Accessibility of End-Stage Renal Disease Patients to Health Care Services of a Specialized Hospital

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ABSTRACT

ARTICLE DETAILS

Objective: This study was conducted to assess accessibility of ESRD patients to health care services of a specialized hospital.

Methods: The study was a cross-sectional study, which was conducted at the National Institute of Kidney Diseases and Urology (NIKDU), Sher-E-Bangla Nagar, Dhaka, Bangladesh during the period from January to December 2021. The study included 384 ESRD patients, who were selected by purposive sampling technique. Data were collected by face-to-face interview with a pretested, semi-structured questionnaire and data were analyzed by current Statistical Package for Social Sciences (SPSS) 25 version. Associations of the categorical data were assessed by using Chi-square (x^2) test. Prior to data collection, informed written consent was taken from each patient.

Results: The study revealed that males (67.2%) and females (32.8%) were portion with mean age of 48.2±12.1 years. More than three fourth (79.9%) were married and 32.3% had graduation and it's above of education level while 1.6% were illiterate. One forth was housewives; average family size was 5.17 (±2.00) and average monthly family income was Tk.44820.31 (±48545.87). More than fifty percent (58%) of the patients had come to the hospital from 30 kilometer away. About three forth (75.3%) of the patients went to the hospital by bus and 1.6% by rickshaw. Most of the patients (82%) were needed for admission within last one month and very fewer (10%) had got bed for admission. Average waiting time was 5.6 (±3.4) months to get dialysis schedule. Off all, 70.6 % got fewer prescribed drugs for dialysis treatment, majority (81.8%) got Femoral/Jugular catheterization service and only 2% got arteri-venous fistula services by the hospital. Among all participants, more than fifty percent (55.7%) got easy access for laboratory test and 28.1% got for radiological test. About half (56%) of the patients got cooperation by hospital staffs. It was found that males (46.5%) had significantly ($p<0.05$) average accessibility to the health care services than their counterpart females (21.8%). On the residency, rural patients (8.3%), had significantly ($p<0.05$) poor accessibility to health care services than urban patients (4.4%). Majority (68%) ESRD patients had average level of accessibility to health care services followed by "good" (19.0%) and "poor" (13.0%).

Conclusion: To improve the accessibility of the End-Stage Renal Disease patients to the health care services of a specialized hospital, associated problems must be overcome by effective measures and program interventions.

KEYWORDS: Accessibility, Health care services, End-Stage Renal Disease, Arterio-venous fistula, dialysis schedule.

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INTRODUCTION

Bangladesh has a good public health infrastructure network. The country's health care delivery system consists of three tier network of health care facilities. As a third-tier specialized hospitals, it is equipped with specialized manpower and modern equipment to provide specialized care and treatment of referred cases from the district hospitals and health facilities from the country. There are different types of specialized hospital in the country, National Institute of Kidney Disease and Urology (NIKDU) is one of them. At the specialized level, NIKDU provides special services for the ESRD patients in which person's kidney cease functioning on a permanent basis leading to the need for a regular course of long- term dialysis or kidney transplant to survive life, in terms of access of health services, it is the basic goals around the world but renal complications and many people who have kidney disease lack access to care [10]–[11]. All of us eventually turn into patients and are forced to look for the medical care we need. Patients often attend the medical practice where they are registered or choose a specific doctor, with the exception of medical crises needing acute care, such as those handled in hospitals [12]. Now a days, CKD (Chronic kidney disease) is increasing globally, and is projected to become the fifth most common cause of death by 2040 and every ten years, the prevalence of ESRD appears to double [15]. So, ESRD patients demand timely and suitable health care services in a hospital, as a result, reduce kidney-related complications and death[7–8]. All ESRD patients are needed diagnostic service, dialysis service and hospital staffs. They also faced different barriers such as physical, financial to get health services by the hospital. In the physical accessibility, these patients are required to go hospital from their different places by using different mode of transport for their treatment. It is evident that accessibility of ESRD patients, tertiary level public health facilities. All these realities especially to the specialized hospital are not up to the mark and they are not well satisfied with the health care services of the ESRD patients[8]. But to meet the health care needs and demand of the ESRD patients their accessibility to specialized hospital must be ensured and accordingly demand based health care services must be provided to those health facilities. Considering theses realities, this specific study was designed to assess accessibility of the ESRD patients to health care services of a specialized hospital. The study findings will contribute to identification of accessibility to health care services of a specialized hospital and accordingly will help to improve the quality and utilization of health care services of the ESRD patients throughout the country.

