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### EFFECTIVENESS OF FOOT BATH ON FATIGUE AMONG PATIENTS WITH CHRONIC RENAL FAILURE UNDERGOING HEMODIALYSIS

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#### ABSTRACT

Patients with Chronic Renal Failure (CRF) undergoing hemodialysis will have high level of fatigue. In this context, footbath has its significance in reducing the level of fatigue. This present study was carried out to assess the effectiveness of footbath on fatigue among patients with CRF undergoing hemodialysis. Quasi experimental pretest posttest with control group design was used to find out the effectiveness of footbath on fatigue. A sample size of 60 patients with CRF undergoing hemodialysis was selected using non probability purposive sampling from a selected hospital. Footbath was given using warm water (40<sup>0</sup>C- 42<sup>0</sup>C) for 10 minutes after hemodialysis. Both legs were soaked 20cm above the ankle. Brief Fatigue Inventory scale was used to assess the level of fatigue by interview method. The result revealed that there was a significant difference between the pre-test and post test score in the interventional group=31, at p<0.05 level. This study concluded that footbath is effective in reducing fatigue among CRF patients undergoing hemodialysis.

#### KEYWORDS

Footbath, Fatigue, Chronic renal failure and Hemodialysis.

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#### INTRODUCTION

CRF is a complex debilitating condition affecting more than 70 million people worldwide. The Lancet Global Health article reported more than 100,000 people are diagnosed with chronic renal failure every year, 7, 437 per month, 716 per week, 244 per day and 10 per hour diagnosed as CRF<sup>1</sup>.

In India, It has been recently estimated that the incidence rate of chronic renal failure to be 229 per million population and more than 100,000 new patients annually entered. Almost more than 2.5 lakh people die of renal failure in India every year<sup>2</sup>.

Fatigue is a highly prevalent symptom experienced by persons who live with chronic renal failure with a prevalence ranging from 60 to 97%. According to Ann E. Horigan, Over 50% of Chronic Renal Failure patients complained of persistent fatigue before the initiation of dialysis therapy and continued to experience while on dialysis and after the dialysis. CRF patients most of the life time they spend with fatigue. Fatigue has been identified by chronic renal failure patients who undergo hemodialysis treatment as a distressing and disability symptom that interfere with their general activity, mood, walking ability, relation with other people and enjoyment of life. Fatigue is often under recognized and under treated by health care provider<sup>3</sup>.

There are many uses of complementary therapies to reduce fatigue and it is becoming a significant part of modern day health care with millions taking treatment each year. The most used therapies are hydrotherapy, biofeedback, aromatherapy, relaxation technique, massage, and acupuncture. Hydrotherapy is the use of water to relieve discomfort and promote physical wellbeing<sup>4</sup>.

A warm foot bath warms the skin, which causes vessel dilation and induces heat dissipation. Foot bath is an effective method of relaxation, since it increases sympathetic activity. In addition, foot bath increases white blood cells and natural killer cells. When warm water foot bath therapy is applied at a 40°C to 42°C temperature to the body, the capillary vessels dilate and become flaccid and exhibit signs of loss of tension<sup>5</sup>.

Untreated fatigue may impact greatly on quality of life, leading to increased dependence on others, weakness, increased physical and mental energy, social withdrawal and depression. A warm footbath therapy increases blood circulation, relaxes muscle tension, relieves congestion in the internal organs and brain and stimulate nerve ending of the soles thereby it exhibits a deep sense of relaxation<sup>6</sup>.

## OBJECTIVES

1. To assess the level of fatigue among patients with chronic renal failure undergoing hemodialysis in control and interventional groups.

2. To determine the effectiveness of footbath on fatigue among patients with chronic renal failure undergoing hemodialysis in interventional group.

## HYPOTHESES

1. There is a significant difference in the level of fatigue among patients with chronic renal failure undergoing hemodialysis in the interventional and control groups.
2. There is a significant difference in the level of fatigue before and after footbath therapy among patients with chronic renal failure undergoing hemodialysis in the interventional group.

