EFFECTIVENESS OF FOOT REFLEXOLOGY ON LEVEL OF

DEPRESSION AMONG OLD AGE PEOPLE

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CERTIFICATE

    Certified that this is a bonafide work of **Mrs.S.SELVA DAPHINE**, second year M.sc (Nursing) student of St. Xavier's Catholic College of Nursing, Chunkankadai, submitted in partial fulfilment of the requirement for the degree of Master of Science in Nursing to The Tamil Nadu Dr.M.G.R. Medical University, Chennai under the Registration No.301731702

College seal:

Signature of the Principal: ---

          Dr.(Mrs).A.Reena Evency, M.Sc., (N), Ph.D (N),

          Principal,

          St. Xavier's Catholic College of Nursing,

          Chunkankadai, Nagercoil,

          Kanyakumari District,

          Pin Code -629 003.

EFFECTIVENESS OF FOOT REFLEXOLOGY ON LEVEL OF DEPRESSION AMONG OLD AGE PEOPLE IN SELECTED OLD AGE HOMES AT KANYAKUMARI DISTRICT

Approved by the Dissertation Committee on: 19/4/ 2018

Professor in Nursing Research: ----------------------------

> **Dr.(Mrs).A.Reena Evency, M.Sc., (N), Ph.D (N),**
>
> Principal,
>
> St. Xavier's Catholic College of Nursing,
>
> Chunkankadai, Nagercoil,
>
> Kanyakumari District,
>
> Pin Code -629 003.

Clinical Speciality Guide   : -----------------------------

> **Mrs.P.S.Medonna Shajini, M.Sc., (N),**
>
> Assistant professor,
>
> Mental Health Nursing,
>
> St. Xavier's Catholic College of Nursing,
>
> Chunkankadai, Nagercoil, Kanyakumari District,
>
> Pin Code - 629 003.

Medical Expert   :   ----------------------------------

> **Dr. C.Paneer Selvan, MBBS. M.D. (Psych),**
>
> Consultant Psychiatrist,
>
> Sneka Mind Care Centre,
>
> Kurichi by pass road,
>
> Tirunelveli,
>
> Pin Code-627 005.

_____   _____

Signature of the Internal Examiner   Signature of the External Examiner

with date   with date

CERTIFICATE

This is to certify that the dissertation entitled **"Effectiveness of Foot Reflexology on Level of Depression Among Old age People in Selected Old age Homes at Kanyakumari District"** is a bonafide work done by **Mrs.S.Selva Daphine, St. Xavier's Catholic College of Nursing** in partial fulfilment of the university rules and regulations for award of **M.Sc. Nursing Degree Course** under my guidance and supervision during the academic year 2017 – 2019.

Name and signature of the Guide: _____

                                     Mrs.P.S.Medonna Shajini, M.Sc. (N),
Assistant professor,
Mental Health Nursing,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, Kanyakumari District,
Pin Code: 629 003.

Name and signature of the Head of Department: _____

                                     Mrs.P.S.Medonna Shajini, M.Sc. (N),
Assistant professor,
Mental Health Nursing,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, Kanyakumari District,
Pin Code: 629 003.

Name and signature of the Principal: _____

                                     Dr.(Mrs).A.Reena Evency, M.Sc.,(N).Ph.D (N),
Principal,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil,
Kanyakumari District,
Pin Code: 629 003.

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ABSTRACT

A pre experimental study was conducted to evaluate the effectiveness of foot reflexology on level of depression among old age people in selected old age homes at Kanyakumari district.

Pre experimental one group pretest posttest design was adopted to evaluate the effectiveness of foot reflexology on level of depression among old age people. 50 participants were selected using purposive sampling technique. Yesavage's Geriatric Depression scale was used to assess the level of depression among old age people. Pretest was done among old age people with depression and foot reflexology was given to the selected participants with mild and severe depression for 20 minutes, once in every three days for 10 sessions. The posttest was done after the intervention with the same scale.

Findings reveal that pretest score of depression among old age people, none of them were normal, 38(76%) of them had mild depression, 12(24%) of them had severe depression. While analysing the posttest score of depression among old age people, 26(52%) of them were normal, 18(36%) of them had mild depression, 6(12%) of them had severe depression. The mean pretest value was 17.94, the mean posttest value was 10.86, the standard deviation was 4.948 and the calculated 't' value was 26.2*. The calculated 't' value was greater than the table value, so there was a significant difference between pretest and posttest score. Hence the research hypothesis (H_1) is accepted. The score represent that foot reflexology was effective in reducing the depression among old age people.

There was no significant association between the level of depression among old age people with demographic variables such as age, sex, religion, education, previous occupation, previous income, present income, previous type of family, marital status, number of children, duration of stay in old age home, reason for joining old age home, medical illness. Hence the research hypothesis (H_2) is rejected.

As per the study the investigator concluded that the foot reflexology was effective in reducing the depression among old age people.

CHAPTER I
INTRODUCTION

Ageing is a natural process. Old age is an incurable disease, biologically; old age is normal and inevitable. At the older life old age needs physical and psychological support. The 'biological age' of a person is not identical with 'chronological age'. It is said by living a certain number of years nobody grows old, years wrinkle the skin, but worry, doubt, fear, anxiety and self-distrust wrinkle the soul. Old age is otherwise known as senescence. Senescence gives the meaning of lowering of biological efficiency that accompanies ageing. In an individual with the passage of time certain changes take place. These changes are eventually leads to death of the individual. When the individual live throughout the ageing process, he or she develops the disabilities **(Park k, 2014)**.

A man's life is normally divided into five main stages namely infancy, childhood, adolescence, adulthood and old age. In each of these stages, an individual has to find himself in different situations to face different problems. Twenty first century may be known as the "Era of Population ageing". The world's old age population is 650 million. By 2050, the "greying" population will increased into 2 billion. By 2050, about 80% of the people living in developing countries will be considered as old age people. The population ageing is growing faster nowadays **(WHO, 2018).**

Life expectancy is increasing worldwide. Currently about 10% of population is made up of old age people (aged 60 and above). In our society now old age become a social problem. In our modern society, where money is the scale of everything, old age people are measured as an economic liability and a social load. It is strange that no one wants to grow old but everyone wants to live long **(Richard, 2016).**

A common problem in old age refers physical and psychological problems. Some of the causes which contribute to old age people are depressed in the death of a spouse, close friends, a child, or grand children often make it extremely difficult for old

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age people to cope with, resulting in feelings of isolation and loneliness and leading to depression (**Bedsie,2019).**

Depression is the most common mental disorder among old age in India and one of the most disabling condition worldwide. It is difficult to differentiate clinical symptoms of depression in old age from symptoms of normal ageing. In India old age people are being traditionally honoured and respected. Urbanisation, migration and the breakup of the joint family system, generation gap cause altered position and status of the old age people **(Townsend, 2017).**

Depression, frustration and at times aggression may be linked to isolation, dependence and loss. Depression decreases mobility and social interaction thereby placing the person at risk for physical, psychological and social impairment. This increases death and morbidity. Depression is found among 15% to 50% of residents in long term care depending on old age home. It is possible to improve mental capacities and coping skills that are affected by depression with daily activities that delay the onset of behavioural disturbances and reduce caring time. Foot reflexology would be the tool that may help to preserve mental capacity of old age people **(Townsend, 2017).**

Between 10% and 20% of old age people has a depressive disorder depending on cultural situations. In India, the community based mental health studies have revealed the prevalence of depressive disorders among old age people varies between 10% and 25% **(The world health organization, 2015).**

We all love good foot rub. Foot massages introduced by ancient Egypt and China. Our ancestors were rubbing each other's feet over 5000 years ago. Reflexology invented by Europeans in late 1800s. In order to make a physical change to the body applying pressure to a person's feet is reflexology. Placement of pressure on zones and reflex areas helps to make a change in the system of the body. Reflexology also called zone therapy. Zone therapy is a mixture of healing and science. In that an energy channel encompassing 12 vital organs exists from head to foot. Applying pressures with hands reflexologist unblocks the channel to restore proper health and body function.

The aim of reflexology is to release stress from the nervous system. Reflexology is not a medical treatment. Every individual's immune system responds differently.

Reflexology is one of the emerging techniques to reduce the depression. It mainly focuses on application of pressure on the certain points at specific places like fingers, toes, foots, hands and palms. It promotes relaxation in the body. Reflexology is a powerful treatment used to stimulate the healing process, detox the body and encourage the better energy to flow throughout the body. It works by bringing the body back into balance by releasing blocked energy in nerve endings and correcting imbalances throughout the body **(Diana Bradley, 2014).**

BACKGROUND OF THE STUDY

Depression is a condition which can impact the entire body. It changes how we think about ourselves and other people. Depression impacts our nervous system, influences how we react to some situations, and changes our mood. Although depression can be treated and managed with traditional medicine, reflexology has promised to work wonders in terms of depression treatments **(Madeline R, 2014).**

World's populations of old age people between 2015 and 2050 will nearly double from 12% to 22%. Mental and neurological problem among old age people may be 6.6% of the total age group. Approximately 15% of old age people will suffer from a mental disorder **(WHO, 2018).**

In old age more wrinkles develops in their minds than their faces. Old age always demands love and affection. The old age people inevitably needs someone to be with them, when they grows old. Getting old is not a regular and gradual process. Ageing is whole set of mechanism occurs at different rates. Hence ageing is a sequential process it has the closing period of the life of an individual. Old age people are those who aged 60 or above. They are more important to the society and family. Their contributions are important as volunteers and as active participants in work force. Most of the old age people have good mental health, but many old age people are at risk of having mental disorders. There are issues involving in the old age are neurological disorders, substance use problem, diabetes, hearing loss, osteoarthritis. In 2050 the proportion of the world's old age population is about 22%; this is an expected increase from 900 million to 2 billion people over the age of 60. At this age people face physical and mental health problems which need to be treated. These disorders in old age people

account for 17.4% of years lived with disability. In the world's old age population 7% affected with depression and dementia, 3.8% of old age population affected by anxiety disorder, 1% affected by substance use problems.

In worldwide depression is a common illness. Depression is different from mood fluctuations and emotional responses. Depression may become a serious health condition if mood fluctuations and emotional responses long lasting. In the family depression can cause the person to suffer greatly and function poorly at work. Depression may cause suicide. Suicide results in an estimated death of 1 million per year **(WHO, 2018).** Depression can cause impairment in functioning of daily life. Symptoms of depression untreated due to co-occur with other problems.

Eventhough there are effective treatment for depression, many of those affected in the world is not receive such treatments. Lack of resources, lack of trained health care providers, and social stigma associated with mental illness are the barriers to effective treatment. Inaccurate assessment also a barrier to effective care. Even in some high income countries, depression is not correctly diagnosed and in some occasion people are misdiagnosed by the medical professionals. The burden of depression is on the rise globally **(World Health Assembly Resolution, 2014).**

Reflexology is aimed at promoting health in body organs and releasing stress from the body. By stroking, massageing and applying pressure to such points, therapist can unblock energy flow and release stress from the nerve endings. According to ancient chinese philosophy, energy flow can be blocked in the nerve endings and cause disease like depression.

Elango, (2014) conducted a pre experimental study to assess the effectiveness of foot reflexology on depression among old age people. 30 participants were selected by using purposive sampling technique. Foot reflexology was given for 15 consecutive sessions. The findings shown that in pretest 20(70%) of participants had moderate depression, 10(30%) had mild depression. The posttest result shows 15(50%) of old age people had moderate depression and 15(50%) had mild depression. This shows that foot reflexology was effective in reducing level of depression among old age people at $p \leq 0.05$ level of significance.

SIGNIFICANCE AND NEED FOR THE STUDY

From 2004 onwards, October 1st has been celebrated as "WORLD ELDER'S DAY". So old age people are in need for urgent attention. Nowadays a lot of old age people are in the old age homes due to their various problems. As per recent statistics, In India today, 1018 old age homes are present. Out of these, 427 old age homes are free of cost while 153 old age homes are on pay and stay basis, 146 old age homes have both free as well as pay and stay facilities and detailed information is not available for 292 old age homes. A total of 371 old age homes all over the country are available for sick and 118 old age homes are exclusive for the women. Major reason for old age persons to join old age home is to meet basic needs (50%) and negligence and rejection by family members (40%) based on the study conducted by the department of human development and family studies, Haryana **(Suresh N, 2016).**

According to the population census 2011 there are nearly 104 million old age people present (aged 60years or above) in India; 53 million females and 51 million males. A report released by the Help Age India suggests that the number of old age people is expected to grow to 178 million by 2026. Depression is a common mental disorder and one of the main causes of disability worldwide. Globally, an estimated 350 million people are affected by depression **(WHO, 2015).**

In later life depression is common. Depression affects nearly 5 million of the 31 million old age people with clinically significant symptoms. In community dwelling old age people 8%-16% are reported as having major depression. 5%-10% of older medical out patients having major depression, 10%-12% of medical-surgical hospitalised old age people experiencing significant depressive symptoms **(Richard, 2019).**

In 2000 and 2050 India's population is likely to increase by 60 % but the old age population will shoot up by 30% and the new policies should start up by government. At present India has around 100 million old age people and the number is expected to increase 323 million by 2050 **(United Nations Population Fund, 2018).**

Foot reflexology eliminating the blockages in the nerve endings by giving pressure to reflex points and therefore restores a healthy balance. Reflexology helps in increased circulation and also helps to flush the toxins from blood stream and restores

the health. Thus reflexology is effective in reducing depression. Reflexology improves the psychological wellbeing in the selected group of old age people. It helps to improve the physical aspects, and emotional aspects of the old age people. Reflexology is cost effective, can be conducted in any setting and it is a non- invasive procedure **(Marlatt,2014)**.

Rajamani, (2014) conducted a study to assess the effectiveness of foot reflexology on depression among old age people. 30 participants were selected by one group pretest and posttest. Among this group more than 40% of the people had severe depression, 60% had mild depression before the intervention. After the foot reflexology the level of depression decreased from severe to mild. The mean posttest depression score was lower than the mean pretest depression score. The 't' value (23.388) was greater than the calculated value $p \leq 0.011$ at the level of significance. The study reveals that there was a significant association between the level of depression among old age people and selected demographic variables such as age, economic status, mode of entry and duration of stay. Thus the investigator concludes that foot reflexology was effective in reducing the level of depression among old age people.

The investigator personally witnessed many old age people having problems of depression in the old age homes. Hence the investigator decided to implement the foot reflexology for reducing the level of depression among old age people residing in old age homes.

STATEMENT OF THE PROBLEM

A Pre experimental Study to Evaluate the Effectiveness of Foot reflexology on Level of Depression among Old age people in Selected Old age homes at Kanyakumari district.

OBJECTIVES

- To assess the pretest and posttest level of depression among old age people.
- To evaluate the effectiveness of foot reflexology on level of depression among old age people.
- To find out the association between pretest level of depression among the old age people with their selected demographic variables.

