 patients (or their guardians) completed the questionnaire and were included in this analysis. No respondent had missing data on the primary outcome (prior care-seeking); missingness on other variables is summarized in Section 2.6.

3.2 Descriptive Data

Table 1 summarizes the sociodemographic and clinical characteristics of the sample. Just over three-fifths of respondents were female (60.2%) and 56.4% lived in rural areas. The most commonly reported health problems were fever/infection (19.6%) and gastrointestinal or abdominal problems (18.4%). Reported problem duration was widely distributed: 32.5% had been dealing with the problem for more than six months, while 29.2% had a duration of 1–7 days.

Variable	Category	n (%)
Gender	Female	206 (60.2)
	Male	136 (39.8)
Residence	Rural	193 (56.4)
	Urban	149 (43.6)
Main health problem	Fever/infection	67 (19.6)
	Gastrointestinal/abdominal	63 (18.4)
	Other	51 (14.9)
	Pain	50 (14.6)
	Maternal/reproductive	30 (8.8)
	Respiratory	29 (8.5)
	Injury/accident	28 (8.2)
	Chronic disease	24 (7.0)
Duration of problem	>6 months	111 (32.5)
	1–7 days	100 (29.2)
	8–30 days	66 (19.3)
	1–6 months	60 (17.5)
	<1 day	5 (1.5)
First visit for this problem	Yes	184 (53.8)
	No	158 (46.2)
Sought care elsewhere before this visit	Yes	183 (53.5)
	No	159 (46.5)
Received formal referral	Yes	77 (22.5)
	No	255 (74.6)
	Not sure	10 (2.9)

Table 1. Sociodemographic and clinical characteristics of respondents (N=342).

Table 2 presents the two continuous variables. Both age and transport cost departed from normality (Shapiro-Wilk p<0.001); median/IQR are the primary summary statistics, with mean/SD shown for reference.

Variable	N	Mean (SD)	Median (Q1–Q3)	Min–Max	Shapiro p
Age (years)	342	33.3 (17.5)	30 (22–47)	1–80	<0.001
Transport cost (BDT)	342	227.6 (314.3)	150 (50–300)	0–3000	<0.001

Table 2. Descriptive statistics for continuous variables. IQR = interquartile range (Q1–Q3); 16 values of transport cost were flagged as IQR-rule outliers.

3.3 Outcome Data

183 of 342 patients (53.5%) reported having sought care from another provider before this hospital visit (Table 1). Among these 183 patients, the most common first point of care was a private hospital or clinic (69/181, 38.1%), followed by a government hospital or institution (43/181, 23.8%), a private doctor (24/181, 13.3%), and a pharmacy or drug store (22/181, 12.2%). Most had consulted only one prior provider (80/183, 43.7%); 21 (11.5%) had consulted four or more. The outcome of this prior care was reported as partial improvement by 80 patients (43.7%), no improvement by 65 (35.5%), full improvement by 25 (13.7%), and worsening by 9 (4.9%).

Only 77 patients (22.5%) reported that their arrival at the current hospital followed a formal referral; the large majority (230/342, 67.3%) attributed the visit to their own or their family's decision, followed by referral by a relative or friend (36, 10.5%). The most common reason given for choosing this hospital was the availability of a specialist doctor (159, 46.5%), followed by better treatment facilities (103, 30.1%).

3.4 Main Results

Table 3 summarizes the chi-square tests of association between candidate factors and prior care-seeking. Gender, residence, first-visit status, and usual first place of care were not significantly associated with prior care-seeking. Main health problem, illness duration, who advised the current visit, formal referral status, main reason for the current visit, distance from home, travel time, and transport mode were all significantly associated.

Factor	χ^2	df	p-value	Result
Gender	1.364	1	0.243	Not significant
Residence	0.498	1	0.480	Not significant
Main health problem	15.535	7	0.030	Significant
Duration of problem	15.516	4	0.004	Significant
First visit for this problem	0.052	1	0.820	Not significant
Who advised this visit	30.377	6	<0.001	Significant
Formal referral	26.132	2	<0.001	Significant
Main reason for this visit	27.575	8	0.001	Significant
Distance from home	19.892	5	0.001	Significant
Travel time	17.431	4	0.002	Significant
Mode of transport	24.400	6	<0.001	Significant
Usual first place of care	7.180	6	0.305	Not significant

Table 3. Chi-square tests of association with prior care-seeking (N=342). Note: an initial automated output also listed "prior care-seeking" itself among the tested factors (χ^2=337.99, p<0.001); this row is a self-comparison artifact of the analysis script and has been excluded here as it carries no interpretable meaning.

