**CHAPTER – 1**

**1. INTRODUCTION**

**“**The protection of the health of the Woman is of primi importance for building of a sound and healthy nation.”

**1.1 Background of the Study**

Women are the vital persons and the heart of the family. When women have been tired, family function will be altered. Women move from the reproductive phase to the post reproductive phase of life as a part of the aging process. Women are facing a lot more problems throughout their life and one of the most common problems they experience during their middle adulthood is Menopause and hormonal changes1.

Menopause is an unspoken, unrelated reality of life the cause of which is still undeciphered completely by man. Menopause is one such midlife stage, which may be overcome easily or make a woman miserable depending on her age. Menopause is a universal phenomenon and there is a considerable variation among women regarding the age of attaining menopause and the manifestation of Post Menopausal Symptoms2.

According to WHO (World Health Organization) the term Natural Menopause is defined as the permanent cessation of Menstruation resulting from the loss of ovarian follicular activity.Natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea, for which there is no other pathological or physiological cause. The mean age of menopause varies with the ethnic group 51 years in the west. The average age of menopause in India is 45-55 years3.

After birth, the ovaries in women have nearly million oocytes, but it will gradually decrease with age and more rapidly from 37 years onwards a reduction in the numbers of oocytes, the hormones like estrogen and inhibin can be found. The removal of negative feedback of gonadotropin production lead to an increase in the FSH [>40 I/ml] as well as LH levels[>20 I/ml].3

The process gradually starts with three stages like peri menopause, menopause and post menopause. The peri menopause typically begins several years before menopause, when the ovaries gradually make less estrogen. It lasts until menopause, the point when the ovaries stop releasing eggs. In the last one to two years of peri menopause, the drop in estrogen quickens. Menopause is the point in a year when a woman had her last menstrual period. At this stage, the ovaries stops releasing eggs and making the most of their estrogen. The Post menopause stage occurs after the menopause. During this stage, Post Menopausal Symptoms such as hot flushes ease for most women4.

There are several known causes of early Menopause, although sometimes the cause cannot be determined some of the causes such as genetics, lifestyle factors like smoking has anti estrogen effects that can contribute to early Menopause. Body Mass Index [BMI] can also factor into early menopause. Some research suggests that a vegetarian diet, lack of exercises, lack of sun exposure throughout our life and some of the factors like chromosomal defects, autoimmune disease such as thyroid, rheumatoid arthritis, and epilepsy are responsible. Sometimes the menopause can occur by surgical removal of Ovaries and Uterus called “Surgical Menopause.” Because of all these factors women get early menopause. 5

With all these changes in the hormone levels women may experience some physiological, psychological, vasomotor and sexual symptoms. The physical symptoms like little weight gain, headache, migraines, mouth discomfort, insomnia, irritability, tenderness, vaginal dryness, irregular bleeding, urethral dryness, thinness, urine continence. Vasomotor symptoms like hot flushes, night sweats can also be experienced. Sexual symptoms like loss of sexual drive, sexual pleasure, and pain during intercourse, etc. and psychological symptoms are fatigue, memory problems, poor concentration, rapid changes in mood, depression may be seen. Women may also have a risk of cardiovascular problems and osteoporosis6.

Indian Women are traditionally ignored about Menopausal changes, issues and its treatment measures. Hormonal Replacement Therapy [HRT] has been regarded as an effective remedy. Despite its positive effects, HRT has various potential side effects, including thromboembolism, gallstones, breast cancer and stroke. Moreover, HRT was found to improve quality of life only when applied for a short time with measures slike diet, and lifestyle changes, natural relief products7.

There are several alternative medicines to relieve Post Menopausal Symptoms like Black cohosh, Natural Progesterone Cream, Red Clover, Lifestyle changes, Complementary and Alternative therapies in those essential oils [Aromatherapy] helps to relieve Post Menopausal Symptoms8.

The essential oils have properties like antiseptic, astringent and detoxifying properties which will help in relieving physical symptoms, emotional symptoms and mood elevating properties9.

The essential oils can provide cooling relief when we need. Each essential oil has its own character and aroma, exhibiting a varying number of properties and benefits. When they are applied to the body, it will penetrate the skin via the hair follicles and sweat glands and are absorbed into the body fluids, not only helps to kill bacteria and viruses but also stimulates the body’s immune system thereby strengthening resistance to further attack. Some essential oils increase the circulation and helps in the elimination of toxins, others promote new cell growth10.

Citrus oil is one of the many essential oils available. It is an essential oil produced by the cells present within the rind of citrus fruits such as orange, lemon10.

The olfactory system allows the sense of smell. Smell is a chemical reaction to which receptors in the brain respond. Citrus oil’s aroma can enter the bloodstream when inhaled through the nose, which is the fastest direct route into the body. The odor produced by Citrus Oil has an immediate effect on respiration, pulse, and blood pressure. It also produces reflex action that has a dramatic effect on the functioning of the nervous system11.

The process of olfaction consists of five stages – detection, transmission, perception, analysis, and storage11.

