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# Effectiveness of Foot Reflexology on Blood Pressure, Headache and Fatigue among Hypertensive Patients at Tertiary Care Hospital, Karad

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**Abstract:** ***Background: As per the WHO statistics (2019) an estimated 1.13 billion people worldwide have hypertension, most (two-thirds) living in low and middle income countries. In 2015, 1 in 4 men and 1 in 5 women had hypertension. Fewer than 1 in 5 people with hypertension have the problem under control. Hypertension is a major cause of premature death worldwide. One of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 25% by 2025. Problem Statement: Effectiveness of Foot Reflexology on Blood Pressure, Headache and Fatigue among Hypertensive Patients at Tertiary Care Hospital, Karad" Objectives: 1) To determine effectiveness of foot reflexology on blood pressure 2) To determine effectiveness of foot reflexology on headache 3) To determine effectiveness of foot reflexology on fatigue. Methods: A quantitative approach was used to conduct among 60 patients which were selected by simple random sampling technique. 30 samples were allotted in Experimental group and 30 in control group at Medicine ward and ICU in Krishna Hospital, karad. The experimental group received Foot Reflexology Once a day for Five Days and each session lasted for 20 minutes where control group followed hospital routine management. The data was analyzed by using descriptive and inferential statistics. Results: Pretest the mean and SD of SBP was 164±16.30 in the experimental group and 164.87±16.97 in the control group. Pretest the mean and SD of DBP was 100.73±6.46 in the experimental group and 101.53±7.68 in the control group. Among the Experimental group in the pretest, the Mean and SD of SBP was 164±16.30 and DBP was 100.73±6.46. In posttest, the Mean and SD of SBP was 155.47±15.96 and that of 101.53±7.68. The test of Significance was calculated using paired "t" test. The calculated "t" value for SBP was 2.116(P=0.0430). And that of DBP was 2.305(p=0.285) were greater than the table value. It showed that Foot Reflexology was effective in reducing the high blood pressure among the patients with hypertension. The Mean post-test value of SBP was 155.47±15.96 in the experimental group and 154.2±10.35 in the control group. The Mean post-test value of DBP was 96.33±8.26 in the experimental group and 92.67±5.10 in the control group. The calculated paired "t" value for SBP is 2.305 in the experimental group. And DBP was 5.972in the control group. These values were greater than the table value. It showed that Foot Reflexology was effective in controlling the Blood Pressure among the patients with Hypertension. Among the experimental group, in pre-test, the Mean and SD of Headache was 4.67±1.97 and in the post-test the mean and SD of Headache was 2.27±2.13. The test of significance was calculated using paired "t" test. The calculated "t" value for Headache was 4.079(P=0.003) were greater than table value. It showed that Foot Reflexology was effective in reducing Headache among hypertensive patients. Among the experimental group, in the pre-test, the Mean and SD of fatigue was 28.77±5.41 and in post-test the Mean and SD of Fatigue was 27.7±6.79. The test of significance was calculated using paired "t" test. The calculated "t" value is 4.013(p=0.004). It showed that Foot Reflexology was effective in reducing the level of fatigue among Hypertensive patients. Conclusion: Reflexology helps overall circulation in the body and it helps to reduce the blood pressure. Hypertension is one of the conditions purported to be improved by complementary therapies such as Foot Reflexology. The investigator conducted study to determine the effectiveness of Foot Reflexology on Blood pressure, Headache and Fatigue in Hypertensive patients in tertiary care hospital, karad.***

**Keywords:** Foot Reflexology, Systolic Blood Pressure, Diastolic Blood Pressure, Headache. Fatigue.

## 1. Introduction

Maintenance of good health is the means to living, existence, zest for life, feelings of being and happiness. Health not only means absence of sickness but presence of feelings and behaviors which constitutes different kinds of health. Achieving and maintaining health is an ongoing process, shaped by both the evolution of health care knowledge and practices as well as personal strategies and organized interventions for staying healthy known as lifestyle management. As per the WHO statistics (2019) an estimated 1.13 billion people worldwide have hypertension, most (two-thirds) living in low and middle income countries. In 2015, 1 in 4 men and 1 in 5 women had hypertension. Fewer than 1 in 5 people with hypertension have the problem under control. Hypertension is a major cause of premature death worldwide. One of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 25% by 2025.Hypertension is called a "silent killer". Most people with hypertension are unaware of the problem because it may have no warning signs or symptoms. For this reason, it is essential that blood pressure is measured regularly. Reducing hypertension prevents heart attack, stroke, and kidney damage, as well as other health problems. The age-adjusted prevalence of hypertension in India was 11.3% (95% CI 11.16% to 11.43%) among persons aged between 15 and 19 and was four percentage points higher among males 13.8% ((95% CI 13.46% to 14.19%) than among females 10.9% (95% CI 10.79% to 11.06%).

