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RESEARCH ARTICLE

EFFECTIVENESS OF FOOT REFLEXOLOGY ON PAIN AMONG HEMODIALYSIS PATIENTS

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Abstract

Background: Hemodialysis is the most important treatment for chronic kidney disease. The occurrence of the negative symptoms of dialysis therapy such as pain, sleep disorder, depression, fluctuations in blood pressure reduce the Quality of life and cause the illness to be perceived as burdensome. Foot reflexology serves to relax, improve circulation and promote a general feeling of wellness among hemodialysis patients.

Aim: To assess the effectiveness of foot reflexology on pain among hemodialysis patients. **Material & Methods:** A quasi-experimental pretest posttest control group design was used. 302 patients underwent hemodialysis were selected from two hemodialysis center. Foot reflexology given for 2 weeks in an alternative day. Researcher used numerical pain rating scale for assessing the pain of hemodialysis patients.

Results: In the study group the pre-test mean was 7.15 with SD of 2.29 reduced to 2.02 with SD 1.97 in the post-test III which gives the evidence that there was a significant difference between the observations $P < 0.001$ on patient's level of pain. In the control group the pre-test mean was 7.08 with SD of 2.25 and the posttest III mean was 6.25 with SD 1.70 which shows that there was no significant difference between pre and posttest observations on patient's level of pain.

Conclusion: Foot reflexology is a safe and effective tool, which helps in reducing pain among hemodialysis patients. This study highlights the need for adopting foot reflexology as an effective therapy in hospital settings.

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Introduction:-

Chronic kidney disease represents a major economic burden on healthcare systems worldwide. Nowadays, the prevalence of chronic kidney disease is rising significantly. The estimated number of affected people ranges from

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11% to 13% globally.(Mosleh H,2020). Based on different epidemiological data, chronic kidney disease effects on average 10% of the population around the world.(Dąbrowska M, 2018).

The prevalence of chronic kidney disease in worldwide predicted to reach 8-16% of the populations. The incidence of chronic kidney disease rises every year, especially in developing countries cause of increasing life expectation age, so that people have a longer age. chronic kidney disease therapy needs special treatment such as dialysis or renal transplantation. Many people use dialysis to treat chronic kidney disease. Chronic kidney disease is a global threat to health in general and in developing countries in particular because the treatment is lifelong and expensive. Nearly 90% of patients in India cannot afford the cost. (Choudhari K, 2017)

The global prevalence of chronic renal failure (CRF) is significantly elevated. Reports indicate that about 10% of the people had this problem from all over the world. Hemodialysis is the most important treatment for chronic kidney disease as of the 3 million people undergoing replacement renal treatment, 2.5 million (80%) use hemodialysis. (Habibzadeh H, 2020).

The occurrence of the negative symptoms of dialysis therapy such as pain, sleep disorder, depression, fluctuations in blood pressure, and stomachache reduce the quality of life and cause the illness to be perceived as burdensome. (Dąbrowska M, 2018)

The theory of reflexology is based on the principle that energy flows through vertical zones throughout body from organs toward the head. Therefore, massage and stimulation of nerves cause relaxation, reduce tension and as a result returns balance in the body. Studies have shown that reflexology reduces anxiety, nausea and vomiting, pain, sleeplessness and fatigue.(Rahmani Z, 2017).

Methods & Materials:-

Researcher adopted a quasi-experimental pretest posttest control group design. Formal permission was obtained from Institutional Ethical Committee of Mahatma Gandhi Medical College & Research Institute, Puducherry. The formal setting permission was obtained from the Directors of two Dialysis Centers from Puducherry.302 hemodialysis patients (Experimental -155, Control -155) undergoing hemodialysis were selected for the study.

A brief introduction about the self and study were given and data was collected from the patients. Written informed consent was obtained from the patients and confidentiality of the responses was assured. After selection of samples, the investigator assessed the pretest level of pain in both the experimental and control groups using a Numerical Pain Intensity Scale. Foot reflexology is administered for 6 cycles in duration of 40 minutes by the investigator for the experimental group and the control group were received no intervention. The posttest level of pain was assessed by the investigator for the experimental and control groups after two weeks of intervention.

Results & Discussion:-

In the study and control group 30(19.87%) were in the age group of 20-30 years, 60(39.73%)wereintheagegroupof 31-40years,30(19.87%)wereintheagegroupof 41-50 years and 31(20.53%) were in the age group of 51-60 years.With regard to gender, 110(72.85%) were male and 41(27.15%) were female in both thestudyandcontrolgroup.

According to body mass index, in the study group 11(7.28%) of them had underweight, 50(33.12%) had normal weight, 42(27.81%) had overweight and 48(31.79%) had obese. In the control group 12(7.95%) of them had underweight, 56(37.09%) had normal weight, 41(27.15%) had overweight and 42(27.81%) had obese.With regard to hemoglobin level, in the study group 61(40.40%) were normal, 26(17.22%) were mild anemic, 41(27.15%) were moderate anemic and 23(15.23%) were severe anemic. In the control group 57(37.75%) were normal, 21(13.91%) were mild anemic, 36(23.84%) were moderate anemic and 37(24.50%) were severe anemic.

