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Efficacy of Acupressure on contributing factors of fatigue, severity of fatigue, Oxidative Stress Markers (OSM) and other blood parameters of patients with End-Stage Renal Disease (ESRD) on Maintenance Hemodialysis (MHD) in a selected tertiary hospital of Udupi Dist. Karnataka

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ABSTRACT

Fatigue is a debilitating symptom experienced by maintenance hemodialysis patients at varying intensity. Fatigue is multifactorial and to a great extent it can influence physical emotional and mental wellbeing of these patients. A randomized controlled trial was conducted to identify severity of fatigue, its contributing factors and to find effectiveness of acupressure therapy on change in fatigue scores, contributing factors of fatigue and blood parameters including oxidative markers among maintenance hemodialysis (MHD) patients in a tertiary care hospital, Udupi district.

The study was conducted in two phases. The first phase of the study was to identify severity of fatigue score and contributing factors of fatigue in MHD patients. The second phase of the study was aimed to i) find effectiveness of acupressure therapy in terms of difference in severity of fatigue score, changes in scores of contributing factors of fatigue, and blood parameters including oxidative stress markers (OSM). ii) Determine relationship between pretest scores of severity of fatigue, contributing factors of fatigue, OSM, other blood parameters of M H D patients. iii) Find association between pretest scores of severity of fatigue, and selected personal and clinical factors of M H D patients.

Structured interview technique was adopted to gather data by using validated and reliable study instruments. First phase of the study assessed severity of fatigue and factors contributing to fatigue by using questionnaires on severity of fatigue scale and factors of fatigue assessment tool respectively by conducting a cross sectional survey among 195 MHD patients. Second phase of the study was randomized controlled trial. Acupressure therapy was independent variable and statistically significant top ten factors contributing to fatigue which was identified in phase I and blood parameters were also included as

dependent variable. Eighty patients who had an average and above fatigue scores in the phase one were randomized to control (40) and experimental group (40) using block randomization procedure. Experimental group received acupressure therapy, whereas control group received sham acupressure therapy during the dialysis procedure that was within one hour of starting of the dialysis and during the last hour of dialysis for a total duration of 8weeks. Data on severity of fatigue score, functional ability and sleep quality were assessed at the beginning of the study prior to the implementation of intervention and it was re assessed during 3rd week, 5th week and 8th week. Blood parameters on hemoglobin, serum albumin, calcium, urea, creatinine and oxidative markers including protein thioles, malondialdehyde, glutathione (GSH) and glutathione S Transferase (GST) were measured pre intervention pre dialysis and post dialysis and also post intervention pre dialysis and post dialysis. Researcher and an assistant underwent acupressure training and was certified to provide acupressure therapy prior to commencement of study.

Descriptive statistics were used to describe patient's characteristics in phase I. Association of severity of fatigue and contributing factors of fatigue was tested by chi square. In phase II statistical significance of effectiveness of acupressure therapy was tested by repeated measures ANOVA and Post hoc Bonferroni corrections for different post- test measures on severity of fatigue scores and functional ability including in the different domains of physical, cognitive, social and affective and also for the other factors on mental wellbeing and sleep quality index. Effectiveness of acupressure therapy on blood parameters including oxidative stress markers were tested by repeated measures ANOVA with Post hoc Bonferroni corrections, *t* test and also Mann Whitney U test.

Findings of phase I revealed mean age of participant was 53 years and most of them 122 (62.5%) were above 50 years. Among them 147 (75.40%) were male and 65

(84.6%) belonged to lower middle socio economic status. With regard to the severity of fatigue all of the participants (100%) experienced fatigue within a range of mild to severe. Factors significant to fatigue were emotional wellbeing, sleep quality and activities of daily living. Hence phase II was decided to find acupressure effectiveness on mental wellbeing, sleep quality and functional ability along with the blood parameters including oxidative markers.

Mean age of participants in phase II was 52.02 years. Among them male constituted 23 (60.5%) in control and 30 (75%) in experimental group. Repeated measures ANOVA and Post hoc Bonferroni corrections for effectiveness of acupressure therapy on severity of fatigue and factors contributing to fatigue revealed that there was a statistically and clinically significant sustainable reduction in the fatigue in intervention group. Similarly in functional ability, mental wellbeing as well as in sleep quality also there was statistically and clinically significant sustainable improvement was seen in experimental group.

Pre dialysis pre intervention hemoglobin mean ± SD of control group was 9.12 ± 1.82, where as in the experimental group was 9.20 ± 2.05. In comparison to pre intervention and post intervention pre- dialysis hemoglobin value there was an increase seen in the experimental group i.e. was 9.63 ± 2.45. The pre intervention and post intervention pre dialysis changes in the blood parameters between the control group and experimental group of repeated measures ANOVA findings on hemoglobin value revealed a moderate statistical as well as clinical difference, but there was no significant change was seen between experimental and control groups. It was reassessed with each individual blood sample difference in control and experimental group and hemoglobin increase in experimental group was confirmed. Pre intervention pre-dialysis and post-intervention pre-dialysis computed‘*t*’ value of blood urea level was significantly higher

in control group. This increase could not be ascertained since the data on dietary details were not available as it was not included in the objective of the study. The same way the post intervention effect was not statistically significant in all the other blood parameters.

With regard to oxidative stress markers there was significant increase in protein thioles, glutathione values and also significant reduction in malondialdehyde value was seen in experimental group comparing to the control group.

Severity of fatigue scores and functional ability scores had strong positive correlation. But severity of fatigue scores with mental wellbeing scores and sleep quality index had a weak negative and moderate negative correlation respectively.

With regard to blood parameters there was negative correlation between pre intervention severity of fatigue scores, hemoglobin, protein thioles and glutathione values. But serum urea and creatinine, malondialdehyde and severity of fatigue scores had positive correlation. There was no significant relationship was seen with severity of fatigue scores and GST.

Acupressure therapy was found to be affective in this study intervention group in reducing the fatigue, improving the functional ability, mental wellbeing, and sleep quality index. It was also found to be effective in reducing the oxidant serum malondialdehyde, improving antioxidants protein thioles, GSH and also hemoglobin values. It was inferred as, as the fatigue score increases functional disability increases, mental wellbeing and sleep quality decreases.