As per the World Health Statistics 2012, of the estimated 57 million global deaths in 2008, 36 million (63%) were due to non-communicable diseases (NCDs). The largest proportion of NCD deaths is caused by cardiovascular diseases (48%). In terms of attributable deaths, raised blood pressure is one of the leading behavioral and physiological risk factor to which

13% of global deaths are attributed. Hypertension is reported to be the fourth contributor to premature death in developed countries and the seventh in developing countries. Understanding epidemiology of hypertension will significantly help in decreasing the burden of associated morbidity and mortality. Recent WHO initiative on non-communicable diseases is expected to decrease hypertension related mortality and morbidity globally.

Headache is a common human experience, diverse in its expression, complex in its manifestation, and difficult to understand by any simple mechanism. Migraine is predominantly an affliction of young people. The strong familial association and early onset of the disorder suggest that there is an important genetic component.

Fatigue can refer to a subjective symptom of malaise and aversion to activity or to objectively impaired performance. It has both physical and mental aspects. The symptom of fatigue is a poorly defined feeling, and careful inquiry is needed to clarify complaints of "fatigue," "tiredness," or "exhaustion" and to distinguish lack of energy from loss of motivation or sleepiness, which may be pointers to specific diagnoses The physiological and psychological mechanisms underlying subjective fatigue are poorly understood.

Hypertension is less often reported associated with fatigue although there is some evidence that hypertensive subjects suffer more fatigue-related symptoms.

Reflexology is potentially a very valuable therapeutic nursing skill and could have wide-ranging and cost-effective benefits in health care, from special care baby units through to care of the elderly. Like many other complementary therapies, reflexology seems to restore and maintain health by rebalancing the body. Whilst too many, reflexology may appear a gentle therapy, it is vital that the contraindications are known and that it is only carried out by trained therapists.

The International Institute of Reflexology defines reflexology as a science that deals with the principle that there are reflex areas in the feet, and stimulating them properly can help many health problems in a natural way a type of preventative maintenance (International Institute of Reflexology, 2012The foundations of reflexology can be traced to two different theories or Schools of thought documented in the reflexology literature. The first theory originated in traditional Chinese medicine (TCM) and the second one in a Western technique known as Zone therapy

Reflexology is believed to be used for more than 4,500 years in Egypt, as pictograph evidence was found in the tomb of an Egyptian physician; some claim that it originated in India and China. During intervention, the therapist inserted pressure on reflexology areas of plantar surface of the disease and any treatment side effects but may also, be worried and frustrated about their disease, may be open to complementary therapies as an adjunct to conventional treatments.

Reflexology is an active and continually evolving therapeutic practice. In recent years traditional reflexology has branched out into new and exciting therapeutic expressions in an effort to improve the health and wellness of clients. Within all of these different types of reflexology, there are therapists who specialize in different protocols.

## 2. Need for Study

Globally, an estimated 26% of the world's population (972 million people) has hypertension, and the prevalence is expected to increase to 29% by 2025, driven largely by increases in economically developing nations. The high prevalence of hypertension exacts a tremendous public health burden. As a primary contributor to heart disease and stroke, the first and third leading causes of death worldwide, respectively, high blood pressure was the top modifiable risk factor for disability adjusted life-years lost worldwide in 2013.

Having hypertension puts you at risk for heart disease and stroke, which are leading causes of death in the United States. In 2018, nearly half a million deaths in the United States included hypertension as a primary or contributing cause. Only about 1 in 4 adults (24%) with hypertension have their condition under control. A greater percent of men (47%) have high blood pressure than women (43%).

Headache is an extremely common symptom and collectively headache disorders are among the most common of the nervous system disorders, with a prevalence of 48.9% in the general population. A reflexology treatment aims to restore the body's natural balance. In this busy world, we spend a lot of time on our feet and our feet take a daily pounding. We put our feet under a lot of pressure and never give them a thought until they start hurting. This impact is felt throughout the whole body and can even lead to tension headaches. Despite its prevalence, however, surprisingly few data exist on the demographic and social associations of fatigue. In recent years fatigue has attracted renewed attention, largely because of the prominence given to the chronic fatigue syndrome, also known as post viral fatigue.

