

Quality of Life in Patients with Chronic Kidney Disease undergoing Maintenance Hemodialysis

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Article received: 9th February, 2022

Article accepted: 22nd March, 2022

ABSTRACT

Introduction: Quality of life (QOL) is an important parameter that needs to be considered when evaluating the experience of patients receiving health care. The study aims to describe the quality of life of patients with Chronic Kidney Disease (CKD) under maintenance hemodialysis (MHD).

Materials and methods: The study was descriptive, cross sectional involving 106 CKD patients undergoing maintenance hemodialysis for at least 2 months in the hemodialysis unit of Pokhara Academy of Health Science, Pokhara. Patients undergoing hemodialysis during the data collection period (March 2021 to August 2021) i.e. 106 were taken as sample. Patient aged less than 18 and more than 75 years were excluded. Data was collected by interview technique using SF-36 questionnaire and analyzed via SPSS version 21 and p-value < 0.05 were considered significant. Independent T-test, one way Anova were used for statistical analysis. The quality of life was determined by Physical Component Summary (PCS), Mental Component Summary (MCS) and overall quality of life.

Results: The overall quality of life was slightly above the average and physical component summary was better than mental component summary. The finding shows that there is statistically significant difference in age (p < 0.001), marital status (p = 0.002), duration of hemodialysis (p < 0.001) and education status (p < 0.001) with quality of life.

Conclusion: It was concluded that the overall quality of life was slightly above the average and physical component summary was better than mental component summary in the studied population.

Keywords: Chronic Kidney Disease (CKD); Maintenance Hemodialysis (MHD); Mental Component Summary (MCS); Physical Component Summary (PCS)



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INTRODUCTION

Chronic kidney disease (CKD) is diagnosed when glomerular filtration rate is $< 15.0\text{ml}/\text{min}/1.73\text{m}^2$. CKD has become one of the major medical problems worldwide, which can seriously affect quality of life (QOL). Health-Related QOL represents the physical, psychological, and social domains of health that are influenced by a person's experience, beliefs, expectations, and perceptions. QOL has become an important indicator of health care, patient's experience, and measure of effectiveness of treatment in various chronic diseases.^{1,2,3,4} The assessment of QOL becomes mandatory as an outcome measure in the evaluation of adverse events and treatment effectiveness in various conditions such as end-stage renal disease (ESRD), cardiovascular disease, malignancy, chronic obstructive pulmonary disease, and human immunodeficiency virus infection.^{5,6} Moreover, patients with CKD may experience a negative impact on their QOL, which comes from the anxiety that can appear before and during the treatment.⁷ Although no consensus exists between experts in defining QOL, there is a general agreement that in CKD patients, particularly in those receiving dialysis, QOL most commonly affects the physical domains (e.g., physical abilities and vitality) and least commonly affects the mental functioning (e.g., mental, behavioral, and psychological health) and social health.⁸

Chronic renal disease is one of the developing issues throughout the world. Health-related quality of life is a disregarded part of chronic kidney disease care. Alongside survival, quality of life is an important marker of effectiveness of the medical care that patients get. The aim of the study is to explore the quality of life of patients with stage 5 CKD undergoing maintenance hemodialysis.

MATERIALS AND METHODS

The study was a descriptive, cross-sectional study carried out from March 2021 to August 2021 among CKD patients attending hemodialysis unit of Pokhara Academy of Health Sciences (PoAHS), Pokhara who were under maintenance hemodialysis for at least 2 months. Patients undergoing hemodialysis during that period i.e., 106 were taken as sample. Patients aged less than 18 and more than 75 years were excluded. Ethical approval for study was taken from the Institutional Review Committee of PoAHS. All respondents were informed briefly regarding objectives of the study and verbal and written informed consent was taken from them. Strict confidentiality of their identities was reassured. Voluntary participation of respondents was ensured with the choice to withdraw any time without fear and clarification. Data were collected from 106 respondents using standard tool (SF-36 questionnaire), who came for hemodialysis service, using interview schedule in the separate room i.e., extra counseling room after completion of their hemodialysis services, considering their convenient time. Data was analyzed using SPSS version 21 and $p\text{-value} < 0.05$ was considered significant. Independent T-test and one way Anova were used for statistical analysis. The quality of life was determined by Physical Component Summary (PCS), Mental Component Summary (MCS) and overall quality of life. The higher the score of the domain, the better is the quality of life. The SF 36 includes 36 questions in eight domains which included physical functioning, bodily pain, physical role limitation, emotional role limitation, social functioning, vitality, mental health and general health.⁹ The eight domains provide two summary measure of health-related quality of life; Physical Component Summary (PCS) and Mental Component Summary (MCS).¹⁰

