



# International Journal of Medicine and Health Profession Research

Journal home page: [www.ijmhpr.com](http://www.ijmhpr.com)

<https://doi.org/10.36673/IJMHPR.2021.v08.i01.A12>



## EFFECT OF WARM FOOTBATH ON SLEEP AMONG THE RENAL FAILURE PATIENTS IN SELECTED HOSPITALS

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### ABSTRACT

End Stage Renal Disease (ESRD or renal failure), caused by irreversible failure of renal function to filter body metabolic waste products, salts and water, is the lethal stage of all progressive renal diseases. Because of the chronic nature of the disease and its' burden on physical, physiological, psychological and economical aspects of the RF patients, it affects their sleep quality thereby the quality of life. This study was undertaken to assess the effect of warm footbath on sleep quality among the renal failure patients in selected hospitals. A pre-experimental, one group pre and post test design was adopted for the study. Thirty RF patients who met the inclusion and exclusion criteria were selected using convenient sampling technique. The Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality. The base line results of PSQI showed that 20% of RF patients slept well, and 80% suffered from sleeplessness with the mean score of PSQI was  $11.37 \pm 5.91$ . The comparison of PSQI mean scores between pre- and post-intervention among the RF patients showed that the overall sleep quality as well as the sub-components such as subjective sleep quality, latency, time, sleep efficacy, somniphathy, use of sleep medications and daytime dysfunction have improved significantly ( $p=0.000$ ) after the foot bath therapy for 4 weeks. This confirms that the warm foot bath therapy for 30 - 40 minutes per day before sleep, improves the quality of sleep among RF patients.

### KEYWORDS

Renal failure patients, Foot-bath, Sleep Quality and PSQI,

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### INTRODUCTION

End Stage Renal Disease (ESRD), caused by irreversible failure of renal function to filter body metabolic waste products, salts and water, is the lethal stage of all progressive renal diseases<sup>1</sup>. ESRD morbidity is increasing by 8% on average per year,

with roughly 50-200 people in one million normal populations over the world<sup>2</sup>. Renal replacement therapies such as hemodialysis (HD), peritoneal dialysis (PD), and kidney transplantation, are still the most effective treatments for ESRD. However, because to the limitations of kidney transplantation, such as the high cost, limited renal donors, and high risk, the majority of ESRD patients will require Maintenance Hemodialysis (MHD), as a lifelong substitute therapy. Recently, as HD performance and equipment have improved, the long-term survival rate of MHD patients has gradually increased, and the treatment objective of renal failure (RF) patients has shifted from prolonging survival time to increasing patient quality of life and social rehabilitation<sup>3,4</sup>.

RF patients are frequently concerned by affected sleep quality and other symptom distress, which is closely associated to their morbidity and death rate<sup>5-7</sup>. This is due to the pain of the disease itself and complications caused by HD treatment. According to a current study, almost 60-80% of RF patients have somniphobia, which manifests as poor sleep quality, insomnia, exhaustion, and somnolence throughout the day, hypnotic dependency, restless legs syndrome, obstructive sleep apnea, and other symptoms<sup>8,9</sup>. Furthermore, when researchers looked at the physical health of ESRD patients, they discovered that the majority of them suffered from insomnia, pruritus, and joint discomfort.

Also, sleep is a basic human requirement and a universal biological function that affects everyone. One-third of a person's life is spent sleeping. We need sleep for a variety of reasons, including coping with daily stresses, preventing weariness, conserving energy, restoring the mind and body, and enjoying life more fully. Sleep is a natural state of altered consciousness in which the body relaxes; it is characterized by diminished attentiveness to the surroundings and can be awoken by external stimuli. Sleep is a life-sustaining activity that has an impact on everyone's well-being and quality of life. Sleep deprivation causes exhaustion, worry, and despair, as well as cognitive impairment, sleep-disrupted behaviors, and increased mortality<sup>10,11</sup>. Especially the patients with RF will have illness related

sleeplessness and anxieties which may further reduce their immune function and brings many physiological adverse effects. Many researches have evaluated the efficacy of non-pharmacological treatments for sleep disturbances, such as herbal inhalation, massage, and footbaths, because long-term use of sleeping drugs can induce numerous negative effects, such as physical dependence and cognitive impairment. Footbath therapy has been shown to significantly improve sleep quality by lowering core body temperature by peripheral vasodilatation<sup>12</sup>. Thus, this study was undertaken to assess the effect of warm footbath on sleep quality among the renal failure patients in selected hospitals.

## MATERIAL AND METHODS

Thirty RF patients between 45 to 70 years from the two selected dialysis centres were selected for the study by convenient sampling technique. A pre-experimental, one group pre and post test design was adopted for the study. The participants with the following conditions were dropped out from the study: A foot injury or sensory abnormality, acute disease, peripheral vascular disease, communication difficulties. The Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality and the patients who scored 7 and above were included for the study. Additionally, the following are the inclusive criteria: First, the RF patients with MHD period is longer than three months, with no surgical procedures or changes in haemodialysis methods occurring within those three months; second, the patient is in stable condition throughout the investigation; and third, the patient is willing to participate in the study with consent, understanding, and cooperation. Ethical clearance and no harm certificate for the treatment protocol were obtained. Buysse *et al*, constructed the PSQI to assess sleep quality over a one-month period<sup>13</sup>. Subjective somnus quality, sleep latency, sleep time, sleep efficiency, somniphobia, use of sleep medications and daytime dysfunction are some of the components. Every component is graded on a scale of 0 to 21, with a total range of 0 to 21 in which the high score denotes poor sleep quality.