Foot reflexology is a non-invasive, cost effective method used for the reduction of blood pressure. It is a readily available, painless procedure that can be applied to any person without consideration time and place. This form of treatment demands no special devices or requirements.

**Problem Statement:**
"Effectiveness of foot reflexology on blood pressure, headache and fatigue among hypertensive patients at tertiary care hospital, Karad"

**Objectives:**
- To determine effectiveness of foot reflexology on blood Pressure
- To determine effectiveness of foot reflexology on Headache
- To determine effectiveness of foot reflexology on fatigue.

**Hypothesis:**
H0 –There will be no significant effect of Foot reflexology On Blood Pressure, Headache and Fatigue.
H1-There will be significant effect of Foot Reflexology on Blood Pressure, Headache, Fatigue.

**Operational Definitions**

Effectiveness: It refers to the reduction of high blood pressure, headache and fatigue among hypertensive patients as measured by using sphygmomanometer, as determined by the difference in pre and post test score and which is statistically significant.

- Foot Reflexology: It refers to the therapeutic application of five steps of massage to both feet of patients with hypertension for a period of 10 Minutes on each foot, daily for 5 consecutive days as a relaxations therapy.
- Blood Pressure: Blood pressure is a measure of the force that your heart uses to pump blood around your body.
- Headache: Headache is pain in any region of the head. Headaches may occur on one or both sides of the head be isolated to a certain location, radiate across the head from one point, or have a viselike quality.
- Fatigue: In this study, it refers to extreme tiredness resulting from mental and physical illness.
- Hypertension: In this Study It refers to blood pressure is above 140/90mmHg.
- Patients with Hypertension: In this study, it refers to the patients, diagnosed as hypertension for a period of less than 10 years.
- Tertiary Care Hospital: In this study, a tertiary care hospital refers to Krishna Hospital, karad

## 3. Review of Literature

1) Smith TA, Thurgood SL. (2020) This study investigated the effectiveness of reflexology on migraine symptoms provided under pragmatic, personally funded conditions. Data was gathered on a case series of 20 reflexology clients with medically diagnosed migraine. The Measure Yourself Medical Outcome Profile (MYMOP) was completed at each appointment. All participants received six reflexology sessions. In terms of an improvement in the overall MYMOP profile, 75% (n = 15) of clients had an improvement of two or more points. The minimal clinically important difference for the MYMOP change score is 1.0; this was achieved by 90% (n = 18) of participants. The mean difference in scores for each of the MYMOP aspects was calculated and the greatest improvement was found with symptom 1, their chosen primary symptom, which changed an average of 3.40 points (95% CI: 2.35, 4.45.) The results indicate the potential for reflexology to relieve the symptoms of migraine.
2) Ko YS, Park MK.2019.The study examined the effects of Self-foot reflexology (SFR) on fatigue and sleep states in clinical women nurses. This study was a nonequivalent pretest-posttest quasi-experimental. Women nurses were assigned to an experimental group (EG, n=20) or a control group (CG, n=20). The EG participated in SFR for a total of 40 minutes, 2 times per week during 4 weeks on their Rt& Lt feet. The CG did not receive SFR during the research period. The EG & CG had never before received SFR, and they had no open wounds or fractures. Data was analyzed using the x2-test, and t test by the SPSS version 12.0 program at a 5% significant level. Results: The score of fatigue in the EG was significantly lower than that of the CG and the score of sleep states in the EG was also significantly higher than that of the CG. The findings show that the score of fatigue decreased and sleep states increased in the study. Therefore, we should consider SFR as an intervention on clinical nurses. However, it is still needed to verify its effects through more intensive study.

## 4. Research Methodology

Research Methodology is a technique for proficiently dealing with the research problem. It is a study of concentrating how research is done scientifically. This chapter deals with the methodology which includes research approach, research design, setting of the study, Population, the sample and the sampling techniques, development of tool, procedure of data collection and plan of data analysis.

**Research Approach:** A research approach mentions to the nurse researcher what information to gather and how to analyses it. It additionally proposes potential ends to be drawn from the data. In the present study, the nurse investigator evaluates the effectiveness of foot reflexology on blood pressure, headache and fatigue among hypertensive patients. It centralizing on the nature of the research problem for this study and the objective to be fulfilled, a quantitative approach was used to conduct this study.

**Research Design:** The research design is the plan, structure and strategy of investigations of answering the research question is the overall plan or blue print the researcher select to carry out their study. The assurance of research design depends on the purpose of the study; investigate approach and variable to be considered. The research design close for the investigation was True experimental research design.