HYPOTHESES

H_1-There is a significant difference between pretest and posttest level of depression among old age people.

H_2-There is a significant association between pretest level of depression among old age people with their selected demographic variables.

OPERATIONAL DEFINITIONS

Evaluate

Evaluation is the systematic assessment of the design, implementation or results of an initiative for the purposes of learning of decision making.

-Canadian society (2017)

In this study, it refers to the measurement of the level of depression among old age people with the help of Yesavage's geriatric depression scale after foot reflexology.

Effectiveness

It is the degree to which something is successful in producing a desired result or success.

-Collins Dictionary (2016)

In this study, it refers to the extent to which the foot reflexology will reduce the level of depression among the old age people as measured by Yesavage's geriatric depression scale.

Foot reflexology

Reflexology is the application of pressure to areas on the feet. Reflexology is generally relaxing and may help alleviate stress.

-Bauer (2017)

In this study, it refers to a technique where constant pressure is applied to the foot of old age people from the solar flexes to the base of big toe that correspond with other zones in the body for releasing any blocked energy in the nerve endings for 20 minutes duration once in every three days for 10 sessions.

Depression

Depression is a common and serious medical illness that negatively affects how you feel the way you think and how you act. Depression causes feelings of sadness and loss of interest in activities once enjoyed. It can lead to a variety of emotional and physical problems and can decrease a person's ability to function at work and at home.

-American Psychiatric Association (2017)

In this study, depression refers to the feeling of sadness, loss of interest in activities, changes in appetite and sleep disturbances as expressed by the old age people measured by using Yesavage's geriatric depression scale.

Old age people

Old age also called senescence, in human beings the final stage of the normal life span.

-Maggie Kuhn (2015)

In this study, old age people refer to a person whose age is between 61 to 80 years, residing at St. Joseph's old age home and Emmaus Rehabilitation Centre.

ASSUMPTIONS

- ❖ Old age people may have depression.
- ❖ Foot reflexology relieves the nerve blocks and releases energy in the nerve endings to reduce depression.
- ❖ Foot reflexology may reduce depression among the old age people.
- ❖ Foot reflexology has no side effects on old age people with depression.

DELIMITATIONS

The study was delimited to

- ❖ old age people from St. Joseph's old age home and Emmaus Rehabilitation Centre.
- ❖ 50 old age people.
- ❖ old age people with mild and severe depression.
- ❖ four weeks period of data collection.

PROJECTED OUTCOME

The findings of this study help the old age people with depression to reduce the depression by foot reflexology. At the end of the study old age people with depression understand and develop to practice foot reflexology to reduce the depression.

CONCEPTUAL FRAME WORK

Conceptual framework is a whole of interrelated concepts or abstracts that are assembled together in some rational scheme by virtue of their relevance to common theme. A conceptual model provides for logical thinking for systemic observation and interpretation of observed data. The model also gives direction for relevant questions on phenomena and pointout solutions to practical problems as well as serve as a spring board for the generation of hypotheses to be used.

The conceptual framework which suits the present study is based on **General System Theory of Von Ludwig Bertalanffy (1968).**

According to Von Ludwig Bertalanffy, a system is composed of a set of interactive elements and gets each system distinct from environment in which it exists. In all systems activities can be resolved into an aggregation of feedback circuits such as input, throughput and output. The feedback circuits help in maintenance of an intact system.

Present study aims at evaluating the effectiveness of foot reflexology on level of depression among old age people. Conceptual theory of this study based on the general system model.

The model consists of three phases:
Input

It is the energy transformed by the system. It refers to the target groups with their character such as age, sex, religion, education, previous occupation, previous income, present income, previous type of family, marital status, number of children, duration of stay in old age home, medical illness and the assessment of pretest level of depression among old age people.

Throughput

It is a process that occurs at some point between the input and output process, which enables the input to be transferred as output in such a way that it can be readily used by the system.

According to Von Ludwig Bertalanffy throughput is defined as the process by which the system processes output and release output. In this study throughput refers to the implementation of foot reflexology among old age people with depression.

Output

According to general system theory, "output refers to the energy, matter, or information that leaves the system". In this study output is considered as the evaluation of foot reflexology among old age people with depression.

Feedback

According to general system theory, "feedback refers to the output that is returned to the system and it allows it to monitor itself overtime to a steady state known as equilibrium or homeostasis". Feedback may be positive, negative or neutral. In this study feedback was related to evaluate the effectiveness of foot reflexology on level of depression among old age people.

INPUT

THROUGHPUT

OUTPUT

DEMOGRAPHIC VARIABLES
Age,
Sex,
Religion,
Education,
Previous occupation,
Previous income,
Present income,
Previous type of family,
Marital status,
Number of children,
Duration of stay in old age home,
Reason for joining old age home,
Medical illness

Assessment of pretest level of depression among old age people by Yesavage's geriatric depression scale

Implementation of foot reflexology

Posttest level of depression was assessed by Yesavage's geriatric depression scale

Effectiveness of foot reflexology

Normal

Mild depression

Severe depression

Feedback

Fig 1.1 MODIFIED VON LUDWIG BERTALANFFY MODEL (1968)

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CHAPTER – II
REVIEW OF LITERATURE

Review of literature is an ongoing process and covers the entire planning stage. Good research does not exist in vacuum. An intensive review of literature was done by the investigator to lay a broad foundation for the study.

The literature was reviewed and presented under the following headings;

Section A: Studies related to depression among old age people

Section B: Studies related to foot reflexology

Section C: Studies related to foot reflexology on depression among old age people

STUDIES RELATED TO DEPRESSION AMONG OLD AGE PEOPLE

Jossy and kasturi (2018) conducted a cross sectional study on prevalence and factors associated depression among old age population at Kanyakumari district. 75 old age people were selected by purposive sampling technique. Geriatric depression scale was used to assess the depression. The participants mean age was 72.63. The prevalence of depression was 76%. In this 30.7% of old age people had severe depression and 16% had moderate depression. This study showed that prevalence of depression among old age people were high.

Buvaneshkumar (2017) conducted a study to assess prevalence of depression and associated risk factors among old age people in kattankulathur block Tamilnadu. The objective of the study is to estimate the prevalence. By using Clustering sampling technique 650 participants were selected. Interview was conducted in all houses using structured questionnaire. Depression was assessed using geriatric depression scale. The results showed that prevalence of depression was 35.5%. Socio economic factors such as sex, widower, medical illness, and occupation conflicts in family were associated with depression ($p \leq 0.05$). These findings concluded that the need for care by family and counseling for the old age people is very important in preventing depression.

Arul (2015) conducted a cross sectional study to assess the prevalence of depression among adolescents. The participants were selected by simple random sampling technique. The sample size was 2432 school going adolescents. In that 25% (612) students with depression. Adolescent depression identified at the earliest and interventions provided.

Ankur (2014) conducted a study to assess the prevalence of depression among old age people worldwide. 4, 87,275 old age people were selected as study participants by simple random sampling technique. The median prevalence rate of depressive disorders in the world for old age population was assessed as 10.3%. The median prevalence rate of depression among the aged Indian population was assessed as 21.9%. The comparison of the median prevalence rates of depression in the aged population of India and the rest of the world was determined. The results revealed that the proportion of the old age population with depression in India (18.2%) was significantly higher than the rest of the world (5.4%) and this was statistically highly significant (p=0.000000001). The investigator concluded that the old age depression was significantly higher among Indians, than the rest of the world's population.

Gupta (2014) conducted a cross sectional study to assess prevalence of depression. Patients were randomly selected from geriatric clinic. Depression was assessed by geriatric depression scale. The sample size was 196 old age people. The prevalence of depression was significantly more in old age people suffering with chronic diseases (48.445). This difference was statistically significant (p<0.005). Prevalence of depression was the highest in stroke patients (50%) followed by hypothyroidism (42%), arthritis (41.54%), COPD (37.7%), CAD (32.8%), hypertension (32%), and diabetes mellitus (28.8%). Thus the investigator concluded that it was important to provide health care for this vulnerable section of the society.

Thakur (2014) conducted a cross sectional study on health problems among old age people. 407 samples were selected by survey method. Health problems of

old age people were assessed through structured questionnaire. Results found that the females are the sufferers than the males. Widows are more than the widowers. In that 58.9% were taking tobacco, 83.29% (339/407) had visual impairment, uncorrected hearing impairment also common, Urinary complaints also more common in males. 29.2% were had not operated cataract, 30.75 had the prevalence of hypertension. Almost half of the population had depression. The researcher concluded that the old age population had the unmet needs.

STUDIES RELATED TO FOOT REFLEXOLOGY

Hilal (2019) conducted a study to evaluate the effectiveness of foot reflexology on lung cancer patients with nausea and vomiting. Participants were selected by purposive sampling technique. Sample size was 50 patients with lung cancer. 20 minutes of foot reflexology was administered for 10 sessions. Changes in number of vomiting were notified before and after the foot reflexology. There was a significant difference at the level of $p \geq .0100$. Thus the investigator concluded that foot reflexology has positive effects on lung cancer patients with nausea and vomiting.

Ghareeb (2018) conducted a study to assess effectiveness of foot reflexology on vasomotor symptoms during menopause. Many women need alternative to manage menopause. A total number of 50 women of menopausal age 45-55 years selected as a participants. They were divided into two groups. The foot reflexology conducted three times per week for 8 weeks. Assessment carried out by determining blood cortisol levels before and after the intervention. The mean value was 15.40 and 16.32 in both groups. This shows a greater reduction in the blood cortisol level ($p \leq 0.001$ and <0.001) respectively. The investigator concluded that foot reflexology has effectiveness in reducing vasomotor symptoms during menopause.

Pour (2016) conducted a study to assess the effectiveness of foot reflexology on physiological parameters. The physiological parameters such as blood pressure and heart rate. 100 participants of the study were hospitalized male patients undergoing angioplasty. 30 minutes of foot reflexology given to study

group. Vital signs were measured in both groups before and after the foot reflexology. Changes in heart rate had no significance before and after the intervention. The number of breathing has significance difference (p=0.100 and p >0.0100). Thus the investigator concluded that foot reflexology can sustain physiological parameters such as blood pressure and heart rate.

Yang (2015) conducted a study to evaluate the effectiveness of foot reflexology on interacting functional constipation. 40 participants were selected by using simple random technique aged between 48-90years. 20 participants were diagnosed as having constipation; the other 20 participants were free of constipation. The time elapsed between taking a carbon tablet and the last black stool eliminated was recorded as pre and post treatment. From this the researcher concluded that foot reflexology had a remarkable effect in shortening the emptying time of the digestive tract and thus foot reflexology is highly effective in curing functional constipation.

STUDIES RELATED TO EFFECTIVENESS OF FOOT REFLEXOLOGY ON DEPRESSION AMONG OLD AGE PEOPLE

Fakhravari (2018) conducted a quasi-experimental study to find out the effect of foot reflexology on sleep among old age people with sleep disturbances. 67 old age people was selected by using convenience sampling technique. Foot reflexology was given as a 20 minute session for 4 weeks. Pittsburgh sleep quality index was used for data collection. The investigator found that there was no significant in sleep quality before and after intervention (p=0.013). The difference was statistically significant (p≤0.001). Hence the investigator concluded that foot reflexology has a positive effect on quality of sleep among old age people.

Vania and Suresh (2016) conducted a quasi-experimental study to assess the effectiveness of foot reflexology on depression among old age people. 60 participants were selected by using purposive sampling technique. Foot reflexology was administered to the study group. The mean posttest score was 11.83 in study group and 18.4 in control group. The calculated 't' value is more than the tabulated value at 0.05 level of significance. The study concluded that foot reflexology was effective in reducing depression.

Taehan and Lee (2015) conducted a pre experimental study to assess effectiveness of self-foot reflexology on depression among middle age women. 46 middle age women were selected as a study participants. Participants were trained to do self-foot reflexology for 2 weeks and participants did the foot reflexology for their own for 6 weeks. After the intervention there was a statistically significant difference in depression. The results showed that a self-foot reflexology can be utilized as an effective intervention in reducing depression.

Choi (2015) conducted a study to find the effectiveness of foot reflexology on post-partum depression among post-partum women. A non-equivalent control group pretest design was used. 70 women were selected as study participants and they were assigned to study group and control group (35). Foot reflexology was given once a day for three days. Post-partum depression was assessed before and after the foot reflexology. The results showed that the level of depression in the study group was significantly lower than control group (p=0.004). The investigator concluded that the foot reflexology was an effective intervention to relieve depression for post-partum women.

Shanmugam (2014) conducted a study to assess the effectiveness of foot reflexology on depression among old age people. 30 participants were selected by one group pretest and posttest. Among this group more than 40% of the people had severe depression, 60% had mild depression. After the foot reflexology the level of depression decreased from severe to mild. The mean posttest depression score was lower than the mean pretest depression scores. The 't' value (23.388) was greater than the table value at $p \leq 0.011$ level of significance. The study reveals that there was a significant association between the level of depression among old age people and selected demographic variables such as age, economic status, mode of entry and duration of stay. Thus the investigator concluded that foot reflexology was effective in reducing the level of depression among old age people.

Elango (2014) conducted a pre experimental study to assess the effectiveness of foot reflexology on depression among old age people. 30 participants were selected by using purposive sampling technique. Foot reflexology

was given for 15 consecutive sessions. The findings shown that in pretest 20 (70%) of participants has moderate depression, 10(30%) had mild depression. During posttest 15(50%) of old age people had moderate depression and 15(50%) had mild depression. Thus it was proved that foot reflexology was effective in reducing level of depression among old age population at $p \leq 0.05$ level of significance.

CHAPTER III

RESEARCH METHODOLOGY

RESEARCH APPROACH

The investigator utilized Quantitative Research approach.

RESEARCH DESIGN

Pre experimental one group pretest posttest research design was used in this study.

Diagrammatic representation of this study is as follows

Pretest	Intervention	Posttest
O_1	X	O_2

Key

O_1 - Pretest using Yesavage's Geriatric Depression Scale

X -Intervention (Foot Reflexology)

O_2 - Posttest using Yesavage's Geriatric Depression Scale

VARIABLES

- **Independent variable**

  Foot reflexology

- **Dependent variable**

  Level of depression

RESEARCH SETTING

The study was conducted among the old age people at St.Joseph's old age home, Pilankalai and Emmaus Rehabilitation Centre, Ummancode, at Kanyakumari District.

St.Joseph's old age home was established in the year of 1974, by the guidance of Most.Rev.Fr.Monison Joseph Kuzhipali and most Rev.Sr.Mary Katlaraikal, which was selected 20km away from St. Xavier's catholic college of nursing, Chunkankadai. There were 90 old age people. Totally 100 beds are available. 10 sq.ft provided for each person. All the facilities such as water, electricity, garden and prayer room are available. The old people spent their leisure time by reading books, newspaper and watching TV.