MATERIALS AND METHODS

Study setting: The study was conducted at National Institute of Kidney Diseases and Urology, Sher-E- Bangla Nagar, Dhaka, Bangladesh during the period from January to December 2021.

Study design: The study was a Cross-sectional Study to assess the accessibility of End- Stage Renal Disease Patients to Health Care Services of a Specialized Hospital.

Sample size and sampling: The sample size was calculated by using the formula: $n=z^2pq/d^2$ where n=required sample size; z=1.96 at 95% confidence interval; p= prevalence (50%) 0.5;q=1-p; d is the desired precision or error allowed in the study (set at 0.05). The calculated sample size was 384. Sample was included following purposive sampling technique and using a standard written informed consent form.

Data collection: Data were collected by face-to-face interview with the help of pre-tested semi-structured questionnaire.

Data analysis: Data analysis was done with the help of SPSS software. Descriptive statistics included frequency, percentage, mean, standard deviation while inferential statistics included chi- square test to find association between accessibility and diverse independent variables. Accessibility to health care services was assessed on the basis of findings of fourteen out of thirty seven questions related to accessibility. Each question had two options; "Yes" and "No"; "Yes" answer incurred "1" while and "No" answer incurred "0" score. The total score was ranged from 0 to 14. Finally, accessibility was labeled as; 11-14 was good, 7-10 was average and <7 was poor (Islam,2019).

Ethics: Ethical clearance was obtained from the Institutional Review Board (IRB) of NIPSOM followed by permission was taken from the ethical clearance committee of National Institute of Kidney Diseases and Urology, Sher-E- Bangla Nagar, Dhaka, Bangladesh for data collection. Informed written consent was taken from the each patient informing purpose, procedure, risk and benefits of the study. Privacy of the patient and confidentiality of data were maintained strictly.

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RESULTS

Socio-demographic characteristics

Age group in years	Frequency	Percentage (%)
18-30	56	14.6
31-45	77	20.1
46-60	202	52.6
>60	49	12.8
Sex of patients	**Frequency**	**Percentage (%)**
Male	258	67.2
Female	126	32.8
Educational qualification	**Frequency**	**Percentage (%)**
Illiterate	6	1.6
Signature knowledge	45	11.7
Primary	58	15.1
Secondary	108	28.1
Higher Secondary	43	11.2
Graduate and above	124	32.3
Occupation of patients	**Frequency**	**Percentage (%)**
Agriculture	50	13.0
Service	91	23.7
Business	92	24.0
House work	100	26.0
Jobless	51	13.3
Monthly family income (Taka)	**Frequency**	**Percentage (%)**
≤ 50000	299	77.9
50001-100000	46	12.0
>100000	39	10.2
Place of residence	**Frequency**	**Percentage (%)**
Urban	153	40
Rural	231	60

Males were predominant (67.2%), mean age of the participants was 48.2 (± 12.1) years, around 32.3% had graduation and above of education level, average monthly family income was Tk.44820.31 (±48545.87), and more than one fourth (26%) was housewives. Among the all patients, more than fifty percent of the patients (60%) attained from rural area to assess health care services. [Table-1].

Accessibility of End-Stage Renal Disease Patients to Health Care Services: Majority of patients correctly demonstrated their responses regarding the questions about accessibility to health care services showed average level of accessibility based on 7-10 out of 14 points. Out of 384 patients (67.7%) got health education on disadvantages of missing of dialysis treatment, 98.4% patients were unaffordable to continue treatment, 66.9% was not satisfied with the location of hospital and only 10.7% patients said dialysis 1st schedule process by the hospital was easy.