In regard to duration of renal failure, in the study group 27(17.88%) had below 1 year, 30(19.87%) had 1-4 years, 94(62.25%) had 5-8 years and none of them had more than 8 years. In the control group 32(21.19%) had below 1 year, 38(25.17%) had 1-4 years, 81(53.60%) had 5-8 years and none of them had more than 8 years.Regarding the duration of hemodialysis, in the study group 16(10.60%) of them were subjected to hemodialysis less than 1 year, 74(49.01%) had 1-2 years and 61(40.40%) had more than 2 years. In the control group 25(15.26%) of them were subjected to hemodialysis less than 1 year, 73(48.34%) had 1-2 years and 53(35.10%) had more than 2 years. In

regard to frequency of hemodialysis, in the study group 13(8.61%) had undergone one time per week, 33(21.85%) had undergone two time per week and 105(69.54%) had undergone three time per week. In the control group 13(8.61%) had undergone one time per week, 24(15.89 %) had undergone two time per week and 110(72.85%) had undergone three time per week.

Table 1:- Pain among hemodialysis patients in the study and control group.

Assessments	Pain level	Experiment (n=151)		Control (n=151)		Chi-square test
		N	%	n	%	
Pretest	None	0	0.00	0	0.00	$\chi^2=1.45$ p=0.48 not significant
	Mild Pain	22	14.57	23	15.23	
	Moderate Pain	48	31.79	57	37.75	
	Severe Pain	81	53.64	71	47.02	
Posttest-I	None	14	9.27	0	0.00	$\chi^2=20.23$ p=0.001*** significant
	Mild Pain	30	19.87	27	17.88	
	Moderate Pain	63	41.72	55	36.42	
	Severe Pain	44	29.14	69	45.70	
Posttest-II	None	24	15.89	0	0.00	$\chi^2=87.90$ p=0.001*** significant
	Mild Pain	40	26.49	32	21.19	
	Moderate Pain	83	54.97	52	34.44	
	Severe Pain	4	2.65	67	44.37	
Posttest-III	None	44	29.14	0	0.00	$\chi^2=113.65$ p=0.001*** significant
	Mild Pain	59	39.07	36	23.84	
	Moderate Pain	48	31.79	51	33.77	
	Severe Pain	0	0.00	64	42.38	

In the pre-test of the study group 22(14.57%) had mild pain and 48(31.79%) had moderate pain, 81(53.64%) had severe pain. In the post-test 3, 44(29.14%) of them had no pain, 59(39.07%) had mild pain, 48(31.79%) had moderate pain and none of them had severe pain.

The study result coincided with studies by Bassat, Brill, Sharon (2019) conducted a retrospective study on incidence and treatment of pain in the dialysis unit of tertiary referral center. The cohort included 147 patients. Over 66% reported significant (VAS >40) chronic pain during the preceding 3 months, most often characterized as stabbing (38%) and with concurrent itching (44%). Only 33% of patients received chronic pain medications, while 55.6% of patients with severe pain and 45.9% with pain characterized as the worst imaginable did not receive any analgesics. Pregabalin or weak opioids were the most frequently used. The study concluded that chronic pain is highly prevalent and markedly undertreated in dialysis patients, despite its significant adverse impact.

Brkovic, Burilovic, Puljak (2016) conducted a systematic review on prevalence and severity of pain in adult end-stage renal disease patients on chronic intermittent hemodialysis. A total of 52 studies with 6,917 participants were included. The data were collected by using PsycINFO, MEDLINE, CINAHL and Scopus. Results revealed that the prevalence of acute and chronic pain in hemodialysis patients was up to 82% and 92%, respectively. The study concluded that prevalence of pain was higher in patients undergoing hemodialysis and appreciable gaps and restriction in the accessible evidence

The chi square test revealed that there was no statistically significant difference between the study and control group in pretest. The chi square value of posttest 1 ($\chi^2=20.23$, p=0.001), posttest 2 ($\chi^2=87.90$, p=0.001) and posttest 3 ($\chi^2=113.65$, p=0.001) revealed that there was high level statistically significant difference between the study and control group which showed that the foot reflexology had significantly reduced the pain among patients subjected to hemodialysis in study group.

Table 2:- Comparison of Mean Difference Score of Pain between study and control group.

Group	Pretest		Posttest-I		Posttest-II		Posttest-III		Mean difference	Oneway Repeated measures
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		

										ANOVA F-test
Experiment	7.15	2.29	4.60	2.43	3.04	2.61	2.02	1.97	5.13	F=201.96 p=0.001*** (S)
Control	7.08	2.25	6.95	1.71	6.87	1.62	6.45	1.79	0.63	F=4.90 p=0.01** (S)

In the study group the pre-test mean was 7.15 with SD of 2.29 reduced to 2.02 with SD 1.97 in the post-test III which gives the evidence that there was a significant difference between the observations $P < 0.001$ on patient's level of pain. In study group, hemodialysis patient's pain was reduced to 51.30% whereas in control group pain was reduced to 8.30%. This clearly indicates that foot reflexology is effective in reducing the pain of the hemodialysis patients.

