
FACTORS AFFECTING SLEEP DISTURBANCE FOR PATIENTS UNDERGOING HEMODIALYSIS AT MANSOURA UNIVERSITY HOSPITALS

¹Samah Gaber Abou El-Atta; ¹Karima Fouad Elshamy; ¹Hanan Mohamed Soliman and ²Ayman Maher Nagib

¹Medical-Surgical Nursing Department, Faculty of Nursing, Mansoura University. ²Faculty of Medicine, Mansoura University.

E-mail of corresponding author: samahgaber2005@gmail.com

Abstract:

Background: End-stage renal disease (ESRD) is a worldwide public health problem with an increasing incidence, prevalence, poor outcomes, and high cost. Many patients with ESRD who are undergoing chronic hemodialysis treatment suffer from sleeping disturbance. **Aim of this study:** was to assess sleep pattern, the factors affecting sleeping disturbances for patients undergoing hemodialysis. **Materials and method:** This study design was a descriptive survey design. The study was conducted at hemodialysis unit in urology and nephrology center at Mansoura University Hospital . The study group was a convenience sample of 100 adult patients from both sex, ranged from 18 to 60 years old, and undergoing maintenance hemodialysis program. Patients' assessment was done through using the following tools: 1) Sociodemographic characteristic and patient health status sheet, 2) The Pittsburgh sleeping Quality index. **Results:** There are many factors causing sleep disturbance among hemodialysis patients. **Conclusions:** Majority of patients undergoing hemodialysis (HD) program had sleeping disturbance. **Recommendation:** 1) Comprehensive simple Arabic booklet that includes instructions to improve sleep quality and how avoid sleep disturbance to be handled to all patients on hemodialysis treatment program. 2) Developing an educational program for nurses about how to avoid sleeping disturbances and improving quality of sleep. 3) Encourage nurses to apply complementary and alternative medicine (CAM) to improve sleeping disturbances among HD patients. 4) Further researches to different geographical areas and large sample to assess types of sleeping disturbance, incidence, intensity, associated factors, therapeutic management, and to investigate treatment success to improve objective and subjective parameters of sleeping disorders for hemodialysis patients. Apply intervention that improves sleep quality in these patients.

Keywords: Disturbance , Hemodialysis , Sleep.

Introduction:

Chronic kidney disease is a worldwide public health problem with an increasing incidence, prevalence, poor outcome, and high cost. Outcomes of chronic kidney disease include not only kidney failure but also complication of decreased kidney function and cardiovascular disease. End-Stage Renal Disease (ESRD) has reached epidemic levels, causing a

major burden to health care resources and it is a medical, social and economic problems for patients and their families ⁽¹⁾.

⁽²⁾ reported that, The number of chronic renal failure (CRF) patients who discharged from internal ward in general and central hospital all over Egyptian government at 2009 was 10728 patients represents sample of

21.9% and number of CRF patients in Dakahlia was 2179 patients .

Sleeping complaints have been reported in up to 80% of patients within end stage of renal disease (ESRD). For these patients, sleeping disturbances manifesting as insomnia, sleeping apnea syndrome, restless leg syndrome (RLS), periodic limb movement disorder (PLMD) and excessive daytime sleepiness (EDS) have been frequently reported⁽³⁾.

Sleeping disturbances affects one's quality of life and has been reported to be associated with mortalities .Several factors are believed to contribute to this problem including stress, depression, and anxiety, anemia, the confines of treatment and vocational activity. Sleeping complaints and daytime sleepiness are also very prevalent in this group but their impact upon quality of life remains to be well characterized ⁽⁴⁾.

Aim of the Study:

Assess factors affecting sleep disturbance among patients undergoing Hemodialysis.

Research questions:-

What are the factors affecting sleep disturbances among patients undergoing hemodialysis?

Materials and method:-

Materials:

Design: A descriptive research design was conducted .

Setting of the study:The study was conducted at Hemodialysis Unit in Urology and Nephrology Center at Mansoura University Hospital .

Subjects: Purposive sample of 100 adult patients with end-stage renal disease and under regular hemodialysis treatment program in the previously

mentioned setting.

Inclusion criteria:

Adult patients from both sex, ranged from 18 to 60 years old, with different educational levels, able to give consent & participate voluntarily in this study, and able to communicate & verbalize their needs.

