Original Article

Disease Specific Quality of Life, Quality of Sleep and Sleep Hygiene among Patients with End Stage Renal Disease Undergoing Hemodialysis

Anju Suresh[1], Shirley prakash[2], J. Gladys[3], Tintu C Francis[4]

Abstract

End-stage renal disease is a chronic ailment that has a severe negative impact on the health related quality of life of patients.

Aim: of the study is to Assess the Disease Specific Quality of Life, Quality of Sleep and sleep hygiene among patients with ESRD undergoing Haemodialysis. Descriptive research design was used and it was done among 60 samples selected by purposive sampling technique at dialysis departments of selected hospitals, Thrissur. The study tools are a predesigned questionnaire; Kidney disease Quality of Life-36 item (KDQoL-36) survey tool; Sleep quality scale (SQS); and a structured statement. Descriptive (frequency, mean, percentage, standard deviation) and inferential (Karl Pearson correlation coefficient, Chi-square) statistics were used.

Result: Majority of the subjects responded to have an average disease specific QoL. About 70% of the subjects have good sleep quality and 83.3% did not practice basic sleep hygiene. The MCS subscales and Symptoms and problem subscales of KDQoL- 36 items had a significant positive correlation with quality of sleep at p≤0.05. Where as no significant correlation between sleep hygiene and the subscales of KDQoL-36 items survey tool and as well as between the quality of sleep. A significant association was found between MCS subscale with the education and type of family; Burden of Kidney disease subscale with education; Effect of kidney disease on their daily life subscale with type of family; sleep hygiene with age and gender.

Conclusion: Health workers have a major role in improving the Disease specific Quality of Life, Quality of sleep and sleep hygiene among patients, to promote a positive treatment outcome.

Keywords: Disease specific quality of life; Sleep hygiene; Quality of sleep; End stage renal disease; Hemodialysis.

Author's Affiliation: [1]M.Sc Nursing Student, [2]Principal, [3]Vice Principal, [4]Associate Professor, West Fort College of Nursing, Kerala University of Health Sciences, Thrissur, Kerala 680581, India.

Corresponding Author: Anju Suresh, M.Sc Nursing Student, West Fort College of Nursing, Kerala University of Health Sciences, Thrissur, Kerala 680581, India.

E-mail: anjus6300@gmail.com

INTRODUCTION

End stage renal disease [ESRD] is characterised by near or total and permanent kidney failure that necessitates Renal Replacement Treatment [RRT] through dialysis or transplantation to compensate insufficient kidney function.[1] ESRD has become a substantial concern in health care settings over

the last decade, affecting around 1 billion people.[2] A significant number of screening programmes undertaken in high income countries revealed that prevalence of CKD in the general adult population is 10-13%.[3] In 2018, 1,31,779 individuals were started on ESRD treatment, and 1,27,925 were started on dialysis.[2] QOL is an overall assessment of a person's well being that includes physical, emotional, social characteristics, as well as sexual function and self-perceived health status. ESRD is a chronic condition that has a significant negative impact on patients' HRQOL, owing to an impairment or limitation in all aspects of their daily lives.[4] Sleep is a basic human requirement that consumes one-third of one's lifetime.[5] poor QOL is frequent in chronic HD patients hence it was closely connected with an increased risk of death and hospitalisation.[6] Sleep disorders disrupting body's circadian rhythms might cause sleep issues.[7] The prevalence of sleep disturbances in HD patients will intensify individual and social problems.[5]

According to recent data from the Indian Council of Medical Research, the prevalence of diabetes in the Indian adult population has risen to 7.1% and 28% in rural and urban areas, respectively, and the prevalence of hypertension in the adult population has risen to 14.8% and 21.4% in rural and urban areas, respectively. The prevalence of CKD is projected to rise in India as the prevalence of these diseases rises.[8] In 2018 a systematic study of *Medline* data conducted to assess the prevalence of CKD. It includes total of 26 studies. According to the study findings, the median prevalence of CKD was 7.2% in people aged 30 or older, and the prevalence of CKD in people aged 64 or older ranged from 23.4% to 35.8%.[9]