Emmaus Rehabilitation Centre was established in the year of 2008, supported by Tamilnadu Government and Congregation of the Daughters of Mary. Among the 75 people 30 are old age people. Totally 150 beds are available. 10sq.ft provided for each person. All the facilities are available like water, electricity, garden, library, auditorium, consultation room and prayer hall. The old age people spent their leisure time by making candle.

POPULATION

Target population

All the old age people with depression.

Accessible population

The population under study constituted of all old age people with mild and severe depression between the age group of 61 to 80 years, residing at St. Joseph's old age home and Emmaus Rehabilitation Centre.

SAMPLE

The investigator selected old age people with mild and severe depression between the age group of 61 to 80 years who fulfilled the inclusion criteria residing in St. Joseph's old age home, Pilankalai and Emmaus Rehabilitation Centre, Ummancode at Kanyakumari district.

SAMPLE SIZE

The sample size (n) was calculated by using Slovin's formula ($n=N/1+Ne^2$) n=50. Sample size consisted of 50 old age people with mild and severe depression.

SAMPLING TECHNIQUE

Purposive sampling technique was used to select the old age people.

CRITERIA FOR SAMPLE SELECTION

Inclusion criteria

Old age people who were,

- with mild and severe depression

- staying in old age homes

- aged between 61 to 80 years.

- willing to participate

Exclusion criteria

- Problems in foot like cellulitis, foot ulcer, amputation, hemiplegia

- Old age people who under treatment for mental disorders such as dementia, Alzheimer's disease and chronic schizophrenia.

DESCRIPTION OF TOOL

The tool used in this study consisted of two parts.

Part-1:

Demographic data (Annexure VII)

A Structured Interview schedule was used to collect the demographic variables like age, sex, religion, education, previous occupation, previous income, present

income, previous type of family, marital status, number of children, duration of stay at old age home, reason for joining in old age home, medical illness.

Part-2:

Yesavage's Geriatric depression scale (1983) Assessment (Annexure VII)

J.A.Yesavage's Geriatric depression scale (1983) consisted of 30 items, scores ranged from 0 to 30, the Yesavage's geriatric depression scale questions are answered as "yes" or "no". One point was assigned to each answer and the total score was rated on scoring grid.

Scoring interpretation of Yesavage's Geriatric Depression Scale(1983)

Score	Level of depression
0-9	Normal
10-19	Mild depression
20-30	Severe depression

DESCRIPTION OF INTERVENTION

Foot reflexology is a therapeutic method of relieving pain by stimulating pre-defined pressure points on the feet and hand. Explain procedure to the old age people. Provide comfortable position to the old age person. Provide warmth to the left foot by simply massageing the foot. Start from the left foot. Provide massage to the solar flexes for 5 times. Massage upward for 5 times from the solar flexes. Massage downwards toward the foot for 5 times from the solar flexes. Rotate each toe 5 times in clockwise likewise in anticlockwise motion. Massage the upper part of the foot and then ankle of foot. Give pressure in the base of big toe. Do the same for the right foot.

CONTENT VALIDITY

The content was validated by five experts including two Psychiatrists and three Nursing personnel from Mental Health Nursing department, with more than five years of experience. The experts were requested to give their opinion about the content and its relevance. The investigator underwent training for foot reflexology and obtained consent (Annexure XI).

RELIABILITY

Standardised Yesavage's Geriatric Depression Scale(1983) (Annexure VII) was used in the study. Hence the scale was considered reliable for proceeding the study.

PILOT STUDY

The purpose of pilot study was to find out the feasibility and practicability of the study and to finalise the tool. After obtaining initial permission from the college and the Director of Snegam old age home, Nesamani nager, Nagercoil on 10/12/2018, pilot study was conducted among five old age people aged between 61-80 years with mild and severe depression. Foot reflexology was given for five days in two sessions and posttest was done. The mean score level of depression was 8.6. The paired 't' test value was 2.619* which was significant at level of $p \leq 0.05$. Hence the foot reflexology was very effective in reducing the level of depression among old age people. No changes were made and the investigator was asked to proceed for the main study. The tool was found feasible and practicable.

METHOD OF DATA COLLECTION

Phase -I: Selection of old age people

After obtaining formal permission from the Principal of St. Xavier's catholic college of nursing, Chunkankadai (Annexure I) and Administrator of the St. Joseph's old age home, Pilankalai, and Emmaus Rehabilitation Centre, Ummancode, Kanyakumari district, (Annexure II) Old age people were selected based on the criteria

of sample selection. The investigator obtained oral consent from each participant and proceeded with data collection.

Phase-II: Pretest

The data was collected from the selected old age people and the Yesavage's Geriatric Depression Scale (Annexure VII) was used to assess the level of depression. Among them 50 old age people had mild and severe depression were selected for the study.

Phase-III: Intervention

Foot reflexology was given to selected old age people who were mild and severe depression. The intervention was given for the duration of 20 minutes once in every three days for 10 sessions. 40 old age people from St. Joseph's old age home were divided into two groups. 10 old age people from Emmaus Rehabilitation Centre was taken in third group. Foot reflexology was given to the 1st group for 1st day, 2nd group for 2nd day, 3rd group for 3rd day. Accordingly the foot reflexology was given for 10 following sessions (Annexure VIII).

Phase-IV: Posttest

The posttest was conducted at the end of fourth week by using Yesavage's Geriatric Depression Scale (Annexure VII).

PLAN FOR DATA ANALYSIS

Data collected were analysed using both descriptive and inferential statistics such as mean, standard deviation, chi-square test and paired 't' test (Annexure XIV).

Descriptive statistics

❖ Frequency and percentage distribution was used to analyse the demographic data, and level of depression among old age people.
❖ Mean and standard deviation was used to compare pretest and posttest level of depression among old age people.

Inferential statistics

- ❖ Paired 't' test was used to compare the pretest and posttest level of depression among old age people.
- ❖ Chi-square test was used to find out the association between the pretest level of depression among old age people with their selected demographic variables.

ETHICAL CONSIDERATION

The proposed study was conducted after the approval of the dissertation committee of St. Xavier's Catholic College of Nursing and prior permission was obtained from the administrator of St. Joseph's old age home, Pilankalai and Emmaus Rehabilitation Centre, Ummancode, Kanyakumari district (Annexure I,II). Oral consent was taken from each old age people before starting data collection. Assurance was given to the study participants regarding the secrecy of the collected data.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected among the old age people with mild and severe depression. The data collected from the participants were tabulated, analysed and preserved in the tables and interpreted under following section based on the objectives and hypotheses of this study.

SECTION A

1. **Distribution of demographic variables among old age people.**

    1.1. Frequency and percentage distribution of demographic variables among old age people with depression.

SECTION B

2. **Pretest and posttest level of depression among old age people.**

    2.1. Frequency and percentage distribution of depression among old age people.

SECTION C

3. **Comparison of pretest and posttest level of depression among old age people.**

    3.1. Comparison of mean, standard deviation and paired 't' test value of pretest and posttest level of depression among old age people.

SECTION D

    4. Association between the pretest level of depression among old age people with their selected demographic variables.

SECTION A

DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF OLD AGE PEOPLE

Table 1.1 Frequency and percentage distribution of demographic variables among old age people with depression.

n=50

S.No	Demographic variables		(f)	(%)
1.	Age	61-65 years	16	32
		66-70 years	15	30
		71-75 years	11	22
		76-80 years	8	16
2.	Sex	Male	21	42
		Female	29	58
3.	Religion	Christian	36	72
		Hindu	14	28
		Muslim	0	0
		Others	0	0
4.	Education	Illiterate	21	42
		Primary schooling	18	36
		Middle schooling	7	14
		High school	3	6
		Higher secondary	1	2
		Graduate	0	0
		Post graduate	0	0

5.	Previous occupation	Unemployed	21	42
		Self employed	26	52
		Private employed	1	2
		Government employed	2	4
6.	Previous income	Rs.1000-5000	20	40
		Rs.5001-10000	8	16
		Rs.10001-20000	0	0
		Above Rs.20000	2	4
		Nil	20	40
7.	Present income	Rs.1000-5000	1	2
		Rs.5001-10000	1	2
		Rs.10001-20000	0	0
		Above Rs.20000	0	0
		Nil	48	96
8.	Previous type of family	Nuclear family	35	70
		Joint family	12	24
		Extended family	1	2
		Separated	2	4
9.	Marital status	Single	9	18
		Married	11	22
		Separated	6	12
		Widower	24	48
10.	Number of children	Nil	14	28
		1	9	18
		2	11	22
		3	8	16

		More than 3		8	16
11.	Duration of stay at old age home	Less than 1 year		20	40
		1-3 years		8	16
		More than 3 years		22	44
12.	Reason for joining old age home	Illness		7	14
		Poor economic status		6	12
		Family conflicts		18	36
		Loneliness		19	38
13.	Medical illness	Yes	Diabetes mellitus	2	16	32
			Hypertension	1		
			Diabetes mellitus and hypertension	8		
			Arthritis	2		
			Asthma	3		
		No			34	68

Table 1.1 represents the frequency and percentage distribution of the demographic variables among old age people. Regarding age, 16 (32%) of them were between 61- 65 years old, and 5 (10%) of them were 76-80 years old.

Regarding sex, 21 (42%) of them were males, 29 (58%) of them were females.

Analysing religion, 36 (72%) of them were Christians, 14 (28%) of them were Hindu.

According to education, 21 (42%) of them were illiterate, 1 (2%) of them had completed higher secondary education.

Regarding previous occupation, 21 (42%) of them were unemployed, 1 (2%) of them were private employed.

Regarding to the previous income, 20 (40%) of them got Rs.1000-5000, 2 (4%) of them got above Rs. 20000, 20 (40%) of them not got income.

According to present income, 1 (2%) of them were getting Rs.1000-5000, 48 (96%) of them were not getting income.

Regarding previous type of family, 35 (70%) of them belongs to nuclear family, 1 (2%) of them belongs to extended family.

Analysing marital status, 6 (12%) of them were separated, 24 (48%) of them were widower.

According to number of children, 13 (26%) of them were not had children, 7 (14%) of them were had more than 3 children.

With regard to duration of stay in old age home, 7 (14%) of them were staying between 1-3 years, 23 (46%) of them were staying more than 3years.

Analysing reason for joining old age home, 6 (12%) of them were joined due to poor economic status, 19 (38%) of them were joined due to family conflicts.

