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Adherence to hemodialysis and factors affecting Quality of life (QOL) among End Stage Renal Disease (ESRD) patients

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Abstract

Introduction: End-stage renal disease (ESRD) is becoming a global health problem for everyone and it has two main leading causes Hypertension and Diabetes Mellitus. The main treatments for ESRD are hemodialysis, renal transplant and conservative treatment. There were lot many factors that directly affect the Quality of Life (QOL) of ESRD patients and non-adherence to the regimen as missed hemodialysis sessions was a sign of poor compliance. The present study aimed to assess the adherence to hemodialysis & factors affecting QOL among patients with ESRD

Method: A quantitative research approach and descriptive research design were used to conduct with 116 ESRD patients, purposive sampling technique was used and the study data was collected by interview method by administering three tools i.e. Sociodemographic data, a structured questionnaire on adherence to hemodialysis and standardized WHOQOL-BREF for assessing QOL.

Result: The findings suggested that 87.1% of ESRD patients didn't miss their hemodialysis session/treatment. The mean and standard deviation of the Physical Health domain of QOL was computed as (45.24 ±17.901) which was lowest among other three domains as psychological domain, Social Relationship and environmental domain.

Physical domain of QOL with age in years (P=0.006), gender (P =0.018) and psychological domain of QOL with gender (P =0.031) were significant at the level of (P<0.05).

Conclusion: It was concluded that patients adhered to hemodialysis treatment but their quality of life was poor in the physical domain.

Keywords: Hemodialysis, Renal Disease, Quality of life, Real failure.

INTRODUCTION

Chronic Kidney Disease (CKD) or End Stage Renal Disease (ESRD) is becoming a global health problem for everyone. Globally the approximated prevalence rate of CKD was found as 13.4 % (11.7-15.1%) in the year 2019 and patients with ESRD require renal replacement therapy was estimated at 4.902 and 7.083 million.[1] The two main causes of CKD are Diabetes Mellitus and Hypertension.[2] The main treatment of CKD are hemodialysis, renal transplant and conservative treatment.[3] Chan et.al (2014) concluded that poor adherence to hemodialysis works as a blockage in achieving a better health outcome.[4]

Hemodialysis is a better option for leading life in ESRD patients but long term hemodialysis affect other aspects of life as financial issue, health dependency on family and health care worker, negative impact on marital life, avoiding social gatherings etc. which directly or indirectly affects the quality of life of the patient and their family members that is why Quality of life (QOL) of ESRD patient become an important parameter for their family and health care professionals.[5] According to a cross-sectional study conducted by **Subedi et.al (2017)** in Nepal to evaluate the quality of life of hemodialysis patients. It concluded that the overall quality of ESRD patients were low in all four domains.[6] The researcher observed and found that cases of ESRD multiplied due to many causes but hypertension and diabetes were commonest among them and a lot of factors affected the quality of life but non-adherence to hemodialysis was one of the major factors.

MATERIALS AND METHODS

Study Design and Participants

A descriptive study was adopted to assess the adherence to hemodialysis and factors affecting Quality of life among End Stage Renal Disease patients in a selected Hospital, Dehradun, Uttarakhand. A total of 116 ESRD patients who were on hemodialysis were selected on the basis of inclusion criteria i.e. samples should be above eighteen years of age, they should be on hemodialysis treatment for more than three months, their presence is must at the time of data collection and they should be able to understand and speak Hindi language. Samples excluded those who were critically ill or unconscious, suffering from mental illness and Children on hemodialysis.

Sample Size

Total 116 ESRD patients were selected using purposive sampling technique and on the basis of inclusion criteria.

Study Tool

Tools were developed after thorough research studies, opinion and suggestions from experts were implemented. Total three tools were used in the present study i.e. Socio Demographic variable, structured adherence questionnaire on hemodialysis and WHOQOL-BREF Standardized Tool.

Data collection and analysis

Administrative permission was taken from Principal, Medical Superintendent and HOD Nephrology Department. A written informed consent was received from every participant of the research and the information was collected by one-to-one interview method. After checking completeness and consistency data was entered in SPSS. It was then described by using descriptive statistics of mean, standard deviation, frequency and percentage. Univariate analysis was carried out using the Chi-square test and $p<0.05$ was considered to be statistically significant.

Ethical Issues

Ethical approval was obtained from Ethics Committee, Swami Rama Himalayan University.

RESULTS Adherence to hemodialysis among patient with End Stage Renal Disease (n=116)

Table 1 Indicated that more than half of participants 66(56.9%) followed prescribed frequency of hemodialysis per week i.e. twice in a week and 110(94.8%) attended duration of hemodialysis per session 4 hours. Most of the participants 82(70.7%) found hemodialysis highly important for them and 111(95.7%) of them got the information of hemodialysis importance when they started receiving treatment. Less than half of the participants 44(37.9%) said they faced a little difficulty in entire hemodialysis and 101(87%) of participants didn't miss their hemodialysis treatment in last one month. More than half of participants 64(55.2%) didn't shortened their hemodialysis time during last one month.

