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Effectiveness of Acupressure on Quality of Sleep of Hemodialysis Patients

Arun R.D[1], MahalingamVenkateshan[2]

[1]*Nursing Officer, AIIMS, Bhubaneswar, Odisha, India*

[2]*Assistant Professor, AIIMS College of Nursing, Bhubaneswar, Odisha, India*

ABSTRACT

Introduction: Poor quality of sleep is most commonly reported problem among patients undergoing Hemodialysis. Acupressure is a traditional treatment in which pressure is applied to specific points by fingers on the body to reestablish a healthy status by engaging the body's natural healing abilities. **Material & Method:** A quantitative Quasi-experimental study design was used to measure the level of quality of sleep and to study the effectiveness of acupressure on quality of sleep of Hemodialysis patients. Thirty Chronic renal failure patients undergoing Hemodialysis (HD) were selected through simple random sampling technique to study the variables. Before and after the acupressure Intervention quality of sleep was measured using Pittsburg Sleep Quality Index (PSQI). Acupressure intervention was given over shenmen points for 9 cycles. **Results:** Every second (50%) of the patient undergoing Hemodialysis reported 'fairly bad' sleep quality and One third (33.3%) of them were reported 'very bad' sleep quality. Thirty days of acupressure intervention among the Hemodialysis patients significantly ($p \leq 0.05$) improved their level of sleep from pre intervention (10.9±2.7) to post intervention (3.0±1.0) and the mean difference was 7.9. **Conclusion:** The study results shows that majority of the dialysis patients reported 'Bad' sleep quality also, none of them had 'very good' sleep quality. Acupressure therapy significantly improved the quality of sleep of dialysis patients.

Keywords: *Acupressure Therapy, Chronic Kidney Disease, Dialysis Patients, Quality of Sleep.*

INTRODUCTION

Kidneys are a pair of bean-shaped organ which removes waste products from the body and regulates water, electrolyte and blood pressure. Deterioration of kidney function leads to accumulation of urea, toxins and other waste products build up over the period of months to years and affect the body homeostasis which leads to a state of Chronic Kidney Disease (CKD).

World health organization states that 10% of the population worldwide is affected by Chronic Kidney Disease.(1) It was highlighted that Asian countries like India and China have increasing in incidence of Kidney Failure cases every year.(2)

There is no cure for Chronic Kidney Disease, but treatment can slow or halt the progression of the disease and can prevent development of other serious complications.(1) The primary management for renal failure is dietary management and lifestyle changes and secondary line of management is Dialysis. In Hemodialysis, blood is pumped in to the dialysis machine to remove the excess water and nitrogenous waste products from our body. (3)

Over 2 million people worldwide currently receive treatment with dialysis or a kidney transplant to stay alive.(2) In India Only 10-15% Patients receive proper treatment for CKD. Out of it only 6000 undergo renal transplantation. Rest 60000 undergo Hemodialysis and 6000 undergo peritoneal dialysis in a year.(4)

Corresponding Author:
Arun R.D,
Nursing Officer, All India Institute of Medical Sciences (AIIMS), Bhubaneswar, Odisha, India. Email Id: rd.arunn@gmail.com, milkymaha2007@gmail.com
Mob: 7205658996.

Sleep disturbances are extremely common among dialysis patients. Most (80%) of patients who undergo dialysis reports subjective sleep complaints.[5] Apart from that restless leg syndrome, sleep apnea syndrome, muscle cramps, poor sleep quality, prolonged sleep latency, and daytime sleepiness were reported.[6]

These sleep abnormalities disrupt basic sleep regulatory mechanisms adversely effects the quality of life and functional health status.[6]

Quality sleep is crucial for good health. To overcome all the sleep problems the Complementary and alternative therapies were used worldwide practices, that are not part of mainstream medicine. Acupressure recognizes that there are certain points in the human body that are linked to critical systems and organs. Our human body consists of 12 meridiants that supplies 'chi' called the fundamental life energy. Disease is viewed as an energy imbalances. According to acupressure philosophy, Insomnia is energy imbalances of the Heart and blockage of the energy flow[7]

Considering prevalence of Sleeping problems and burden on quality of life of dialysis patients, investigator conducted a pre-experimental study to test the effect of acupressure on quality of sleep of dialysis patients.

Objectives of the Study

1. To assess the level of quality of sleep among patients undergoing Hemodialysis.

2. To measure the effectiveness of acupressure on quality of sleep among patients undergoing Hemodialysis.

MATERIALS AND METHOD

A Quantitative Quasi-experimental study design was carried to study the prevalence of sleeping problems among patients undergoing Hemodialysis also, measure the effectiveness of acupressure on quality of sleep of patients undergoing Hemodialysis. Thirty Hemodialysis patients were selected through simple random technique from the study population. Patients with age between 40-70 years, patient with chronic renal failure, patients undergoing Hemodialysis for more than 3 months were considered to be the study population. Acupressure were given over ear shenmen**(HT7),** arm shenmen**(HT7)** and foot/ankle shenmen**(KD1)** points over the duration of 1-3 minute for 9 cycles for the period of 4 weeks during Hemodialysis. Demographic and clinical variable information were collected from the study participants. The Pittsburgh Sleep Quality Index (PSQI) was used to measure the quality of sleep before and after the intervention. Written informed consent was obtained from the study samples. Ethical committee permission was obtained from the concerned authority.