Exclusion criteria

-Patients with other chronic disease ,with diagnosed psychosis or currently undergoing antipsychotic treatment. , and Planning for surgical treatment.

Tool of the study:

ToolI- Sociodemographic characteristics and Patients' health status sheet: this tool was developed by the researcher after reviewing recent related literature. It was divided into three main parts:

Part 1: Socio-demographic characteristics and patient health status sheet such as: age, sex, marital status, educational level, occupation and nature of work.

Part 2:The medical history data such as: Causes of the disease and family history, Patients' associated symptoms, physical problems and the problems faced during the hemodialysis sessions. And number of hemodialysis session per week and total of hours of each session.

Part 3:Body Mass Index (BMI), weight pre and post hemodialysis sessions using the following formula:-

Tool II: Quality of Sleep Index. It has two main parts:-

Part A: The Pittsburgh Sleeping Quality Index (PSQI):This tool was developed by ^(5,6) and translated by the researcher to Arabic language.It was designed to measure patient's sleeping quality, and to assess a wide variety of

factors affect on sleeping quality. It consists of seven components as following: (i) Subjective sleep quality, (ii) Sleep latency, (iii) Sleep duration, (iv) Habitual sleep efficiency, (v) Sleep disturbances, (vi) Use of sleeping medications and (vii) Daytime dysfunction.

Part B: Quality of Sleep Index .
This tool was developed by (7,8,9,10,11) and translated by the researcher to simple Arabic language and vice versa . It is used to assess factors affecting quality of sleeping. It consists of 7 items. Physiological changes during sleep, environmental factors, Medications .Diet .Psychological or emotional status .Life style habits , and alleviating factors affecting on Sleep disturbance.

Method:

An official approval for conducting the study was obtained from Faculty of Nursing of Mansoura University as well as the ethical committee of Faculty of Nursing of Mansoura University.

Tool I was constructed and developed by the researchers after reviewing recent related literature. Using (7,8,9,10,11,12,13,14,15). Tool II and III were translated by the researcher to simple Arabic language and vice versa.

Validity and reliability of the tools were ascertained by a panel of experts in medical and nursing for clarity, relevance, applicability, comprehensiveness and ease for implementation.

Official approval for conducting the study was obtained from the responsible administrative personnel of Urology and Nephrology center, based on official letter from faculty of

nursing including the title ,aim of the study and duration of the study .

Oral consents were obtained from patients who accepted to participate voluntarily in this study after illustrating aim and nature of the study.

Confidentiality of patients was ascertained .

Pilot study

It was applied on 10% of total number of patients undergoing regular hemodialysis sessions to test the simplicity, clarity of the questions and time frame needed for interview . The patients in the pilot study were excluded from the study group. Some modifications were done accordingly.

Field work:

Tool I was completed using patient's medical records .Tool II and III were completed via interviewing the patients individualized. Patients were interviewed during the morning and afternoon shifts. Assessment of patients done during dialysis, each sheet was taken 15 - 20 minute. Data collected during January 2014 to June 2014 .

Ethical consideration:

An oral consent was obtained from patients to participate in this study after explaining the study aims. Patients were assured that the information is confidential and used for study purposes only.

Official permission to use patient's medical record.

Statistical analysis:

The collected data were organized, categorized, tabulated and analyzed using the statistical package for social science "SPSS" the computer program "version 11.0". Data were presented in

tables and charts using actual percentages. The tests used to summarize the data as mean and standard deviation test, t-test to compare mean scores for numerical data, correlation coefficient (r-test) and ANOVA test for non-numerical data.

-The value of <0.05 was used as a cut-off point for determination of significance

-The value of >0.05 was used as a cut-off point for determination of non-significance.

Result

Table (1): Shows the distribution of patients according to their socio-demographic characteristics. Regarding age, (32%) of patients were in the age ranged from 30 to 40 years old, followed by (27%) lies between the age 20-30 years old. Concerning genders, the majority of patients were male (73%). The educational level, majority of patients were highly educated (45%). Regarding marital status, majority of patients were married (60%). Occupation status, majority of patients weren't working (96%). Concerning family members, (43%) of patients have family member within 4 to 6 members. Regarding current funding of treatment, majority of patients were governmental support (68%).

