

A study to assess the effect of Foot reflexology on Blood pressure among patients with Hypertension at Kannur Medical College Hospital, Anjarakandy Kannur District.

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ABSTRACT

Reflexology is the practice of applying pressure to specific points on the feet and hands to alleviate stress and for relaxation. The present study was undertaken to assess the effect of Foot Reflexology on Blood pressure among patients with Hypertension. The objectives of the study were to assess Blood pressure level among patients with Hypertension, evaluate the effect of Foot Reflexology on Blood pressure among patients with Hypertension and find out the association between Blood pressure and demographic variable such age, gender, occupation, diet, and exercise. The Quantitative evaluative approach with a Quasi-experimental non-equivalent pre-test post-test control group design was adapted for the study. Purposive sampling technique was used and 60 hypertensive patients (30 the experimental group and 30 in the control group) were taken. The patients in the experimental group provided with Foot Reflexology in the morning and evening for 10 minutes for a period of 5 days and routine intervention to the control group. Systolic and diastolic Blood pressure recorded on the first and seventh day. The result revealed that the mean post-test Blood pressure was lower than the mean pre-test Blood pressure in the experimental group ($t=13.216$, $t=3.69$, $p < 0.05$ systolic and diastolic Blood pressure respectively). When comparing the effect of Foot Reflexology in the experimental group with the control group, it was found that

significant difference in systolic and diastolic Blood pressure ($t=3.926$, $t=2.042$, $p < 0.05$ systolic and diastolic Blood pressure respectively) and also there was a significant Association between Blood pressure and occupation. The finding of the study interpreted that Foot Reflexology is an effective complimentary therapy to reduce Blood pressure.

Keywords: Effect, Foot Reflexology, Blood pressure

I. INTRODUCTION

“Your body is a temple, but only if you treat it as one”

-Astrid Alauda

Good health is the fundamental right of every human being. The internal and external growth of an individual is not possible without good health. Good health is essential to lead a quality and successful life. Beyond being personal responsibility, health is a national and international responsibility, and also, a worldwide social goal. The World Health Organization define “Health is a state of complete physical, mental and social well-being, and not merely an absence of disease or infirmity”¹.

Cardiovascular disease (CVD) refers to a group of disorders of the heart and blood vessels. Cardiovascular disease affects the heart's ability to function normally. The most common cause of heart disease is narrowing or blockage of the coronary arteries, which supply blood to the heart.

These disorders include coronary heart disease (CHD), hypertension, cerebro-vascular disease, peripheral artery disease, heart failure, rheumatic heart disease, and congenital heart disease².

The WHO has given clear guidelines and definition of Hypertension in adults as Systolic Blood pressure of 140 mm Hg or Diastolic Blood pressure of 90 mmHg or greater Blood pressure in patients with or without taking Hypertensive medication³.

Hypertension is one of the conditions purported to be improved by complementary therapies such as Foot Reflexology. The pressure techniques applied on the feet are believed to help unblock nerve supply and improve blood flow, which may help the body to function at its peak. It is claimed that Reflexology relieves stress and tension by inducing relaxation. By doing this, it brings about vasodilatation, improved blood flow and provision of oxygen-rich nutrients to cells. Some authors suggest that 70 to 80% of all diseases and illnesses come from stress including Hypertension, migraine, headaches, the common cold, ulcers and coronary heart disease⁴.

Reflexology is believed to be used for more than 5000 years in Egypt, as pictograph evidence was found in the tomb of an Egyptian physician; while some claim that it was originated in India and China⁴.

Reflexology is a Chinese asymptomatic remedial technique akin to acupuncture. Unlike acupuncture, Reflexology, however, relies less on needles and more on massaging the specific pressure points under the feet and on the palm. Reflexology can eradicate the root causes of some of the most dangerous diseases plaguing in the world such as high Blood pressure, stroke, diabetes, heart diseases. Reflexology is a very effective remedial technique that can be practiced at home and it provides almost life-changing results. Reflexology can help to reduce Blood pressure in an easy and natural way if a healthy lifestyle is maintained there with⁵.

During intervention, the therapist inserted pressure on Reflexology areas of plantar surface of the feet or palm of the hands using his fingers (especially the thumbs) which were related to each part of the body⁴.

Hypertension is one of the leading causes of death and disability among the global adult population. The higher incidence of Hypertension damages the physical and economic health of the global community. In India, 196 million adult populations are affected with Hypertension⁶.