The pattern within these associations was consistent with an access- and need-driven pathway. Respiratory problems had the highest rate of prior care-seeking (21/29, 72.4%) and injuries/accidents the lowest (9/28, 32.1%). Patients with a problem lasting more than six months had the highest rate of prior care-seeking (73/111, 65.8%), compared with 20.0% (1/5) among those with a problem of less than one day. Prior care-seeking was more common among patients referred by a private doctor (22/25, 88.0%) or another hospital (14/17, 82.4%) than among those attending on their own or a family decision (104/230, 45.2%), and among patients who received a formal referral (60/77, 77.9%) compared with those who did not (116/255, 45.5%). Prior care-seeking rose with distance from home, from 37.4% (34/91) among those living less than 5 km away to roughly 62–64% among those living 11 km or farther, and with travel time, from 41.0% (43/105) for journeys under 30 minutes to 70.0% (63/90) for journeys of 1–2 hours. Patients travelling by bus had the highest rate of prior care-seeking (84/124, 67.7%) and those travelling on foot the lowest (2/11, 18.2%).

Table 4 reports the independent-samples t-tests for age. Age did not differ significantly by gender (p=0.161), but patients who had sought prior care were significantly older on average than those who had not (35.3 vs 31.0 years, p=0.024).

Comparison	Group 1	Mean (SD)	Group 2	Mean (SD)	t (df)	p
Age by gender	Male (n=136)	34.9 (19.7)	Female (n=206)	32.2 (16.0)	1.41 (340)	0.161
Age by prior care-seeking	Yes (n=183)	35.3 (18.3)	No (n=159)	31.0 (16.4)	2.27 (340)	0.024

Table 4. Independent-samples t-tests for age.

3.5 Other Analyses – Reasons for Delay

Respondents could report more than one reason for delaying care (percentages calculated out of all 342 respondents). Financial constraints were the most commonly cited reason (117, 34.2%), followed by perceiving the symptoms as not serious (105, 30.7%) and believing the problem would resolve on its own (74, 21.6%). Fear of diagnosis (28, 8.2%), distance from residence (24, 7.0%), continuing traditional treatment (17, 5.0%), homeopathic/herbal/alternative treatment (10, 2.9%), and social stigma (9, 2.6%) were reported less frequently.

3.6 Normality Assessment (Figure 1)

Histograms, boxplots, and Q-Q plots for age and transport cost are shown below. Age is moderately right-skewed with a broad spread from 1 to 80 years; transport cost is heavily right-skewed with a small number of high-cost outliers (up to 3000 BDT against a median of 150 BDT), consistent with the Shapiro-Wilk results in Table 2.

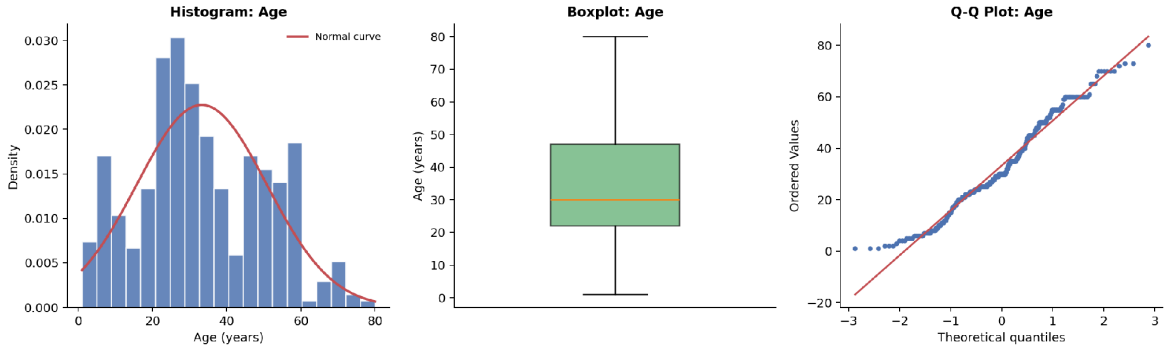


Figure 1a. Normality assessment for age: histogram with normal curve overlay, boxplot, and Q-Q plot.