Table 1: Frequency and percentage distribution of adherence to hemodialysis among patient with End Stage Renal Disease. (n=116)

Adherence Variables		**f**	**%**
Prescribed frequency of Hemodialysis per week	Once a week	3	2.6
	Twice in a week	**66**	**56.9**
	Thrice in week	47	40.5
Duration of Hemodialysis per session	3 Hrs	1	0.9
	3.5 Hrs	5	4.3
	4 Hrs	**110**	**94.8**
How important do you think to follow your HD schedule?	Highly Important	**82**	**70.7**
	Very Important	26	22.4
	Moderately Important	8	6.9
When you got the information about importance of hemodialysis by your health care professional.	Never	5	4.3
	When I started receiving treatment (HD)	**111**	**95.7**
How much difficulty you face while staying in entire hemodialysis session?	No Difficulty	23	19.8
	A little Difficulty	**44**	**37.9**
	Moderate Difficulty	34	29.3
	A lot of Difficulty	13	11.2
	Extreme Difficulty	2	1.7
How many hemodialysis treatments did you missed during last month?	None	**101**	**87.1**
	Missed 1 dialysis treatment	13	11.2

	Missed 2 dialysis treatment	1	0.9
	Missed 3 dialysis treatment	1	0.9
How many times you have shortened your hemodialysis time during last one month?	Not applicable as I have not shortened my dialysis time	**64**	**55.2**
	Once	22	19.0
	Twice	17	14.7
	Three Times	6	5.1
	Four to Five Times	7	6.0
During last one month, when your hemodialysis treatment was shortened, then what was the average number of minutes?	Not applicable as I have not shortened my dialysis time	**64**	**55.2**
	Less than 10 minutes or 10 minutes	11	9.5
	11 to 20 minutes	10	8.6
	21 to 30 minutes	31	26.7
What was the reason for shortening of hemodialysis treatment?	Not Applicable as I have not shortened my dialysis time	**64**	**55.2**
	Cramping	10	8.6
	Low blood pressure	18	15.5

	Pain	1	0.9
	Restlessness	3	2.6
	Any other	20	17.2

Mean Score and Standard Deviation of Domains of the WHOQOL-BREF. (n=116*)*

Result revealed that Physical Domain (45.24 ±17.901) indicated poor quality of life whereas psychological domain (56.62 ±16.075), social domain (69.95 ± 16.969) and environmental domain (66.52 ±9.770) showed good quality of life.

Physical Domain of QOL of patient with ESRD with their socio demographic variables (n=116)

Table 2 Showed significant association between factors affecting quality of life (Physical Domain) with sociodemographic variables i.e. age in years (p=0.006) and gender (p=0.018) at the level $p < 0.05$.

Table 2. Association between Physical Domain of QOL of patient with ESRD with their socio demographic variables

Socio-demographic characteristics		**Median ≤ 44**	**Median >44**	**chi square**	**df**	**p-Value**
Age in years	22-42	19	27	10.091	2	**0.006***
	43-62	28	20			
	63-82	18	4			
Gender	Male	36	39	5.560	1	**0.018***
	Female	29	12			
Marital Status	Married	58	41	1.785	1	0.182

	Unmarried	7	10			
Education	Educated	50	46	3.528	1	0.060
	Uneducated	15	5			
Occupation	Employed	27	30	3.416	1	0.065
	Unemployed	38	21			
Type of family	Joint	47	36	0.042	1	0.839
	Nuclear	18	15			
Place of Living	Urban	13	10	0.934	2	0.627
	Semi Urban	39	27			
	Rural	13	14			
Income per month in rupees	Income ≤35000	52	42	0.103	1	0.748
	Income> 35000	13	9			
Suffering from ESRD since and on hemodialysis treatment	Suffering from ESRD and HD Treatment ≤ 5 Years	37	34	1.143	1	0.285
	Suffering from ESRD and HD	28	17			
	Treatment > 5 Years					
Mode of Payment	Ayushman	57	49	1.598	1	0.206

	ECHS	8	2			
Mode of Transport	Self-Conveyance	28	28	1.752	2	0.416
	Private	29	17			
	By walk	8	6			
Distance from Dialysis Center	Distance ≤ 50 Km	56	40	1.194	1	0.274
	Distance > 50 Km	9	11			

***p < 0.05**

Association of Psychological Domain, QOL of patient with ESRD with their sociodemographic variables (n=116)

Table 3 Showed significant association between factors affecting the quality of life (Psychological Domain) with sociodemographic variables i.e. gender (p=0.031) at the level p< 0.05.