Sleep disorders which are highly prevalent in HD patients may intensify their individual and social problems. Despite many investigations on the prevalence of sleep disorders in HD patients and the associated factors, interventional approaches to improve sleep quality in HD patients have been explored much less frequently.[5] A cross-sectional study conducted among 88 chronic HD patients at the Urology and Nephrology Centre, Egypt, over a 4-month period in 2022 with the goal of assessing the prevalence of sleep disturbances among hemodialysis patients. The prevalence of sleep disorders in HD patients was 79.5%, with insomnia (65.9%) being the most frequent sleep abnormality, followed by RLS (42%), OSAS (31.8%), snoring (27.3%), EDS (27.3%), narcolepsy (15.9%), and sleep walking (3.4%).[10]

Sleep hygiene refers to those behaviours that are thought to promote quality of sleep. The prevalence of sleep disturbances in HD patients will intensify individual and social problems.[5] There are numerous factors that influence HD patients' sleep habits, including therapeutic, psychological, and disease related aspects that have a direct impact on their QOL.[11] A randomised control trial done on 2021 with 67 hemodialysis patients to examine the effect of sleep hygiene on sleep quality and quality of life in hemodialysis patients. The study found that sleep hygiene training improves sleep quality and quality of life in hemodialysis patients.[12]

The nephrology team should focus in assessing the QoL as well as Quality of sleep of renal patients as both has a remarkable role in the prognosis of the disease. During the investigator's clinical experience in the dialysis unit, sleep difficulties were reported by some patients. Assessing and managing sleep quality would be a crucial component of providing treatment to HD patients in order to improve their QOL. As well as awareness of sleep quality, sleep hygiene, and QOL are critical variables in making clinical decisions and preventing further complications. Hence the investigator attempted to assess the Disease specific Quality, Quality of sleep and sleep hygiene in ESRD patients undergoing HD.

Statement of the problem

A study to assess the Disease Specific Quality of Life, Quality of Sleep and Sleep Hygiene among patients with End Stage Renal Disease undergoing hemodialysis at selected hospitals, Thrissur.

Objectives

- Assess the Disease Specific Quality of Life, Quality of Sleep and Sleep Hygiene among patients undergoing hemodialysis.
- Correlate Disease Specific Quality of Life, Quality of Sleep and Sleep Hygiene among patients undergoing hemodialysis.
- Associate Disease specific Quality of Life, Quality of Sleep and Sleep Hygiene with selected demographic variables among patients undergoing hemodialysis.

Conceptual Framework

The conceptual framework adopted in the study is Pender's Health Promotion Model. It was developed by Nola J Pender in the year 1982 and lately revised in 2002. According to the model each person has unique personal characteristics and experiences that affect subsequent actions. The set of variables for behavioural specific knowledge and effect have important motivational significance.

Anju Suresh, Shirley prakash, J.Gladys, *et al.*/Disease Specific Quality of Life, Quality of Sleep and Sleep Hygiene Among Patients with End Stage Renal Disease Undergoing Hemodialysis

55

These variables can be modified through nursing actions. Health promoting behaviour is the desired behavioural outcome and is the end point in the Health Promotion Model. Health promoting behaviours should result in improved health, enhanced functional ability, and better quality of life at all development stages. The final behavioural demand is also influenced by the immediate competing demand and preferences, which can derail intended health promoting actions.

MATERIALS AND METHODS

A quantitative descriptive research design conducted among 60 patients with ESRD undergoing hemodialys is at selected hospitals, Thrissur, Kerala to assess the disease specific quality of life, quality of sleep and sleep hygiene among patients with ESRD undergoing hemodialysis. The samples were selected using purposive sampling technique. Patients between the age group 30-55 from both genders diagnosed with ESRD, who have the disease for more than 3 months and willing to participate included in the study. Patients using sleep inducing medications, having cognitive impairment, dementia, active psychosis and other chronic diseases like cancer, liver disorders, cardiac disorders and who are unable to read Malayalam or English were excluded from the study.