Global burden of diseases study reported that Hypertension led to 1.63 million deaths in India in 2016 as compared to 0.78 million in 1990 (+108%). The disease burden (DALYs) attributable to Hypertension increased from 21 million in 1990 to 39 million in 2016 (+89%). Social determinants of Hypertension are important and Indian states with greater urbanization, human development and social development have more Hypertension. There is poor association of Hypertension prevalence with healthcare availability although there is positive association with healthcare access and quality. The health system in India should focus on better Hypertension screening and control to reduce cardiovascular morbidity and mortality⁷.

WHO (2016) stated that Over “970 million people worldwide have Hypertension. In the developed countries, 330 million people and 640 million in the developing countries have Hypertension”. Hypertension is rated as one of the most important causes of premature death worldwide by WHO. The estimate of Hypertension in 2025 will be 1.56 billion adults. Hypertension is responsible for 62% of cardiovascular diseases and 49% of ischemic heart disease affecting 25 to 30% of the urban population and 10 to 12% of the rural population in India with high Blood pressure. Currently, 30% are still unaware that they have Hypertension and even though 59% are receiving treatment; only 34% have maintained the target Blood pressure⁸.

In 2025, the World Health Organization (WHO) estimates that 1.5 billion people worldwide will have hypertension, a significant increase from the estimated 1.13 billion in 2021⁸.

The world health organization is developing a global plan of action for 2013-2020 to provide a roadmap for the country-led action for prevention and control of the non-communicable disease. Hypertension is a silent, invisible killer that rarely causes symptoms. Increasing public awareness is key as is access to early detection raised Blood pressure is a serious warning sign that significant lifestyle changes are urgently needed. Complications of Hypertension account for 9.4 million deaths worldwide every year⁹.

Hypertension is a risk factor for coronary heart disease and the single most important risk factor for stroke and it is responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke¹⁰.

In 2013, all members of the world health organization target to reducing preventable mortality from non-communicable disease-

cardiovascular disease, diabetes or chronic respiratory disease by 25% by 2025. Tackling Hypertension has been identified as a key, measure in achieving this and one of the global targets set out by the WHO global action plan for the prevention and control of non-communicable disease and 25% relative reduction in the prevalence¹⁰.

The most effective way of tackling Hypertension in many cases is to address and modify risk factors. Behavioral risk factors that lead to the development of Hypertension are also synonymous with those related to other non-communicable diseases. Especially limiting or modifying dietary and lifestyle factors such as consumption of excess salt in the diet, harmful level of alcohol use, physical inactivity, and lack of exercise and tobacco use. Hence the control provides an entry point to prevent all types of complications due to high Blood pressure¹¹.

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 of time and place. This form of treatment demands no special devices or requirements¹¹.

The role of Nurses has been recognized for nearly 50 years in public and professional education to improve control of Hypertension by the US National High Blood Pressure Education Programs, Joint National Committee reports and other publications. Nurses' involvement began with measuring and monitoring Blood pressure and patient education and has expanded to become one of the most effective strategies to improve Blood pressure control. Today the roles of Nurses and Nurse practitioners (NPs) in Hypertension management involve all aspects of care, including detection, referral, and follow up; diagnostics and medication management; patient education, counseling, and skill building; coordination of care; clinic or office management; population health management; and performance measurement and quality improvement through teaching programmers and various intervention¹².

Hypertension is a global burden, because of its high frequency and concurrent risk. Pharmacological measures alone cannot manage the high Blood pressure, so investigator strongly felt that an intervention strategy is needed to control Hypertension. After the personal experience in the clinical area and after reviewing the related literature, the investigator planned to conduct a

study to evaluate the effect of Foot Reflexology on Blood pressure among patients with Hypertension. The investigator was interested in the implication of Foot Reflexology among Hypertensive patients to decrease the elevated Blood pressure. Such intervention will help to reduce the high Blood pressure.

STATEMENT OF THE PROBLEM

A study to assess the effect of Foot reflexology on Blood pressure among patients with Hypertension at Kannur Medical College Hospital, Anjarakandy Kannur District.

OBJECTIVES

- Assess Blood pressure level among patients with Hypertension
- Evaluate the effect of Foot Reflexology on Blood pressure among patients with Hypertension
- Find out the association between Blood pressure and selected demographic variables such as age, gender, occupation, diet, and exercise.

OPERATIONAL DEFINITIONS

Effect:

It refers to producing desired or intended results.