## MATERIAL AND METHOD

A quasi experimental pretest posttest with control group design was used to assess the effectiveness of footbath. Non probability sampling technique was adapted. Sample size of 60 was selected, among which 30 subjects were allotted to interventional and 30 to control group. A standardized interview questionnaire was used for the study. It consisted of 2 parts.

### Part I

Consists of demographic variables of the patients with CRF undergoing hemodialysis (age, gender, duration of dialysis and contributing factors such as anemia, anorexia, and other contributing factors: diabetes mellitus, heart disease).

### Part II

Consists of Brief Fatigue Inventory Scale to assess the level of fatigue. The questionnaire consists of 9 statements. Each item was graded on a 0-10 numerical scale.

The overall score is obtained by averaging the scores obtained on each item, which is graded as follows:

Pre and post test was administered for five days to the control and interventional groups. During the interventional days, Standardized Brief Fatigue Inventory Scale was administered through structured interview schedule for the patients with CRF undergoing hemodialysis. It took 5 minutes for each sample. Then foot bath was given for 10 minutes with warm water (40°C-42°C). Both legs were

soaked inside the bucket 20cm above the ankle, and then the legs were dried. Then the post test level of fatigue was assessed one hour after the intervention by the same Brief Fatigue Inventory scale. That was repeated for 5 days.

## RESULTS

The collected data were analyzed by using both descriptive (mean standard deviation, mean percentile, frequency and percentage) and inferential statistics (paired 't' test, unpaired 't' test and chi square test).

Figure No.1 reveals the level of fatigue in control group. During the pre-test, (1-5days) ranging between 22(73%) and 24(83%) clients experienced moderate level of fatigue, and ranging between 5(17%) and 8(27%) clients had severe level of fatigue.

Figure No.2 reveals the post test level of fatigue in control group. During the post test, majority of 23-24 (77%-83%) patients experienced moderate level of fatigue and 5-7 (17%-23%) patients had severe level of fatigue. The result showed that there was no significant change in the level of fatigue.

Figure No.3: shows that in interventional group during the pre-test, majority 22(73%), 28(93%) and 29(100%), 25(86%) of them had moderate level of fatigue, 8(27%) and 2(7%) subjects had severe fatigue during the 1<sup>st</sup> 2<sup>nd</sup> and 3<sup>rd</sup> days respectively. None of them had mild level of fatigue. During the 4<sup>th</sup> and 5<sup>th</sup> days, 28(97%) and 25(86%) had moderate level of fatigue, 1(3%) and 4(14%) had mild level of fatigue. None of them had severe level of fatigue. It inferred that there is gradual decrease in the level of fatigue due to the effect of footbath therapy.

Figure No.4 shows that among the interventional group during the post test 1<sup>st</sup> day itself all patients 30(100%) experienced moderate fatigue. Then the fatigue level decreased day by day. On the 5<sup>th</sup> day, 10(34%) patients experienced moderate fatigue and majority 19(66%) experienced mild fatigue. The result proved that the foot bath is effective in reduction of the level of fatigue.

Table No.1 reveals that among interventional group the obtained paired 't' test value was highly significant at  $p < 0.05\%$  level, unpaired 't' test value

was also highly significant at  $p < 0.05\%$  level. Among control group, the obtained paired 't' test value was not significant at  $p < 0.05\%$  level. Hence, it is inferred that footbath therapy among patients with Chronic Renal Failure undergoing hemodialysis is effective in reducing fatigue.

Table No.2 reveals that among interventional group, the mean pre-test score was 49 with 5.6 Standard Deviation and calculated Mean Percentile was 46% were more than the post test score of  $32 \pm 6.2$ , 36%. Hence, it is inferred that the foot bath therapy is effective in reducing fatigue among clients with Chronic Renal Failure undergoing hemodialysis.

## DISCUSSION

The basic aim of the present study was to assess the effectiveness of footbath on fatigue among patients with chronic renal failure undergoing hemodialysis. The results of this study revealed that among the interventional group the mean pre-test score of fatigue was 49 with standard deviation 5.6 and mean percentile 46%. In contrast, the mean post-test score of fatigue was 32 with standard deviation of 6.2 and mean percentile 36%. The obtained 't' value 31 was significant at  $p < 0.05$  level.