The data were collected using four tools which includes *Section 1:* Structured Questionnaire to elicit the socio demographic data of the study subjects it has 9 items which include are age, gender, marital status, education, type of family, dietary pattern, occupation, family income, duration of ESRD, *Section 2:* kidney Disease Quality of Life (KDQOL) 36 item survey tool is used to assess the Disease specific quality of life of the study subjects, The entire tool was divided in to 5 subscales such as Physical Component Summary (PCS) and Mental Component Summary (MCS): 12 items - Q1-12, Burden of Kidney Disease: 4 items Q13-16, Symptoms and Problems: 12 items – Q17- 28, Effects of Kidney Disease on Daily Life: 08 items – Q29-36. The study subjects are expected to respond to the 36 statements mentioned under the subscales. The levels were assessed as either Above average, Average, below average. *Section 3:* Sleep Quality Scale (SQS)used to assess the quality of sleep of the study subjects, it has 28 items and the Scoring was done by using a four points Likert scale. The study subjects have to respond the frequency of sleep behaviours during the previous one month(0="few,"1= "sometimes," 2 = "often," and 3

= "almost always. Total scores can range from 0 to 84, and *Section 4:* A Structured statements to assess the sleep hygiene of the study subjects. it has 12 statements which enquired about the sleep hygiene followed by the study subjects through out the day. The subjects are expected to express their habits as 'Yes' or 'No'. The maximum score is 1 and the total raw score ranges from 0-12. If the total score is less than 50% the sleep hygiene is poor and if it is more than 50% it is good.

The study was conducted for 4 weeks from in the Month of March 2022. Informed consent was taken from the sample and assured anonymity and confidentiality of the information provided by them. The data collection tools were self -administered and it took about 20-30 minutes. The data was then processed, organized and tabulated for analysis. Data analysis was carried out by using the software statistical package for social sciences (SPSS) version 20. Karl-Pearson correlation co-efficient was used to assess the correlation between the Disease specific quality of life, quality of sleep and sleep hygiene and Chi-square test was applied to identify the association between Disease Specific quality of life, quality of sleep and sleep hygiene with selected demographic variable.

RESULTS

1) Description of demographic variables

The findings of the study reveal that majority (38.3%) of the subjects belonged to the age group of 51-55 years; and 28.3% of subjects were in the age group of 46-50 years. 60% of the subjects were males; Majority (85%) were married and 10% of subjects have lost their spouse. With regard to educational qualification, 50% of the subjects completed high school education, 8.3% of subjects have degree and/or above qualifications. In case of family pattern of subjects, 85% of subjects were from nuclear family and 15% of subjects belonged to joint family. The dietary pattern of the subjects showed that 61.7% were non vegetarians; 48.4% of subjects were employed and 18.3%. of subjects retired. The findings on monthly income of the subjects depict that 50% of subjects have a monthly income less than Rs. 10,000, 38.4% of subjects have an income between Rs. 10001 - 25000/month. With regard to duration of ESRD, majority of the subjects (40%) have the disease for 3-6 Years.

2) *Disease specific Quality of life, Quality of sleep and Sleep hygiene among patients undergoing hemodialysis*

Majority of the subjects have only an average

Disease specific Quality of Life as evidenced by the KDQoL subscale scores, i.e., PCS 70%; MCS 73.3%; Burden of kidney disease-80%; Symptoms & problems-75%; Effect of kidney disease on daily life -73.34% (table 1). In case of quality of sleep findings shows that 70% of subjects have good sleep quality (table 2) and 83.3% did not have proper sleep hygiene.

Table 1: Disease specific Quality of life, among patients undergoing hemodialysis

KDQoL Subscales	Scores of Disease Specific Quality of Life					
	Above average		Average		Below average	
	n	%	n	%	n	%
Physical component summary	8	13.3	42	70	10	16.7
Mental component summary	6	10	44	73.3	10	16.7
Burden of kidney disease	3	5	48	80	9	15
Symptoms and problems	9	15	45	75	6	10
Effects of kidney disease on daily life	8	13.33	44	73.34	8	13.33

Table 2: Frequency and percentage distribution of subjects based on their Quality of Sleep

Quality of sleep	Frequency (n)	Percentage (%)
Extremely good sleep	10	16.6
Very good sleep	42	70
Good sleep	7	11.7
Poor sleep	0	0
Extremely poor sleep	1	1.7

3) Correlate Disease Specific Quality of Life, Quality of Sleep and Sleep Hygiene among patients undergoing Hemodialysis.