In this study, effect refers to the desired reduction of Blood pressure after Foot Reflexology among Hypertensive patients which was measured by Digital sphygmomanometer

Foot Reflexology:

Technique of stimulating predefined pressure points on the feet.

In this study Foot Reflexology refers to the therapeutic application of various steps of massaging on both feet for a period of 10 minutes twice a day for 5 days of patients with Hypertension

Blood pressure:

Blood pressure is the pressure exerted by blood against the walls of the arterial system measured in mm of Hg with the help of a standardized Digital sphygmomanometer on left arm of patients in lying down position. Normal systolic Blood pressure is 120 mm of Hg and the diastolic Blood pressure is 80 mm of Hg.

Patients with Hypertension:

Adults, both men and women, diagnosed to have pre-Hypertension and Grade I Hypertension as per JNC VIII classification of Hypertension. In this study, the researcher has selected the patients with Hypertension in the age group of 40-60 years

REVIEW OF LITERATURE

The review of literature for the present study has been taken up from different sources like text book, journals, articles, and published research studies. The literature reviewed for the present study is organized and presented in the following headings.

1. Incidence and prevalence of Hypertension.
2. Non-Pharmacological methods used in the reduction Blood Pressure.
3. Foot Reflexology and its effect on Blood pressure.

RESEARCH METHODOLOGY

Research approach

A Quantitative evaluative approach was adopted

Research design

Quasi-experimental, Non-equivalent pre-test post-test control group design was used in this study

Variables

Independent variable:

Foot Reflexology

Dependent variable:

Reduction of Blood pressure

Setting of the study

The study was conducted in the medical wards of Kannur Medical College Hospital, Anjarakandy Kannur District.

Population

All the patients with Hypertension admitted in Kannur Medical College Hospital, Anjarakandy, Kannur District.

Sample:

In this study Patients with Hypertension who fulfills the inclusion and exclusion criteria.

Sample size:

The sample size was about 60 patients with Hypertension (30 in experimental group and 30 in the control group) who got admitted in Kannur Medical College Hospital, Anjarakandy, Kannur District.

Sampling technique:

In this study, Non-probability purposive sampling technique was used to select subjects as they fulfilled inclusion and exclusion criteria.

Description of the tool

The following tools were developed to collect data for the study.

Tool 1: Structured interview schedule

It was used to collect selected demographic variables such as age, gender, marital status, education, occupation, religion, monthly income, duration of illness, intake of anti-hypertensive medications, knowledge on complimentary therapy, diet, alcoholism, exercise, and smoking

Technique: Interviewing

Tool 2: Digital sphygmomanometer - to monitor Blood pressure

Technique: Observation (in vivo bio physiologic method)

Tool 3: Clinical Assessment form

Technique: Observation

Tool 4: Blood pressure classification (JNC- VIII) to categorize the patients according to level of Blood pressure

Technique: Observation

Tool 5: Guidelines for Foot Reflexology

Technique: Performing Foot Reflexology

Content validity

Content validity was determined by 11 experts in the field of Medicine (Allopathy and Naturopathy), Nursing and Statistics. The experts were requested to give their opinions and suggestions regarding the relevance, adequacy, and appropriateness of the tool.

According to the recommendations and suggestions of the expert's, demographic questionnaire was modified.

Validity of the translated tool was also established by language experts. After considering the suggestions and modifications the tool was finalized with the help of guide.

Reliability of the tool

The reliability of the tool was assessed by the test re-test method. After ensuring the caliber of the instrument, investigator herself conducted the measurement of Blood pressure of 6 patients. After 15 minutes, the measurement was repeated on the same patients. The reliability was found using Karl Pearson's co-relation co-efficient and the value was 0.99. Hence the tool was considered as highly reliable.

Data collection process

The present study was conducted at Kannur Medical College Hospital, Anjarakandy Kannur district.

The investigator obtained a formal clearance from the institutional ethical committee and written permission from the concerned authority of Kannur Medical College Hospital, Anjarakandy, Kannur District. Investigator underwent a certificate course in Foot Reflexology before the study.

The Data collection period was one month

After obtaining written informed consent from study subjects (60) were selected by Purposive sampling technique. In these, 30 subjects were assigned into the experimental group and 30 were into control group.

Demographic data collected with the help of a structured questionnaire and Blood pressure was measured by using Digital Sphygmomanometer on the left hand of the subjects in lying position. The investigator spent 5-10 minutes with each subject to collect data and for pre-test.

