Effect of Acupressure on Anxiety among Patients Undergoing Hemodialysis in Selected Hospitals of Ambala, Haryana: A Randomized Controlled Trial

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Abstract

Patients with chronic kidney disease with co morbidities (like diabetes mellitus, hypertension) undergoing hemodialysis are more prone to stress and anxiety. Aims and Objectives: The aim of the study was to evaluate the effect of acupressure on anxiety among patients undergoing hemodialysis. Methodology: The research includes quantitative approach and design was Basic pre-test post-test (with optional repeated follow ups). The tool used i.e. selected variables regarding study participants characteristics and DASS-42 (Anxiety-14 items). Results: After the administration of acupressure, two third of the study participants in experimental group were at normal level (no anxiety) whereas in control group study participants were at severe and extreme level of anxiety. There was significant difference between experimental and control group in post-test I and post-test II i.e. ('t'= 13.35, p=0.00) and ('t'= 13.79, p=0.00) respectively. Further results showed significant difference within groups in experimental and control group (in inverse direction) as calculated (F value 1.62, p=0.00) and (F value 3.69, p=0.03) respectively. Step wise regression analysis was used which showed the predictability of selected variables on anxiety. Conclusion: Findings of this study concluded that Acupressure intervention given for 30 minutes at once was effective in reducing anxiety among patients undergoing hemodialysis.

***Keywords**: Acupressure, anxiety, patients undergoing hemodialysis*

Introduction

Chronic kidney disease (CKD) is a condition in which the kidneys are damaged or cannot filter blood. Adults with diabetes, high blood pressure, or both have a higher risk of developing CKD than those without these diseases. Other risk factors for CKD include heart disease, obesity, and a family history of CKD[1] and more than 1 million people die annually from ESRD [2]. The number of patients who do receive dialysis seems likely to double from 1.0 to 2.0 million between 2010 and 2030.[3]

Among the patients of end stage renal disease, about 90% of the patients require hemodialysis (HD) three times a week while 9% of the patients adopt home peritoneal dialysis.[4] It has been reported that the average anxiety rate among ESRD patients is 38%. [5] It was found that compared with HD patients with depressive disorders, HD patients diagnosed with anxiety disorders have improved quality of life.[6]

Acupressure Therapy is effective in the relief of stress-related ailments and ideal for self-treatment and preventive health care for boosting the immune system.[7] Psychological illnesses need non-pharmacological treatment along with the pharmacological treatment for

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the better recovery of the patient both physically and psychologically.[8]

To explore more about the acupressure and its effect on anxiety based on the previous research evidences researcher decided to do research on acupressure among patients undergoing hemodialysis.

Methodology

The study was conducted during the period from March 2017 to July 2018 in the state of Haryana, India. A sample of 70 patients undergoing hemodialysis in this study with the prior permission from the medical superintendent of M.M.I.M.S.R & Hospital, Mullana, Ambala and civil surgeon of Civil hospital, Ambala, Haryana**.** The written consent from the patients was collected prior to the study. Quantitative research approach with true experimental (basic pre - test with repeated optional follow ups) design was used in this study. Patients those who were undergoing hemodialysis in selected hospitals, having complete four limbs, able to understand and speak Hindi, alert, oriented, and comprehend to respond were included for experimental group with the same criteria was included for control group. Patients have no anxiety (scored 0-7 in DASS) were not willing to participate were excluded from the study. Seventy hemodialysis patients (35 in experimental group and 35 in control group) were selected using random sampling technique who were randomized into experimental and control group with lottery method.

Description of Tool

1. Selected variables:

It consists of 14 items related to selected variables i.e. Age in years, Gender, Religion, Marital status, Education, Occupation, Family income (per month), Socio-economic class, Duration of taking Hemodialysis treatment, Type of family, Place of living, Associated health problems, History of kidney disease in family, History of taking benzodiazepines / anti-anxiety drugs.

2.* DASS- 42 *Scale to assess the anxiety

It consists of 42 items (14 items for anxiety) with 4-point rating scale with total ranging from 0-42 for anxiety with self-report (Interview) technique. The calculated Cronbach Alpha Internal consistency was 0.74 (Acceptable range is 0.7-0.9).