During detection, a scent is carried into the nostril and the molecule moves up the nose to the olfactory epithelium. It is then transmitted as an electromagnetic impulse and travels to the olfactory bulbs. These bulbs connect directly to the limbic system of the brain. The limbic system influences emotions, motivation, instinctive behaviors, learning, and memory. Once the aroma is perceived hypothalamus in the brain stimulates pituitary gland to produce hormones. These hormones trigger physiological, psychological, and emotional reactions that influence feelings and behavior. The brain stores the information for future recall. By directly inhaling an essential oil, the brain is able to analyze and store11.

This is the main reason the Essential Oils (Citrus Oil) have such a powerful effect on mood and generates a positive state of mind11.

The minute molecules of essential oils are readily absorbed into the blood stream when they are inhaled, as the lungs work to oxygenate the blood. This form of absorption is most efficient when inhaling essential oils from a vaporizer diffusing them into the tissue. The aroma sends signals directly to the Limbic system of the brain, which is the center of emotions, memory, and sexual arousal and thus creates a powerful effect on mood and generates state of mind11.

**1.2 Need for the Study**

Women’s health has been described as a “Patch Work Quilt with Gaps.” Although many of the issues around women’s health relate to their reproductive issues, including genital health, breast health, endocrine (hormonal) health, birth control while Menopause gives broader understanding of women’s health. All the aspects of the health of women have been urged, replacing “Women’s Health” with the Health of Women12.

India has a large population. According to Indian Demographic Profile (2016), total population in Inida was 1,266,883,598 [July] among which women in the age group of 55-64 years were over 40,598,87213.

According to Indian Menopause Society [2010], 71 million people were over the age group of 60 years and the number of menopausal women were 43 million. Projected figures in 2026 have estimated the population in India will be around 14 billion among whom 173 million people will be over 60 years and menopausal population will be reaching 103 million14.

According to National Health Society [2012], eight out of 100 women cease menstruating before the age of 40 whereas while five out of 100 women continue menstruating until almost 60 years. The average age of menopause is 51 years15.

**Abuja MO [2016],** conducteda survey on the age of Menopause and determinants of menopause age at Faridabad, Haryana, India. Five regions were selected and by means of interview techniquein the outpatient departmentof Gynecology, menopausal women were asked their age and its attainment by natural or surgical means. The peri menopausal women were asked to enlist the date of their last period. The study revealed that the average age of menopause of Indian women was 46.2 years was much less than their western counterparts 51years16.

Every woman’s experience is highly individual. Some women may experience few or others may experience multiple physical, psychological vasomotor and sexual symptoms while the severity will vary significantly among women5.

A survey was conducted on the impact of menopause on every aspect of women’s lives in the UK, October 2017, revealed that Women had hot flushes (46%), night sweats (37%) and low levels of energy (37%). Despite this, a third of the women surveyed who were experiencing or who have experienced the menopause, hadn’t tried anything to reduce or prevent their symptoms. Over half (51%) of women said that the menopause had affected their sex lives, with around 40% saying that they just didn’t feel as sexy since experiencing the menopause. Over a quarter of women (26%) said that they felt less outgoing in social situations and felt more isolated (23%). Over a third (34%) said that they were less active since experiencing the menopause and a further third (32%) said they no longer felt like good company. Furthermore, almost half (45%) of women, whose menopause had a strong impact on their lives, felt their menopause symptoms have had a negative impact on their work17.

In Indian setting menopause and its symptoms such as, physical, psychological and vasomotor symptoms are under threat, which affect negatively the quality of life for women17. Some suitable interventions, like lifestylemodifications and coping strategies, especially during menopause period may help in improving and maintaining their good health9.

There are some pharmaceutical treatments available for Post Menopausal Symptoms, but it has some adverse effects18. Some of the natural products like complementary and alternative therapies are available19. Aromatherapy like Citrus Oil helps in relieving Post Menopausal Symptoms and other problems like depression, decreasing cholesterol levels and insomnia10.

A randomized control trail study was conducted by **Costa CA et al [2013]** on Citrus aurantum, an essential oil in exhibiting anxiolytic like activity mediated by 5-HT [1A] receptors that reduces cholesterol after repeated oral treatment. The study result shows that anxiolytic like activity observed in the light /dark box procedure after acute [5mg/kg] or 14- day [1mg/kg/day] dosing was mediated by the serotonergic system, shows that it is sensitive to antidepressants and reduces cholesterol levels. This work contributes to a better understanding of the biological activity of Citrus aurantum and its underlying anxiolytic like activity20.

The literature received has enlightened the researcher that many research studies were conducted in different parts of India and the world, which revealed that there are many problems associated with the women in menopause due to hormonal imbalances and thus leading for physiological and psychological changes and poor quality of life17.

The researcher in their clinical experience found many women are facing with a number of problems which is associated with menopause. And in Indian setting it is at least concentrated area to get treatment and get rid of their problems. So alternative therapies can be used at home to helpget relief fromPost Menopausal Symptoms.

Hence, the researcher felt there wasa greaterneed to conduct a study on Citrus Oil for relieving symptoms of Menopause to reduce the risk of getting the health problems in women.

**1.3 Problem Statement**

Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women at selected Urban Communities in Hyderabad,Telangana.

**1.4 Objectives**

* To assess the level of Post Menopausal Symptomsamong Women interms of pretest and post test scores in both experimental and control groups.
* To evaluate the effectiveness of Citrus Oil in terms of decrease in Post Menopausal Symptomsamong Women in the experimental group than the placebo in control groups
* To find the association between posttest scores of Post Menopausal Symptoms among Women with selected demographic variables in the experimental and control group.