RESULTS

Table 1: Sociodemographic and Clinical Characteristics of CKD Patients n=106

Socio demographic Characteristics	Frequency	Percentage (%)
Age group in years		
20-39	35	33.0
40-59	48	45.3
≥ 60	23	21.7
Gender		
Male	73	68.9
Female	33	31.1
Employment Status		
Employed	17	16.0
Unemployed	89	84.0
Educational Status		
Illiterate	12	11.3
Primary or less	53	50.0
Secondary or more	41	38.7
Type of Family		
Nuclear	59	55.7
Joint	47	44.3
Duration of hemodialysis		
< 8 months	4	3.8
8-24months	32	30.2
25-32 months	6	5.7
≥ 33 months	64	60.4
Comorbidity (Hypertension)		
Present	98	92.4
Absent	8	7.6
Comorbidity (DM)		
Present	18	16.9
Absent	88	83.1

Mean Age 47.50 ± 13.57 SD

The sociodemographic characteristics were described in terms of age, gender, employment status, educational status, family types whereas duration of hemodialysis, presence of comorbidities were included in clinical characteristics. Mean age of patients was 47.50 (± 13.57) with more than half being males (68.9%). Among them majority belonged to following characteristics: nuclear family (55.7%), married (87.7%), unemployed (84%) and had basic level education (53%). More than sixty

percent of CKD patient were under maintenance hemodialysis for more than 33 months.

Table 2: Mean Score of Various Components and Overall Quality of Life n=106

Quality Of life	Mean Score	S.E	95% CI	Min	Max
Physical Dimension (PCS)	56.1	1.7	(52.4,59.7)	10.62	83.1
Mental Dimension(MCS)	54.4	1.8	(50.6,58.1)	9.63	87.0
Overall QOL	53.2	1.6	(49.9, 56.6)	12.8	80.1

CI: Confidence Interval, SE: Standard Error

Out of 106 CKD patients under MHD, the mean score of overall Quality of life was 53.2 with score ranges from 12.8 to 80.1. Among two dimensions of Quality of life, physical dimension had higher mean score of 56.1 than that of mental dimension (54.4).

Table3:Socio-demographic(PhysicalComponent Summary) and Clinical Characteristics of Patients =106

Characteristics	No.	Mean Score	CI (95%)	Statistic Value	p-value
Age group (in years)					
20-39	35	64.7	(61.7,67.8)	6.66 [^]	0.002*
40-59	48	53.1	(47.7,58.4)		
≥ 60 above	23	49.2	(38.6,59.9)		
Gender					
Male	73	54.8	(-3.62, 11.7)	3.6 [#]	0.29
Female	33	58.9			
Marital Status					
Married	93	54.2	(-26.2, -5.26)	6.53 [#]	0.012*
Unmarried	13	69.9			
Duration of Haemodialysis					
< 8 months	4	66.8	(66.2,66.6)	21.31 [^]	<.0001*
8-24 months	32	72.1	(68.2,76.1)		
25-32 months	6	37.7	(37.2,38.0)		
≥ 33 months	64	49.1	(44.9,53.4)		
Educational Status					
Illiterate	12	48.6	(32.9,64.3)	6.93 [^]	<0.001*
Primary or less	53	51.7	(46.6,56.8)		
Secondary or above	41	64.0	(59.7,68.2)		
Employment Status					
Employed	17	62.5	(-1.97, 17.3)	0.052 [#]	0.118
Unemployed	89	54.9			

[^] = One way ANOVA, [#] = Independent t- test, * = Significant at < 0.05, CI.: Confidence Interval

Table 4: Socio-demographic (Mental Component Summary) and Clinical Characteristics of Patients n=106

Characteristics	No.	Mean Score	CI (95%)	Statistic Value	p-value
Age group (in years)					
20-39	35	64.9	(59.9,70.0)	9.453 [^]	<0.0001*
40-59	48	48.1	(42.9,53.2)		
≥ 60 above	23	51.4	(41.9,60.8)		
Gender					
Male	73	55.5	(-6.32, 9.75)	3.54 [#]	0.67
Female	33	53.8			
Marital Status					
Married	93	52.2	(-28.1, -6.42)	.026 [#]	0.002*
Unmarried	13	69.5			
Duration of Haemodialysis					
< 8 months	4	85.1	(85.0,85.2)	37.9 [^]	<.0001*
8-24 months	32	71.9	(68.3,75.6)		
25-32 months	6	40.7	(37.05,44.3)		
≥ 33 months	64	44.9	(41.0,48.0)		
Educational Status					
Illiterate	12	49.9	(36.2,63.5)	16.82 [^]	<.0001*
Primary or less	53	46.2	(41.5,50.9)		
Secondary or above	41	66.2	(61.5,71.0)		
Employment Status					
Employed	17	64.6	(2.32,22.05)	.002 [#]	0.16
Unemployed	89	52.4			