Table (1) : Distribution of socio-demographic characteristics among patients (N=100)

Sociodemographic Characteristics	Frequency (No=100)	Percent %
<u>Age :-</u>		
- 20 >30	27	27.0
- 30 > 40	32	32.0
- 40 >50	20	20.0
- 50- 60	21	21.0
<u>Genders :-</u>		
- Male	73	73.0
- Female	27	27.0
<u>Education :-</u>		
- Illiterate		
- Read / write	8	8.0
- School level	5	5.0
(Technical institute)	42	42.0
- University level	45	45.0
<u>Marital status :-</u>		
- Married	60	60.0
- Single	32	32.0
-Divorced	6	6.0
-Widow	2	2.0
<u>Occupation status :-</u>		
-Working	4	4.0
-Not working	96	96.0
<u>The number of family members :-</u>		
- 1- 4	22	22.0
- 4 – 6	43	43.0
- 6 – 8	25	25.0
- 8 – 10	10	10.0
<u>Current funding for treatment:-</u>		
- Private money on his own	32	32.0
- Governmental support	68	68.0

Table (2): Reveals that the majority of patients had unsatisfied and had poor quality of sleeping (72%), while (28%) of them had satisfied and had good quality of sleeping. The majority of patients (72%, 65%, 61%, 59% and 56%) had unsatisfied with habitual sleeping efficiency, sleeping disturbance,

subjective sleeping quality, (2%) of them used hypnotic sleeping duration, and sleeping medications to induce sleeping latency respectively. While about

Table (2): Distribution of patient's satisfaction regarding the quality of sleeping and its subscale (No=100)

(PSQI) Sleep subscale	Satisfactor y		Unsatisfactory	
	No	%	No	%
Total sleep quality	28	28.0	72	72.0
Mean ± SD	86.88 ±33.61			
-Subjective sleep quality	39		61	61.0
- Sleep latency	44	39.0	56	56.0
- Sleep duration	35	44.0	65	65.0
- Habitual sleep efficiency	28	35.0	72	72.0
- Sleep disturbances	41	28.0	59	59.0
-Use of sleeping medications	98	41.0	2	2.0
- Daytime dysfunction	47	98.0	53	47.0

Table (3) reveals that: Regarding physical factors, the majority of patients were complained of skeletal pain (53%). While (11%) of them suffered from shortness of breath as factors affecting on sleeping quality. Regarding environmental factors, the majority of patients were affected by external & internal noise, Other's movement in same room and Light on (86.0%, 85.0%, 83.0% respectively).Regarding

psychological & emotional factors, the majority of patients were affected by anxiety and depression (84%, 81% respectively), about (82.0%) of them were affected by emotional stressors due to Death of a love one (relative). Regarding medication, the majority of the patients used hypnotic medications (34.0%). While only (3% and 2%) of them used anticonvulsant and antidepressant drugs respectively

Table (3):Distribution of Factors affecting the quality of sleeping among patients (N=100)

Factors affecting quality of sleep	Frequency (No=100)	Percent%
<u>Physical factors:</u>		
-Itching	47	47.0
-Cramps of muscles	40	40.0
-Restless Leg Syndrome	37	37.0
-Skeletal pain	53	53.0
-Shortness of breath	11	11.0
-Insomnia from coughing	8	8.0
-Check of fistula	39	39.0
<u>Environmental factors:</u>		
-Light on	83	83.0
- External & internal noise	86	86.0
- Other's movement in same room	85	85.0
- People sharing a bed	83	83.0
<u>psychological/ emotional factors:</u>		
-Anxiety	84	84.0
-Depression	81	81.0
-Type of emotional stressors :-		
- Retirement	64	64.0
- Physical impairment (Erectile Dysfunction)	32	32.0
- Death of a love one (relative)	82	82.0
<u>Medication:</u>		
- Hypnotics	34	34.0
-Diuretics	0	0.0
-Antidepressant	2	2.0
-Anticonvulsant	3	3.0