**1.5 Hypotheses**

**H1** There will be asignificant decrease of Post Menopausal Symptomsin the post test scores of women in the experimental group than the control group after administration of Citrus Oil and placebo respectively at 0.05 level of significance.

**H2** There will be a significant association between post test scores of Post Menopausal SymptomsamongWomen with selected demographic variables at 0.05 level of significance.

**1.6 Operational Definitions**

**Effectiveness:** It refers to the extent to which the Citrus Oil achieved the desired effect on the Management of Post Menopausal Symptoms in terms ofimproving the health status of the Women in post-test scores as measured by Likerts Five point Rating Scale on Post Menopausal Symptoms.

**Women:**In this study it refers tothose who are above the age group of 45 years who attained Menopause and associated with Post Menopausal Symptoms.

**Post Menopausal Symptoms:** It is the permanent cessation of menstruation resulting from theloss of ovarian follicular activityand are recognized to have occurred after 12 consecutive months of amenorrhea. Due to these hormonal changes women show some of the symptoms like physical, psychological, vasomotor and sexual symptoms as measured by Sphygmomanometer for Blood Pressure, Likert five point rating scale on Post Menopausal Symptoms and VAS (Visual Analogue Scale) for Stress levels.

**Management:**It refers to relieving the symptoms of Menopause by inhaling 0.1% of Citrus Oil for five minutes twice daily for 20 days.

**Citrus Oil:** Citrus Oil is an essential oil produced by cell within the rind of citrus fruits such as orange, lemon. This is prepared by heating theOlive Oil and citrus fruits peel at1500 C in order to acquire the Oil for Inhalation. The obtained Citrus Oil (NeroliOil) is given at a concentration of 0.1% on Padto inhale for 5 minutes twice daily for 20 days.

**1.7 Assumptions**

* The women may be willing to use Citrus Oil
* Citrus oil may help the women to relieve the Post Menopausal Symptoms
* Women may co- operate at the time of data collection

**1.8 Delimitations**

The study is delimited to

* Post Menopausal Women at urban communities, Hyderabad
* Post Menopausal Women who are willing to participate in the study
* Post Menopausal Women who can understand and speak Telugu as well as English

**1.9 Conceptual Framework**

A conceptual framework deal with the abstractions (concepts) that are assembled by virtue of their relevance to a common theme. 21

(Polit & Beck, 2012)

“A conceptual framework is usually constructed by using researchers own experiences, previous research findings or concepts of several theories or model.”21

A Conceptual framework is a group of related concepts and set of propositions that spell out the relationship between them. Conceptual frame work facilities, communication and provides for a systematic approach to Nursing Research, Education, Administration and Practice21

A conceptual framework plays several interrelated roles in the process of science. Their overall purpose is to make research findings meaningful and generalizable. Theories allowresearchers to knit together observations and facts into an orderly scheme. The development of Conceptual framework is a fundamental process required before conducting actual research because, it guides each stage. Conceptual models help to express abstracts conceptualization and they serve as important spring boards for the generation of hypothesis to be tested. It provides a certain frame Of Clinical Practices, Research and Education.21

The conceptual framework adapted for this study was based on modified concepts of **“Imogene King’s goal Attainment Theory” (1981).** The major components of King Goal Attainment theory are:

**Perception:** It is each persons representation of the reality. The elements of perception are imparting of energy from the environment and organizing it by information, storing information and exploring information in the form of overt behavior.

In this study investigator, perceived that the Citrus Oil will decreasePost Menopausal Symptoms among Women. The Post Menopausal Women perceived that they have the health problem, need to improve their health.

**Judgment:** It is a cognitive process of reaching a decision or drawing conclusions.

The investigator’s judgment was to create the awareness and improve their health. The Post Menopausal Women judgment was needed to use the Citrus Oil to decrease the Post Menopausal Symptoms.

**Action:** It is the capacity or ability to achieve goal. The investigator action was to prepare the Citrus Oil and administer it to Post Menopausal Women to inhale it for five minutes twice daily for 20 days.

The action of Post Menopausal Women was their willingness to participate in the study by giving their consent and the effort taken by Post Menopausal Women to be able to receive the Citrus Oil (0.1%) by the inhalation method for five minutes twice daily for 20 days.

**Goal Setting:** It is the commend objective shared by the researcher and samples.

In this study, the goal setting of the investigator is to decrease the Post Menopausal Symptoms among Women with the help of Citrus Oil inhalation to improve the health status.

**Interaction:**It was a process of perceiving and understanding the given information and communication between persons and their environment, which was represented by either verbal or non-verbal behavior that were directed towards goal achievement.

In this study, it refers to the assessment of Post Menopausal Symptoms, Blood Pressure and Stress Level, scores of Women before and after administration of Citrus Oil by using Likert Five Point Rating Scale on Post Menopausal Symptoms, Visual Analogue Scale (VAS) for Stress Level and Measurement of Blood Pressure by Sphygmomanometer.

**Transaction:** It refers to the evaluation component of human interaction.

In this study investigator evaluate the effectiveness of Citrus Oil in terms of decrease of Post Menopausal Symptoms by Mild Scores. The Women who Scores moderate and severe score will move towards feedback.