According to medical illness, 17 (34%) of them were had illness, 33 (66%) of them were had no illness.
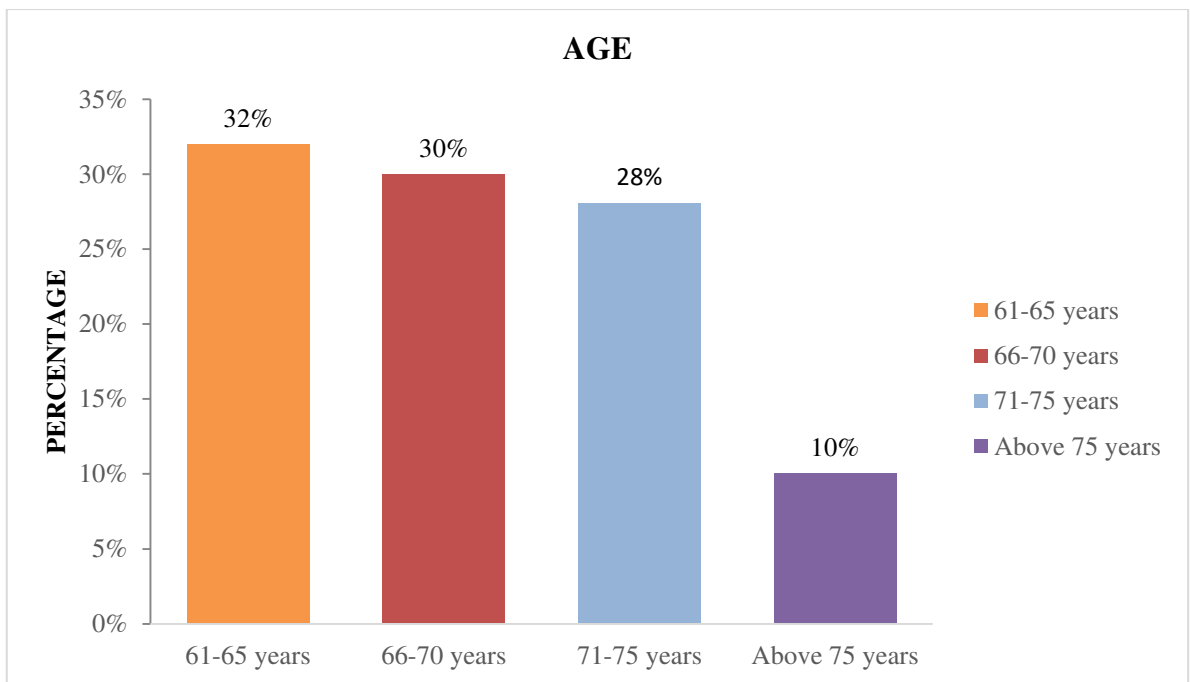
Figure 2.1: Percentage distribution of age among old age people
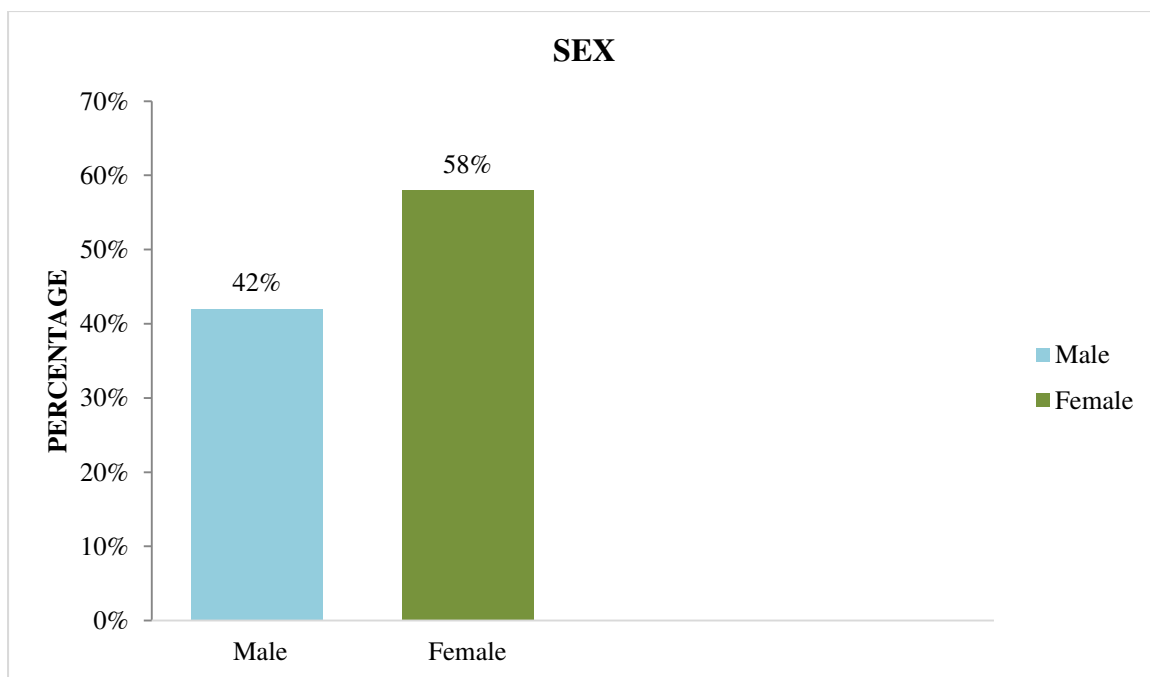
Figure 2.2: Percentage distribution of sex among old age people
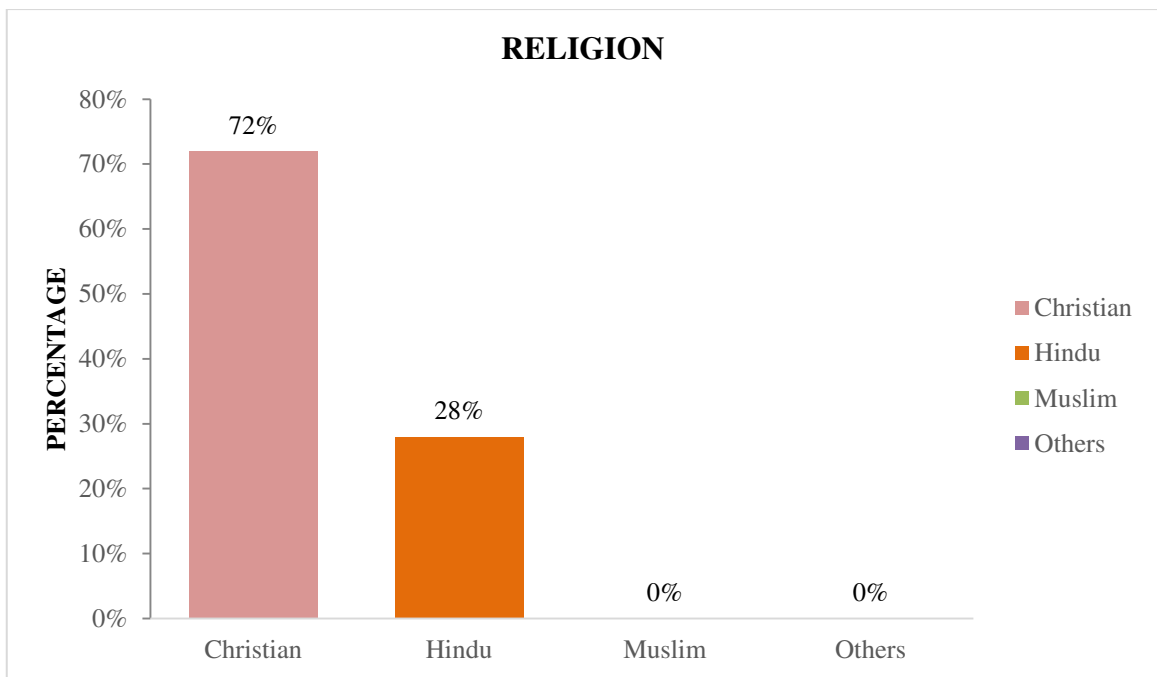
Figure 2.3: Percentage distribution of religion among old age people
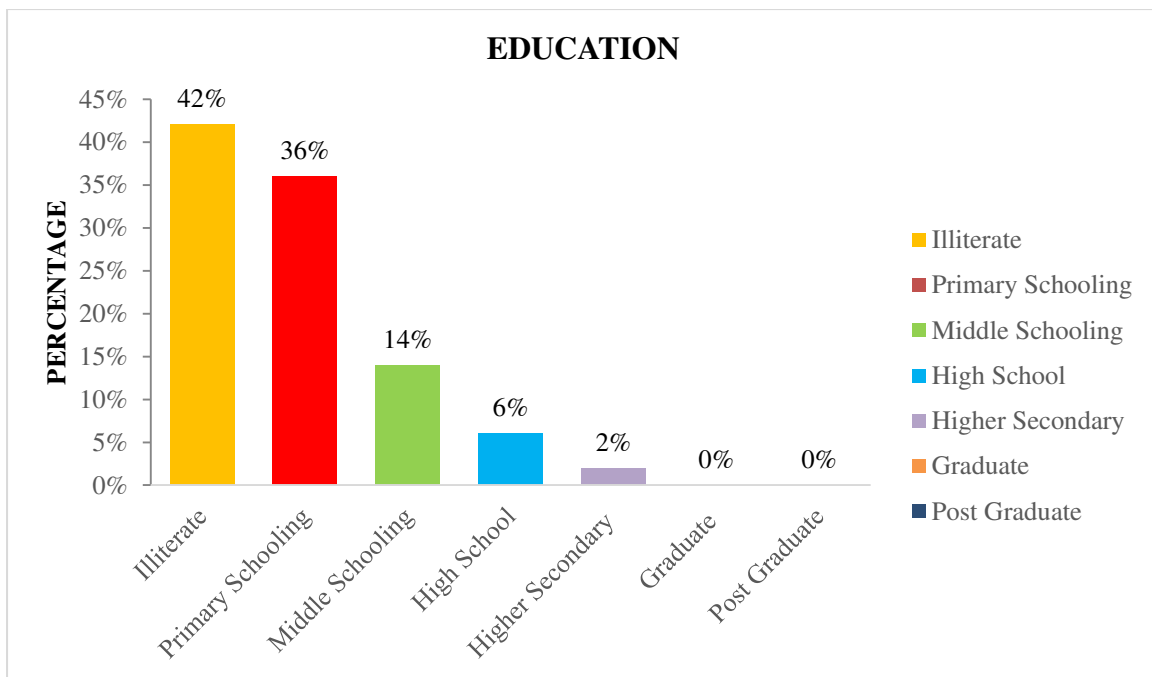
Figure 2.4: Percentage distribution of education among old age people
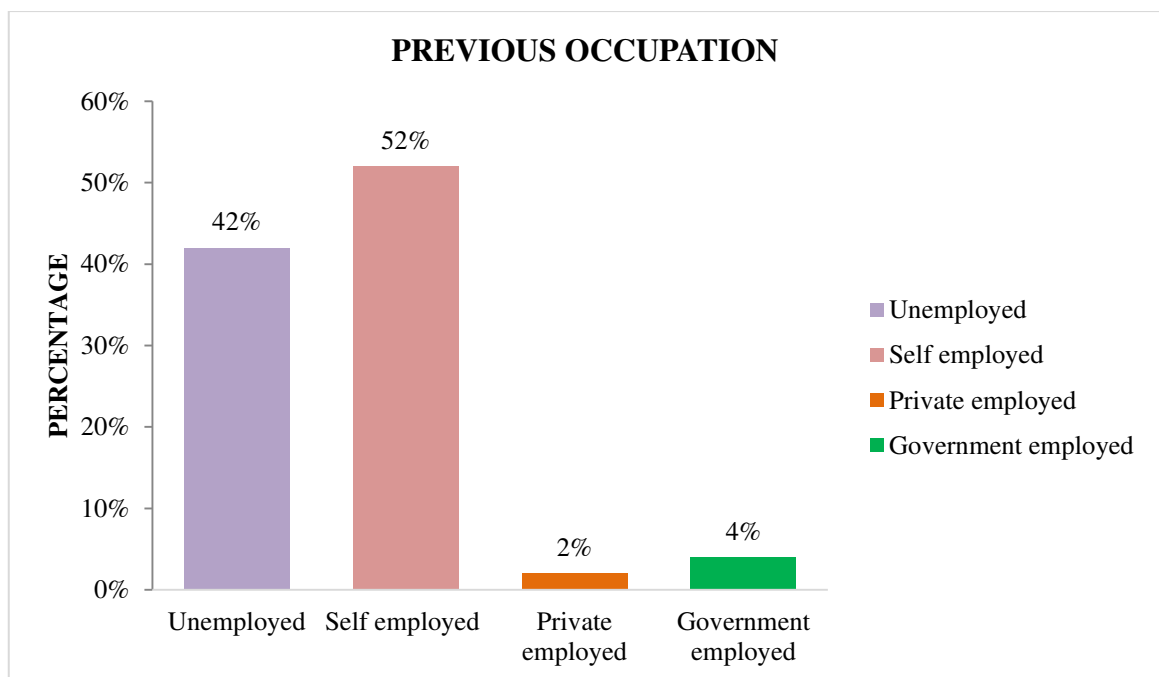
Figure 2.5: Percentage distribution of previous occupation among old age people
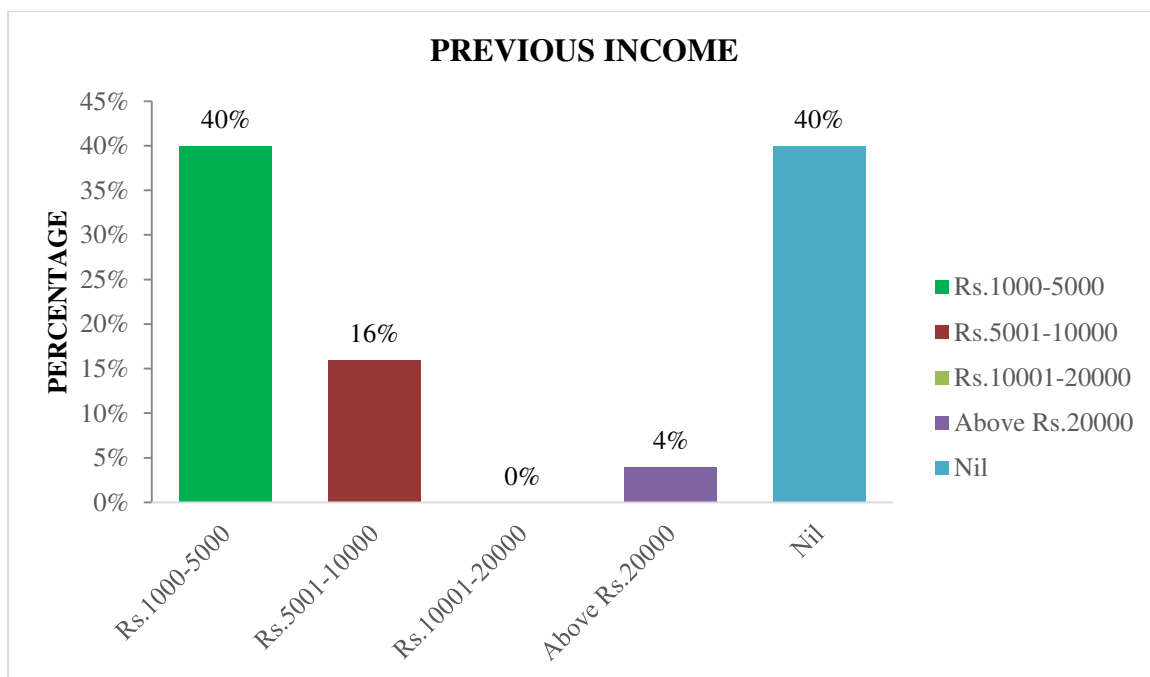
Figure 2.6: Percentage distribution of previous income among old age people
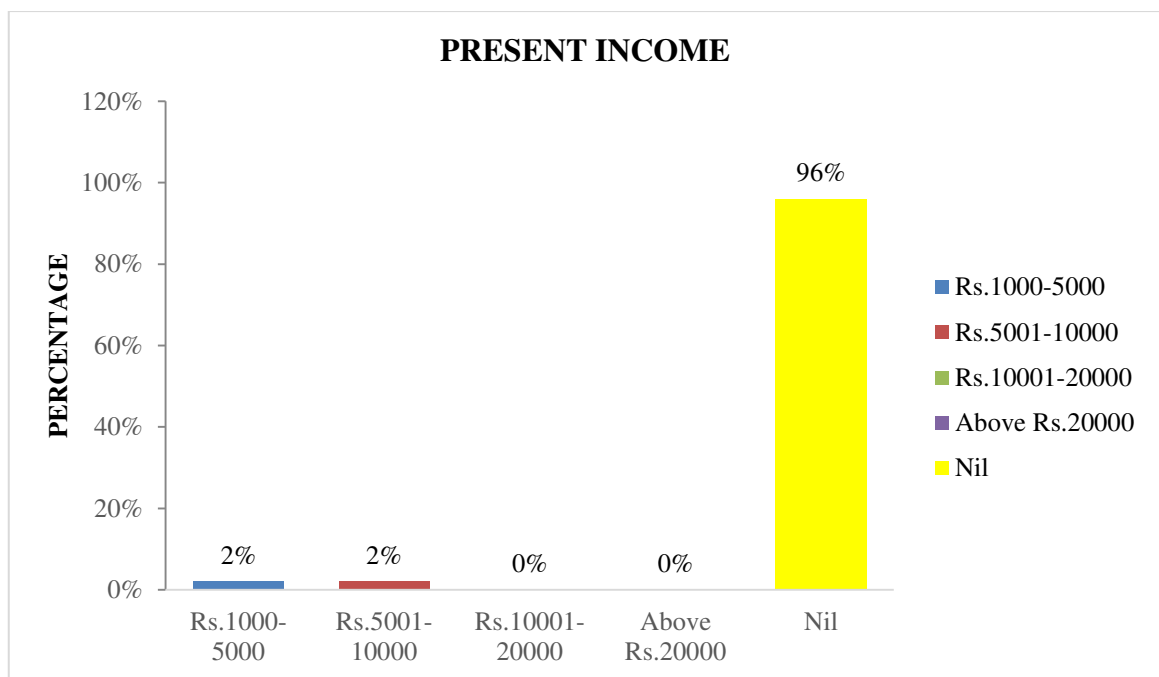
Figure 2.7: Percentage distribution of present income among old age people

