Quality of Sleep and its relationship to Kidney disease related quality of life among ESRD patients with Ozonedialysis

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Abstract:
Introduction: *Sleeep is the one of the major subjective complaint of all dialysis patients. The increased incidence of poor sleep in ozonedialysis patients, which is associated with physical, behavioural, and psychosomatic troubles constantly,affect ESRD patients quality of life. Generally restlessness during night has negative impacts on Kidney Disease- related quality of life (KDQoL). The purpose of this study was to examine the relationship between the quality of sleep and KDQoL among ESRD patients with ozonedialysis .*
Methods: *Using descriptive research design study samples were selected by purposive sampling from the dialysis unit of East Coast Hospitals at Puducherry. Sleep quality was measured by the Pittsburgh Sleep Quality Index(PSQI),and the quality of life for ESRD patients was measured by the Kidney Disease Quality of Life (KDQoL) scale among 50 ESRD patients with Ozonedialysis.*
Results: *Out of 50 participant15(30%) of them belonged to 30-39 years, 20(40%) of them belonged to 40-49 years, 11(22%) of them were in the age group of 50-59 years and 04(8%) of them belonged to age group of 60 and above. Eighteen (38%) of them had duration of illness below 5 years, 25(50%) o f them had duration of illness 5 years -10 years and 7(14%) of them had duration of illness above 10 years. Twenty eight (56%) of them were undergoing duration of dialysis twice a week, and 22(44%) of them were undergoing duration of dialysis three times a week. Eleven(22%) of them had 1-2 kg weight gain between dialysis, 23(46%) of them had 2-3kg weight gain between dialysis,12(24%) of them had 3-4 kg weight gain between dialysis and 04(8%) of them had above 5 kg weight gain between dialysis30(60%) of ozonedialysis patients had poor quality of sleep,6(12%) of ozonedialysis patients had very poor quality of life. Poor quality of life was significantly associated with poor quality of sleep. There was a significant correlation between global PSQI and important aspects of quality of life including physical health, symptoms and problems, the impact of kidney disease on daily life, burden of kidney disease, mental health, social support, and sexual function.There was significant association between demographic variables like age, duration of dialysis, weight gain between dialysis, with quality of sleep and their quality of life.*
Conclusion: *Sleep disturbances is common in dialysis patients and is related with decreased KDQoL. This study hypothesize that End Stage Renal Disease harshly affects the sleep quality, which in turn impacts on KDQoL. The poor quality of sleep in ozone dialysis patients has an effect on their quality of life. Hence adequate coping, emotional support and flexibility exercise training would have better results in decreasing sleep deprivation and improvement in quality life mainly for those with poor education and income, and older people*
Key words: *End Stage Renal Disease (ESRD), ozone dialysis, Quality of Life, Insominia*

I. Introduction

End Stage Renal Disease (ESRD) and chronic kidney disease have become Global public health problems. The prevalence of ESRD cases in India was 700,000 in 2004 and its incidence rate was 173 per 100,000 people. These conditions increase patient morbidity and mortality risks and put major economic strain on the health care system.Poor sleep quality affects many ozonedialysis patients and can potentially predict their morbidity, mortality, quality of life . The noticed prevalence of poor sleep, including waking up and breathing disorders during the sleeping period and excessive sleeplessness, is in the range of 45-80%.Several studies carried out in the last 20 years have demonstrated a high percentage of sleep disorders. In general population, increased stress, anxiety, depression and worry are associated with poor sleep quality in dialysis patients. Sleep affects more common among ESRD patients with dialysis. Most subjective sleep deprivations symptoms are

reported 80% by the ESRD patients and are characterized by very difficult to start initiating sleep and also maintaining sleep, problems with restlessness, snoring, cramps, shortness of breath, itching and stomach upset (Veiga et al., 2007). These problems have negative significant effects on their quality of life. Half of the patients complaining of sleep deprivation feel that problems affects their daily living and 2121% consider that relief of this symptoms would improve their quality of life (Parfrey et al.,2008;Iliescu et al., 2009) Although many ESRD patients with dialysis complain of sleep disorder. This study aimed to measure the sleep quality of dialysis patients and determine itsrelationship with quality of life. Nurses, more than other healthcare professionals, can address poor sleep quality in ozonedialysis patients; hence, knowing these associative factors is necessary for them to help these patients acquire a healthy life.