The study results coincided with studies by Ozdemir G, Owayolu N, Owayolu O (2013) conducted a randomized, controlled study on the effect of reflexology applied on hemodialysis patients with fatigue, pain and cramps in Turkey. A total of 80 patients were enrolled. Piper Fatigue Scale and visual analogue scale for measuring the severity of cramp and pain were used. The intervention group received a 30 min reflexology treatment for one week. Results showed that reflexology decreased mean scores of the fatigue, cramp and pain in the intervention group. The study concluded that the seriousness of pain, fatigue and cramp reduced in patients undergoing hemodialysis receiving reflexology.

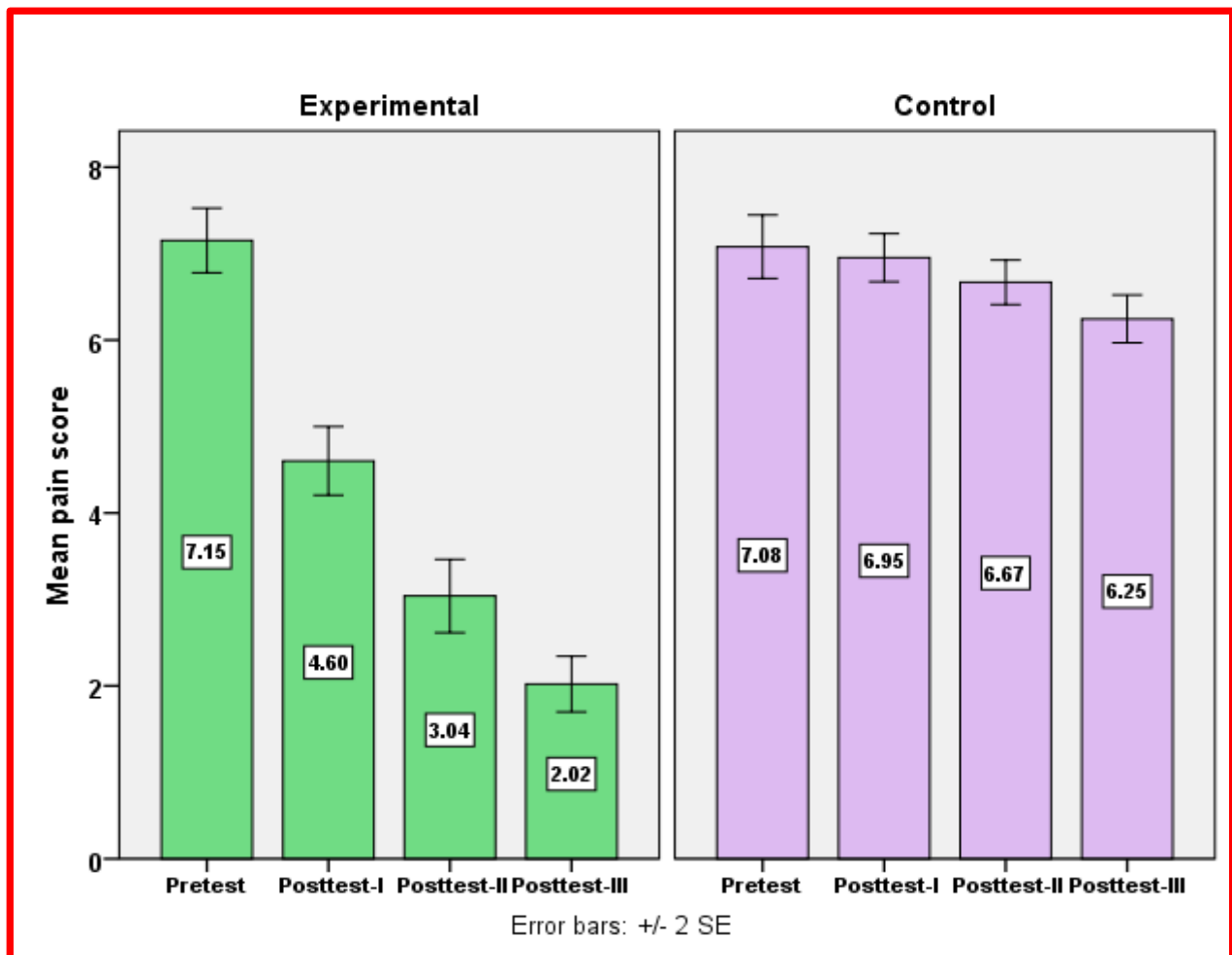


Figure 1:- Comparison of overall pretest and posttest I, II and III pain score between study and control group.

There was a significant association of pain with age at $p < 0.001$, residence at $p < 0.001$ and dietary pattern at $p < 0.01$ in the study group.

Conclusion:-

The present study reveals that foot reflexology intervention has a definite impact in reducing the pain among hemodialysis patients. Foot reflexology is a simple, safe, cheap and cost effective intervention. Nurses play an important role to identifying the complications of hemodialysis among patients with chronic renal failure and practice of foot reflexology relieve pain and discomfort among patients subjected to hemodialysis in the dialysis centers.

Conflict of interest:

None declared

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