PREVIOUS TYPE OF FAMILY
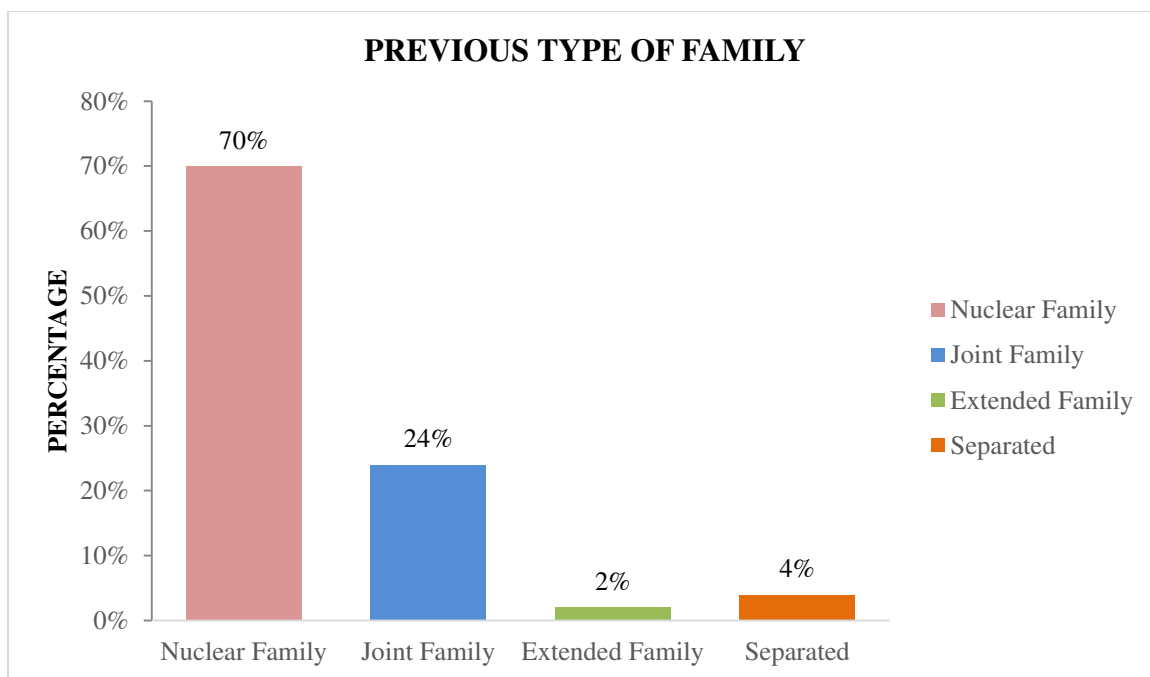
Figure 2.8: Percentage distribution of previous type of family among old age people
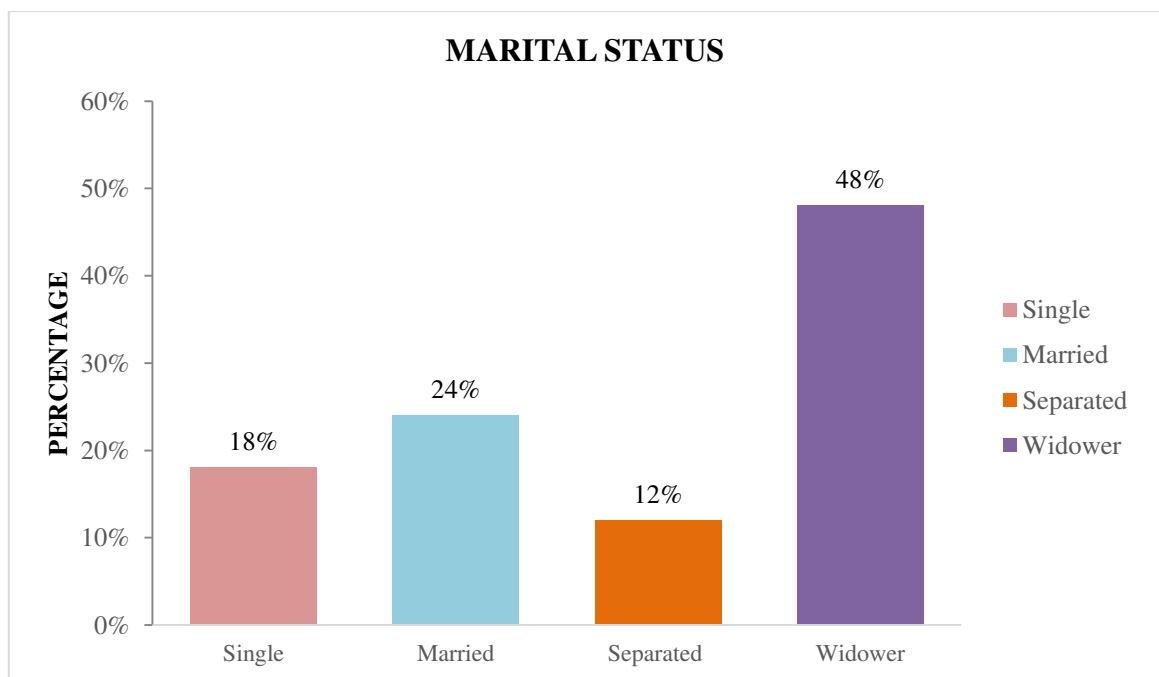
Figure 2.9: Percentage distribution of marital status among old age people
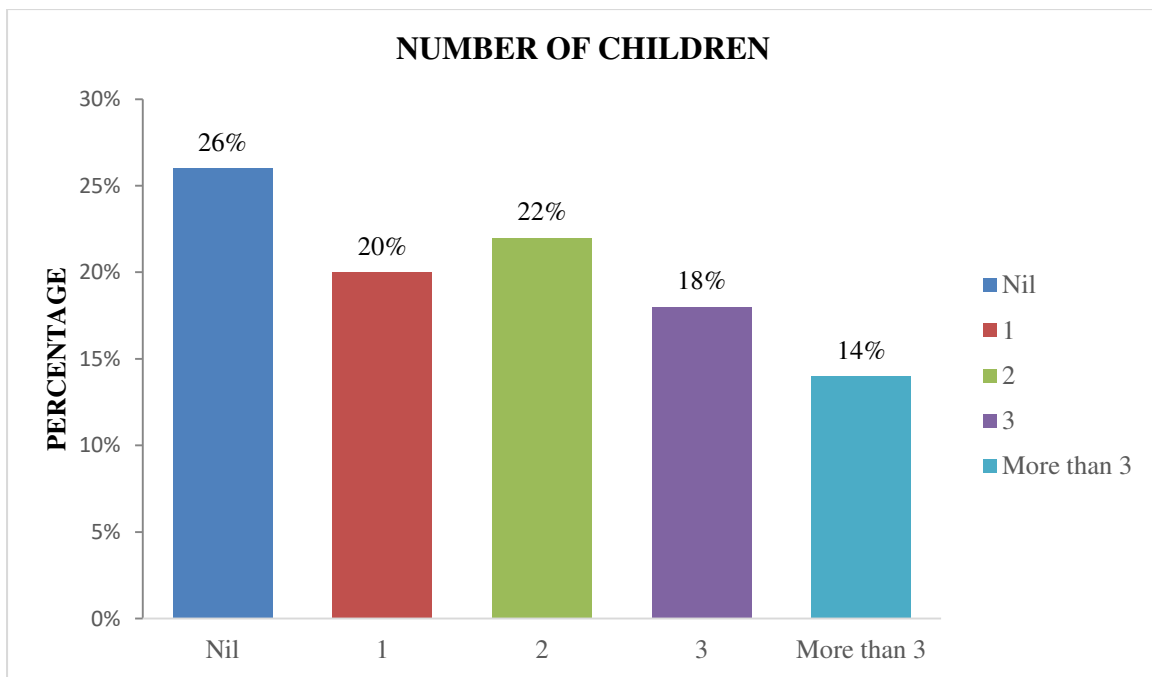
Figure 2.10: Percentage distribution of number of children among old age people

DURATION OF STAY IN OLD AGE HOME
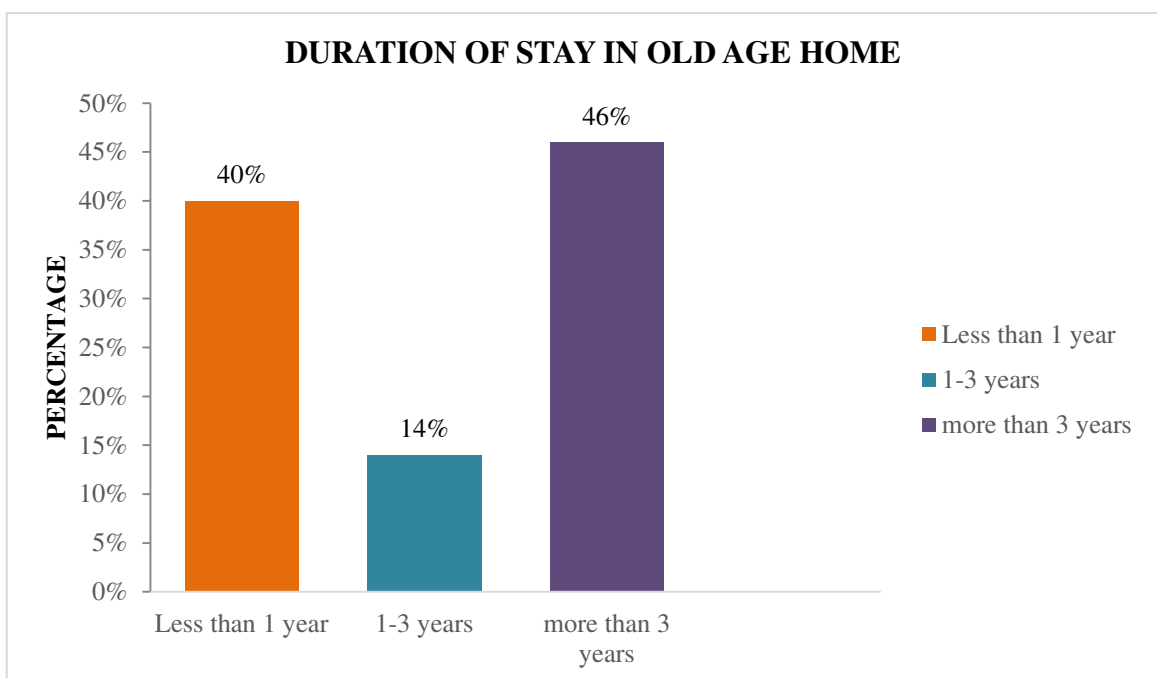
Figure 2.11: Percentage distribution of duration of stay in old age home among old age people
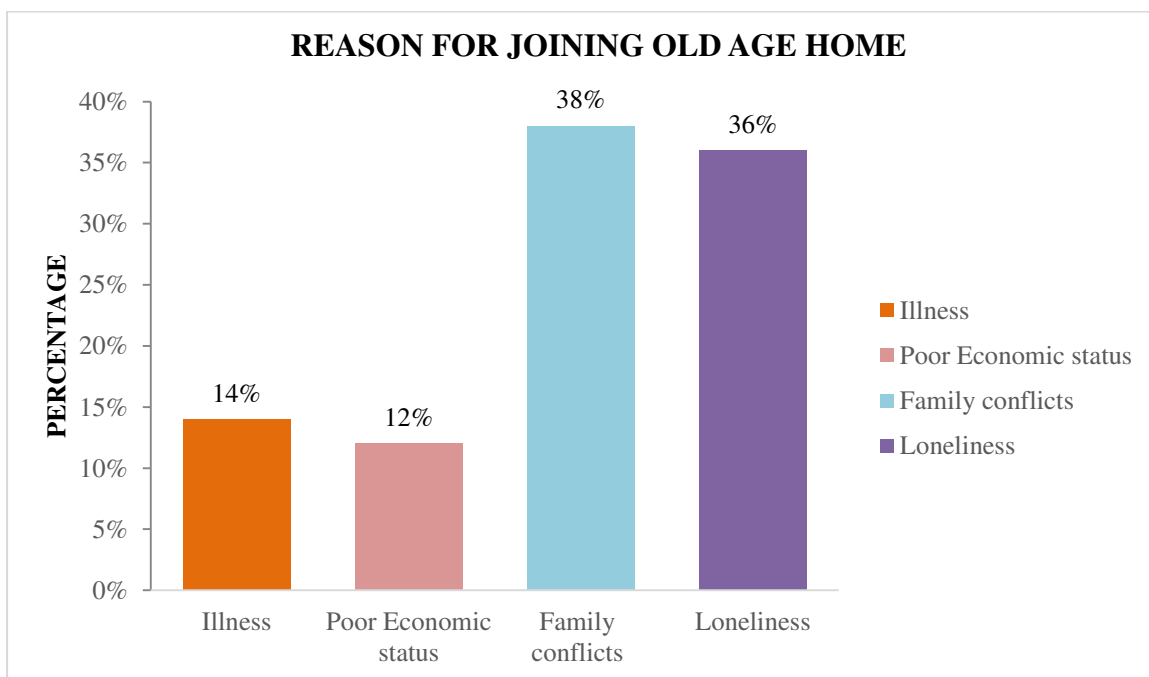
Figure 2.12: Percentage distribution of reason for joining old age home among old age people
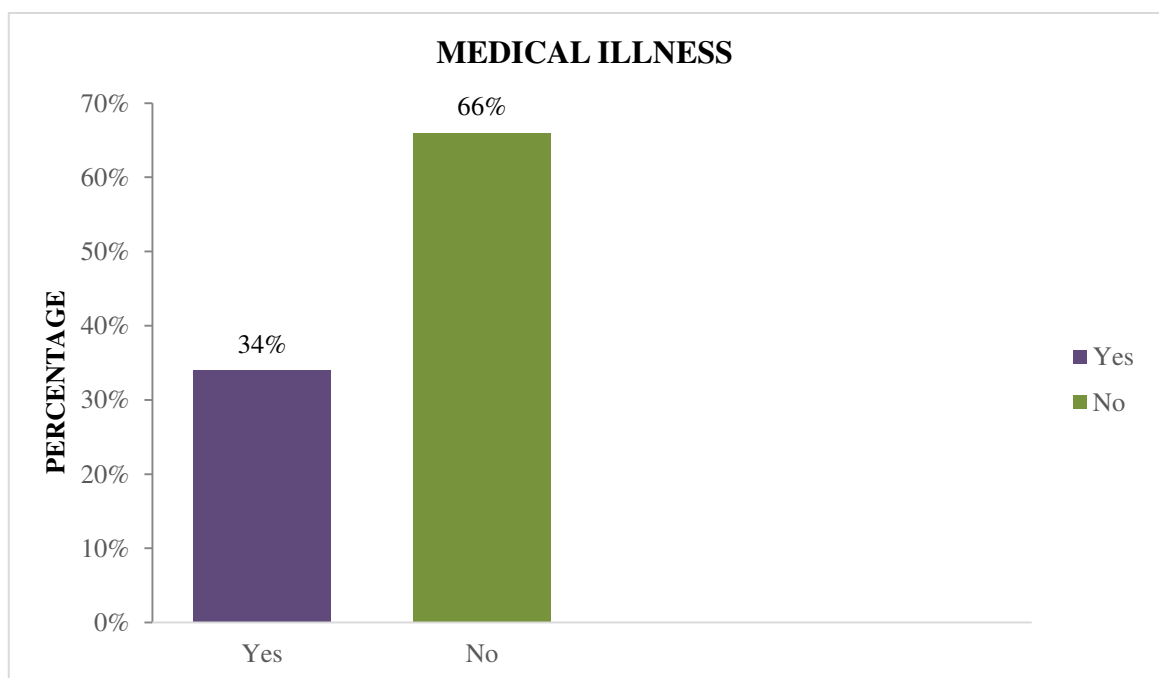
MEDICAL ILLNESS

Figure 2.13: Percentage distribution of medical illness among old age people

PRETEST AND POSTTEST LEVEL OF DEPRESSION AMONG OLD AGE PEOPLE

Table 2.1.Frequency and percentage distribution of depression among old age people.

n=50

S.no	Level of depression	Pretest		Posttest	
		f	**%**	**f**	**%**
1.	**Normal**	0	0	26	52
2.	**Mild depression**	38	76	18	36
3.	**Severe depression**	12	24	6	12

Table 2.1 depicts the level of depression in pretest and posttest. In pretest none of them were normal, 38 (76%) of them had mild depression, 12 (24%) of them had severe depression.

