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Quality of life of chronic kidney disease patient on hemodialysis

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Abstract:

Background: *Chronic Kidney Disease (CKD) is one of the common chronic illnesses among elderly people due to increasing incidence of hypertension, diabetes mellitus and vascular disease. Among the renal replacement therapy hemodialysis is the cornerstone to improve quality of life (QOL) of the CKD patients.*

Objectives: *To evaluate the quality of life of CKD patient on hemodialysis therapy & also to compare this QOL with that of healthy control.*

Patients and method: *This is a descriptive cross sectional study carried out in dialysis unit of Rangpur Medical College Hospital. WHOQOL-BREF questionnaire was used to assess the quality of life. Higher QOL score corresponds to better quality of life.*

Results: *A total of 60 patients on hemodialysis and 30 healthy subjects (attendant of the patient) has been included in this study. The quality of life of CKD patient on hemodialysis was significantly lower ($p < 0.05$) than healthy people especially in physical, psychological &*

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social domain. There was no significant difference between two groups in environmental domain. Female hemodialysis patient showed significantly lower QOL scores (p <0.05) than male patient especially in psychological & social domain. Higher educational qualification showed better quality of life than lower educational qualification.

Conclusion: *The quality of life of CKD patient on hemodialysis was found to be significantly lower in comparison to healthy general people in this study.*

Key words: quality, domain, hemodialysis.

INTRODUCTION

Quality of life, an important parameter of health and well-being, getting popular now-a-days. Quality of life (QOL) is an important outcome representing a person's concerns. This also is an important indicator of other outcomes, such as mortality and hospitalization due to any disease.[1,2] In 1991, the World Health Organization(WHO) introduced a pilot project to develop a QOL questionnaire (WHOQOL) for generic use and defined QOL as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live,and in relation to their goals, expectations, standards, and concerns.[3,4,5] Modern civilization includes better health facilities, thus increasing proportions of elderly people, with a resulting increase in the incidence and duration of chronic illnesses. These chronic diseases are being treated by different newer & better therapeutic procedure, bringing to the center the need for a dignified QoL of patients.[6] An increasing interest in QoL is observed in patients who suffer from chronic diseases, including those with chronic kidney disease (CKD).[7] Data from different studies in Bangladesh reveal an alarmingly high burden of chronic kidney disease. These groups of patient are increasing day by day on the part of diagnostic advances.

Patients with CKD on Hemodialysis therapy, is an important subgroup of them who needs long term monitoring & prognostic evaluation. Although HD therapy prolongs life, there often several factors which may affect QOL of CKD patient. [8] Chronic renal patients who depend on renal replacement therapy (continuous peritoneal dialysis and hemodialysis) have a limited daily life and go through many bio-psychosocial changes and losses which interfere in their quality of life.[9] When dialysis came up, the main concern was to prolong the survival of chronic renal patients, but now it is more important to evaluate their quality of life with this therapy. Being under hemodialysis three times a week or under peritoneal dialysis on a daily basis has consequences for the patients regarding physical, emotional and social aspects of their lives. Depression is the most common mood disorder among these patients, and usually represents an answer to a real or imagined loss, thus configuring persistent depressive mood, bad self-image and pessimistic feelings, besides physiological complaints such as generalized weakness, sleep disorders, changes in appetite and weight, diminished sexual interest, among others.[10]

Bangladesh is a developing country, nephrology services are in the earlier stage of development. In this era, there is improvement in the awareness about kidney diseases in Bangladesh. There are only about 40 formally trained nephrologists for a population of 180 million (compared to the United States with more than 5000 nephrologists for a population of about 300 million) [11]. There are only 12 Government institute in Bangladesh where dialysis facility is present. Beside these there are some private institute developing in recent years but bothers high cost load. According to the Hospital Data, there are about 20,000 patients who are receiving dialysis in Bangladesh. Rangpur Medical college hospital is a tertiary level hospital in the northern part of Bangladesh where dialysis unit has been established in

2011.Now in this hospital total 16 dialyzer machine is working out of which 03 machines are dedicated for hepatitis B & C positive patient. A total of 114 CKD patients are enrolled in this hospital for dialysis from starting up to 30th June of 2013 out of which only 80 patients are currently on regular schedule. Among them 10 patients are irregular in respect to their need i.e. under dialyzed. Even most of the patients who receive dialysis are "under dialyzed" (about 75% get dialysis twice per week, 12.5% also get irregular dialysis). Under dialysis affects not only survival of the patients (1- to 2-year survival is 40.5%), but even quality of life (QOL) is also poor in these patients. Health-related QOL(HRQOL) represents the "physical, psychological, and social domains of health that are influenced by a person's experience, beliefs, expectations, and perceptions. We know that there are many factors that affect QOL of these patients.(13) Causes of CKD also affect QOL of the patient. Adequacy of dialysis, daily dialysis, financial capacity and transport facility all may affect QOL.[14]