These findings were supported by the study done by Soumya Susan who did a quasi-experimental study to find out the effectiveness of footbath therapy on fatigue among CRF patients. 30 CRF patients were selected (15 each in experimental and control groups) using purposive sampling technique. Piper Fatigue Scale - 12 was used. The result revealed that there was a significant difference between pre-test and post-test fatigue score in experimental group. In pre-test, the mean fatigue score of both experimental and control groups were almost equal ( $6.41 \pm 0.48$  and  $6.5 \pm 0.31$ ). The mean post-test fatigue scores of control group were  $6.53 \pm 0.29$ ,  $6.61 \pm 0.21$ ,  $6.58 \pm 0.29$  on 3<sup>rd</sup>, 5<sup>th</sup> and 7<sup>th</sup> days respectively, that were higher than the mean post-test scores of experimental group subjects ( $5.85 \pm 0.57$ ,  $5.03 \pm 0.71$ ,  $3.66 \pm 0.37$ ). The study revealed that footbath therapy was effective in reducing fatigue<sup>5</sup>.

S.No	Score	Description
1	0	No fatigue
2	1-3	Mild
3	4-6	Moderate
4	7-9	Severe
5	10	Fatigue as bad as you can imagine

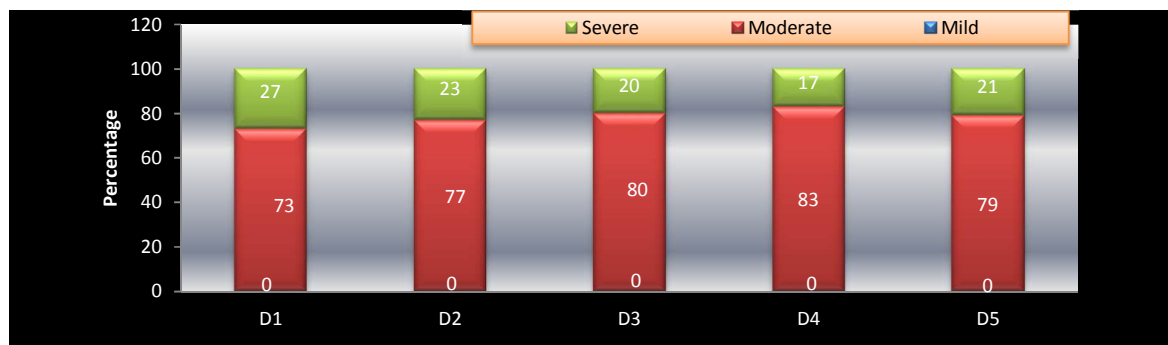
S.No	Level of fatigue	Score
1	Mild	1-27
2	Moderate	28-54
3	Severe	55-90

**Table No.1: Score of fatigue among clients with chronic renal failure undergoing hemodialysis in interventional and control group (Paired ‘t’ test and unpaired ‘t’ test) N=60**

S.No	CRF clients on hemodialysis	Paired t-test	Unpaired t-test	Table value	Degree of freedom	Level of Significance
1	Interventional group Pre test Post test	31	-	2.045	5%	Significant
2	Control group Pre test Post test	0.6	-	2.045	5%	Not significant
3	Interventional and Control group	-	9.3	2.045	5%	Significant

**Table No.2: Fatigue among clients with chronic renal failure undergoing hemodialysis in interventional and control group (Mean, Standard Deviation, Mean Percentile)**

S.No	CRF clients on hemodialysis	Mean	Standard deviation	Mean Percentile
1	Interventional group	Pre test	49	46%
		Post test	32	36%
2	Control group	Pre test	48	53%
		Post test	47	54%



**Figure No.1: Percentage bar diagram showing percentage distribution of pre-test level of fatigue among CRF patients on hemodialysis in control group**



Figure No.2: Percentage bar diagram showing percentage distribution of post-test level of fatigue among CRF patients on hemodialysis in control group