In posttest 26 (52%) of them were normal, 18 (36%) of them had mild depression, 6 (12%) of them had severe depression.
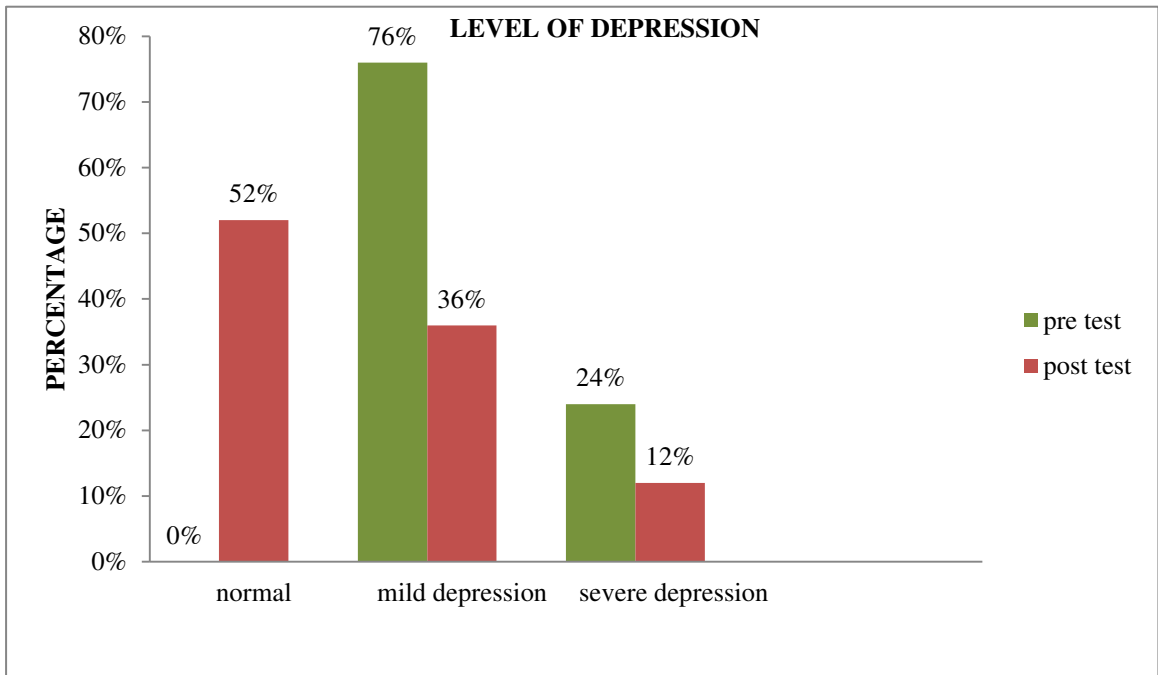
Figure 3.1 Pretest and posttest percentage distribution of level of depression among old age people.

SECTION-C

COMPARISON OF PRETEST AND POSTTEST LEVEL OF DEPRESSION AMONG OLD AGE PEOPLE

Table 3.1 Comparison of mean, standard deviation, and paired 't' test value of pretest and posttest level of depression among old age people.

n=50

S.No	Variables	Mean	Standard deviation	't' value	Table value
1.	**Pretest**	17.94	4.637	26.2*	2.02
2.	**Posttest**	10.86	4.948		

Table 3.1 shows that the pretest mean score of depression was 17.94 and standard deviation was 4.637. In posttest mean score was 10.86 and standard deviation score was 4.948. The 't' value between pretest and posttest score was 26.2*. The calculated't' value was greater than the table value which was significant at $p \leq 0.05$. Hence the foot reflexology was effective in reducing depression.

SECTION-D

ASSOCIATION BETWEEN THE PRETEST LEVEL OF DEPRESSION AMONG OLD AGE PEOPLE WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

Table 4.1 Association between the pretest level of depression among old age people with their selected demographic variables.

n=50

S.No	Demographic variables		Mild depression		Severe depression		Chi-square test χ^2
			(f)	(%)	(f)	(%)	
1.	Age	61-65 years	10	20	6	12	χ^2=2.738 df=3 Table value=7.82
		66-70 years	13	26	2	4	
		71-75 years	9	18	2	4	
		76- 80 years	6	12	2	4	
2.	Sex	Male	18	36	3	6	χ^2=1.87 df=1 Table value=3.84
		Female	20	40	9	18	
3.	Religion	Christian	27	54	9	18	χ^2=0.0691 df=1 Table value=3.84
		Hindu	11	22	3	6	
		Muslim	0	0	0	0	
		Others	0	0	0	0	
4.	Education	Illiterate	16	32	5	10	χ^2=0.9621 df=4 Table value=9.49
		Primary schooling	13	26	5	10	
		Middle schooling	6	12	1	2	
		High school	2	4	1	2	

No.	Category	Subcategory					χ^2 value
		Higher secondary	1	2	0	0	
		Graduate	0	0	0	0	
		Post graduate	0	0	0	0	
5.	Previous occupation	Unemployed	15	30	6	12	χ^2=1.2056 df=3 Table value=7.82
		Self employed	20	40	6	12	
		Private employed	1	2	0	0	
		Government employed	2	4	0	0	
6.	Previous income	Rs.1000-5000	16	32	4	8	χ^2=1.0343 df=3 Table value=7.82
		Rs.5001-10000	6	12	2	4	
		Rs.10001-20000	0	0	0	0	
		Above Rs.20000	2	4	0	0	
		Nil	14	28	6	12	
7.	Present income	Rs.1000-5000	1	2	0	0	χ^2=0.6493 df=2 Table value=5.99
		Rs.5001-10000	1	2	0	0	
		Rs.10001-20000	0	0	0	0	
		Above Rs.20000	0	0	0	0	
		Nil	36	72	12	24	

8.	Previous type of family	Nuclear family	26	52	9	18	χ^2=1.4585 df=3 Table value=7.82
		Joint family	10	20	2	4	
		Extended family	1	2	0	0	
		Separated	1	2	1	2	
		Married	8	16	3	6	
		Separated	5	10	1	2	
9.	Marital status	Single	7	14	2	4	χ^2=0.2678 df=3 Table value=7.82
		Married	8	16	3	6	
		Separated	5	10	1	2	
		Widower	18	36	6	12	
10.	Number of children	Nil	11	22	3	6	χ^2=2.9998 df=4 Table value=9.4
		1	7	14	2	4	
		2	10	20	1	2	
		3	5	10	3	6	
		More than 3	5	10	3	6	
11.	Duration of stay at old age home	Less than 1 year	16	32	4	8	χ^2=0.9916 df=2 Table value=5.99
		1-3 years	5	10	3	6	
		More than 3 years	17	34	5	10	
12.	Reason for joining old age home	Illness	5	10	2	4	χ^2=0.9529 df=3 Table value=7.82
		Poor economic status	4	8	2	4	
		Family conflicts	15	30	3	6	
		Loneliness	14	28	5	10	

13.	Medical illness	Yes	Diabetes mellitus	2	12	24	4	8	χ²=0.0127 df=1 Table value=3.84
			Hypertension	1					
			Diabetes mellitus and hypertension	8					
			Arthritis	2					
			Asthma	3					
		No			26	52	8	16	

Table 4.1 represents that there was no association between the level of depression among old age people with their demographic variables such as age, sex, religion, education, previous occupation, previous income, present income, previous type of family, marital status, number of children, duration of stay in old age home, reason for joining old age home, medical illness.

CHAPTER V

DISCUSSION

This chapter deals with the discussion of the data analysed based on the objectives and hypotheses of the study. Pre experimental study was done to evaluate the effectiveness of foot reflexology on level of depression among old age people in selected old age homes, at Kanyakumari district. The discussion was based on the objectives and hypotheses mentioned in the study.

Distribution of demographic variables among old age peoples

The distribution of demographic variables of the participants of 50 old age people with mild and severe depression. Regarding age, 16 (32%) of them were 61- 65 years old, 5 (10%) of them were 76-80 years old.

Regarding sex, 21 (42%) of them were males, 29 (58%) of them were females.

Analysing religion, 36 (72%) of them were christians, 14 (28%) of them were hindu.

According to education, 21 (42%) of them were illiterate, 1 (2%) of them did higher secondary education.

With regard to the previous occupation, 26 (52%) of them were self-employed, 1 (2%) of them was private employed.

Regarding to previous income, 20 (40%) of them got Rs.1000-5000, 2 (4%) of them got above Rs.20000.

According to present income, 1 (2%) of them were getting Rs.1000-5000, 48 (96%) of them were not getting any income.

Regarding to previous type of family, 35 (70%) of them belongs to nuclear family, 1 (2%) of them belong to extended family.

Analysing marital status, 6 (12%) of them were separated, 24 (48%) of them were widower.

According to number of children, 14 (28%) of them don't have children, 8 (16%) of them had more than 3 children.

With regard to duration of stay in old age home, 8 (16%) of them were staying for 1-3 years, 22 (44%) of them were staying for more than 3years.

Analysing reason for joining old age home, 6 (12%) of them were joined due to poor economic status, 19 (38%) of them were joined due to family conflicts.

According to medical illness, 16 (32%) of them had illness, 34 (68%) of them had no illness.

The first objective was to assess the pretest and posttest level of depression among old age people.

During pretest, 38 (76%) were had mild depression, 14 (24%) were had severe depression. During posttest 26 (52%) of them were normal, 18 (36%) of them were mild depressive, 6 (12%) of them were severe depression.

The first objective was supported by the study of **Buvaneshkumar (2018)** conducted a study to assess prevalence of depression and associated risk factors among old age people in kattankulathur block Tamilnadu. The objective of the study is to estimate the prevalence. Sample size was 690. Clustering sampling technique was used to select the sample. Interview was conducted in all houses by using questionnaire. Depression was assessed by using geriatric depression scale. The results showed that prevalence of depression was 35.5%. Socio economic factors such as sex, widower, medical illness, and occupation conflicts in family were associated with depression ($p \leq 0.05$). These findings represent the need for care by family and counseling for the old age is very important in preventing depression.

The second objective was to evaluate the effectiveness of foot reflexology on level of depression among old age people.

During pretest the mean score of depression was 17.94 and standard deviation was 4.637. In posttest mean score was 10.86 and standard deviation score was 4.948. The 't' value between pretest and posttest score was 26.2* which was significant at $p \leq 0.05$. Hence research hypothesis (H_1) is accepted.

The second objective was supported by the study of **Fakhravari (2018)** conducted a quasi-experimental study to find out the effect of foot reflexology on sleep among old age people with sleep disturbances. Sample size was 67 old age people. Convenience sampling technique was used in this study. Foot reflexology was given as a 20 minute session for 4 weeks. Pittsburgh sleep quality index was used for data collection. The difference was statistically significant ($p \leq 0.001$). Hence the investigator concluded that foot reflexology had a positive effect on quality sleep of old age people.

The third objective was to find out the association between pretest level of depression among the old age people with their selected demographic variables

It shows that, the calculated value of demographic variables such as, age, sex, religion, education, previous occupation, previous income, present income, previous type of family, marital status, number of children, duration of stay in old age home, reason for joining old age home, medical illness is less than table value which indicates that there was no significant association with depression and demographic variables. Hence, hypothesis (H_2) is not accepted.

This chapter dealt with the discussion of the study with reference to the objectives and supportive studies. Investigator concluded as per the study that the depression level can be reduced by using foot reflexology. The study statistically proved that foot reflexology was effective in reducing level of depression among old age people at old age homes.

CHAPTER VI

SUMMARY, CONCLUSION, LIMITATION, NURSING IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary, conclusion of the study. It explains nursing implications for nursing practice, nursing education, nursing administration and nursing research, limitations and recommendation for further research in the field.

SUMMARY

The aim of the study was to assess the effectiveness of Foot reflexology on level of depression among old age people. A review of related literature enabled the investigator to develop the conceptual framework and methodology for the study. The conceptual framework adopted by modified Von Ludwig Bertalanffy General System Theory (1968). Quantitative research approach was used. Pre experimental one group pretest posttest design was adopted to evaluate the effectiveness of foot reflexology on level of depression among old age people. The study was conducted in St. Joseph's old age home, Pilankalai and Emmaus Rehabilitation Centre, Ummancode, Kanyakumari district. Purposive sampling technique was used to select 50 old age people.

Data collection was done by using demographic data sheet and Yesavage's Geriatric depression scale. Foot reflexology was given to old age people who were suffering with mild and severe depression. Posttest was done at the end of 10th session. The data gathered were analysed by descriptive and inferential statistics method and interpretation were done on the basis of the objectives of the study. The level of significance was assessed by $p \leq 0.05$ to test the hypothesis.

FINDINGS

The major finding of the study was summarized as follows;

The distribution of demographic variables of old age people according to age, 16 (32%) of them were 61- 65 years old, 15 (30%) of them were 66- 70 years old, 14 (28%) of them were 71-75 years old, 5 (10%) of them were 76-80 years old.

Regarding sex, 21 (42%) of them were males, 29 (58%) of them were females.

Analysing religion, 36 (72%) of them were Christians, 14 (28%) of them were Hindu. None of them are Muslim and others.

According to education, 21 (42%) of them were illiterate, 18 (36%) of them were primary schooling, 7 (14%) of them were middle schooling, 3 (6%) of them were high school, 1 (2%) of them were higher secondary, none of them are graduate and post graduate.

Regarding to previous occupation, 21 (42%) of them were unemployed, 26 (52%) of them were self-employed, 1 (2%) of them were private employed, 2 (4%) of them were government employed.

Regarding to previous income, 20 (40%) of them got Rs.1000-5000, 8 (16%) of them got Rs.5001-10000, none of them got Rs.10001-20000, 2 (4%) of them got above Rs. 20000, 20 (40%) of them got nil income.