Data collection for the control group

First two days was the period of collecting data from the control group. In that, the investigator met 14 subjects on the first day and 16 subjects on second day at bed side. The investigator explained the purpose of study and assured its confidentiality. After taking consent from each subject's, pre-test demographic data was collected by using Structured interview schedule and Blood pressure was checked and recorded separately. The average time taken for pre-test was 5-10 minutes. Post-test was conducted on the seventh day.

Data collection for the experimental group

As similar to the control group, out of 30 subjects of experimental group the investigator met first 10 subjects on the first day at their bed side and pre-test demographic data was collected by using Structured interview schedule and Blood pressure was checked and recorded separately. On the second day onwards the Foot Reflexology was provided for 10 minutes in the morning and evening for 5 days from heel area up through the arch of the foot to the ball of the foot, one thumb and the other thumb over and over with fairly light pressure and the post-test was conducted on the seventh day. The similar second and third sessions were repeated with 10 subjects each for 7 days. The whole session took 21 days [3 weeks] to complete.

II. RESULT AND DISCUSSION

The following were the major findings of the study.

- The higher percentage of subjects (45%) were in the age group of 55 to 60 years and 33.33% were in the age group of 50 to 54 years.
- The highest percentage of subjects participated in the study, 53.33% were female and remaining 46.67% of subjects were male.
- In relation to the religion, majority of the subjects belonged to Hindu religion (46.67%) and Muslim religion (36.66%) and remaining belonged to Christian religion (16.67%).
- With respect to educational qualification, majority (50%) of them completed up to 10th standard and 31.67% were uneducated. 16.67% were completed plus two and (1.66%) had completed graduation and above.
- Among the subjects, majority (91.67%) were married and 3.33% were widow/widower. Another 3.33% were divorced and remaining 1.67% were single.
- With respect to occupation, 31.67% of them were house wives and 13.33% of subjects were farmers and 1.67% of subjects were doing business. And the majority (53.33%) of subjects were doing other jobs.
- It reveals that the dietary habits of majority (91.67%) of the subjects were following mixed diet and remaining 8.33% of them were vegetarian.
- Data shows that all the subjects were diagnosed with Hypertension. Where 43.33% of subjects had Hypertension for a period of less than one year and 30% of subjects had Hypertension for a period 1-5 years. 21.67% of subjects had Hypertension for a period of 5-10 years and remaining 5% of the subjects had Hypertension for a period more than 10 years.
- It reveals that that 60% subjects were not taking any anti-hypertensive medication and remaining 40% of subjects were taking anti-hypertensive medication.
- With regard to practice of regular exercise, 56.67% of the subjects were not doing regular exercise and remaining 43.33% of the subjects were doing regular exercise.
- With respect to Alcoholism, it reveals that 81.67% of the subjects were not having the habit of alcoholism and remaining 18.33% of the subjects were having the habit of alcoholism
- It reveals that 80% of the subjects were not having the habit of smoking and remaining 20% of the subjects were having the habit of

smoking.

Level of Blood pressure among subjects using JNC VIII classification of Blood pressure

- In this present study majority of the subjects in both experimental group (96.67%) and control group (86.67%) had Grade 1 Hypertension in the pre-test and in the post-test (46.67%,86.67% respectively)
- In the experimental group during pre-test (3.33%) and during post-test (53.33%) respectively.
- In the control group during the pre-test, the percentage of the patients having pre-