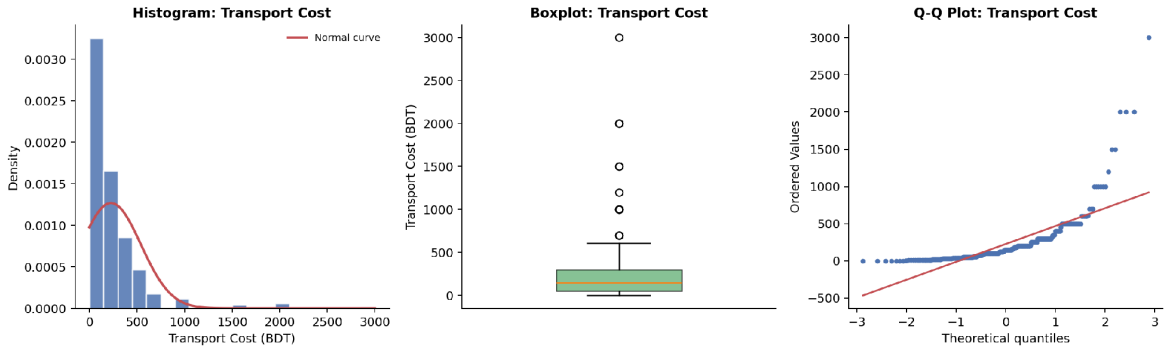


Figure 1b. Normality assessment for transport cost: histogram with normal curve overlay, boxplot, and Q-Q plot.

4. Discussion

4.1 Key Results

Just over half of the patients in this sample (53.5%) had already sought care from another provider before arriving at the study hospital, and only about one in five (22.5%) arrived through a formal referral. Whether a patient followed this longer pathway was not explained by demographic characteristics – gender and residence were unrelated – but was strongly patterned by illness- and access-related factors: the type and duration of the health problem, distance and travel time from home, transport mode, and whether a doctor or another facility had directed the visit. This pattern maps onto Andersen's Behavioral Model of Health Services Use, in which need factors (illness type, duration) and enabling factors (distance, transport, referral) drive service use more than predisposing demographic characteristics.

4.2 Limitations

- Cross-sectional design: associations cannot be interpreted as causal or temporally ordered.
- Hospital-based, convenience sampling: likely overrepresents patients with more complex or prolonged pathways and excludes community members who sought no care at all, limiting generalizability beyond the study hospitals.
- Self/guardian recall bias: particularly plausible for transport cost, which ranged from 0 to 3000 BDT, and for illness duration.
- Skip-pattern missingness: first-provider, number-of-providers, and prior-outcome variables were only collected from the 183 patients reporting prior care-seeking, so these sub-analyses are not directly comparable to the full-sample statistics.
- Wide age range mixing patient self-report (adults) and guardian proxy-report (children as young as 1 year) may introduce reporting heterogeneity.
- Multiple bivariate tests were run without correction for multiple comparisons, which increases the risk of at least one false-positive association among the twelve factors tested.

4.3 Interpretation

These findings are broadly consistent with prior Bangladeshi research showing that families in both rural and semi-urban settings often move through more than one provider – pharmacies, informal providers, or a first facility – before reaching definitive care, and that distance and illness severity, rather than demographic profile, are the more consistent correlates of this pathway. The low proportion of visits attributed to a formal referral (22.5%), against the relatively high proportion of

patients who had nonetheless sought some form of prior care (53.5%), suggests that most of this pathway is informally or self-directed rather than coordinated through the formal referral system.

4.4 Generalizability

These results describe patients who presented to the specific Cumilla Medical College Hospital sampled during the study period and should not be generalized to the wider community, including individuals who did not seek any care, or to hospitals in other districts with different referral infrastructure or case-mix.

5. Conclusion

In this sample of hospital patients in Cumilla Medical College Hospital, more than half had already sought care elsewhere before this visit, and formal referral accounted for only a minority of hospital arrivals. The care-seeking pathway was shaped by illness characteristics and access barriers – distance, travel time, transport mode, and financial constraints – rather than by gender or residence. Efforts to strengthen the formal referral pathway and reduce financial and distance-related barriers to timely care may help shorten these multi-step pathways.

Other Information

Ethical Approval

[Cumilla Medical College Hospital institutional/departmental ethics review committee permitted to conduct this study.]

Informed consent was obtained from all adult participants and from the parent/guardian of pediatric patients prior to data collection.

Funding

This research received no specific grant from any funding agency.

Conflicts of Interest

The authors declare no conflicts of interest.

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