**Feedback:** According to King Goal Attainment feedback refers to the information regarding the goal. In this study feedback is not included.

**Epilogue**

This chapter dealt with the Background of the Study, Need for the study, Statement of the Problem, Objectives of the study, Hypotheses, Operational Definitions, Assumptions, Delimitations and Conceptual Frame Work of the study.

The next chapter will discuss Review of Literature.

**TRANSACTION**

Evaluate the Effectiveness of Citrus Oil on Blood pressure,

Post Menopausal Symptoms and Stress Levels

**INTERACTION**

**Experimental Group:**

**Pretest**

Measurement of Blood Pressure,

Rating scale on Post Menopausal Symptoms

VAS- Stress levels

**Administration of Citrus Oil**

**Post test:** Conducted by using same tools

**Control Group:**

**Pre test**

Measurement of Blood Pressure, Rating scale on Post Menopausal Symptoms

VAS- Stress levels

**Placebo**

**Posttest:**Conducted by using same tools

Reduced Post Menopausal Symptoms

**PERCEPTION**

Women’s are suffering with Post Menopausal Symptoms

**JUDGEMENT**

Reduce the Post Menopausal Symptoms and improve the health status

- - - - - - - - - - - - - - - - - - - - - - -  **- - - - - - - - - - - - - - -** Not included in the study

**MUTUAL GOAL**

To reduce Post Menopausal Symptoms.

Moderate and severe Post Menopausal Symptoms

**ACTION**

Willing to give consent and readiness to participate in the study

**ACTION**

Prepare the Citrus Oil for Inhalation

FEEDBACK

**PERCEPTION**

Has the Post Menopausal Symptoms and health Problems

**JUDGEMENT**

Need to use Citrus Oil to reduce the symptoms

**Figure No.1 Conceptual Frame Work based on Modified King’s Goal Attainment Theory (1981)**

**CHAPTER-II**

**2. REVIEW OF LITERATURE**

“A literature review involves the systematic identification, location suiting and a summary of the writer’s material that contain information on research problems.

This chapter deals with the Review of Literature, which gives an insight into various aspects of the problem under study. A literature review involves the systematic identification serenity and summary of written materials that contain information on a research problem.

Review of related literature is an integral component of any study or research project. It enhances the depth of the knowledge and inspires clear insight into the problem. Literature review throws light on the studies and their findings reported about the problem under the study.

Review of literature is defined as a broad, comprehensive in depth, systematic and critical review of scholarly print materials, audio- visual materials and person communication.

A critical summary of research on a topic interest, often prepared to put the research problem in context.21  (Polite & Beck, 2012)

The review of related literature provides a basis for future investigation. It justifies the need for the study, revealed constraints of data collection and relates the findings from the study to another with a hope to establish a comprehensive study of scientific knowledge in a professional discipline21.

In order to accomplish the goal of the present study, the reviews have been organized under the following headings. The literature related to

2.1 Prevalence of Post Menopausal Symptoms among women

2.2 Adverse effects of Hormonal Replacement Therapy

2.3 Alternative and Complementary therapies for Management of Post Menopausal Symptoms

2.4 Effectiveness of Citrus Oil for Management of Post Menopausal Symptoms

**2.1 Prevalence of Post Menopausal Symptoms among Women**

A cross-sectional survey was conducted by **Shukula R et al [2018],** on theprevalence of post Post Menopausal Symptoms, and its effect on Quality of Life (QOL) in Gujarat, India. The sample size selected for this study were 250 Women. The results show that the prevalence of Post Menopausal Symptoms was found to be 47% and mean (standard deviation) age at menopause was 44.9 (4.9) years. The prevalence of at least one symptom related to vasomotor was 21.3%, physical 91.5%, psychosocial 44.7% and none of them had sexual symptoms. The study concluded that Post Menopausal Symptoms affected QOL from mild-to-moderate extent22.

A descriptive cross-sectional study was conducted by **Karmakar N et al [2018],** on Quality of life among menopausal women in a rural area of West Bengal. The study was carried out among 100 peri and postmenopausal women (40–60 years). The results show that the occurrence of vasomotor symptoms were, 60% of them reported hot flushes and 47% had sweating. Most prevalent psychosocial symptoms reported were feeling of anxiety and 94% had nervousness and 88% had overall depression. Physical symptoms quite varied in occurrence with some symptoms such as feeling tired or worn out, decrease in physical strength and lack of energy occurring in 93% of the women to only 5% suffering from growth of facial hair. Overall sexual changes were reported among 49% who reported of avoiding intimacy with a partner and 26% complained of vaginal dryness. The study concluded that menopause cause both physical and psychiatric problems. Education, creating awareness and providing suitable intervention will improve their QOL23.

A community based cross-sectional study was conducted by **Mahajan N et.al [2017]** on health issues of menopausal women in North India. The result showed that the mean age of menopause was 44.54 years. Main symptoms associated with menopause were reported as fatigue (62%), hot flashes (56%), Cold sweats (52%), and backaches (51%). Other ailments associated with menopause were arthritis (25%), hypertension (23%), and diabetes (6%). The researcher concluded that the mean age of menopause was 44.54 years. Chief co morbid conditions were arthritis and hypertension24.