According to present income, 1 (2%) of them was getting Rs.1000-5000, 1 (2%) of them was getting Rs.5001-10000, none of them were getting Rs.10001-20000 and above Rs.20000, 48 (96%) of them were not getting any income.

With regard to the previous type of family, 35 (70%) of them belongs to nuclear family, 12 (24%) of them belongs to joint family, 1 (2%) of them belong to extended family, 2 (4%) of them were separated.

Analysing marital status, 9 (18%) of them were single, 11 (22%) of them were married, 6 (12%) of them were separated, 24 (48%) of them were widower.

According to number of children, 14 (28%) of them didn't had children, 9 (18%) of them had 1 child, 11(22%) of them had 2 children, 8 (16%) of them had 3 children, 8 (16%) of them had more than 3 children.

With regard to duration of stay at old age home, 20 (40%) of them were staying less than 1 year, 8 (16%) of them were staying 1-3 years, 22 (44%) of them were staying more than 3.

Analysing reason for joining old age home, 7 (14%) of them were joined due to illness, 6 (12%) of them were joined due to poor economic status, 18 (36%) of them were joined due to family conflicts, 19 (38%) of them were joined due to loneliness.

According to medical illness, 16 (32%) of them were had illness, 34(68%) of them were had no illness.

The prevalence of level of depression among old age people, 28 (31.1%) were normal, 38 (42.2%) were mild depressive, 24 (26.6%) were severe depressive.

The pretest mean score of depression was 17.94 and standard deviation was 4.637. In posttest mean score of depression was 10.86 and standard deviation score was 4.948. The 't' value between pretest and posttest score was 26.2*which was significant at $p \leq 0.05$. The calculated 't' value was greater than the table value so there was significant difference between pretest and posttest score. It shows that foot reflexology was effective in reducing depression among old age people. Hence the research hypothesis (H_1) is accepted.

There was no association between the level of depression among old age people with their selected demographic variables such as age, sex, religion, education, previous occupation, previous income, present income, previous type of family, marital

status, number of children, duration of stay at old age home, reason for joining old age home and medical illness. Hence research hypothesis (H_2) is not accepted.

CONCLUSION

The study was done to determine the effectiveness of foot reflexology on level of depression among old age people in selected old age homes. A review of related literature enabled the investigator to develop the conceptual framework and methodology for the study. The conceptual framework adopted for this study was modified Von Ludwig Bertalanffy general system theory (1968). Quantitative research approach was used. Pre experimental one group pretest posttest design was adopted to evaluate the effectiveness of foot reflexology on level of depression among old age people. The study was conducted in St. Joseph's old age home, Pilankalai and Emmaus Rehabilitation Centre, Ummancode, Kanyakumari district. Purposive sampling technique was used to select 50 old age people.

Based on the data collected the mean score level of depression was 17.94 in pretest, the mean score of level of depression was 10.86 in posttest. The paired 't' test value was 26.2* which was significant at level of $p \leq 0.05$. It shows that foot reflexology was effective in reducing depression. From the result the investigator concluded that providing foot reflexology was effective in reducing depression among old age people. Therefore the investigator felt that more importance should be given to foot reflexology to reduce level of depression among old age people.

NURSING IMPLICATIONS

The findings of the study enables us to conclude that foot reflexology was effective in reduce the level of depression among old age people, which is a vital concern in the field of Nursing profession including Nursing practice, Nursing administration, Nursing education and Nursing research.

NURSING PRACTICE

❖ Foot reflexology can be used by nurses in charge of old age clinics in reducing the depression of old age.

❖ Foot reflexology can be used by nurses to reduce the level of depression of their client.

❖ Nurses should develop skills in implementing foot reflexology.

❖ Nurses should develop their knowledge regarding the benefits of foot reflexology on reducing depression among old age people

❖ Nurse should create awareness on benefits of foot reflexology to promote and encourage practising foot reflexology among old age people with depression.

NURSING EDUCATION

❖ Nurse educators should develop their knowledge regarding the benefits of foot reflexology among old age people with depression.

❖ Nurse educator should create awareness on benefits of foot reflexology to promote and encourage practising foot reflexology among old age people with depression.

❖ Nurse educators should ensure that foot reflexology is included in the curriculum for the basic level of nursing education.

❖ Workshop and conferences can be conducted for nursing students regarding the effectiveness of foot reflexology, in day to day nursing practice.

NURSING ADMINISTRATION

❖ Nurse administrator can assist in implementing foot reflexology on public health awareness in hospitals.

❖ Nurse administrator should understand the needs of old age people with depression.

❖ Request should be designed by nurse administrator to the institutions to implement foot reflexology on old age people with depression.

❖ Nursing administrator can organize conference, seminars, and workshop for nurses working in community to encourage a positive attitude on foot reflexology.

NURSING RESEARCH

❖ Nurse Researchers can work on various methods to reduce depression.

❖ Nurses can conduct research for further clarifications on the benefits of foot reflexology.

❖ Nurses should be encouraged to conduct more research on the effect of foot reflexology.

❖ Large scale study should be conducted on benefits of foot reflexology on depression among old age people and disseminate the findings of research through conferences, workshops, seminars and publishing in nursing journals.

❖ A qualitative study can be adopted to find out the practice and factors influencing old age people's depression.

LIMITATIONS

❖ Since there were very few studies done on the effectiveness of foot reflexology on depression among old age people, the investigator had lot of difficulty in collecting the study material for the review.

❖ Since the investigator is the tool for providing foot reflexology, the investigator found difficulty in doing the procedure for large group of participants.

RECOMMENDATIONS

The following steps can be under taken to strengthen the study

❖ A study can be conducted among large group.

❖ A study can be conducted on other geriatric problems.

❖ A study can be conducted to assess the knowledge of old age people regarding foot reflexology.

❖ A study can be conducted for the other geriatric psychiatric problems.

❖ A comparative study can be done to determine the effectiveness of foot reflexology versus other therapies on depression.

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ANNEXURE I

LETTER SEEKING PERMISSION TO CONDUCT STUDY

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil, Kanyakumari, Tamil Nadu - 629 003.
Tel : College : 04651-231740, Cell : 9840307884, 8012524043; Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com; Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc (N)., Ph.D.
Principal

Date: 21-12-2018

To

The Administrative Officer,

St.Joseph's old age home,

Nagercoil,

Kanyakumari District.

Respected Madam,

Ms. Selva Daphine .S is a student of M.sc Nursing program in our college from mental health department. She is conducting study on, "A study to assess effectiveness of foot reflexology on level of depression among old age people in selected old age homes at Kanyakumari District"

This for the research project to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of university requirement for the award of M.Sc (Nursing)

As a part of her study she needs to conduct the study in your old age home. So kindly grant permission for her to conduct the study at your esteemed old age home. She will abide by the rules and regulation of your old age home.

Thanking You.

Yours Faithfully,

PRINCIPAL
SL XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

i

© : 04651 - 248523

HOME FOR THE AGED

(Registered under Tamil Nadu Societies Registration Act. 1975)

Pilankalai,
Mekkamandapam - 629 166.
Kanyakumari District.

Date. ....

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY

Date:

DISSERTATION COMPLETION CERTIFICATE

This is to certify that miss.Selvadaphine .S (M.sc Nursing II year) student of St. Xavier's Catholic College of Nursing Chunkankadai, Kanyakumari District. She has successfully completed the data collection in our St. Joseph's Old Age Home, Pilankalai for the dissertation work on "a study to assess the effectiveness of foot reflexology on depression among old age people" during the period from 22.12.18 to 25.12.19.

Administrative officer

HOME FOR THE AGED
PILANKALAI
MECK'MANDAPAM POST
KANYAKUMARI - 629 166
TAMIL NADU, INDIA

ANNEXURE III

LETTER GRANTING PERMISSON TO CONDUCT THE STUDY

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY

Date:

DISSERTATION COMPLETION CERTIFICATE

This is to certify that Mrs.selva daphine .S (M.sc Nursing IIyear) student of St. Xavier's catholic college of nursing chunkankadai, kanyakumari district. She has successfully completed the data collection in our Emmaus house, Umman code, for the dissertation work on **"A study to assess the effectiveness of foot reflexology on depression among old age people"** during the period from 22.12.18 to 25.1.19.

Administrative officer

Director
Emmaus Rehabilitation Centre for
Mentally ill Women
Ummencode, Mekkamandapam - P.O.
K.K.Dist. - 629 166, Tamil Nadu.

ANNEXURE IV

LETTER SEEKING EXPERT OPINION FOR THE VALIDATION OF THE TOOL

From

       S. Selva Daphine,

       M.Sc. Nursing II year,

       St. Xavier's catholic college of nursing,

       Chunkankadai, Nagercoil,

       Kanyakumari District,

       Pin Code-629 003.

To

Respected   madam,

       Sub: Requisition to expert opinion and suggestion for the content validity.

I S. Selva Daphine, M.sc., nursing second year student of St. Xavier's Catholic College of Nursing, Chunkankadai, have selected the following topic, **"A Pre experimental Study to Evaluate the Effectiveness of Foot reflexology on Level of Depression among Old age people in Selected Old age homes at Kanyakumari District"** for my dissertation to be submitted to the Tamilnadu Dr.M.G.R Medical University, Chennai in the partial fulfilment of the requirement for award of Master of Science in Nursing.

       I request you to go through the items and give your valuable suggestions and opinions to validate the tool. Kindly suggest modifications, additions and deletions if any in the remarks column.

<div align="center">Thanking you,</div>

Place: Chunkankadai

Date:

<div align="right">Yours Sincerely,
S.Selva Daphine</div>

ENCLOSURE:

1. Problem statement, objectives and hypothesis of study.
2. Demographic profile.
3. Assessment of geriatric depression scale.
4. Evaluation proforma for validation of tool.

ANNEXURE V

EVALUATION CRITERIA CHECKLIST FOR VALIDATION

INSTRUCTION:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remark. Kindly please tick in the appropriate columns and give remarks.

Interpretation column

Column I – Does not meet the criteria
Column II – Partially meets the criteria
Column III –Meet the criteria

S.NO	CRITERIA	1	2	3	REMARKS
1	**SCORING** Adequacy Clarity Simplicity				
2	**CONTENT** Logical sequence Adequacy Relevance				
3	**LANGUAGE** Appropriate Clarity Simplicity				
4	**PRACTICABILITY** Easy to score Precise Utility				

Any other suggestion   Signature:

Name:

Designation:

Address:

CRITERIA CHECKLIST FOR VALIDATION OF THE TOOL

INSTRUCTIONS:

Kindly review the demographic data for depression among old age people. Kindly give your suggestion regarding the accuracy, relevance and appropriateness of the content. Kindly place a tick mark (✓) against specific columns.

Part I

Validation of demographic variables

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Part II

Validation of Yesavage's geriatric depression scale (1983)

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

ANNEXURE VI

LIST OF EXPERTS VALIDATED THE TOOL

1. Dr.C.Panneer Selvan, MBBS, M.D.,

    Consultant Psychiatrist,

    Sneka Mind Care Centre,

    Tirunelveli,

    Pin code-627 005.

2. Dr.Karthik Duraisamy, MBBS, M.D.,

    Consultant Psychiatrist,

    Sneka Mind Care Centre,

    Tirunelveli,

    Pincode-627 005.

3. Dr.(Mrs).A.Subhala, M.sc.,(N), Ph.D (N).,

    Principal,

    Dr. Kumaraswami Health Centre,

    Kottaram,

    Kanyakumari District.

4. Mrs.P.Jabalin Mahiba, M.sc.,(N),

    Assistant Professor,

    P.S.College of Nursing,

    Thalakulam,

    Kanyakumari District.

5. Mrs.P.Jega Juliet,

    Assistant Professor,

    Chritian College of Nursing,

    Neyyoor,

    Kanyakumari District.

ANNEXURE VII

STRUCTURED INTERVIEW SCHEDULE

PART I

DEMOGRAPHIC VARIABLES

Instructions

The investigator will ask the item listed below and place the tick mark (✓) against the response given by the respondents.

1. Age

    a) 61 - 65 years   (   )

    b) 66 – 70 years   (   )

    c) 71 – 75 years   (   )

    d) 76-80years   (   )

2. Sex

    a) Male   (   )

    b) Female   (   )

3. Religion

    a) Christian   (   )

    b) Hindu   (   )

    c) Muslim   (   )

    d) Others   (   )

4. Education

    a) Illiterate   (   )

    b) Primary schooling   (   )

    c) Middle schooling   (   )

    d) High school   (   )

    e) Higher secondary   (   )

    d) Graduate   (   )

    e) Post graduate   (   )

5. Previous occupation

    a) Unemployed   (   )

    b) Self-employed   (   )

    c) Private-employed   (   )

    d) Government employed   (   )

6. Previous income

    a) Rs.1000-5000   (   )

    b) Rs.5001-10000   (   )

    c) Rs.10001-20000   (   )

    d) Above Rs.20000   (   )

    e) Nil   (   )

7. Present income

      a) Rs.1000-5000   (   )

      b) Rs.5001-10000   (   )

      c) Rs.10001-20000   (   )

      d) Above Rs.20000   (   )

      e) Nil   (   )

8. Previous type of family

      a) Nuclear family   (   )

      b) Joint family   (   )

      c) Extended family   (   )

      d) Separated   (   )

9. Marital status

      a) Single   (   )

      b) Married   (   )

      c) Separated   (   )

      d) Widower   (   )

10. Number of children

      a) Nil   (   )

      b) 1   (   )

      c) 2   (   )

d) 3   (   )

e) More than 3   (   )

11. Duration of stay at old age home

a) Less than 1 year   (   )

b) 1-3 years   (   )

c) More than 3 years   (   )

12. Reason for joining old age home

a) Illness   (   )

b) Poor economic status (   )

c) Family conflicts   (   )

d) Loneliness   (   )

13. Medical illness (if yes, mention)

a) Yes   (   )

b) No   (   )

PART II

J.A.YESAVAGE'S GERIATRIC DEPRESSION SCALE (1983)

1.	Are you basically satisfied with your life?	Yes	No
2.	Have you dropped many of your activities and interests?	Yes	No
3.	Do you feel that your life is empty?	Yes	No
4.	Do you often get bored?	Yes	No
5.	Are you hopeful about the future?	Yes	No
6.	Are you bothered by thoughts you can't get out of your head?	Yes	No
7.	Are you in good spirits most of the time?	Yes	No
8.	Are you afraid that something bad is going to happen to you?	Yes	No
9.	Do you feel happy most of the time?	Yes	No
10.	Do you often feel helpless?	Yes	No
11.	Do you often get restless and fidgety?	Yes	No
12.	Do you prefer to stay at home, rather than going out and doing new things?	Yes	No
13.	Do you frequently worry about the future?	Yes	No
14.	Do you feel you have more problems with memory than most?	Yes	No
15.	Do you think it is wonderful to be alive now?	Yes	No
16.	Do you often feel downhearted and blue?	Yes	No
17.	Do you feel pretty worthless the way you are now?	Yes	No
18.	Do you worry a lot about the past?	Yes	No
19.	Do you find life very exciting?	Yes	No
20.	Is it hard for you to get started on new projects?	Yes	No

21.	Do you feel full of energy?	Yes	No
22.	Do you feel that your situation is hopeless?	Yes	No
23.	Do you think that most people are better off than you are?	Yes	No
24.	Do you frequently get upset over little things?	Yes	No
25.	Do you frequently feel like crying?	Yes	No
26.	Do you have trouble concentrating?	Yes	No
27.	Do you enjoy getting up in the morning?	Yes	No
28.	Do you prefer to avoid social gatherings?	Yes	No
29.	Is it easy for you to make decisions?	Yes	No
30.	Is your mind as clear as it used to be?	Yes	No

Note: Each answer carry one point.