RESULTS

Table No 1: Frequency and percentagewise distribution of demographic variables among patients undergoing Hemodialysis N= 30

S.No	Demographic Variables		Frequency	Percentage%
1	Age	40-50 years	12	40%
		51 – 60 years	13	**43.3%**
		> 60 years	5	16.7%
2	Gender	Male	22	**73.3%**
		Female	8	26.7%
3	Educational status	No formal Education	5	16.7%
		Primary education	5	16.7%
		Secondary education	8	26.6%
		Graduates	12	**40.0%**

Cont... **Table No 1: Frequency and percentagewise distribution of demographic variables among patients undergoing Hemodialysis N= 30**

4	Occupational Status	Unemployed	13	**43.3%**
		Coolie	4	13.3%
		Professionals	9	30.3%
		Self employed	4	13.3%
5	Marital Status	Married	29	96.7%
		Unmarried	1	3.3%

Table No 1 shows that majority (83.3%) of the study participants were in the age group between 40-60 years and almost three fourth (73.3%) of the study participants were Male. Most (83.3%) of the study participants were formally educated. More than half (56.7%) of the study participants were employed i.e. Coolie, professional employment, self employment and most (96.7%) of the study participants were married.

Table No 2: Frequency and percentagewise distribution of clinical variables among patients undergoing Hemodialysis. N=30

S.No	Demographic Variables		Frequency	Percentage%
1	Duration of Chronic renal failure	< 1 year	9	30%
		>1 year	21	**70%**
2	Number of Hemodialysis cycles per week	Three times	22	**73.3%**
		Two times	8	26.7%
3	History of dyspnea	During dialysis	1	3.3%
		After Dialysis	12	40.0%
		No dyspnea	17	56.7%
4	Presence of edema before dialysis	On lower extremities	20	**66.7%**
		Whole body edema	3	10.0%
		No edema	7	23.3%
5	Blood urea level before Hemodialysis	< 60 mg/dl	0	0%
		60-100 mg/dl	6	20%
		100-150 mg/dl	11	36.7%
		More than 150 mg/dl	13	**43.4%**
6	Serum creatinine level before Hemodialysis	3-4 mg/dl	2	6.7%
		>4mg/dl	28	**93.3%**

Table No 2: Depicts that majority (70%) of the study participants were suffered with Chronic Renal Failure more than a year. Almost three fourth (73.3%) of the study participants were undergone Hemodialysis more than two times per week. More than half (56.7%) of the study participants not had any history of dyspnea related symptoms. Two third (66.7%) of the study participants had the history of edema on their lower extremities. Majority (80.1%) of the study participants had blood urea level more than 100mg/dl before Hemodialysis. Also, most (93.3%) of the study participants had serum creatinine level more than 4mg/dl before Hemodialysis.

Table No 3: Level of quality of sleep among patients undergoing Hemodialysis. N=30

S. No	Level of quality of sleep	Percentage
1	Fairly Good	16.7%
2	Fairly bad	50%
3	Very bad	33.3%

Table No 3: Shows that every second (50%) of the patient undergoing Hemodialysis reported 'fairly bad' sleep quality. In addition one third (33.3%) patients undergoing Hemodialysis reported 'very bad' sleep quality and least (16.7%) number of patients undergoing Hemodialysis reported 'fairly good' sleep quality. Besides, none of the patients undergoing Hemodialysis reported 'very good' sleep quality.

Table No 4: Effectiveness of acupressure on quality of sleep among patients undergoing Hemodialysis. N=30

S. No	Level	Mean± S.D	Mean difference	't' value	p value
1	Pre test	10.9±2.7	7.9	19.10	.001
2	Post Test	3.0±1.0			

df(29) = 2.05, level of significance p≤ 0.05

Table No 4: depicts that, thirty days of acupressure intervention on quality of sleep of Hemodialysis patients significantly (p≤0.05) improved their level of sleep from pre intervention (10.9±2.7) to post intervention (3.0±1.0) and the mean difference was 7.9.