A analytical study was conducted by **Pathak V [2017],** on knowledge, attitude and practice regarding menopause among menopausal women attending outdoor in tertiary care center, Madhya Pradesh, India. The results **i**n the present study revealed that 32.72% of menopausal women had knowledge of Post Menopausal Symptoms, 39.09% had increased risk of cardiovascular diseases, 52.72% had Osteoporosis and 22.72% Breast cancer. 67.28% thought menopausal psychological symptoms affect quality of life, 57.28% thought that menopause means end of sexual life, 30% thought that menopause is associated with maturity and experience, 46.27% thought that absence of menstruation in the post-menopausal period is a relief, 39.10% thought physical changes of menopause are inevitable and hence acceptable and 29.09% had consulted a physician at the onset of menopause. The study shows that the majority of women have a negative outlook towards menopause. This shows that the awareness towards menopause should be increased by information, education, and counseling.25

A cross-sectional community-based study was conducted by **Kulkarni P et al [2016],**on burge ongoing Post Menopausal Symptoms an urgent public health concernin the urban slum of Mysore for 3 months. A total of 100 postmenopausal women in the age group of 40-65 years were selected by simple random sampling method from the database of households. Details regarding socio-demographic characteristics, Post Menopausal Symptoms, and factors associated with them were collected in a pre structured interview technique. The results showed that the mean age at menarche and menopause was 13.45 ± 1.72 and 46.7 ± 5.2 years, respectively. The most common postmenopausal symptom was joint pain (92%) followed by physical and mental exhaustion (84%), depression (76%), irritability (73%), hot flushes, and night sweats (65%). There was a significant positive correlation between age of the women, duration of life after menopause, and Post Menopausal Symptoms. There is a high burden on women with regard to Post Menopausal Symptoms with the advancement of age. This calls for the establishment of specific health interventions for Post Menopausal women in the healthcare settings.26

A cross sectional study was conducted by **Sumbrahmanyam, PadmajaA [2016],** on Menopause related problem among women in a Rural Community, Kerala. A total of 120 Peri Menopausal Women were selected by Purposive sampling technique. The data on social, personal and health related variables were collected by using a structured questionnaire and the Greene Climacteric Scale to assess the Post Menopausal Symptoms among Women. The study showed that the mean age of peri menopausal Women was 47.95 (SD 3.7) years. More than half of the women (55%) had a secondary level education and belonged to Hindu religion (56.7%), one third of the subjected were employed (34%). Majority 80.8% were not aware about the consequences and management. The most commonly reported muscle and joint pain (95%), parts of body feel numbness (93.3%), difficulty in sleeping (86.5%), irritability (85.8%), vasomotor symptoms hot flushes (46.7%) and sweating at night (50%).The study concluded that prevalence of Post Menopausal Symptoms was high among women. Education to public about menopause and its management, utilization of community health services and organization of menopause clinic to deal with the unique problems of menopause might help women to lead a healthy and fruitful life at menopause.27

A cross-sectional study was conducted by, **Singh A, Pradhana, SK [2016]** on Post Menopausal Symptoms among postmenopausal women in a rural community of Delhi, India. The mean age of attaining menopause was 46.24 (Standard Deviation = 3.38) years. Only four (1.6%) postmenopausal women had premature menopause. A total of 225 (89.3%) postmenopausal women experienced at least one or more Post Menopausal Symptoms. The most common complaints of postmenopausal women were sleeping disturbances (62.7%); muscle or joint pain (59.1%), hot flushes (46.4%) and night sweat (45.6%). A total of 32.1% (n=81) postmenopausal women suffered from depression and 21.0% (n=53) postmenopausal women suffered from anxiety. They concluded that it is necessary to critically introspect health needs of postmenopausal women and specific components can be incorporated into the national health programs.28

A cross sectional study was conducted by **Satpathy M [2016]** on age at the Menopause, Post Menopausal Symptoms and Problems among Urban Women from Western Odisha, India. Total 100 menopausal women were selected for this study. Mean age of menopause was 44.82 and median 45 years. The study revealed that more than 60% of women were suffering with common problems of menopause, i.e. hot flushes 77%, joint pain 60%, body pain 62%, and increased weight 69%. More than 40% of women reported sleep disturbance, headache 43%, ting tiling of finger 45%, and rapid heartbeat 43%, and 30% of women reported dryness of vagina, feelings of suffocation 32%, 46% women were with less bleeding and 17% were reported excessive bleeding and 26 - 28% respondents were suffering from cold hand and cold feet respectively. Very less women suffered from difficulty in passing stool i.e. 10%, difficulty in sexual intercourse was reported by 17% and very less respondents showed interest in sex i.e. 7%.The psychological problems of menopause among the respondents of the study revealed that women experienced common psychological changes such as forgetfulness 59%, irritability 42%, anxiety 42%, worry about body image 75%, and confusion 46%, 27% were losing control over emotions, 24% reported feeling that something is crawling on skin, 17% of respondents had poor concentration, 10% of the working women were more interested to go on job whereas seven percent showed disinterest, six percent of respondents had the feeling of loosing faminity (femaleness). By making wise decisions about menopause and healthy lifestyle, we can make the most of the 20, 30, or more years we have ahead.29