II. Material And Methods

This descriptive study was carried out on End Stage Renal Disease (ESRD) patients undergoing ozone dialysis at East Coast Hospitals, Puducherry . A total 50 adult subjects (both male and females) of aged ≥ 30, years were for in this study.

Study Design: Non experimental research design

Study Location: This was conducted at East Coast Hospitals Pvt Lt, Multi speciality hospital located in Puducherry.

Sample size: 50 patients.

Subjects & selection method: The study population was drawn from ESRD patients undergoing ozone dialysis who presented to East Coast Hospitals . Patients were selected by using purposive sampling technique.

Inclusion criteria:

ESRD patients undergoing Ozone Dialysis …

- between the age group of 30 years and above
- willing to participate in the study
- both males and females
- With or without co-morbid illness (Diabetes, Hypertension & Coronary Artery Disease)
- Who will be able to read and write Tamil and English

Exclusion criteria:

ESRD patients undergoing Ozone Dialysis

- admitted in critical care unit
- not willing to participate in the study

Procedure methodology

After getting informed consent from patients, Demofraphic data, Pittsburgh Sleep Quality Index(PSQI) and KDQoL scale was used to collect the data of the recruited patients . The questionnaire included socio-demographic characteristics such as age, gender, religion, education, occupation, income, residence, and and clinical variables such as cause of ESRD, duration of illness, duration of dialysis, family history of ESRD,weight gain between dialysis and comorbidities.

Sleep deficit was measured using the Pittsburgh Sleep Quality Index (PSQI). It contains 19 self-rated questions yielding seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications and daytime dysfunction. Each component is scored from 0 to 3, yielding a global PSQI score between 0 and 21, with higher scores indicating lower quality of sleep. The PSQI is useful in identifying good and poor sleepers. A global PSQI score >5 indicates that a person is a 'poor sleeper' having severe difficulties in at least two areas or moderate difficulties in more than three areas .

KDQoL was measured with the Medical Outcomes Study 36-item Short Form (SF-36) this instrument has been used extensively in populations of patients with renal disease. The SF-36 is a 36-item self-administered questionnaire that yields scores for eight domains of KDQoL (physical functioning, role limitations physical, bodily pain, general health perceptions, vitality, social functioning, role limitations emotional and mental health) .

Statistical analysis

Data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL). Inferential and descriptive statistic were used to calculate frequency and percentage of demographic data.Chi-square used to test for significant association between variables, correlation was used for find relationship between clinical variables and sleep quality and quality of life.

III. Result

Table 1 shows that out of 50 participants 15(30%) of them belonged to 30-39 years, 20(40%) of them belonged to 40-49 years, 11(22%) of them were in the age group of 50-59 years and 04(8%) of them belonged to age group of 60 and above. Gender 29(58%) of them were male and 21(42%) of them were female. Thirty seven (37%) of them were Hindu and 10(20%) were Christian, and 03(6%) were Muslim. Education status 19(38%) were non literate / primary school, 20(40%) were completed secondary school, 7(14%) were completed higher secondary school and 04(8%) were completed their graduates

Table I: Frequency and percentage distribution of demographic variables among ESRD patients undergoing ozone dialysis

No: 50

S.No	Demographic data	Frequency	Percentage
1	Age		
	a.30– 39 years	15	30
	b.40 – 49 years	20	40
	c. 50 – 59 years	11	22
	d. 60 and above	04	8
2	Gender		
	a.Male	29	58
	b.Female	21	42
3	Religion		
	a.Hindu	37	74
	b.Christian	10	20
	c.muslim	03	6
	d.Other	0	0
4	Educational status		
	a. Non literate/Primary school	19	38
	b. Secondary	20	40
	c. Higher secondary	07	14
	d. Graduate	04	8
5	Occupation		
	a. Unemployed	14	28
	b. Employed	23	46
	c. Retired	13	26
6	Income per month		
	a. Below Rs 10000	34	68
	b. Rs 100001- 20000	16	32
	c. Rs 20001 – 30000	-	-
	d. Above 30000	-	-
7	Marital status		
	a. Married	42	84
	b. Unmarried	03	6
	c. Widow/Divorced/Separated	05	10
8	Residence		
	a.Urban	31	62
	b.Rural	19	38
9	Sources of health information		
	a. Health personnel	36	72
	b. Mass media	07	14
	c. Friends/Relatives	07	14

TABLE 2: Frequency and percentage distribution of clinical variables among ESRD patients undergoing ozone dialysis   No: 50