Table 2. Accessibility of End-Stage Renal Disease Patients to Health Care Services (n =384)

No	Questions	Yes [n (%)]	No [n (%)]
1	Are you satisfied with the location of the hospital?	127(66.9%)	127(33.1%)
2	Did you get an un-occupied bed for admission?	108(28.1%)	276(71.9%)
3	Are you affordable to continue your treatment by this hospital?	6(1.6%)	378(98.4%)
4	Was it easy for you to get 1st dialysis schedule by this hospital?	41(10.7%)	343(89.3%)
5	Is your current dialysis schedule convenient for you?	142(37.0%)	242(63.0%)
6	Did you get access to make an AV-fistula at this hospital?	15(3.9%)	369(95.1%)
7	Did you get access to make jugular/ femoral catheterization at this	245(63.8%)	139(36.2%)

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	hospital?		
8	Does hospital staff give health education on disadvantages of missing dialysis treatment?	259(67.7%)	125(32.6%)
9	Can you complete a pathological test easily (S. Creatinine, S. Urea, eGFR) by this hospital?	214(55.7%)	170(44.3%)
10	Can you complete a radiological test easily (USG, X-ray, CT-Scan) in this hospital?	108(28.1%)	276(71.9%)
11	Do you get a doctor as soon as you need it?	188(49.0%)	196(51.0%)
12	Do you get a nurse as soon as you need it?	284(73.9%)	100(26.1%)
13	Do you find the hospital staffs at due time to get service?	212(55.2%)	172(44.8%)
14	Do you get good co-operation by the hospital staffs?	215(55.9%)	169(44.1%)

Figure 1. Level of health care accessibility
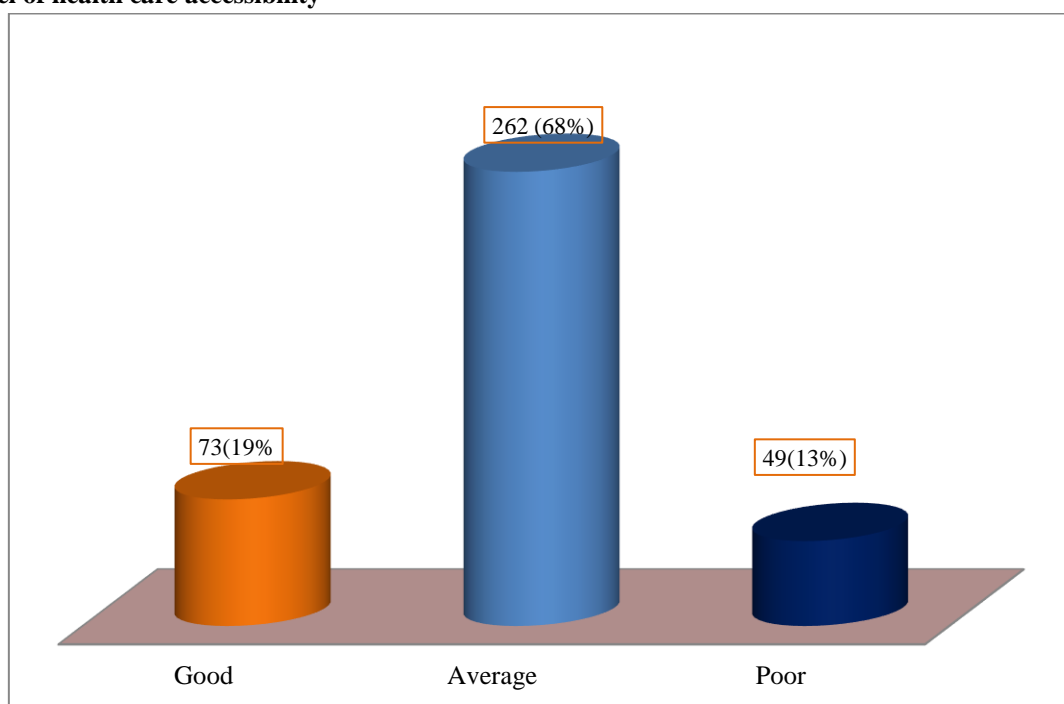
Figure 1. shows that majority (68%) ESRD patients had average level of accessibility, 19% patients had good and 13% patients had poor level of accessibility to health care services by the specialized hospital.