A cross sectional community based study was conducted by **Shilpa K, Ugargol A [2015]**, on Post Menopausal Symptoms in rural and urban women.The results showed that out of 250 from rural area and 250 from urban areas, nearly half 223 (44.6%) of them were in the age group of 55- 64 years. Majority 161 (32.2%) of them belonged to the upper middle class, 346 (69.2) were pre obese according to the WHO classification. Majority, (385) 77% had no history of gynecological problems. Almost all had one or the other menopausal symptom. They concluded the prevalence of postPost Menopausal Symptoms was higher in urban women compared to the rural population.30

A cross-sectional house- to- house study was conducted by **Bindhu S, et.al [2015],** on the prevalence of Post Menopausal Symptoms among women in a rural Area In Kottayam, Kerala, India. The result showed that the mean age of 320 women who participated in the study were 48.96. The frequently occurring symptoms were “feeling of fatigue 49.7%, easily get irritated 41.1%, hot flushes 40.9%, muscle or joint pain 35.9 %, night sweats 32.8%. The study concluded that the prevalence of Post Menopausal Symptoms was high among women in this rural area in Kottayam, Kerala.31

An epidemiological study was conducted by**Joshi M, Nair S, [2015]** to assess the Menopausal problems during Menopausal transition in middle age women of Vadadara, Gujarat, India. The total sample was selected by purposive sampling technique. A predesigned questionnaire was used to assess their knowledge associated with Menopause along with self reported health profile. The study showed that the mean age of the study population was 42 + 5.1, where the mean age of pre menopausal group was 40.07 + 3.79, peri menopausal group was 41.72 + 4.28 and menopausal group was 46.4 + 5.32. The result showed that pain in the hands or legs as the most prevalent symptom (73.6%), followed by anxiety (67.4%), physical and mental exhaustion (66.8%), other symptoms like dryness of vagina (48.5%), heart discomfort (45%), mood swings (35.5%) and irritability (32.8%) were reported.Severity of symptoms was observed for anxiety (2.7%), heart discomfort (2.3%), sleep disturbances (2.3%), bladder problems (2.1%). The mean total MRS was found to be rising up during transition from premenopausal (4.60 + 3.07) to peri menopause (6.53 + 3.93) and showed a decline during the transition from pre menopause to post menopause (5.78 + 3.03). Amongst the three subscales of MRS, the meaning of the psychological domain (2.59 + 1.91) was higher followed by somatic symptoms (2.03 + 1.54) and least by the urogenital symptoms (0.92 + 0.99). Knowledge of participants regarding the menopause and related health issues was very poor. The study concluded that, the time span between different menopausal transitions was very short.32

A cross sectional study was conducted by **Ibrahim ZM et.al [2015]** on the prevalence of Post Menopausal Symptoms and their impact on quality of life among Egyptian Women. The total sample was 1,214 women aged 40-70 years were selected using an interview questionnaire, menopausal rating scale as well as WHO quality of life questionnaire. The result showed that men age 48.1+ 10.3 years, with 26.6% of the study participants were illiterates. The results show that 58.4% of them had mild /moderate depressive symptoms, 58.2% of them were with irritability and 63% of them reported anxiety. The study concluded that women have higher prevalence of Post Menopausal Symptoms that significantly affect their quality of life33.

A retrospective study was conducted by **Sussman M, et.al. [2015],**onthe prevalence of Post Menopausal Symptoms among mid life women. The total 102 sample were selected randomly. The result showed that mean age of patients was 54 years. The most common symptoms were hot flushes (40%), night sweats (17%), insomnia (16%), vaginal dryness (13%), mood disorders (12%), and weight gain (12%).The study concluded that all the types of Post Menopausal Symptoms were experienced by mid life women and prescribed hormonal therapy.34

A cross sectional study was conducted by **Joseph N et.al [2014]** on assessment of Post Menopausal Symptoms among women attending various outreach clinics in South Canada district, India. Women in the age group of 40-65 years were selected by a convenient sampling method. The mean ages of participants were 54.2+ 7.2 years and mean age of menopause was 48.4+4, 5 years. The most common symptoms reported were joint and muscular discomfort and physical and mental exhaustion seen in 94 (85.4%) participants. The mean number of symptoms reported by participants was 7.6+2.8 and the educated women reported significantly more symptoms (F=2.218, P=0.047), somatic and urogenital symptoms more premenopausal women and somatic symptoms more in post-menopausal women. 52.7% participants had severe symptoms. The study concluded that more menopausal clinics need awareness for a generation, early recognition and treatment modalities35.

A cross sectional study was conducted by **Amrita S et.al [2014],** on the health profile of Post Menopausal women in Jamnagar, Gujarat. Total 300 samples under the age of 40-65 years were selected through simple random sampling method. The result showed that the mean age at menarche and menopause were 14.73+ 1.40 and 46.3+5.29 (man + SD) respectively. The most common symptoms associated with menopause were joint pain (64%), backache (58%), irritability (56.66%), forgetfulness and sadness (48%) and vasomotor symptoms like hot flushes and night sweats (47.33%). The study concluded that as life expectancy and population of post-menopausal women increases, efforts are needed to educate them and make them aware about various Post Menopausal Symptoms, to seek timely medical treatment for the same and improve quality of life.36