Table 5: Domain wise quality of sleep of patients undergoing Hemodialysis before and after Acupressure. N=30

S.No	PSQI Components		Mean ± SD	't' value	p value
1.	Subjective sleep quality	Pre Test	2.17 ± 0.69	13.17	.0001
		Post test	0.30 ± 0.46		
2.	Sleep Latency	Pre Test	2.77 ±0 .43	13.08	.0001
		Post test	0.73 ± 0.86		
3.	Sleep Duration	Pre Test	1.93 ± 0.74	10.25	.0001
		Post test	0.33 ± 0.47		
4.	Habitual Sleep Efficiency	Pre Test	1.27 ± 1.25	5.51	.0001
		Post test	0.00 ± 0.00		
5.	Sleep Disturbances	Pre Test	1.73 ± 0.58	5.83	.0001
		Post test	1.13 ± 0.34		
6.	Use of Sleep-Promoting medications	Pre Test	0.13 ± 0.43	.701	.489
		Post test	0.07 ± 0.25		
7.	Daytime dysfunction	Pre Test	0.93 ± 0.58	3.76	.001
		Post test	0.40 ± 0.49		

Df(29) =2.05, level of significance p≤ 0.05

Table No 5: shows domain wise quality of sleep of patients undergoing Hemodialysis before and after acupressure therapy. All the domains of quality of sleep i.e. Subjective sleep quality(.0001), Sleep Latency(.0001), Sleep Duration(.0001), Habitual Sleep Efficiency(.0001), Sleep Disturbances(.0001), Daytime dysfunction(.001) significantly improved after the acupressure therapy at the level of significance p≤0.05 except use of Sleep-Promoting medications (0.489).

DISCUSSION

Every second of the patient undergoing Hemodialysis reported 'fairly bad' sleep quality. One third patients undergoing Hemodialysis reported 'very bad' sleep quality and least number of patients undergoing Hemodialysis reported 'fairly good' sleep quality. Also, none of the patients undergoing Hemodialysis reported 'very good' sleep quality. All the domains of quality of sleep i.e. Subjective sleep quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disturbances, Daytime dysfunction significantly improved after the acupressure therapy except use of Sleep-Promoting medications. These findings were supported by cross sectional study conducted by Sabet R (2012) & his team also reported that almost three fourth (73.8%) dialysis patients are poor sleepers where as PSQI score were >5. Sleep quality problems had a significant at level of p= 0.025.[8]

End-stage renal disease undergoing dialysis therapy patients showed majority (69.1%) high presence of sleep disruption during dialysis. Risk factors for sleep disturbances were identified which was increased by age, alcohol intake, cigeratte smoking, polyneuropathy & dialysis shift in morning.[9]

Iliescu EA, Yeates KE, Holland DC. (2004) Quality of sleep in patients with chronic kidney disease. Half of them reported global PSQI score > 5 which states 'poor' sleepers. The depression was identified as a predictor for sleep disturbances among chronic renal disease.[10]

Majority (90.87%) patients undergoing long-term Hemodialysis had a poor quality of sleep with a PSQI mean score of 9.51 ± 3.51. Also, stated that Low sleep quality and quantity impact the persons' quality of life.[11]. Most 78.7% Hemodialysis patients reported poor sleep quality [12]

Masoumi M, Naini AE, Aghaghazvini R, Amra B, Gholamrezaei A. (2013) Conducted a study on Sleep Quality in Patients on Maintenance Hemodialysis and Peritoneal Dialysis. Both Hemodialysis and peritoneal dialysis patients reported Poor quality sleep. Patients on Hemodialysis had poorer sleep quality in terms of total PSQI scores and two dimensions of sleep latency and sleep efficiency ($P < 0.05$).[13] Majority (72.6%) of Hemodialysis patients had poor quality of sleep and rest 27.4% of them had good sleep quality.[14]

Thirty days of acupressure intervention on quality of sleep of Hemodialysis patients significantly improved their level of sleep from pre intervention to post intervention. These results were consistant with randomized clinical trial that significant differences found after the acupressure intervention in PSQI global scores (p<0.001) and all sleep quality indices: subjective sleep quality (p<0.001), sleep latency (p<0.001), sleep duration (p<0.001), sleep efficiency (p=0.006), sleep disturbance (p<0.001), the use of sleeping medication (p=0.028), and daytime dysfunction (p<0.001).[15]

Arab Z, Shariati AR, Bahrami HR, Asayesh H, Vakili MA. (2012) in their double blinded randomized control trail reported that global score of PSQI (p=0.001) which indicates acupressure has a positive effect on sleep quality of the patients undergoing Hemodialysis. [16] The acupressure intervention group overall sleep quality score significantly (p = 0.001) different from the non intervention group.[17]

Tsay SL. (2004) study findings revealed that acupressure was significant in the perceived fatigue p<0.001) and also significant differences between the acupressure group and the control group (p<0.001). [18] Tsay SL, Chen ML. (2003) in his randomized control trail the findings indicated that PSQI scores of the acupressure group have a significantly greater improvement (p < 0.01) than the control group.[19] Eglence R, Karataş N, Tasci S. (2013) in their experimental study found that acupressure was effective in decreasing fatigue in Hemodialysis patients.[20]

CONCLUSION

The study result shows that majority of the dialysis patients reported 'Bad' sleep quality also, none of them had 'very good' sleep quality. Acupressure therapy significantly improved the quality of sleep of dialysis

patients. Especially acupressure intervention positively shown effect on different domains of quality of sleep i.e. subjective sleep quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disturbances & Daytime dysfunction except use of sleep promoting medications.

Conflict of Interest: No

Source of Funding: Self

Ethical Clearance: Ethical committee permission was obtained from the concerned authority.

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