Cut-off:

Normal-0-9

Mild depression-10-19

Severe depression-20-30

1. No
2. Yes
3. Yes
4. Yes
5. No
6. Yes
7. No
8. Yes
9. No
10. Yes

11. Yes

12. Yes

13. Yes

14. Yes

15. No

16. Yes

17. Yes

18. Yes

19. No

20. Yes

21. No

22. Yes

23. Yes

24. Yes

25. Yes

26. Yes

27. No

28. Yes

29. No

30. No

ANNEXURE VIII

DATACOLLECTION SCHDULE

Sessions	Date of data collection			Method of sample selection
	I Group	II Group	III Group	
Pre test	22.12.18	23.12.18	24.12.18	
Session I	25.12.18	26.12.18	27.12.18	
Session II	28.12.18	29.12.18	30.12.18	
Session III	31.12.18	01.01.19	02.01.19	
Session IV	03.01.19	04.01.19	05.01.19	
Session V	06.01.19	07.01.19	08.01.19	Purposive
Session VI	09.01.19	10.01.19	11.01.19	sampling
Session VII	12.01.19	13.01.19	14.01.19	technique
Session VIII	15.01.19	16.01.19	17.01.19	
Session IX	18.01.19	19.01.19	20.01.19	
Session X	21.01.19	22.01.19	23.01.19	
Post test	24.01.19	25.01.19	26.01.19	

ANNEXURE IX

CERTIFICATE OF TRAINING FOR FOOT REFELEXOLOGY

CIA Regd. No. : 1603

NEEDLES ACUPUNCTURE CLINIC
The Health

நீடில்ஸ்
ஆரோக்கியம்
அக்குபஞ்சர் கிளினிக்

K.Ashokraj
Acupuncturist

Mob : 9367522362
04652 420006

Certificate

This is certify that **Ms. Selva Daphine S.** *M.Sc., Nursing Second Year student doing her specialization in Mental Health Nursing in St. Xavier's Catholic College of Nursing. She is doing her research study on "A Study to Assess the Effectiveness of Foot Reflexology" on level of depression among oldage in selected oldage homes at kanyakumari District.*

For that she has undergone training in Foot Reflexology from 23 - 10 - 2018 to 06 - 11 - 2018 in our Clinic. Now She is eligible to practice Foot Reflexology in her Interventional study for the benefit and reduction of depression.

I wish her all success

K.Ashokraj
Acupuncturist

28/11/2018

42, North Car Street, Opp. Head Post Office, Nagercoil – 629 001

ANNEXURE X

CERTIFICATE OF STATISTICAL ANALYSIS

CERTIFICATE OF STATISTICAL ANALYSIS
TO WHOM SO EVER IT MAY CONCERN

Certified that the dissertation paper titled, **"A study to Evaluate the Effectiveness of Foot reflexology on Level of Depression among Old age people in Selected old age homes at Kanyakumari district"** by **Mrs.SELVA DAPHINE.S**, has been checked for the accuracy in statistical analysis and interpretation and apt for its purpose.

P. ANTO PAULIN BRINTO
Asst. Professor & Bio-Statistician
Scott Christian College (Autonomous)
Nagercoil

Signature

ANNEXURE XI

CERTIFICATE OF EDITING

CERTIFICATE OF EDITING

TO WHOM EVER IT MAY CONCERN

Certified that the dissertation paper titled, **"A study to evaluate the effectiveness of foot reflexology on level of depression among old age people in selected old age home, at Kanyakumari district"** by Mrs. S.Selva Daphine, has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper in lucid, unambiguous, free of grammatical or spelling errors and apt for the purpose.

Signature

Dr. A. XAVIER CHANDRA BOSE
M.A.,M.A.,M.Phil.,Ph.D.
Associate Professor and Head,
Department of English and Research Centre
Lekshmipuram College of Arts & Science
Neyyoor P.O.-629 802,
Kanyakumari District.

ANNEXURE XII

CERTIFICATE OF PLAGIARISM

This is to certify that is dissertation work titled **"Effectiveness of Foot reflexology on Level of Depression among Old age people"** of the candidate **Mrs.S.Selva Daphine** with registration number **301731702** for the award of **Master of Science in Nursing** in the branch of **Mental Health Nursing**. I personally verified the urkund.com website for the purpose of plagiarism check. I found that the uploaded thesis file contains from introduction to conclusion pages and result shows **13** percentage of plagiarism in the dissertation.

Name and Signature of the Principal :_____

                                 Dr.A . (Mrs)Reena Evency , M.Sc.,(N),Ph.D., (N),

                                 Principal,

                                 St.Xaviers Catholic College of Nursing,

                                 Chunkankadai,Nagercoil, Kanyakumari District,

                                  Pin code- 629 003.

Name and Signature of the Guide: _____

                                 Mrs.D.Shiny Mary, M.Sc., (N),

                                 Associate professor,

                                 Obstetrics and Gynaecological nursing,

                                 St.Xavier's Catholic College of Nursing,

                                 Chunkankadai , Nagercoil, Kanyakumari District,

                                 Pin code- 629 003.

ANNEXURE XIII

FOOT REFLEXOLOGY

INTRODUCTION

Reflexology is based on the principle that there are reflex points on the feet that correspond to the body's different organs and glands. The human feet are high evolutionary, capable of handling hundreds of tons of force and our weight while moving. It has 42 muscles, 26 bones, 33 joints, 2500000 sweat glands and at least 50 ligaments and tendons. In particular the feet have almost 15000 nerve endings. In reflexology pressure is applied to these reflexes on the feet to promote good health.

DEFINITION OF FOOT REFLEXOLOGY

Reflexology refers to a therapeutic technique based on the premise that areas in the hands or feet correspond to the organs and systems of the body and stimulation of these areas by pressure can affect the corresponding organ or system.

-Dorland dictionary (2007)

According to massage physiology, blockages in the energy flow of the body are the primary cause of depression, and reflexology targets those blockages and eases the energy flow.

- Bradly (2014)

PURPOSES

- ❖ Improves blood circulation
- ❖ Fights depression
- ❖ Helps in relaxation
- ❖ Promotes better sleep

- ❖ Relieves body pain
- ❖ Eliminates the build up of toxins from body
- ❖ Stimulates the endocrine system
- ❖ Promote the release of happy hormone (endorphins) which minimises the stress

HOW FOOT REFLEXOLOGY WORKS

According to the theory of reflexology channels, a system of tiny tubes or energy channels runs vertically down the front and up the back of the body along the entire length of the body. The energy channels form the reflex channels that connect to all organs, glands and tissues of the human body. Thousands of these channels run through the entire length of the body.

INDICATIONS

- ❖ Migraine head ache
- ❖ Depression and stress
- ❖ Hypertension
- ❖ Menstrual cramps or irregularities
- ❖ Insomnia
- ❖ Anxiety disorders

CONTRA INDICATIONS

- ❖ Infections of foot
- ❖ Trauma to the feet
- ❖ High risk for miscarriage

DURATION

For both feet, 20 minutes for once in every three days for 10 sessions

MECHANISM OF FOOT REFLEXOLOGY ON DEPRESSION

Foot reflexology works relieves symptoms of depression as the foot has blocks in particular pressure points and nerve endings which are responsible for depression. Reflexology eliminates build-up of toxins in the body and then activates the endocrine system. This encourages the release of endorphins; the natural feel good hormones in the body that can minimize the body's stress response.

PREPARATION

- ❖ Explain procedure to the old age person.
- ❖ Provide comfortable position to the old age person. Provide sitting or lying position and with legs forward.
- ❖ Warm the old age person with positive thoughts.

STEPS INVOLVED

- ❖ Explain procedure to the old age person.
- ❖ Provide comfortable position to the old age person. Provide sitting or lying position and with legs forward.
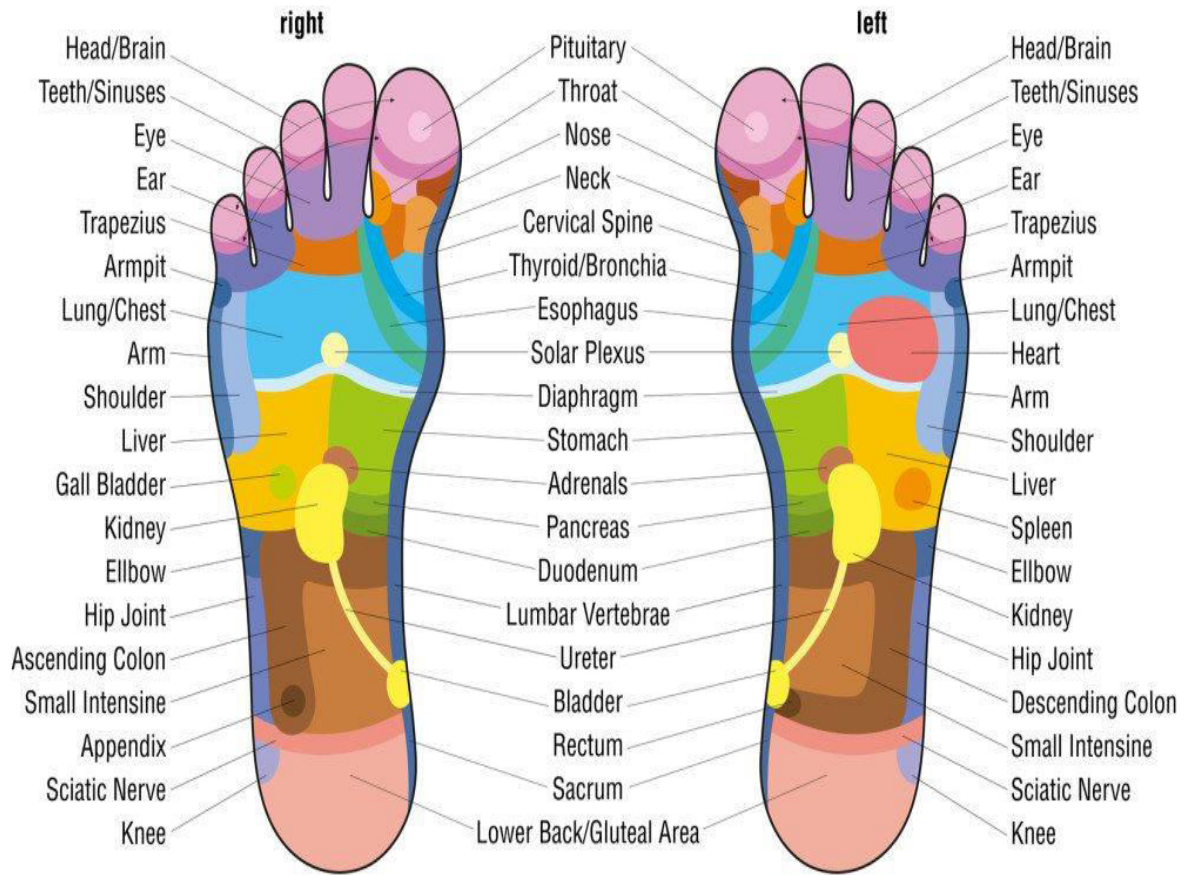- ❖ Warm the old age person with positive thoughts.
- ❖ Provide warmth to the left foot by simply massaging the foot.
- ❖ Start from the left foot.
- ❖ Provide massage to the solar flexes for 5 times.
- ❖ Massage upward for 5 times from the solar flexes.
- ❖ Massage downwards toward the foot for 5 times from the solar flexes.
- ❖ Rotate each toe 5 times in clockwise.
- ❖ Rotate each toe 5 times in anticlockwise motion.
- ❖ Massage the upper part of the foot.
- ❖ Massage the ankle of foot.

AFTER CARE

- ❖ Provide comfort to the patient.
- ❖ Do not leave the patient after procedure warm the patient and explain that foot reflexology has over and make sure that you are going to take hands from the client.
- ❖ Explain the client to drink adequate water.
- ❖ Explain to avoid heavy meals immediately after treatment.

Foot Reflexology Chart

right

Left labels	Center labels	Right labels
Head/Brain	Pituitary	Head/Brain
Teeth/Sinuses	Throat	Teeth/Sinuses
Eye	Nose	Eye
Ear	Neck	Ear
Trapezius	Cervical Spine	Trapezius
Armpit	Thyroid/Bronchia	Armpit
Lung/Chest	Esophagus	Lung/Chest
Arm	Solar Plexus	Heart
Shoulder	Diaphragm	Arm
Liver	Stomach	Shoulder
Gall Bladder	Adrenals	Liver
Kidney	Pancreas	Spleen
Ellbow	Duodenum	Ellbow
Hip Joint	Lumbar Vertebrae	Kidney
Ascending Colon	Ureter	Hip Joint
Small Intensine	Bladder	Descending Colon
Appendix	Rectum	Small Intensine
Sciatic Nerve	Sacrum	Sciatic Nerve
Knee	Lower Back/Gluteal Area	Knee

left

Mindbodygreen.com(2016)

ANNEXURE XIV

FORMULAS USED FOR DATA ANALYSIS

SAMPLE SIZE CALCULATION

Slovin's Formula

$n = N/1 + Ne^2$

DESCRIPTIVE STATISTICS

Mean

$$\bar{X} = \frac{\varepsilon x}{n}$$

Standard Deviation

$$\text{S.D} = \frac{\sqrt{\sum(x-\bar{x})^2}}{n}$$

$$\text{S}^2 = \sum\left(d - \bar{d}\right)^2 / n$$

INFERENTIAL STATISTICS

Paired 't' Test

$$\text{'t'} = \frac{\bar{d}}{s/\sqrt{n-1}}$$

$$S = \sqrt{\frac{\sum(x-d)^2}{n}}$$

Chi-square Test

$$\chi^2 = \frac{\varepsilon(0-e)^2}{e}$$

ANNEXURE XV

PHOTOGRAPHY OF FOOT REFLEXOLOGY