A cross sectional study was conducted by **Bansal P, et.al [2013]** on Menopausal problems among 180 rural middle aged women (40 – 60 years) of Punjab. Menopausal problem was categorized into 5 groups’ i.e. Vasomotor, psychogenic, urogenital, skin, other health problems. The result showed that 25% subjects were Premenopausal, 9.4% were Peri-menopausal and 65% were Post menopausal women. The Mean age at menopause was found to be 45.91 (+3.47) years and median age was 46 years. Symptoms frequently reported that headache (94.1%), dizzy spells (81.5%), decreased libido (81.5%), sleep disturbance (68.9%) and loss of interest in most things. Other symptoms, which were found commonly among the subjects, were hot flushes (59.3%), lack concentration (54.1%), mood changes (49%) and night sweats (35.6%). A very few subjects reported symptoms like hair loss, increase in facial hair, urinary tract infections, urinary incontinence, prolapsed uterus and dyspareunia. The researcher concluded that efforts should be made to educate and inform women of the menopausal transition, seek appropriate medical care, if necessary37.

A cross sectional descriptive survey design conducted by **Geetha R and Parida LP [2013]** to assess prevalence of menopausal problems and strategies adopted by women to prevent them. A total 100 samples were selected. The results showed that majority 61% women were in the age group of 45-50 years and 39% were in the age group of 51-55 years. The mean age of study samples was 50.28 years SD+3. 49 and the mean age of menopause was 45.26 years (SD+ 3.96). The majority of menopausal women experienced joint and muscular discomfort 86% and physical and mental exhaustion 81. More than half of the respondents experienced heart discomfort 68%, irritability 66%, depressive moods 61%, hot flushes and profuse sweating 58%, 43% menopausal women experienced sleep problems, 35% had vaginal dryness and 31% had sexual problems. Only 25% respondents had bladder and 18%, had anxiety. The study reveals the most common symptoms reported were from the somatic and psychological subscale. All study subjects adopted some kind of strategies to prevent menopausal problems at home38.

A community based cross-sectional house-to-house survey was conducted by **Borker SA et.al [2013]** on study of Post Menopausal Symptoms, and perceptions about menopause among women in a rural community in Kerala. The sample size was 100 post menopausal women selected by random sampling technique. The results showed that the mean age of attaining menopause was 48.26 years. Prevalence of symptoms among women were emotional problems (crying spells, depression, irritability) 90.7%, headache 72.9%, lethargy 65.4%, dysuria 58.9%, forgetfulness 57%, musculoskeletal problems (joint pain, muscle pain) 53.3%, sexual problems (decreased libido, dyspareunia) 31.8%, genital problems (itching, vaginal dryness) 9.3%, and changes in voice 8.4%. Only 22.4% of women knew the correct cause of menopause. Thus study concluded that all the women were suffering from one or more number of Post Menopausal Symptoms and should be made aware of these symptoms, their causes and treatment respectively39.

A cross sectional study was conducted by **Nayak G, et.al [2012]** on a study of quality of life among perimenopausal women in selected coastal areas of Karnataka, India. Total 209 women under the age were 40 to 60 years were included in the analysis. The mean age group was 48.30 + 5.30 of years. The physical symptoms like feeling of tiredness was seen in 67.5%, decrease in physical strength and stamina was 64.1%, muscles and joint pain was 55%, aches in the back of neck or head was 54.5%, flatulence or gas pain was 50.7%, low back ache was 51.7%, lack of energy was 47.8%, difficulty in sleeping was 44%, feeling bloated was 38.8%, involuntary urination while laughing, coughing was 38.8% were reported by over a half of the women in physical domain. The major symptoms in the psychosocial domain were poor memory 73.7%, accomplishing less than they used to 47.4%, feeling anxious or nervous 40.2% and of vasomotor symptoms were 32.1% reporting hot flushes and 24.9% night sweats. They concluded that a large number of women all over the world suffers from Post Menopausal Symptoms and the problem cannot be ignored. Education, creating awareness and providing suitable intervention to improve the quality of life40.

A cross sectional study conducted by **Rahman S et.al, [2012]**, on Post Menopausal Symptoms assessment among middle age women in Bangladesh. By using modified Menopause rating scale questionnaire, 509 women aged 40-70 years were interviewed. The result showed that the mean age of menopause was 51.14 years. The most prevalent symptoms reported include, feeling tired (92.90%), headache (88.80%), muscular discomfort (76.20%), physical and mental exhaustion (60.90%) and sleeplessness (54.40%) which are followed by depressive mood (37.30%), irritability (36%), dryness of vagina (36%), hot flushes and sweating (35.80%), anxiety (34.20%). However, noted less frequent symptoms were sexual problems (31.20%), cardiac discomfort (19.10%) and bladder problem (12.80%). The study concluded the prevalence of Post Menopausal Symptoms41.

**2.2 Adverse effects of Hormonal Replacement Therapy**

A research study was conducted by **Stoicescu M[2016],** on menopausal Hormone Replacement Therapy. Presented in two cases of medical practice, with two major side effects of this therapy, not insignificant, which should give food for thought. The first case develops occurrence of breast [malignancy](https://googleweblight.com/i?u=https://www.omicsonline.org/searchresult.php%3Fkeyword%3Dmalignancy&hl=en-IN&tg=200) and the second with endometrial cancer after the therapy. The results show that the idea of menopausal hormone replacement therapy appeared with the all best intentions in this difficult period in a woman’s life in menopause, but the reality is that dangerous side effects. The researcher concluded that the hormone replacement therapy at menopause is not safe and more research is needed in the future for the best decision42.