Long term HD therapy often results in loss of freedom, dependence on family members, disruption of marital, social & family life, reduced financial income. In our setting it is estimated that about 75,000 Tk(BD) is needed only dialysis purpose. Private institute requires double cost than that of govt. institute. As hemodialysis therapy is expensive, patients often willingly do not follow the standard dialysis frequency, use of less costly dialyzers& most of them do not receive erythropoietin therapy at all. In overall, end-stage renal disease patients have to cope with many adversities, like physical symptoms, special diet schedules, changes in their body image while the outcome of treatment is not satisfactory. The concept of quality of life in chronic disease is a new thinking in Bangladesh. There are very few studies dealing with this topics & most of them are from developed countries. So, my interest on these topics to judge the feedback of HD patient not to be

satisfied by ourselves that the patient is getting appropriate treatment but also to see the patients view.

For many years scientists are working to measure the quality of life of human being .Their attempt shows tremendous need for this QoL in modern civilized world .QoL reflects every aspect of life especially psychological aspect which is solely related with many chronic diseases like CKD, coronary heart disease & diseases causing disability. In part of this development WHO has developed a WHOQOL group who has adopted a new instrument for measuring QoL by working in different centres in various countries, named WHOQOL-100 score. It contains about 276 questions with 06 domains .Very limited studies were done by this.[16,17,18]But the WHOQOL-100 score has very soon lost its expected popularity due to following reason: very clumsy, time consuming& definitely expensive.

After a while the WHOQOL group, for their convenience and in the interests of parsimony has developed the 26 item WHOQOL-Bref. It is short & easily interpretable. Now a days it is widely used to interpret QoL in health sector as well as many sociological perspectives. The international WHOQOL-Bref has been shown to have good psychometric properties and to provide a valid and reliable alternative to the WHOQOL-100. The WHOQOL-BREF is available in approximately 20 languages, including those of both developed and developing countries, and in Christian, Islamic, and Hindu culture settings, with several studies in developing countries having demonstrated its cross-cultural and content validity.(19,20,21) In Bangladesh, Izutsu et al. developed the Bangla version of the WHOQOL-BREF, showing it to be a valid and reliable assessment tool of QOL in an adolescent population.[15] Finally, it is very important to know the quality of life of chronic kidney disease patient on hemodialysis. Thus we can ensure a positive attitude towards HD treatment so that we can improve the overall quality of life in this group of people.

MATERIALS AND METHODS

This was an observational cross-sectional study, carried out in dialysis unit of Rangpur Medical college Hospital, Rangpur, Bangladesh. Chronic kidney disease patients on hemodialysis for at least 2 months duration, twice in a week, admitted between 1st January 2013 to 30th June 2013 in Rangpur Medical College Hospital, Rangpur were enrolled. Convenient purposive sampling procedure was used, the study objectives were explained to the patient/guardian of the patient and informed written consent was taken. Patients having malignancies, multiple organ system failure, major hearing impairment (inability to hear loud speech even with a hearing aid), any major surgical interventions in the previous three months and who did not give consent to take part in the study were excluded from the study. A total of 60 cases enrolled for the study. Thirty (30) apparently healthy individuals were taken as control from the caregivers of the patients.

Procedure of data collection and analysis

Each patient or attendant was directly interviewed & the data was collected via WHOQOL-BREF questionnaires (Bangla Version). After collection of data it was coded and checked manually. Data analysis was done according to the objectives of the study by using SPSS-17.0 (Statistical Program for Social Science) software program. Descriptive statistics were expressed as mean ± standard deviation for continuous variables and percentage for categorical variables. Statistical significance was set at a two-sided P-value of <0.05. The result of the clinical study and statistical analysis is presented in the form of text, table, bar and chart.