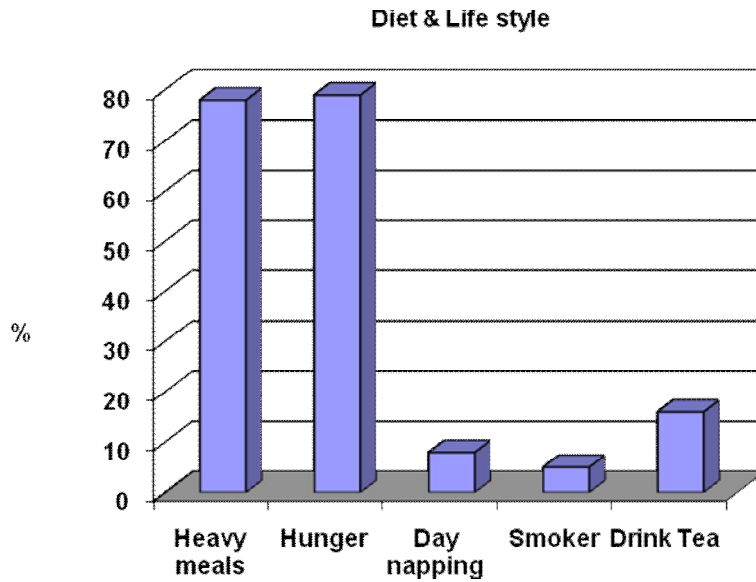


Fig. (1): Distribution of diet & life style factors affecting on sleeping disturbance among patients .

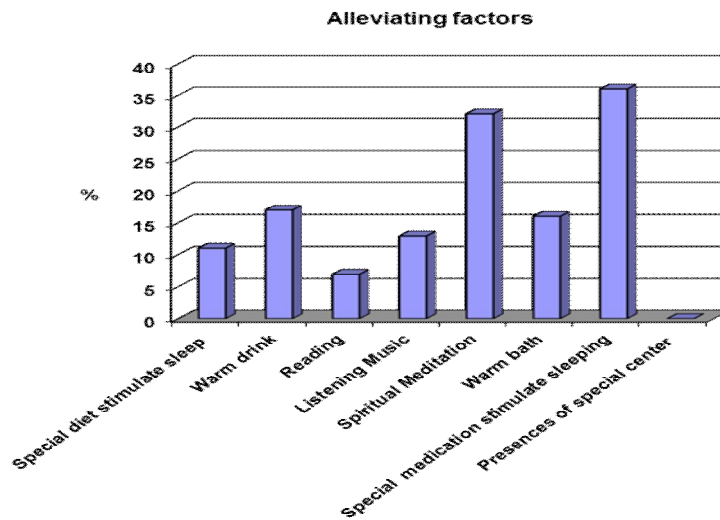


Fig. (2): Distribution of alleviating factors affecting on sleeping disturbance among patients

Discussion:-

The incidence of sleep disorders and its causes in patients undergoing hemodialysis have attracted the attention of many researchers in the past 10 years. Sleep disorders are common in dialysis patients and this problem has been reported in over 80% of them. Renal replacement therapy exposes the patients to the risk of a wide range of physical, psychological, economic, and social problems, and influences their quality of life⁽¹⁶⁾.

The finding of the present study indicated that most patients were male within 30 to 40 years old, this is supported by ^(12,17,18,19,20,21) whom reported that, the male patients had a high incidence than female patients undergoing hemodialysis. This could be attributed to the higher exposure of males from middle age to nephrotoxicants that could be environmental or occupational in origin than females.

Concerning to educational level, the present study clarified that majority of patients were university level. This result is disagree with^(22,23), whom found that the highest percentage among ESRD patients were illiterate. This could be attributed to decrease awareness about healthy habits as well as eating fasting food that affect quality of life.

The highest percentage of patients were married, this result was consistent with ^(24,25). Whom found that the majority of patients were

married. This might be due to decrease style of living as possible has led to lower quality of life.

Regarding occupational status, the present study indicated that the majority of the patients were unable to work after ESRD. This is supported by ^(26,27). This might be due to presence of many factors can interfere with job performance for hemodialysis patients such as fatigue, tiredness, difficulty with concentration and the disability may be caused by the disease or treatment. As well as the sessions schedule per week which affect on patients attendance in their work.

The results of the current study, also reveals that Restless Legs Syndrome (RLS) in about two third of the patients under study had a negative effect on their quality of sleeping. This was supported by ^(28,29) whom found that, there was two third of patients affected with RLS which impaired their quality of sleeping. This finding might be due to effect of the disease on the physiological changes of the body as muscles contractions and uncomfortable sensation.