Two groups were studied; Experimental group (Intervention) Control Group (Routine Management) Variable are qualities, Properties or characteristics of person, thing or situation that change or vary.

**Independent Variable:** Foot reflexology b) Dependent Variable: Blood Pressure, Headache and Fatigue.

**Setting of the study:** Setting is the more explicit places where data collection occurs dependent on the idea of the research question and the kind of data expected to address it. The study was conducted in Medicine ICU and Medicine Wards at Krishna Hospital, Karad.

**Population:** In this study, the population consisted of Hypertensive Patients those are suffering from Headache and Fatigue in the tertiary hospital, karad Sample Size The sample comprised of 60 patients with hypertension, comprising of 30 samples in experimental group and 30 control groups.

Based on this study done by, T Sasi Priya. Effectiveness of Foot Reflexology on Blood pressure among patients with hospital, Coimbatore. SBP: 4.67±3.33 DBP: 9.07±2.60 By SBP 1. n= 4/(×) Sampling Technique: Polit and Hungler, 1999 defined sampling technique is the process of selecting a portion of the population to represent the entire population. Non-probability purposive sampling was selected for the present study. Sampling Technique: Polit and Hungler, 1999 defined sampling technique is the process of selecting a portion of the population to represent the entire population.

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The demographic data was collected through structured interview schedule in Marathi. Blood Pressure was measured and recorded and Headache and fatigue was assessed for 5 consecutive days. Foot reflexology was implemented. Post-test blood pressure was taken for all the samples after 30 min duration of the pre-test. Ethical aspects were considered throughout the study.

## 5. Result and Discussion

This experimental study aims to determine the effectiveness of Foot Reflexology on Blood pressure, Headache and Fatigue in Hypertensive patients. Baseline Characteristics of Experimental and Control Group. Demographic Variables: In experimental group, 16(53.33%) sample belongs to the age group of 41 to 50 years, 16(53.33%) sample were Female, most of the sample 29(96.67%) were married, 17(5.67%) samples had secondary education , 10(33.33%) sample were self-employed and doing private job, 9(30%)samples were earning monthly income of 10000-150000Rs, 19(69.33) samples were belongs to nuclear family , 12(86.67%) sample are taking mixed type of diet, 19( 63.33%) samples were from Urban region, 15(60%) sample were used Tabaco products, 19(63.33) sample had hypertension for period of less than 5 years, 20(66.67%) sample had no family history of hypertension, 21(70%) samples were taken regular treatment of hypertension, 16(53.33%) samples suffered from respiratory illnesses, 23(76.67%) samples took medication of hypertension less than 5 years. In control group , 17(56.67%)samples were in the age group of 41 to 50 years, 15( 50%) samples were male and 15(50%) samples were female, 28( 93.33%) samples were married, 12(40%) samples had higher secondary education, 11(36.67) samples were self-employed , half of the samples 15(50%) were monthly income of 10 to 15 thousands, 18(60%) samples belonged to nuclear family , 26(86.67) samples took mixed type of diet, 21(70) samples from rural region, 18(60%) samples used tobacco and its products, 16(60%) samples had hypertension for a period of less than 5 years, 18(60%) samples had no family history of hypertension, 23(76.67) samples took regular medication of hypertension, 17(56.67%) samples suffered from respiratory illnesses, 20(66.67%) samples took medication for less than five years. Jasvirkaur, Sukhpal Kaur, NeerjaBhardwaj (2011) conducted a study to assess the effect of foot massage and reflexology on physiological parameters of critically ill patients in Chandigarh. 60 patients admitted in various ICUs of Nehru hospital were selected for the study. Similar to the present study, this study was consistent with the demographic variables. According to age, the mean age (years) ±SD of the subjects was 46.7±16.1, with the range of 16-80 years. Around none third (31.6%) were between 31-45 years. Majority (70%) were male. 30% were illiterate. 28.3% were self-employed. Around half (53.3%) of the subjects had 1-5 family members in their families.

To determine effectiveness of foot reflexology on blood Pressure.