Operational definitions:

Chronic kidney disease (CKD) refers to an irreversible deterioration in renal function or evidence of renal damage for at least 03 months. According to the serum creatinine data in the study cohort, the estimated GFR (eGFR) was calculated using the Modification of Diet in Renal Disease four-variable equation.[22] CKD was identified & stages of CKD were originally defined by the US National Kidney Foundation Kidney Disease Quality Outcomes Initiative 2002. Hemodialysis patient means CKD patients who were on regular at least twice a week hemodialysis therapy. Hemodialysis means purification of blood by ultrafiltration in a dialyzer machine. Anxiety means emotion of anxiety, worrisome thoughts, avoidance behavior and the somatic symptoms of autonomic arousal. Depression means episodes of low mood & disinterest. Demographic and medical data including age, sex, marriage, education, religion, occupation, annual income, and co-morbidities were obtained from medical records and interviews with the patients. Regarding educational status primary means up to class V level, secondary means S.S.C & H.S.C level and graduate means university education. The designated level of income; low was <TK(BD)30,000 per year, middle was between TK 30001-180,000,which was approximately the average annual income of the general population in Bangladesh, whereas upper class was designated as annual income >Tk (BD)180,000. Cardiovascular disease was defined as a history of congestive heart failure, angina pectoris or myocardial infarction. Diabetes mellitus (DM) was defined as those with the history or on anti-diabetic medications. Definition of hypertension was those patients with blood pressure >140/90 mmHg or on anti-hypertensive medications.

Tools of Investigation:

The WHOQOL-BREF consisted of 2 global items, G1 for overall QOL and G2 for general health, and 26 items in the physical, psychological, social relations, and environment domains. Specifically, there were 7, 6, 4, and 9 items in the physical, psychological, social relations, and environment domains, respectively. Application method, reference time point, and item scoring were performed as described for the original WHOQOL-BREF. Four domains are defined for the WHOQOL-BREF, based on its 24 items: domain 1, physical health, is on activities of daily living, dependence on medicinal substances and medical aids, energy and fatigue, mobility, pain and discomfort, sleep and rest, and work capacity. Domain 2, psychological health, includes bodily image and appearance, negative feelings, positive feelings, self-esteem, spirituality, religion, personal beliefs, thinking, earning, memory, and concentration. Domain 3, social relationships, covers personal relationships, social support, and sexual activity. Domain 4, environment, assesses financial resources, freedom, physical safety and security, health and social care (accessibility and quality), home environment, opportunities for acquiring new information and skills, participation in and opportunities for recreation and leisure activities, physical environment (pollution, noise, traffic, and climate), and transport. The raw score of each domain was then transferred to standardized score of 4 to 20, in order to maintain uniformity in the scores. The method of inferring the score is available elsewhere. (21) Higher scores mean the better quality of life of patients. The QOL index of each domain and their associations with demographic factors were assessed.

Ethical implications:

Written, informed and voluntary consent was taken and confidentiality assurance was provided to those who agreed to participate in the study.

RESULTS

During the study period, 60 patients who fulfill the criteria & 30 healthy attendants had been studied. The mean age of the patients in our study was 40.63 (SD ±14.25) years with a range of 16 to 70 years & of control group was 32.03 ± 11.58 (mean ± SD) years with a range of 17 to 60 years. (Table I)

Table 1 Demographic characteristics of the studied subjects & Healthy control group

Variables	Hemodialysis group (n=60)	Healthy control group (n=30)
Age(Years)		
<30	18 (30%)	18 (60%)
31-60	38 (63.3%)	12 (40%)
>60	04 (4.70%)	00
Sex		
Male	38 (63.3%)	14 (46.7%)
Female	22 (36.7%)	16 (53.3%)
Marital status		
Married	52 (86.7%)	5 (16.7%)
Unmarried	8 (13.3%)	25 (83.3%)
Educational status		
Primary	23 (38.3%)	16 (53.3%)
Seconday	13 (21.7%)	07 (23.3%)
Graduate	20 (33.3%)	07 (23.3%)
Illeterate	04 (6.7%)	00
Occupation		
Farmer	07 (11.7%)	06 (20%)
Service holder	11(18.3%)	02 (6.7%)
Businessman	11 (18.3%)	07 (23.3%)
Housewife	19 (31.7%)	13 (43.3%)
Retired person	04 (6.7%)	00
Student	08 (13.3%)	02 (6.7%)

Comparison of WHOQOL-BREF QOL scores:

The scores in a WHOQOL-BREF scale range from 0 to 100. In hemodialysis group highest QOL score was observed in the

environmental domain (40.23 ±11.86) and lowest in social relationship domain (30.22±14.34). (Table II) Where as in the healthy subjects the QOL score was highest in social domain 82.66± 9.94 and lowest in psychological domain 78.19± 8.59. The overall QOL score in haemodialysis patient was 38.06±16.13 and in healthy subjects was 77.50±7.63 (p value 0.0001).