S.No	Clinical variables	Frequency	Percentage
1	Family history of ESRD		
	a. Yes	12	24
	b. No	38	76
3	Duration of treatment		
	a. Below 5 years	18	36
	b. 5 year – 10 years	25	50
	c. Above 10 years	7	14
4	Cause of ESRD		
	a.Hypertension	24	48
	b.Diabetes	19	38
	c.Glomerulonephritis	07	14
	d.Others	-	-
5	Duration of dialysis		

	a. Twice a week	28	56
	b. Three times per week	22	44
6	Weight gain between dialysis		
	a. 1-2 Kg	11	22
	b. 2-3 Kg	23	46
	c. 3-4 Kg	12	24
	d. Above 5 Kg	04	8
7	Comorbidities/ Renal risk markers		
	a.Hypertension	28	56
	b. Diabetes and HT	14	28
	c. Nephropathy	05	10
	d. Others	03	6

Table 2 shows that 12(24%) of them had family history of ESRD and 38(76%) of them had unknown family history of ESRD. Eighteen (38%) of them had duration of illness below 5 years, 25(50%) o f them had duration of illness 5 years -10 years and 7(14%) of them had duration of illness above 10 years. Twenty four (48%) of them had cause of ESRD hypertension,19(39%) of them had cause of ESRD Diabetes and 07 (14%) of them had cause of ESRD Glomerulonephritis. Twenty eight (56%) of them were undergoing duration of dialysis twice a week, and 22(44%) of them were undergoing duration of dialysis three times a week. Eleven(22%) of them had 1-2 kg weight gain between dialysis, 23(46%) of them had 2-3kg weight gain between dialysis,12(24%) of them had 3-4 kg weight gain between dialysis and 04(8%) of them had above 5 kg weight gain between dialysis.

Table 3: Frequency, Mean and Standard deviation of Quality of sleep among ESRD patients undergoing Ozone dialysis

S.No	Level of sleep deprivation	No	Percentage	Mean	SD
1.	Good sleep	03	6%	24.58	10.3
2.	Better sleep	11	22%		
3.	Poor sleep	30	60%		
4.	Very poor sleep	06	12%		

The above table shows that 03(6%) of ESRD patients had good sleep, 11(22%) of ESRD patients had better sleep, 30(60%) of ESRD patients had poor sleep and 06(12%) of ESRD patients had very poor sleep. The Mean and Standard deviation of Quality of sleep among ESRD patients undergoing ozone dialysis were 24.58 and 10.3.

Table 4: Frequency, Mean and Standard deviation of Quality of Life among ESRD patients undergoing Ozone dialysis

S.No	Quality of Life	No	Percentage	Mean	SD
1.	Excellent QoL	0	-	46.8	24.43
2.	Good QoL	03	6%		
3.	Average QoL	06	12%		
4.	Poor sleep	29	58%		
5.	Very poor QoL	12	24%		

The above table shows that 03(6%) of ESRD patients had good quality of life, 06(12%) of ESRD patients had average quality of life, 29(58%) of ESRD patients had poor quality of life and 12(24%) of ESRD patients had very poor quality of life. The Mean and Standard deviation of Quality of life among ESRD patients undergoing ozone dialysis were 46.8 and 24.43.

Table 5: The relationship between quality of sleep with quality of life

S.No	Quality of life	Quality of sleep	P value
1.	Physical health	r = -0.51	P<0.001
2.	Mental health	r = -0.42	P<0.001
3.	Burden of Kidney disease	r = -0.35	P<0.001
4.	Symptoms and problem	r = -0.28	P<0.001
5.	Impact of kidney disease on daily life	r = -0.47	P<0.001
6.	Social support	r = -0.12	P=0.040
7.	Family burden	r = -0.58	P<0.001
8.	Sexual functioning	r = -0.15	P=0.014
9.	Personal appearance	r = -0.41	P<0.001
10.	Patient satisfaction	r = -0.31	P<0.001

There was a significant relationship between the global PSQI and global KDQOL p (0.05). There was a significant relationship between global PSQI and physical health, mental health, burden of kidney disease, symptoms and problem, impact of kidney disease, family burden, patient satisfaction and personal appearance. There was no significant relationship between quality of sleep and social support, and sexual functioning

Table 6: The relationship between demographic and clinical variables and quality of life and quality of sleep