The water for the foot bath was warmed to 38-43°C, the feet were soaked, and the water level should be above ankles but below knees and the water temperature was maintained at a comfortable level. The treatment lasted four weeks, with the intervention taking place every day before bedtime. For 30 and 40 minutes. Once symptoms such as discomfort, profuse sweating, tachycardia and dizziness occurred, patient should stop the intervention and rest in bed. After foot bath, foot should be dried and kept warm. A diary was maintained for 4 weeks and the mobile reminders were given to motivate the patients and to improve the compliance. The collected data was analysed using descriptive and inferential statistics.

**RESULTS AND DISCUSSION**

The base line results of PSQI showed that 20% of RF patients slept well, and 80% suffered from sleeplessness with the mean score of PSQI was 11.37 ± 5.91. The average scores were respectively 1.92 ± 0.8 of subjective sleep quality, 2.73 ± 0.77 of the time of falling sleep, 1.81 ± 0.91 of sleeping time, 1.21 ± 1.19 of sleeping effect, 1.45 ± 0.51 of the handicap of sleeping, 0.53 ± 0.73 of the Use of sleep medications and 1.72 ± 0.73 of function handicap in daytime (Table No.1).

Table No.2 shows the comparison of PSQI mean scores between pre- and post-intervention among the RF patients. It shows that the overall sleep quality as well as the sub-components such as subjective sleep quality, latency, time, sleep efficacy, somniphathy, use of sleep medications and daytime dysfunction have improved significantly (p=0.000) after the foot bath therapy for 4 weeks.

This confirms that the warm foot bath therapy for 30-40 minutes per day before sleep, improves the quality of sleep among RF patients. Similar study findings were reported by Lu Ren *et al*, (2017) concluded that the majority of MHD patients had somniphathy, and the majority of them had several symptoms at the same time, with high PSQI scores. The severity of the symptoms was linked to the quality of sleep and herbal foot-bath therapy has been shown to improve sleep quality and alleviate symptom discomfort in MHD patients to some extent<sup>14</sup>. This confirms that the foot bath improves the sleep quality of the RF patients.

The study's RF patients had an average of more than five years of disease progression, and the majority of them were elderly individuals who may have had worrisome sleep issues but had never sought treatment, leading in a more severe sleep disorder. The majority of RF patients reported of trouble falling asleep, poor sleep quality, restless sleep, short sleep duration and low sleep efficiency. The physical and psychological health of these patients were adversely affected by somnolence and lack of strength throughout the daytime as a result of the disrupted circadian rhythm caused by insomnia, further impairing their living quality. The warm foot bath as the most effective and cost effective and simple technique, it improved the sleep quality among RF patients. Hence, this can be given as a regular intervention for the patients with poor sleep quality.

**Table No.1: Baseline PSQI score of RF patients**

S.No	Factor	Score
1	Subjective somnus quality	1.92 ± 0.8
2	Sleep latency	2.73 ± 0.77
3	Sleep time	1.81 ± 0.91
4	Sleep efficacy	1.21 ± 1.19
5	Somniphathy	1.45 ± 0.51
6	Use of sleep medications	0.53 ± 1.0
7	Daytime dysfunction	1.72 ± 0.73
8	PSQI total Score	11.37± 5.91

**Table No.2: Comparison of PSQI mean scores between pre- and post-intervention**

S.No	Factor	Score		
		Before	After	p
1	Subjective somnus quality	1.92 ± 0.8	1.13 ± 0.59	0.000**
2	Sleep latency	2.73 ± 1.7	1.64 ± 0.82	0.000**
3	Sleep time	1.81 ± 1.1	1.47 ± 0.85	0.000**
4	Sleep efficacy	1.21 ± 1.9	1.37 ± 0.98	0.000**
5	Somnipathy	1.45 ± 0.51	1.31 ± 0.17	0.000**
6	Use of sleep medications	0.53 ± 1.0	0.37 ± 0.57	0.002**
7	Daytime dysfunction	1.72 ± 0.93	1.1 ± 0.69	0.000**
8	PSQI total Score	11.37± 5.91	8.39 ± 4.67	0.000**

### CONCLUSION

This study finding concludes that the warm foot bath is effective in improving the quality of sleep among renal failure patients and it can be recommended to all the patients who are suffering with sleeplessness.

### FUNDING

This research was funded by Deanship of Scientific Research at King Khalid University; grant number “RGP 2/186/42”.

### ACKNOWLEDGMENT

The authors extend their sincere appreciation to the Deanship of Scientific Research at King Khalid University for funding this study through the Large Research Group Project under grant number “RGP 2/186/42”.

### DECLARATION OF CONFLICTING INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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**Please cite this article in press as:** Premalatha Paulsamy *et al.* Effect of warm footbath on sleep among the renal failure patients in selected hospitals, *International Journal of Medicine and Health Profession Research*, 8(1), 2021, 62-66.