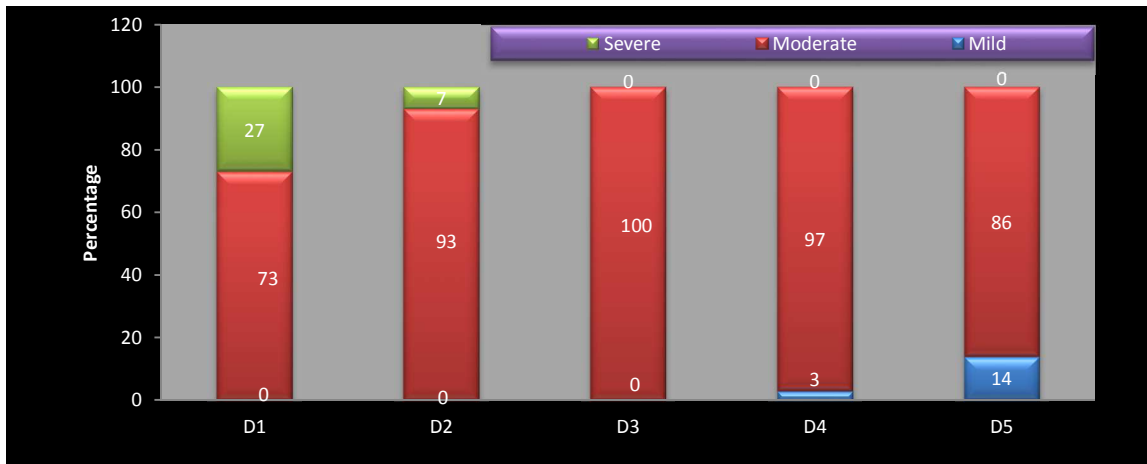


Figure No.3: Percentage bar diagram showing percentage distribution of pre-test level of fatigue among CRF patients on hemodialysis in interventional group

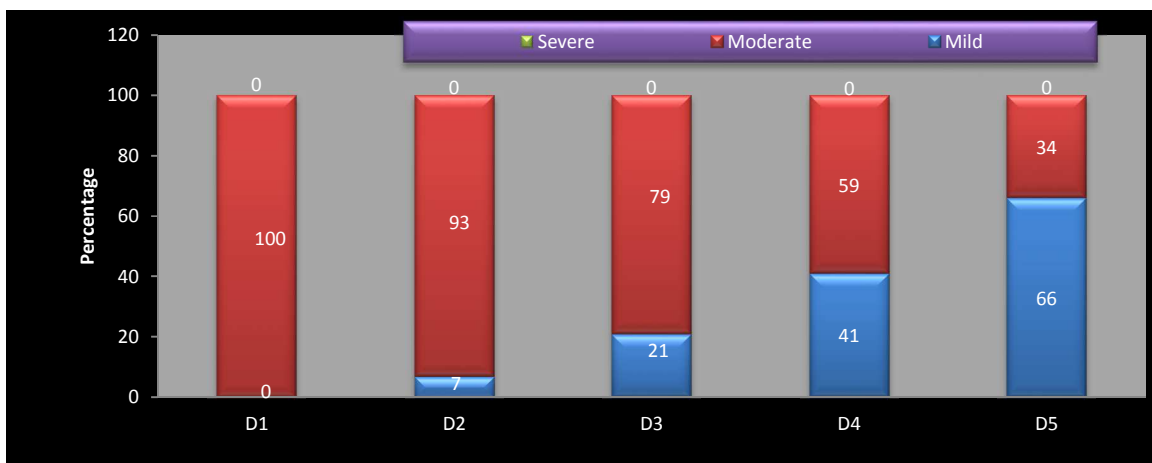


Figure No.4 percentage bar diagram showing percentage distribution of post-test level of fatigue among CRF patients on hemodialysis in interventional group

## CONCLUSION

The main conclusion drawn from this present study was that most of the clients with chronic renal failure undergoing hemodialysis had significant level of fatigue. After footbath session, it was found that there had been a significant level of reduction in fatigue. Participants found themselves comfortable and also expressed high level of satisfaction towards administration of footbath.

It is thus concluded that, footbath is an effective and simple strategy to reduce fatigue among patients with CRF undergoing hemodialysis.

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## CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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