Among the Experimental group in the pretest, the Mean and SD of SBP was 164±16.30 and DBP was 100.73±6.46. In posttest, the Mean and SD of SBP was 155.47±15.96 and that of 101.53±7.68. The test of Significance was calculated using paired “t” test. The calculated “t” value for SBP was 2.116(P=0.0430). And that of DBP was 2.305(p=0.285) were greater than the table value. It showed that Foot Reflexology was effective in reducing the high blood pressure among the patients with hypertension. The Mean posttest value of SBP was 155.47±15.96 in the experimental group and 154.2±10.35 in the control group. The Mean posttest value of DBP was 96.33±8.26 in the experimental group and 92.67±5.10 in the control group. The calculated paired “t” value for SBP is 2.305 in the experimental group. And DBP was 5.972in the control group. These values were greater than the table value. It showed that Foot Reflexology was effective in controlling the Blood Pressure among the patients with Hypertension.

To determine effectiveness of foot reflexology on Headache. Among the experimental group, in pretest, the Mean and SD of Headache was 4.67±1.97 and in the posttest the mean and SD of Headache was 2.27±2.13. The test of significance was calculated using paired “t” test. The calculated “t” value for Headache was 4.079(P=0.003) were greater than table value. It showed that Foot Reflexology was effective in reducing Headache among hypertensive patients.

To determine effectiveness of foot reflexology on fatigue. Among the experimental group, in the pretest, the Mean and SD of fatigue was 28.77±5.41 and in posttest the Mean and SD of Fatigue was 27.7±6.79. The test of significance was calculated using paired “t” test. The calculated “t” value is 98 4.013(p=0.004). It showed that Foot Reflexology was effective in reducing the level of fatigue among Hypertensive patients.

Summary of the study: Hypertension is defined as an average systolic blood pressure above 140 mmHg and a diastolic blood pressure above 90 mmHg or both. The first line of treatment for hypertension includes dietary changes, physical exercise, and weight loss. Reflexology helps overall circulation in the body and it helps to reduce the blood pressure. Hypertension is one of the conditions purported to be improved by complementary therapies such as Foot Reflexology. The investigator conducted study to determine the effectiveness of Foot Reflexology on Blood pressure, Headache and Fatigue in Hypertensive patients in tertiary care hospital, karad.

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- Pre-test the mean and SD of SBP was 164±16.30 in the experimental group and 164.87±16.97 in the control group.
- Pre-test the mean and SD of DBP was 100.73±6.46 in the experimental group and 101.53±7.68 in the control group.

## 6. Conclusion

The study was done to evaluate the effectiveness of Foot Reflexology on Blood Pressure, Headache and fatigue among hypertensive patients in tertiary care hospital, karad. The Statistical analysis of the study showed that there was decrease in the elevated blood pressure level, Headache and fatigue level after implementation of Foot Reflexology in patients with hypertension when compared with the pretest. Thus this study proved the effectiveness of Foot Reflexology on the Blood Pressure, Headache and fatigue among patients with hypertension.

## 7. Implications

The findings of the study have implications in different aspects of nursing profession such as nursing practice, nursing education, nursing research and nursing administration.

**Nursing Practice**:

- Nurses play a vital role in prevention of non-communicable diseases (NCD). The incidence and prevalence of hypertension and its complications are increasing every year. Thus, there is an urgent need to concentrate on the measures to reduce the disease burden.
- Foot Reflexology can be incorporated in the daily nursing routine as it is a proven technique to reduce the elevated Blood pressure, headache and level of Fatigue.
- The nursing personnel should be responsible to create awareness in the general public through mass media campaign regarding the importance of foot reflexology as an adjuvant therapy for hypertension and prevent its complications.

**Nursing Education**

- As a Nurse Educators, we must strengthen the non-pharmacological methods of managing hypertension and should be incorporated in nursing subjects.
- Nursing education should emphasize on preparing nurses to various treatment modalities and update their knowledge in all fields including complementary and alternative medicine.
- This study will enhance the nursing students to acquire knowledge about Foot Reflexology and its importance in maintaining the Blood pressure, No Headache and no fatigue.
- Student nurses can be trained in participating foot Reflexology so that they can inculcate it in nursing care activities.

**Nursing Research**

- This study can be a baseline for future studies to build upon and motivate the investigators to conduct further studies.
- There is a need for extensive research in hypertension and its non- pharmacological measures such as reiki, laughter therapy, yoga and other relaxation techniques.
- As Nursing profession focuses on evidence- based practice, the nursing personnel should involve in research activities to come out with successful remedies to reduce the burden of various diseases.

**Nursing Administration**

- Nurse administrators should organize various staff development programs to educate the nurses on importance of foot reflexology as an adjunct to manage hypertension.
- Nurse administrators should motivate the nurses to gain knowledge regarding various alternative therapies for hypertension and implement them while caring the clients.

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