Table 2: WHOQOL-BREF scores of hemodialysis patients & healthy control group

Domains	group	Mean ±SD (QOL scores)	*p* value
Physical Domain:			
	HD(n=60)	35.89±11.68	0.0001
	HCG(n=30)	81.15±6.39	
Psychological Domain:			
	HD(n=60)	37.42±12.67	0.0001
	HCG(n=30)	78.19± 8.59	
Social Domain:			
	HD(n=60)	30.22±14.35	0.0001
	HCG(n=30)	82.66± 9.94	
Environmental Domain:			
	HD(n=60)	40.23±11.86	0.0001
	HCG(n=30)	81.67±6.02	
Overall QOL :			
	HD(n=60)	38.06±16.13	0.0001
	HCG(n=30)	77.50±7.63	

**P* value <0.05 is considered as statistically significant

SD: standard deviation, HD: Hemodialysis patient, HCG: Healthy control group

Effect of various demographic characteristics upon QOL:

Among the 60 CKD patient on hemodialysis, the female patient showed lower QOL score in psychological domain(35.23±10.10) & social domain (29.35±16.08) in comparison to male CKD patient(38.79±13.84 &31.16±13.52 respectively) (p <0.05) (Table III). Among patient of different educational status of the CKD

patient illiterate having over all QOL score 36.39 and in graduate patient QOL score 39.90.

Table 3: Association between Demographic variables & WHOQOL-BREF scores of Hemodialysis Patients

Variables	QOL Scores in WHOQOL Domains			
	PD	PSD	SD	ED
Sex:				
Male(n=38)	36.09±10.89	38.79±13.84	31,16 ± 13.51	39.75±10.82
Female(n=22)	36.20±12.6	35.23±10.10	29.35±16.08	41.62± 13,39
P- Value	<0.05	<0.05	< 0.05	<0.05
Educational status:				
Primary(n=23)	32.61±10.67	35.84±11.01	27.36±14.38	35.24±10.62
Secondary(n=13)	35.99±12.83	39.10±10.28	26.92±14.50	39.66±10.70
Graduate(n=20)	39.66±12.92	39.03±17.08	35.13±11.62	45.79±11.99
Illeterate(n=4)	35.72±2.91	34.37±5.24	31.25±23.93	44.25±14.39
P-Value (Illeterate Vs.Graduate)	<0.08	<0.05	<0.05	<0.05

QOL: quality of Life;
PD: Physical Domain;
PSD: Psychological Domain;
SD:Social Domain;
ED: Environmental Domain

DISCUSSION

This is the first report of quality of Life of patients on HD therapy in Bangladesh. Quality of life of patients on hemodialysis is poor as compared to attendance of them in all domains except for the environment domain. It means patients on hemodialysis have poor a QOL in physical health, psychological health, and social relationship domains than their attendance. Since attendance of the patients live with them in same socioeconomic conditions, availing same transport, sharing same home and physical environment, it is reasonable that they have the same level of QOL in the environment domain. Similar observation have been reported in other

studies comparing quality of life of CKD patient on hemodialysis with that of general healthy people.[23,24] One important thing is that majority of CKD patient in this study were economically poor. They had not enough economical security, even though they didn't show significantly lower QOL score in environmental domain than healthy control group. The hemodialysis patient were satisfied with the health care facilities in the hospital, also showed no significant difference with that of healthy group.

Educational qualifications have positive effect on QOL scores. Study population with higher educational status showed significantly higher QOL in all dimension of health. This observation is consistent with previous studies. [25] The role of economical security also showed better QOL in all domains. Another cause of this difference is that higher educated people have more income source, become financially capable of bearing the cost of dialysis. It also affects their psychological wellbeing & mental soundness. People with low economy show more depressive & other mental problem than others.

This study showed significantly lower scores in psychological & social domain in female patients than their male counterpart. The cause may be female patients were not the decision maker of their family& majority of them were not income generating person, being dependent upon family income. Another factor may be the cultural factors & biases regarding care & supervision of female patient. Other studies in different parts of world also showed same result in case of gender analysis of QOL. [26] Many of the CKD patients were dissatisfied with them & suffering from anxiety, depression, pessimistic feeling. Many of them thought themselves as burden of the family. This may be an important cause of lowered QOL in psychological domain of CKD patients than healthy people. The majority of study subject especially male were not satisfied in sexual life after initiation of hemodialysis.

Limitations of the present study:

1. The sample was relatively small.
2. Duration of dialysis couldn't be evaluated which may affect QOL of CKD patient.
3. Etiology of CKD couldn't be included in the present study.
4. Co-morbidity of patient was not included.

CONCLUSION:

Quality of life score of CKD patients on hemodialysis is significantly lower in comparison to healthy individual. Hemodialysis therapy affects negatively the quality of life of CKD patients.

Recommendations:

Proper counseling of the CKD patients should be done before dialysis.

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