Procedure

Pre-test of both groups were done by administering the tool i.e. Selected variables and DASS-42 before the hemodialysis. At 30 minutes of hemodialysis acupressure was administered for the duration of 30 min in which first 5 minutes for deep breathing exercise and 25 minutes for acupressure, (5 minutes for each area) only in experimental group. Acupressure was applied in five areas starts from i.e. toe of both foot followed by midway between the medial ends of the eyebrow, at the ulnar end of the transverse crease of wrist, at the midway between the tip of the medial malleolus on both legs and two points on the both sole of the foot i.e. one point for each foot for its therapeutic effect i.e. reduction of anxiety At 1 hour of hemodialysis (immediately after the intervention) post-test I was taken from both the groups with DASS-42 scale and on the completion of hemodialysis post-test II was taken from both groups.

Data Analysis

Descriptive statistics: Frequency, percentage distribution was used to describe selected variables and Chi-square was used to assess the homogeneity between the groups.

Inferential statistics: Independent 't' test, Repeated Measure ANOVA, ANOVA, Post hoc test and Multiple regression analysis was used in the study.

Results

Homogeneity between the experimental and control group was checked by x^2 test was applied to compare the experimental and control group with respect to every selected variable. Both the groups were homogenous in terms of selected variables except family income per month (p=0.04).

Percentage distribution of experimental and control groups in terms of level of anxiety are shown in figure 1. 40% in experimental group and 62.85 %in control group were at severe level of anxiety as shown in Figure 1.

Insert Figure 1 almost here

In terms of anxiety, there was no significant difference between experimental and control group found before administration of acupressure as the calculated 't' value was 0.68, p=0.48 with mean difference of 0.65. Mean score after administration of acupressure in experimental

group was 6.80 and in control group was 18.71 with mean difference of 11.91. The calculated 't' value was found to be 13.35, p= 0.00 in post-test I. In post-test II mean score after administration of acupressure in experimental group was 6.20 and in control group was 18.80 with mean difference of 12.60. The calculated 't' value was found to be 13.79, p=0.00.

Insert Table 1almost here

In experimental group there was a significant difference in the mean score of anxiety in pre-test (17.66), post- test I (6.80) and post-test II (6.80) and computed F value was 1.62 with p=0.00, whereas in control group the mean score of pre -test (17.00), post-test I (18.71) and post-test II (18.80) was in reverse direction and computed F value was 3.69, p=0.03.

Insert Table 2 almost here

In experimental group there was statistically significant difference between pre- test – post- test I (p=0.00), pre- test – post- test II (p=0.00) and post- test I – post- test II (p=0.02), that showed at the time of pre-test, participants had higher anxiety than the post- test I and post- test II. The participants had higher anxiety in post- test I than post- test II in experimental group whereas in control group there was also statistically significant difference between pre- test-post- test I (p=0.00) and pre- test-post-test II (p=0.00) but in reverse direction, participants had lesser anxiety in pre-test than post- test I and post-test II.

In experimental group, anxiety was independent of selected variables in post-test I except family monthly income (18000 – 36016 had higher mean score), duration of taking hemodialysis treatment (>5 years had higher mean score) and others disease (no other disease had higher mean scores). Further Post Hoc test was applied to reveal the mean difference of significant association in experimental group with selected variable (family monthly income) i.e. mean difference (4.38) in the family monthly income category i.e. p=0.01. It concludes that family income category of 13495-17999 had higher anxiety than in category of 1803-5386 in post- test I.

In control group, anxiety was independent of selected variables except heart disease (presence of heart disease had higher mean score) among patients undergoing hemodialysis in post-test 1.

In experimental group, anxiety was independent of selected variables in post-test II except occupation (semi profession having higher mean score), duration of taking hemodialysis treatment (4-5 years had higher mean scores) and hypertension (having hypertension had higher mean score).

Further multiple regression- Step wise analysis was performed to predict the effect of multiple independent variables on anxiety.

On pre-test anxiety, presence of nuclear family having the prediction with variability of 24% (R^2 =0.24) as calculated F value 10.43. Nuclear family in addition to history of taking benzodiazepines having the prediction with variability of 33% (R^2 =0.33). On post-test I anxiety, presence of diabetes having the prediction with the variability of 17% (R^2 = 0.17) as calculated F value 7.0 Diabetes in addition to presence of history of kidney disease in family having the prediction with the variability of 36% (R^2 = 0.36). Diabetes, history of kidney disease in family and presence of urban place of living having the prediction with the variability of 50% (R^2 = 0.50) as shown in table 3.