S.No	Demographic and clinical variables	Quality of life Mean , (SD)	Statistical indication	Quality of sleep Mean, (SD)	Statistical indication
1.	Age		P<0.001		P=0.065
	a.30– 39 years	5.06(0.7)	r= -0.16	3.09(1.02)	R= -0.34
	b.40 – 49 years	6`01(1.01)	S	5.32(1.90)	NS
	c. 50 – 59 years	4`96(1.10)		5.43(1.63)	
	d. 60 and above	4.01(1.41)		4.91(1.02)	
2.	Gender		P<0.001		P<0.003
	a.Male	5.5(1.18)	t= 7.12	4.95(1.12)	T= -2.26
	b. Female	4.8(1.41)	S	4.12(1.04)	S
3.	Family history of ESRD		P=0.58	8.25(3.12)	P=0.60
	a. Yes	5.31(1.18)	F=3.01	11.02(4.05)	F=1.12
	b. No	4.8(1.41)	NS		NS
4.	Duration of treatment		P=0.04		P<0.002
	a. Below 5 years	4.91(1.39)	F=2.17	4.09(0.9)	F= 1.12
	b. 5 year – 10 years	4.67(1.42)	NS	4.71(1.00)	S
	c. Above 10 years	4.78(1.40)		4.53(1.09)	
5.	Cause of ESRD		P<0.001		P<0.005
	a.Hypertension	4.74(1.75)	F= 6.11	3.08(1.03)	F=3.07
	b.Diabetes	5.81(1.98)	S	4.10(1.34)	S
	c.Glomerulonephritis	6.18(2.01)		3.84(1.54)	
	d.Others	4.98(1.82)		2.15(0.98)	
6.	Duration of dialysis		P<0.001		P<0.001
	a. Twice a week	5.91(1.20)	F=2.17	7.19(2.91)	F=1.91
	b. Three times per week	5.01(1.91)	S	6.71(1.82)	S
7.	Weight gain between dialysis		P<0.001		P<0.001
	a. 1-2 Kg	4.40(1.23)	F=0.04	5.11(1.14)	F=2.37
	b. 2-3 Kg	4.79(1.36)	S	5.31(1.06)	S
	c. 3-4 Kg	5.12(1.76)		4.98(2.01)	
	d. Above 5 Kg	5.31(1.83)		5.71(1.21)	

S- Significant, NS- Nonsignificant

There was a significant direct relationship between the global score of sleep quality and age (p<0.001). There was a significant relationship between gender , and sleep quality. There was a significant relationship between cause of ESRD,duration of dialysis, weight gain between dialysis and sleep quality.There was a significant relationship between quality of life and gender, duration of treatment, cause of ESRD, duration of dialysis, and weight gain between dialysis. Quality of life did not have a significant relationship with age, family history of dialysis.

IV. Discussion

Understanding and evaluating the quality of life for patients with end-stage renal disease is important and patients undergoing ozonedialysis have a significant level of impairment in the quality of their lives. The sleep disorders are prevalent in ozonedialysis patients,it reflects their quality of life. In the present study, the prevalence of sleep disorders and very poor and poor sleep quality was 29(58%) and 12(24). In the study of Eryavuz et al., the poor sleep quality percentage and sleep disorders in ozonedialysis patients was 88% versus 78% in peritoneal dialysis patients. The study conducted by Sabbatini et al., 86% of patients reported sleep deficiency. In the study by Sadeghi et al., 83.7% of hemodialysis patients had lower sleep quality. The results of this study are consistent with the results of the above mentioned studies.

Among the dimensions of the PSQI, the patients had the most difficulty in sleep.30(60%) of the patients had poor sleep. The patients expressed severe problems in this dimension during the past month is very difficult to go for sleep itself and sometimes breathing problem plays major role in disturbing sleep and they expressed minimum problems in the use of sleep medications. In a study by Walker et al. on hemodialysis patients, 46% of patients were in the use of sleep medications. In the present study, the significant relationship between total sleep quality score and QOL shows that by increase in the sleep quality scores and deterioration in patients' sleep quality, their global QOL has become lower. This study was reported that there is a significant

relationship between ESRD patients undergoing ozonedialysis' sleep quality and their mental and physical health. That is, patients who had lower sleep quality had poor quality of life.

V. Conclusion

The results of the present study showed that poor sleep quality is prevalent in ozonedialysis patients. This will affect all aspects of QOL especially burden of kidney disease, family burden, social relationship, physical health, and mental health dimensions. It is important to provide individual and group training programs for ESRD patients undergoing ozonedialysis to organize and manage the problems resulting from kidney disease and health, and sleep problems.

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