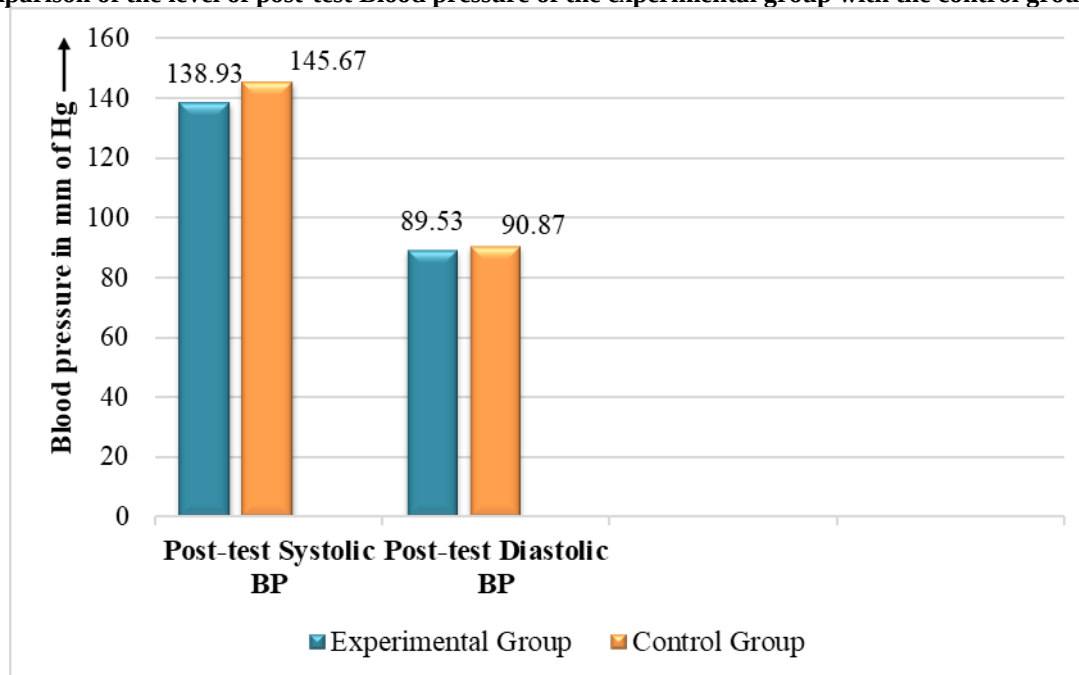
Hypertension (13.33%) and Grade I Hypertension (86.67%) remained the same in the post-test.

Pre-test and post-test level of Blood pressure in the experimental group and its

Significance

- There was a significant reduction in systolic Blood pressure ($t=13.216$, $p < 0.05$) after Foot Reflexology in the experimental group.
- There was a significant reduction in diastolic Blood pressure ($t=3.699$, $p < 0.05$) after Foot Reflexology in the experimental group.

Comparison of the level of post-test Blood pressure of the experimental group with the control group



- The mean post-test systolic Blood pressure of the experimental group (138.93) is lower than the mean post-test systolic Blood pressure of the control group (145.67). The calculated 't' value 3.926 is greater than the table value ($t_{58} = 1.672$) at 0.05 level of significance.
- The mean post-test diastolic Blood pressure of the experimental group (89.53) is lower than the mean post-test diastolic Blood pressure of the control group (90.87). The calculated 't' value 2.046 is greater than the table value ($t_{58} = 1.672$) at 0.05 level of significance.

- In this study, there was a significant association found between systolic Blood pressure with Occupation ($p < 0.05$)
- There was no significant association between the pre-test systolic and diastolic Blood pressure with other selected demographic variables among the patients with Hypertension ($p < 0.05$)

III. CONCLUSION

The study was done to evaluate the effect of Foot Reflexology on the Blood pressure level among patients with Hypertension at Kannur medical college, Anjarakandy Kannur District. The statistical analysis of the study showed that there was a decrease in the elevated Blood pressure level

Section IV Association between level of Blood pressure among patients with Hypertension and selected demographic variables.

after the implementation of Foot Reflexology in patients with Hypertension when compared with the pre-test. Also, there was a significant difference in the post-test Blood pressure score among the experimental and the control group. Thus, this study proved the effect of Foot Reflexology on the Blood pressure level among patients with Hypertension.

NURSING IMPLICATIONS

- Nurses play a vital role in the 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 elevated Blood pressure and educate general public through mass media campaigns
- As Nurse Educators, we must strengthen the non-pharmacological methods of managing Hypertension and should be incorporated into Nursing subjects.
- Nursing education should emphasize on preparing nurses to various treatment modalities and update their knowledge in all fields including complementary and alternative therapy.
- This study will enhance the Nursing students to acquire knowledge about Foot Reflexology and its importance in maintaining the Blood pressure.
- Student Nurses can be trained in practicing Foot Reflexology so that they can inculcate it in Nursing care activities.
- 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 laughter therapy, yoga, and other relaxation techniques.
- As the 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.
- Nurse administrators should organize various staff development programs to educate the Nurses on the 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 for the clients.

IV. RECOMMENDATIONS

The study recommends the following for further research

- The study can be conducted with large samples to generalize the findings.
- Comparative studies can be conducted between various alternative modalities like a comparison of Foot Reflexology with acupuncture.
- The study can be conducted in different clinical settings.
- A comparative study can be undertaken between the genders.
- The same study can be conducted in community settings where the family members can be taught about Foot Reflexology.
- A similar study can be conducted with a longer duration of intervention.

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