Quality of sleeping was affected the majority of the study subjects. This finding go on with^(30,31). As, they found that, the majority of patients suffered from bone pain, which affected negatively on the quality of sleeping among those patients. This finding might be due to poor glomerular filtration rate which associated with lower bone mineral density (BMD) which aggravate bone pain, fatigue and general weakness among those group

of patients.

Regarding the environmental factors that cause sleeping disturbance among patients, the current study reveals that noise was one of the main causes of sleeping complaints which affected the majority of patients and reflected on their sleep quality. This finding was in agreement with ^(32,33), whom stated that, external and internal noise was the main environmental cause of sleeping disturbance. As this could be due to that disrupted affected negatively on the continuity of sleeping, shortens of sleeping duration and length of sleeping latency time.

Concerning the patients psychological and emotional Stressors, the results of the present study, reveals that more one third of patients had emotional stressor related to physical impairment as erectile dysfunction (ED). This finding is agreed with ^(25,34), whom stated that, ED is significantly associated with physical changes that occur in body with kidney disease which affect negatively on hormones, circulation, nerve function, energy level and emotions. These changes may cause people with ESRD to feel less attractive sexually and may be led to depressed mood.

Regarding psychological Stressors as anxiety among patients. The current study reveals that majority of patients had depression and anxiety. This finding is in agreed with ⁽³⁵⁾, whom stated that, a large proportion of patients on HD program suffer from mixed adaptive emotional disorders (anxiety and depression), these may exert a negative influence upon patient

self-perceived health, QOL dimensions and Daily living activities. This might be related to the changes occur in the life of patients under HD treatment which, affecting their social, occupational, physical and personal circumstances.

In relation to medications factors, the present study shows that majority of patients used hypnotic medications which affected negatively on sleeping quality. This was contradicted with ⁽³⁶⁾, whom reported that, diuretic used by the majority of the patients. While ⁽³⁷⁾ states that, certain medications as diuretic affected on sleeping quality. This finding might be due to most patients had sleeping disturbance so they used hypnotic medications to maintain sleep.

In relation to quality of sleeping among patients, the majority of them had unsatisfied with quality of sleeping. Which supported by ^(38,39) whom reported that the majority of patients were suffered from Sleeping disturbances and had unsatisfied with quality of sleeping. This could be due to physical changes and a decreased in functional ability which is related to inefficient treatment program which reflect negatively on the patient's quality of sleep.

Quality of sleeping subscales among the patient's in patients reveals that the majority of them complaining of sleeping disturbances, sleep latency and short sleeping duration, and had unsatisfied of sleep quality. This is consistent with ⁽⁴⁰⁾ who reports that the majority of patients are complained from subjective sleeping disturbances,

decreased sleeping efficiency, short sleeping- duration and had dissatisfied with sleeping quality among the HD population. This finding could be due to chronic health conditions or effects of conventional HD therapy, dialysis session and patient's day napping during the sessions.

The result of the study reveals that using of hypnotic medications is common among them. This is supported by^(40,41)This could be due to fatigue and poor functional ability which associated with chronic disease push them to use hypnotic medications to improve quality of sleep.

Conclusion

Concerning the factors affecting sleeping disturbances as well as sleeping quality; patients were affected by their anxiety level, light on, heavy meal, day napping and drinking tea. Also the majority of the patients were affected with skeletal pain, itching, noise, cramps of muscle, and restless leg syndrome (RLS). As well as depression and anxiety. While the spiritual meditations and use special medication were the most alleviating factors to improve sleeping quality among the study group. The majority of patients were unsatisfied with their sleeping quality.

Recommendation

- 1) Comprehensive simple Arabic booklet that includes instructions to improve sleep quality and how avoid sleep disturbance to be handled to all patients on hemodialysis treatment program.
- 2)Developing an educational program for nurses about how to avoid sleeping

disturbances and improving quality of sleep.

3)Encourage nurses to apply complementary and alternative medicine (CAM) to improve sleeping disturbances among HD patients

.4)Further researches to different geographical areas and large sample to assess types of sleeping disturbance, incidence, intensity, associated factors, therapeutic management, and to investigate treatment success to improve objective and subjective parameters of sleeping disorders for hemodialysis patients. Apply intervention that improves sleep quality in these patients.

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