The correlation between Disease Specific Quality of Life, Quality of Sleep, and Sleep Hygiene among ESRD patients undergoing hemodialysis assessed by Karl Pearson correlation coefficient revealed that a significant correlation existed between the KDQoL subscales MCS; and symptoms and problems with the Quality of Sleep at $p \leq 0.05$ (Table 3). Where as no significant correlation was observed between all subscales of KDQoL and Sleep hygiene; as well as between Sleep hygiene and Quality of sleep among patients with ESRD undergoing Hemodialysis.

4) Associate the Disease Specific Quality of Life, Quality of sleep and Sleep Hygiene among patients undergoing hemodialysis with selected demographic variables.

Association of Disease specific Quality of Life, Quality of sleep and Sleep Hygiene was assessed using Fisher's exact test and the findings depicted that the KDQoL subscales - MCS had a statistically significant association with education ($p<0.02$) and type of family ($p<0.00$) of the subjects; Burden of Kidney Disease had a significant association with education of the subjects ($p<0.01$); Effects of kidney disease on daily life were associated with type of family ($p<0.03$). No significant association was found between Quality of sleep and demographic variables of the subjects. Sleep hygiene had a significant association with age ($p<0.00$) and gender ($p<0.01$) of the subjects.

Table 3: Correlation of Disease Specific Quality of Life and quality of sleep among patients undergoing Hemodialysis.

KDQoL subscales	Quality of sleep	
	r	p value
Physical component summary	-0.24	0.06
Mental component summary	-0.30	0.02*
Burden of kidney disease	-0.25	0.06
Symptoms and problems	-0.36	0.01*
Effect of kidney disease on daily life	-0.10	0.43

Anju Suresh, Shirley prakash, J.Gladys, *et al.*/Disease Specific Quality of Life, Quality of Sleep and
Sleep Hygiene Among Patients with End Stage Renal Disease Undergoing Hemodialysis

57

DISCUSSION

The study assessed the disease specific quality of life, Quality of sleep and Sleep hygiene among patients with ESRD undergoing Hemodialysis. The result revealed that majority of subjects have average disease specific quality of life. ie: PCS 70%; MCS 73.3%; Burden of kidney disease-80%; Symptoms & problems-75%; Effect of kidney disease on daily life-73.34%. With regard to Quality of sleep,70% of subjects have good sleep where as 83.3% of subjects have poor sleep hygiene. The above finding was supported by a cross-sectional study done at Karachi between 2020 and 2021 on 178 CKD patients and 62 ESRD patients on hemodialysis with the aim to compare the quality of sleep in CKD and ESRD patients. The results revealed that two third of the study participants had poor sleep quality and when compared to CKD patients, ESRD patients suffered more sleep disturbances.[13]

In this present study Karl Pearson correlation coefficient was used to correlate the disease specific quality of life, quality of sleep and sleep hygiene. The findings revealed that the subscales of KDQol such as MCS and Symptoms and problem subscale have a correlation with Quality of sleep at p≤0.05, while sleep hygiene didn't have any correlation with the any of subscales of KDQoL and Quality of sleep. The findings of other study conducted on 2009 among 138 subjects on HD with the purpose of determining the relationship between quality of life and quality of sleep also revealed that there is a significant correlation existed between the quality of life and quality of sleep.[14]

In case of association the study shows that the MCS subscale has a significant association with education and type of family of the subjects; A significant association was expounded between the KDQoL subscales-Burden of kidney disease subscale and education; Effects of kidney disease on daily life and type of family. No significant association was elicited between Quality of sleep and the demographic variables of the subjects. Sleep hygiene showed a significant association with age and gender of the subjects. Another study done at Iran on 2021 among 300 samples with an aim to assess relationship between quality of life and hope in family care givers of HD patients also supporting the study finding as that education of the participants had a significant association with quality of life.[15]

CONCLUSION

From the findings of the study the researcher could identify that though majority of the ESRD patients on haemodialysis have average Disease specific Quality of life and considerable number of subjects have below average disease specific Quality of life in the subscale scores of KDQoL. Similarly, 70% of the subjects maintained good quality of sleep and 1.7% had extremely poor Quality of sleep. 83.3% did not maintain sleep hygiene.