On post-test II anxiety, presence of diabetes having the prediction with the variability of 25% (R^2 = 0.25) Diabetes in addition to presence of history of kidney disease in family having the prediction with the variability of 38% (R^2 = 0.38).

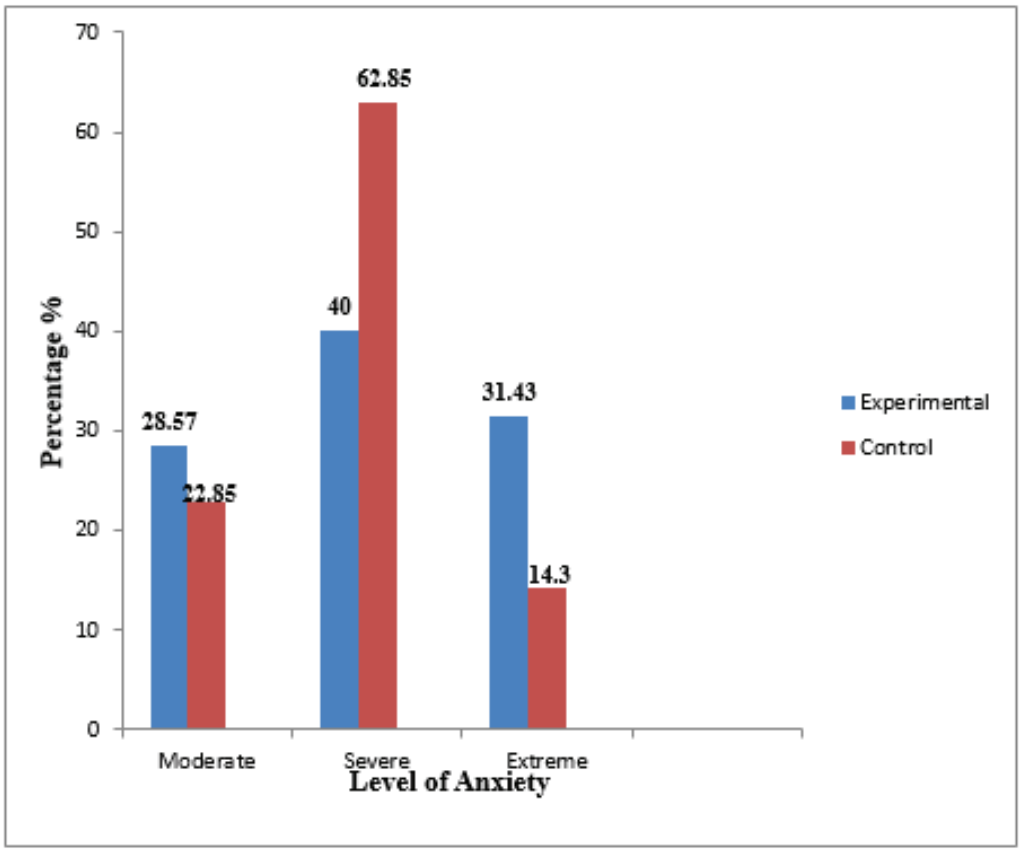

FIGURE 1- LEVEL OF ANXIETY AMONG PATIENTS UNDERGOING HEMODIALYSIS IN EXPERIMENTAL AND CONTROL GROUP BEFORE ADMINISTRATION OF ACUPRESSURE

Table 1: Mean, Mean difference, Standard error of mean difference and 't' value of Anxiety among Patients undergoing Hemodialysis Before and after Administration of Acupressure in Experimental and Control group N = 70

Observation	Group	Mean ± S.D.	MD		SEMD	't' value	df	p value
Pre test	Experimenal (n = 35) Control (n = 35)	17.66 ± 4.53 17.00 ± 3.48	0.65		0.96	0.68	68	0.48NS
Post test1	Experimental (n = 35) Control (n = 35)	6.80 ±2.49 18.7± 4.65	11.9		0.85	13.35	68	0.00*
Post test2	Experimental (n = 35) Control (n = 35)	6.20±2.54 18.80± 4.77	12.6		0.83	13.79	68	0.00*

[NS] -Not significant (p>0.05) df (68) = 1.67 *- significant (p ≤ 0.05)

Table 2: Repeated measure ANOVA showing the significant difference within groups in terms of Anxiety in Experimental and Control group N=70

Variable	Group	Test	Mean	F value	p value
Anxiety	Experimental (n=35)	Pre test	17.66		
		Post test I	6.80	1.62	0.00*
		Post test II	6.20		
	Control (n=35)	Pre test	17.00	3.69	0.03*
		Post test I	18.71		
		Post test II	18.80		