Table 3. Association between Psychological Domain of QOL of patient with ESRD with their socio demographic variables

Socio-demographic characteristics		**Median ≤56**	**Median >56**	**chi square**	**df**	**p-Value**
Age in years	22-42	24	22	0.672	2	0.715
	43-62	29	19			
	63-82	12	10			
Gender	Male	36	39	4.676	1	**0.031***
	Female	29	12			
Marital Status	Married	57	42	0.294	1	0.587
	Unmarried	8	9			

Education	Educated	51	45	1.290	1	0.256
	Uneducated	14	6			
Occupation	Employed	29	28	0.833	1	0.361
	Unemployed	36	23			
Type of family	Joint	47	36	0.42	1	0.839
	Nuclear	18	15			
Place of Living	Urban	11	12	3.123	2	0.210
	Semi Urban	35	31			
	Rural	19	8			
Income per month in rupees	Income ≤35000	53	41	0.241	1	0.876
	Income> 35000	12	10			
Suffering from ESRD since and on hemodialysis treatment	Suffering from ESRD and HD Treatment ≤ 5 Years	39	32	0.012	1	0.913
	Suffering from ESRD and HD Treatment > 5 Years	26	19			
Mode of Payment	Ayushman	57	49	1.598	1	0.206

	ECHS	8	2	**$**		
Mode of Transport	Self-Conveyance	27	29	4.005	2	0.135
	Private	31	15			
	By walk	7	7			
Distance from Dialysis Center	Distance ≤ 50 Km	52	44	0.410	1	0.522
	Distance > 50 Km	53	7			

Note: Symbol denotes $ Yates correction

***p < 0.05**

Result revealed a significant association between factors affecting the quality of life (Psychological Domain) with sociodemographic variables i.e. gender (p=0.031) at the level p<0.05.

There was no significant association found between factors affecting quality of life (Environmental and Social Domain) with their sociodemographic variables at level of p< 0.05.

DISCUSSION

Findings of the conducted study were discussed with the references of the objectives and statistical analysis and findings of the others researchers done on same field. Total 116 samples were chosen through purposive sampling method. Data was collected in regard of selected variables, structured adherence questionnaire and standardized tool of WHOQOL-BREF. In the present study result showed that less than half of the participants 48 (41.4%) were from age group of 43 to 62 years and majority of participants 75 (64.7%) were male. A maximum number of participants 99 (85.3%) of them were married and majority 83(71.6%) of participants belongs to joint family. More than

half of participants 75 (64.65%) were having Hypertension as their comorbidity. The findings were consistent with a study conducted on adherence to hemodialysis in Greece by Alikari V et al. which revealed that mean age of the participants were 56. 5 years and 65.7 % of them were male. More than half 55.4% were married and majority 84% were living with their family and as a co-existing disease maximum (26.5%) were having Hypertension[7]

In our study duration of hemodialysis per session was 4 hours in majority of the participants 110(94.8%). Majority of participants 82(70.7%) responded that it is highly important to them to follow their dialysis schedule.Less than half of the participants 44(37.9%) responded that they faced a little difficulty while staying in entire hemodialysis session. For the missed hemodialysis treatment in the last one month majority 101(87.1%) participants had not missed any session. Majority 64(55.2%) of participants had shortened their hemodialysis time in last one month. A similar research study was conducted by Mukakarangwa MC, Chironda G, Nkurunziza A, Ngendahayo F, Bhengu B , in Kigali City of Rwanda related to adherence to hemodialysis. Result revealed that 100% of participants were on hemodialysis with timing of 4 hours in each session. Majority 83% of participants accepted that dialysis schedule is important for them. Twenty seven percent of participants responded that they faced little difficulty while staying for entire dialysis session. Maximum 61% of participants responded that they didn't miss their dialysis session during last month. Maximum 95% of participants stated that they didn't shorten their dialysis schedule during last month.[8]

In present research findings suggest that scoring of Environmental domains was (66.52 ±9.770) and Psychological Domain was (56.62 ±16.075). Quality of life amongst the Physical domain was lowest (45.24 ±17.901). These findings were consistent with a study conducted by Utsav Joshi which showed the highest scored value for quality of life was in environmental domain (53.17 ±15.59) followed by psychological domain (51.23• ± 18.61) and quality of life was scored lowest in physical domain (45.93±16.90). [6]

The findings of present research also revealed significant association among factors affecting quality of life of Physical Domain with sociodemographic variables i.e. age in years ($p=0.006$) and gender ($p=0.018$) at the level $p<0.05$. Results of similar research were consisted with the study

conducted by Ravindran A (2020). It showed statistically significant relationship between various age groups with different domains specially with physical domain (p=0.001)[9].

The main limitation to this study was its sampling technique. Random Sampling technique could be used in this study but the patients were not following same scheduling of hemodialysis as per their shifts of morning, afternoon and evening. It is recommended to conduct an interventional and comparative study in a large group of ESRD patients across different hemodialysis centers to understand the exact factors affecting quality of life and how one can improve it[10,11].

CONCLUSION

The present study showed that patients were adhered to hemodialysis treatment and but their quality of life was poor in physical domain and good in other three domains i.e. psychological domain, social domain and environmental domain. Addressing these factors comprehensively through tailored interventions and support mechanisms is essential for improving treatment adherence and enhancing the overall QOL of ESRD patients undergoing hemodialysis. Healthcare providers should adopt a holistic approach that encompasses not only medical management but also psychosocial support, patient education, and lifestyle modifications to optimize treatment outcomes and promote a better QOL for ESRD patients. Further research is warranted to explore additional determinants of adherence and QOL and to develop more effective strategies for intervention and support in this vulnerable patient population.

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