Maintaining good quality of life has a positive impact in the prognosis of the disease in ESRD patients and thereby to reduce the episodes of hemodialysis. Hence the health care team has an important role in improving the Quality of life of ESRD patients. Though the quality of sleep was good in majority of the patients, majority of them didn't maintain good sleep hygiene which in turn can affect the quality of sleep in due course. Hence the patients need to be oriented to the importance of sleep hygiene.

REFERENCES

1. Clarkson MJ, Bennett PN, Fraser SF, Warmington SA. Exercise interventions for improving objective physical function in patients with end-stage kidney disease on dialysis: a systematic review and meta-analysis. *American journal of Renal Physiology.* 2019;316(5): 856-72.

2. Sacrias, G. Rathinasamy, E. Elavally, and Arjunan, Brunei Darussalam. Effect of nursing interventions on thirst and interdialytic weight gain of patients with chronic kidney disease subjected to hemodialysis. *Journal of Health.*2015; 6(1): 13-19.

3. Sethi, Suman Menon, Arshdeep, Dhooria, Harmeet Pal Singh, Makkar, et.al. Evaluation of Health-Related Quality of Life in Adult Patients on Hemodialysis. *International Journal of Applied and Basic Medical Research.* 2021; 11. (4): 221-25.

4. Thenmozhi.P. Quality of life of patients undergoing hemodialysis. *Asian journal of pharmaceutical and clinical research.*2018;11. (4):219-23.

5. Farzaneh Soleimani, Hossein motaarefi, Ali hasanpour-dehkord. Effect of Sleep Hygiene Education on Sleep Quality in Hemodialysis Patients. *Journal of Clinical and Diagnostic Research.* 2016 ;10. (12).

6. Wang, R, Tang, C, Chen, X. et al. Poor sleep and reduced quality of life were associated with symptom distress in patients receiving maintenance hemodialysis. *Health and Quality of life outcomes.*2016; 14.125.

7. Potter GD, Skene DJ, Arendt J, Cade JE, Grant PJ, Hardie LJ. Circadian Rhythm and Sleep Disruption: Causes, Metabolic Consequences, and Counter measures. *Endocrine Reviews.* 2016;37(6):584-608.

8. P.P.Varma. Prevalence of chronic kidney disease in

India. *Indian Journey of Nephrology.* 2015;25.(3):133–35.

9. Zhang. Q, Rothenbacher.D. Prevalence of chronic kidney disease in population-based studies: Systematic review. *BMC Public Health.*2018; 8: 117.

10. Sabry AA, Abo-Zenah H, Wafa E, Mahmoud K, El-Dahshan K, Hassan A, Abbas TM, Saleh ABM, Okasha K. Sleep disorders in hemodialysis patients. *Saudi Journal Kidney Disease Transplantation.* 2022;21:300-5.

11. Tannor, E.K, Norman, B.R, Adusei, K.K.et al. Quality of life among patients with moderate to advanced chronic kidney disease in Ghana - a single centre study. *Journal of Nephrology* .2019;20:122.

12. Muz G, ErdoğanYuce.G, Yıldırım, C. et al.The effect of sleep hygiene training applied to hemodialysis patients on sleep quality and quality of life: randomized controlled trial. *Sleep Biology rhythms.*2021:1-10.

13. Mehreen Mujahid, Kiran Nasir, Ruqaya Qureshi et.al. *Comparison of quality of sleep in patients with chronic kidney disease and End Stage Renal Disease.*2022;14.(4).

14. Havva Tel. Determining quality of life and sleep in hemodialysis patients.*Journal of dialysis and transplantation.*2009;38.(6):210.

15. SajadiS.A.FarsiZ.Akbari R. et.al.investigating the relationship between quality of life and hope in family caregivers of *hemodialysis patients and related factors.*2021;22.