*- Significant ($p \leq 0.05$)

Table 3: Stepwise Regression showing Predictability of Individual Independent Variables on Anxiety in Experimental group (Regression Coefficient) in Different Observations N=35

observation	Model	Unstandardized coefficients		Standardized coefficients	't' value	p value
		B	Std. Error	Beta		
Pre Test	*(Constant)*	16.87	0.72		23.43	0.00*
	Nuclear family	6.87	2.13	0.49	3.23	0.00*
	(Constant)	18.40	0.99		18.53	0.00*
	Nuclear family	8.84	2.22	0.63	3.97	0.00*
	History of taking benzodiazepines	-2.79	1.31	-0.33	2.13	0.04*
Post Test	(Constant)	6.28	0.43		14.46	0.00*
	Diabetes	2.57	0.97	0.41	2.64	0.01*
	(Constant)	5.38	0.48		11.14	0.00*
	Diabetes	3.02	0.87	0.49	3.44	0.00*
	History of kidney disease in family	1.57	0.50	0.44	3.11	0.00*
	(Constant)	4.14	0.60		6.88	0.00*
	Diabetes	2.10	0.84	0.34	2.49	0.01*
	History of kidney disease in family	1.95	0.47	0.55	4.13	0.00*
	Urban place of living	1.43	0.48	0.42	2.94	0.00*
Post Test II	*(Constant)*	5.57	0.42		13.12	0.00*
	Diabetes	3.14	0.94	0.50	3.33	0.00*
	(Constant)	4.80	0.48	0.56	9.89	0.00*
	Diabetes	3.51	0.88	0.36	3.98	0.00*
	History of kidney disease	1.31	0.51		2.57	0.01*

*- Significant ($p \leq 0.05$)

Discussion

In the present study near about half of the study participants in control and less than half in experimental group were in the age group of 31-40 years i.e. 17 (48.6.3%) and i.e. 14 (40%) respectively. Less than 2/3rd of the study participants in control group and experimental group were male i.e.22 (62.9%). These findings were supported by a cross sectional study conducted by Ana Carolina Ottaviani et al (2016)[9] where they found more than half of the participants (60%) were in 18-59 years of age group and more than half of the participants (66%) were males.

In the present study in pre-test less than half of study participants in experimental group were at severe level of anxiety i.e. 14 (40%) and in control group 2/3rd of the study participants were also at the same level of anxiety as in experimental group i.e. 22(62.85%). These findings are contradictory to randomized controlled trial study conducted by Younes Mehrabi et al (2017) [10] on effect of Fordyce's Happiness Program on Stress, Anxiety, and Depression among the patients undergoing hemodialysis, where they found prevalence of anxiety among patients undergoing hemodialysis was 4.6% and 4.7% ($p > 0.05$) in trial and control group

In present study there was significant difference in terms of anxiety between experimental and control group after administration of acupressure the mean anxiety score in post-test 1 was 6.80±2.49 and 18.71±4.65 ($t=13.35$, $p=0.00$) in both the groups. In post-test II the mean anxiety score was 6.20±2.54 and 18.80 ±4.77 ($t=13.79$, $p=0.00$). These findings are similar to the previous randomized clinical trial study conducted by Ali Beikmoradi, et al. (2015)[11] on anxiety where they found mean anxiety score in the acupressure group after applying acupressure, in session 5 was 45.30 ± 7.14 and in session 10 it was 43.48 ± 6.82 ($p=0.00$) in experimental group which was significant in comparison to control group.

In present study there was a significant difference with in the experimental group from pre-test to post-test II in terms of anxiety as calculated by Repeated Measures ANOVA (F value=1.62, $p=0.00$) which was significant at 0.05 level of significance. These findings are similar with the findings of the study conducted by Nant Thin Thin Hmwea et al. (2015) [12] where they found significant reduction in anxiety as the mean score reduced to 27.04 ± 20.4 from 34.37±22.61 after the administration of acupressure ($p=0.03$) in experimental group.

Conclusion

Acupressure intervention was effective in reducing anxiety among patients undergoing hemodialysis.

Conflict of Interest: NIL

Source of Funding: NIL

Ethical approval: Research ethics committee of Maharishi Markandeshwar Deemed to be University Mullana, Ambala (MMDU/IEC/972).

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