By the sex of the patients and its association with level of accessibility, majority (46.5%) male, 21.8% female patients had average level of accessibility and 13.4% male, 5.5% female patients had good accessibility to health care services. On the other hand, 7.2% male and 5.5% female patients had poor accessibility to health care services by the hospital. This difference of accessibility by age was found statistically significant ($\chi 2$ Test, p) [Table-3].

Table 3. Association between sex and level of accessibility

Sex of the patients	Level of accessibility			Total f (%)
	Good f (%)	Average f (%)	Poor f (%)	
Male	52 (13.4%)	178 (46.5%)	28 (7.2%)	258 (27.6%)
Female	21 (5.5%)	84 (21.8%)	21(5.5%)	126 (72.4%)
Total	73 (19.9%)	262 (68.5%)	49 (12.7%)	384 (100%)
Significance	x^2=2.852, p=0.00			

In favor of age of the patients and accessibility to health care services, majority (9.6%) of the 46-60 years, 3.6 % of 31-45 years, 3.4 % of >60 years and 2.3 % of ≤30 years age group had good accessibility to health care services. On the other hand, 34.9% of the 46-60 years, 14.8% of 31-45 years, 10.4% of ≤30years and 8.1% of >60 years age group had average accessibility to health care services. It was found 8.1% of the 46-60 years, 1.8% of ≤30 years, 1.6% of 31-45 years and 1.3% of >60 years age group had poor accessibility to health care services. This difference of accessibility by age was found statistically significant ($\chi 2$ Test, p) [Table-4].

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Table 4. Association between age groups and level of accessibility

Age groups	Level of accessibility			Total
	Good f (%)	Average f (%)	Poor f (%)	f (%)
≤30	9 (2.3%)	40 (10.4%)	7 (1.8%)	56(14.6%)
31-45	14 (3.6%)	57 (14.8%)	6 (1.6%)	77 (20.1%)
46-60	37 (9.6%)	134 (34.9%)	31 (8.1%)	202 (52.6%)
>60	13 (3.4%)	31 (8.1%)	5 (1.3%)	49 (12.8%)

In respect of residency of ESRD patients and accessibility to health care services, 7.7% of urban and 11.2% of rural patients had good accessibility to health care services, maximum (40.6%) of rural, 27.6% of urban patients had average accessibility to health care services. On the other hand 8.3% of rural and 4.4% of urban patients had poor accessibility to health care services. This difference of accessibility by residence of patients was found statistically significant ($\chi 2$ Test, p) [Table-5].

Table 5. Association between place of residence and level of accessibility

Place of residence	Level of accessibility			Total f (%)
	Good f (%)	Average f (%)	Poor f(%)	
Urban	30 (7.7%)	106 (27.6%)	17 (4.4%)	153 (39.8%)
Rural	43 (11.2%)	156 (40.6%)	32 (8.3%)	231 (60.2%)
Total	73 (18.9%)	262(68.2%)	49 (12.8%)	384(100%)
Significance	x²=0.631,p=0.00			

By the department of getting treatment and its association with level of accessibility, majority (50.3%) patients of outdoor department and 18.0% of indoor department had average accessibility, 13.0% of outdoor department and 6.0% of indoor department had good accessibility to health care services. On the other hand, 9.1% patients of outdoor department and 3.6% of indoor department patients had poor accessibility health care services by the hospital. This difference of accessibility by age was found statistically significant ($\chi 2$ Test, p) [Table-6].

Table 6. Association between department of getting treatment and level of accessibility.