[^] = One way ANOVA, [#] = Independent t- test, ^{*} = Significant at < 0.05

Table 5: Overall Quality of Life of Patients n=106

Characteristics	No.	Mean Score	CI (95%)	Statistic Value	p-value
Age group (in years)					
20-39	35	62.4	(58.7,66.1)	8.247 [^]	<0.0001*
40-59	48	49.1	(44.2,54.0)		
≥ 60 above	23	48.2	(38.6,57.3)		
Gender					
Male	73	52.3	(-4.12,	2.176 [#]	0.39
Female	33	55.4	10.36)		
Marital Status					
Married	93	51.36	(-25.5, -5.97)	2.710 [#]	0.002*
Unmarried	13	67.13			
Duration of Hemodialysis					
< 8 months	4	73.1	(73.1,73.3)	26.7 [^]	<0.0001*
8-24 months	32	68.5	(65.2,71.9)		
25-32 months	6	38.5	(38.0,38.5)		
≥ 33 months	64	45.7	(41.9,49.6)		
Educational Status					
Illiterate	12	46.3	(32.5,60.1)	11.71 [^]	<0.0001*
Primary or less	53	47.6	(43.1,52.1)		
Secondary or above	41	62.6	(58.5,66.7)		
Employment Status					
Employed	17	60.4	(-0.48, 17.5)	0.178 [#]	0.063
Unemployed	89	51.9			

[^] = One way ANOVA, [#] = Independent t- test, ^{*} = Significant at < 0.05

Table 3, 4 and 5 reveal statistical significant differences in PCS, MCS and overall quality of life score of CKD patients in terms of age, education status, marital status, duration of hemodialysis. However, no significant difference was found in terms of gender and employment status.

DISCUSSION

This study reveals quality mean score of PCS to be 56.13 and that for MCS to be 54.0. The mental domain was found to be bit affected than the physical domain which might be due to the diagnosis of chronic kidney failure along with need of continuous lifelong MHD. In the study carried out by Joshi et al & Ghimire S et al, using SF-36 tool, mean score of mental domain was high than that of physical domain among MHD Patients.^{11,12}

In this study, it shows that lower the age of the CKD patient under maintenance hemodialysis, higher the mean score of the overall quality of life of the patient in the both physical and mental dimension. With the increasing age there are increasing health hazards because of physiological and functional changes. Several studies support this finding. These findings were in contrast to the results of Greene¹³ who used the same tool and observed that increasing age was associated with higher values of some of the QOL scores. They suggested that elderly patients have a greater level of comfort with their health and social life.

No significant difference was found in PCS and MCS score of QOL among gender in this study. These results were in agreement with the study of Saad et al.¹⁴ However, several other studies have observed a significant influence of gender on QOL. Sayin et al¹⁵ found that males have worse QOL than females. It could be because of the differences in the biological factors and biases in the provision of care, as female patients get more support from

their families, and they are not the main source for income for their families.

There was a statistically significant difference in PCS and MCS among education level group. Likewise, many studies revealed consistent findings with the present study. The individual with higher education might allow deep understanding of the disease and compliance to the therapeutic regimen.^{16,17}

Likewise, the difference in the mean score of domains of PCS and MCS and overall quality of life with regard to marital status and duration of receiving hemodialysis treatment were found to be statistically significant. The finding of increased duration of dialysis and reduction of quality of life is consistent with Seica et al.¹⁸

In this study no significant differences ($p > 0.05$) were observed in employment status with the PCS, MCS and quality of life of the CKD patients who were undergoing MHD. These study findings are consistent with the results of one study that reported a positive correlation between QOL scores and total family income.¹⁹ This is because higher income would lead to better self-esteem, feeling of satisfaction, and less worry about the future, all of which result in better QOL.

CONCLUSION

The finding of the study concluded that the overall quality of life is slightly above the average and physical component summary was better than mental component summary. Quality of life of CKD patient under hemodialysis is comparatively high among educated, younger, married and those having MHD for shorter period.

Limitation of the study

The study was cross-sectional, thus not allowing the causal relation between quality of life and sociodemographic and clinical variables. It was conducted in only one setting. Hence, the findings cannot be generalized. Because of the use of

convenience sampling technique, it may have resulted in bias interpretation of the results and conclusion.

Conflict of interest: None

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