Department of getting treatment	Level of accessibility			Total f (%)
	Good f (%)	Average f (%)	Poor f (%)	
Indoor	23 (6.0%)	69 (18.0%)	14 (3.6%)	106 (27.6%)
Out door	50 (13.0%)	193 (50.3%)	35 (9.1%)	278 (72.4%)
Total	73 (19%)	262 (68.2%)	49 (12.8%)	384 (100%)
Significance	x²=0.790,p=0.00			

DISCUSSION

The cross-sectional study was conducted among End-Stage Renal Diseases Patients (ESRD) to assess the accessibility to the health care services of a specialized hospital. Though relevant research is very scarce in Bangladesh. This study revealed findings related to the socio-demographic characteristics of the patients, level of accessibility to the health care services of specialized hospital along with associated problems or factors. These findings were compared with different subgroups of patients within the study and with the findings of other relevant studies. Males were predominant (67.2%), mean age of the participants was 48.2 (± 12.1) years, around 32.3% had graduation and above of education level, average monthly family income was Tk.44820.31 (±48545.87), and more than one fourth (26%) was housewives. Among the all patients, more than fifty percent of the patients (60%) attained from rural area to assess health care services. The study revealed that out of all the participants, 46.5% male and 21.8% female patients had average accessibility to the health care services of a specialized hospital. On the residency, rural patients (8.3%), had poor accessibility to health care services than urban patients (4.4%). Majority (68%) ESRD patients had average level of accessibility to health care services followed by "good" (19.0%) and "poor" (13.0%). A study was conducted by Islam MZ and showed that 51.3% males and 48.7%

females are receiving health services from UHC. It seems females are getting poor accessibility to health care than males. In favor of age of the patients and accessibility to health care services, majority (9.6%) of the 46-60 years, 3.6 % of 31-45 years, 3.4 % of >60 years and 2.3 % of ≤30 years age group had good accessibility to health care services. On the other hand, 34.9% of the 46-60 years, 14.8% of 31-45 years, 10.4% of ≤30years and 8.1% of >60 years age group had average accessibility to health care services. It was found 8.1% of the 46-60 years, 1.8% of ≤30 years, 1.6% of 31-45 years and 1.3% of >60 years age group had poor accessibility to health care services of a specialized hospital. On the basis of a cross-sectional study by Islam MZ and found that majority 45.3% of the 20-29 years age group including 60.0% of 30-39 years age groups, 35.3% of 40-49 years age group and 50.0% of 50-60 age group had poor accessibility to health care services of the UHC. On the other side, 22.6% of the 20-29 years age group including 20.0% of 30-39 years age groups, 44.1% of 40-49 years age group and 46.4% of 50-60 age group had average accessibility to health care services [4]. A cross sectional study on health seeking behavior suggests that inappropriate health care-seeking behavior had a lower mean age (40.4 ± 13.7 years vs 47.3 ± 15.6 years [8]. A cross-sectional study on 141 ESRD patients was conducted at the hemodialysis unit of Lahore General Hospital from January to April 2019; using a self-designed questionnaire following informed permission to see how satisfied patients were with hemodialysis as a long-term treatment and how it affected their quality of life and found that more than half of dialysis patients aged 1 to 5 years were dissatisfied in all aspects assessed by patients, with the exception of time spent with the doctor (64.6) and accessibility and convenience (57.0);in addition, there is a link between patient satisfaction measures and personal traits; however, improvements in the financial, communication, and interpersonal aspects of health care should be made in order to improve health care outcomes and, as a result, increase patient satisfaction, and more patient satisfaction research is needed[14]. About half of survey participants (44%) reside within three kilometers of an Upazila Health Complex (UHC), about a third (38%) within five kilometers, and only a small percentage (17%) reside within eight kilometers. UHC only covers an average distance of 3.75 km [3].

According to research, a sizable portion of the population in Australia's rural and remote areas lacks access to specialized renal disease treatment services within an acceptable driving distance, or 60 minutes[6-12]. The findings of this study shown that 231(60%) patients' residences were in rural and rest 153 (40%) patients' residences were in urban area. More than fifty percent 223(58%) of the patients' house was more than 30 kilometer away from hospital, 69 (18%) ESRD patients' house was within 0-4 kilometer and Only 42(11%) patients' house was within 5-14 kilometer of hospital. The mean distance was 78.0± 101.9 Kilometer. This thesis also find

out that 64.1% patients had got constant nursing care,26% patients had got nursing care by nurses at sometimes, 49% patients got continue medical care by doctor and 30% patients got at sometimes. More than fifty percent (56%) ESRD patients had got cooperation by hospital staffs. Regarding association between dialysis treatment and waiting time to get schedule by this hospital, most of the patients 232(60.4%) was getting dialysis treatment for <12 months and out of total patients 147(38.3%) were needed to wait for schedule by this hospital for more than 3 months and 85(22.1%) was needed for≤ 3 months but at least 2·284 million people might have died prematurely because RRT could not be accessed and noted the largest treatment gaps in low-income countries[13]. Chan MR (2007) study on Outcomes in Patients with Chronic Kidney Disease Referred Late to Nephrologists and revealed that there was a substantially higher rate of overall mortality in the group receiving late referrals compared to the group receiving early referrals (relative risk 1.99; 95% confidence interval [CI], 1.66 to 2.39, P.0001). The average length of hospital stay in the late-referred group was longer by 12 days (95% CI, 8.0 to 16.1, P =.0007) at the time renal replacement therapy was started. Both outcomes showed a significant amount of heterogeneity.[5] Regarding diagnostic services, 55.70% said that they had easy access to ensure laboratory investigation for chronic kidney disease marker like S. Creatinine, S. Urea and eGFR., 34.4% didn't get urgent report within 2-4 hours. Most (86%) of the patients had got routine laboratory report within 24 hours. But laboratory turnaround time <60 minutes is the ideal of an initial goal for acceptable TAT [16]. Majority (98.4%) patients were not affordable and only 1.6% patients were affordable to continue treatment. Majority (82%) of the patients were needed for admission within last one month and among them only 10 % got bed for admission. Majority (69.5%) patients got fewer prescribed medicine for dialysis by the hospital. 185(48.2%) but a small number (5%) get a full course of medicine [1]. A study was conducted by Hasan, MK in respect of quality of health and patients" expectation showed that, unavailability of health professionals, shortage of health staff, lack of resources and cleanliness of the UHC, lack of adequate infrastructures at the UHC, lack of adequate diagnostic facilities, power supply and drug supply as the major factors related accessibility to health care[4].

CONCLUSION

End-Stage Renal Disease (ESRD) is a significant concern in the present day due to its high treatment cost[3]. These patients are depended on hospital based treatment for a long period of time[7]. The findings of this study suggest that the location of the hospital was not well located in terms of access .Majority patients were male and age of the patients were within forty six to sixty years. Most of them came to the hospital by bus. The maximum ESRD patients' house was away from hospital. They were needed for long time to

access the health services. It suggests that it will be better if this type of service can be decentralized. Among the ESRD patients, majority sold their properties to continue their treatment. Most of the patients were not affordable. This hospital provides dialysis related medicines to the ESRD patients but most of the patients got fewer medicines. It may help the authority to ensure available dialysis related drugs in poor fund and also economically help the poorer.   Most of the patients were needed to get admission within last one month during data collection and out of them majority patients didn't get bed for admission due to limited number of bed. In accessibility of dialysis service - third-fourth patients got dialysis schedule by the hospital after a long time. It was found that most of the patients got Jugular/Femoral catheterization access and very fewer got arterio-venous fistula access. According to findings of this study, majority patients got easy access of laboratory test and minority patients got easy access of radiological test. Regarding hospital staffs accessibility, majority patients got constant nursing care. A separate arterio-venous fistula (AVF) unit can be established which may ensure AV-fistula services for whom are needed. This type of hospital can be decentralized for minimizing the duration of ESRD patients arrival time. Planners and policy makers should advice the Government to increase the dialysis bed and dialysis facilities to ensure admission for all patients and reduce the waiting time of dialysis schedule.

CONFLICTS OF INTEREST
The authors declare no conflicts of interest.

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