A systemic review was conducted by **Marjoribanks J et al [2016],** on long term hormone therapy for perimenopausal and postmenopausal women, Newzland. HT [Hormonal Therapy] included estrogens with or without progesterone via oral, transdermal, subcutaneous or intranasal route. The result shows that the mean age of participants was 60 years, continuous hormonal therapy increased the risk of coronary artery disease after one year of use, after three years of use they are getting stroke, breast cancer, and gallbladder disease. Estrogen only hormonal therapy increased the risk of venous thromboembolism. Women over 65 years who are relatively healthy and taking continuous combined hormonal therapy showed increase incidence of dementia. They concluded that woman with intolerable Post Menopausal Symptoms may wish to benefits from the symptoms of relief against the small absolute risk of HT arising from short term use of low dose of hormonal therapy, provided they do not have specific contraindications like Chronic heart diseases, Venousthrombolism and Cancer43.

A systemic review was conducted by **Formoso G et.al, [2015],** on Short-term and long-term effects of Tibolone in postmenopausal women in America. Tibolone versus placebo for vasomotor symptoms. Tibolone was more effective than placebo with standard mean difference (SMD) -0.99. Among women with a history of breast cancer, Tibolone was associated with increased risk of 95%. The authors' concluded that moderate-quality evidence suggests that Tibolone is less effective than hormonal therapy in reducing menopausal vasomotor symptoms, Tibolone increases recurrent breast cancer rates in women with a history of breast cancer, and may increase stroke rates in women over 60 years of age44.

A cross sectional study was conducted by **Jin et.al [2015]** on knowledge and attitude towards menopause and Hormone Replacement Therapy (HRT) in China. Total 3,619 women under the age were 40-65 years were included. Majority of women had knowledge of menopause; the symptoms were prevalent in 16.1% of pre-menopausal women and in 49.3%of peri,-post and surgical menopausal women. The symptoms like back and joint pain, sleeplessness, fatigue and sweating and hot flushes were frequently reported. 75 (2.1%) women were used HRT, of which 57.3% used HRT with a doctor’sprescription and 29.3% experienced side effects from the use of HRT. The study concluded that there is a need to educating the women regarding menopause and its management45.

A cohort study was conducted by **Saeed O,  Malik A, Adnan, Qureshi A [2015]** on Hormone Replacement Therapy increases the risk of subarachnoid hemorrhage in post-menopausal women, the United States of America. A total of 93, 676 women aged 50-79 years were selected as the sample. The result showed that a total 114 (0.1%) of the 93,676 participants developed SAH during the follow-up period. The rate of SAH was higher among women on HRT compared with those without HRT (0.14% versus 0.11%, p= <. 0001). The rate was not significantly higher with “estrogen only” (32.5%) compared with “estrogen and progesterone” (18.4%, p=0.2) among women. The study concluded that Post-menopausal women, particularly those at risk for SAH due to the presence of unruptured aneurysms, family history, or cardiovascular risk factors, should be counseled against the use of hormonal replacement therapy46.

A systemic review was conducted by **Lee W et.al, [2013]** on Hormone therapy for postmenopausal women and they concluded that Hormonal therapy is very effective in the management of postmenopausal women with symptoms. With the large number of participants being treated with hormonal therapy, especially the combination of estrogen and progestin therapy in the woman’s health initiative study, clinicians now recognize the potential adverse effects of estrogen progesterone therapy. Although this concept is much clearer now, some women might still benefit from short term hormonal therapy, especially postmenopausal women. In this review, some health issues of postmenopausal women related hormonal therapy like venous thromboembolism, stroke, breast cancer, gallbladder diseases, and death from lung cancer in relatively healthy postmenopausal women47.

A retrospective study was conducted by **Ness J et al [2012],** on the use of Hormone Replacement Therapy by postmenopausal women after publication of the Women's Health Initiative Trial. 1000 postmenopausal women were selected. The result showed that mean age 66 years, 445 (45%) had used or still were on HRT (HRT users), whereas 286 women (64%) had discontinued therapy. 159 women still on HRT, 41% had atherosclerotic disease, 26% had the previous venous thromboembolism disease, 8% had a history of breast cancer and 12% had a family history of breast cancer. They concluded that despite the widespread impact of the WHI trial results, many women still remained on HRT in an internal medicine practice for a variety of reasons and despite relative contraindications to its use48.

A meta-analyses of observational study was conducted by **Nelson HD, et, al [2012]** on Postmenopausal hormone replacement therapy, theUSA. The meta-analysis indicated that risk was significantly elevated for thromboembolic stroke, but not subarachnoid or intracerebral stroke. The risk of venous thromboembolism among current hormone replacement therapy users was increased overall (95%) and was highest during the first year of use according to a meta-analysis. Current estrogen users have an increased risk of breast cancer that increases with duration of use. Endometrial cancer incidence, but not mortality, is increased with unopposed estrogen use, but not with estrogen with progesterone. The researcher concluded that the benefits of HRT include prevention of osteoporotic fractures and colorectal cancer, while prevention of dementia is uncertain. Harms include CHD, stroke, thromboembolic events, breast cancer with 5 or more years of use49.

**2.3 Alternative and Complementary therapies for Management of Post Menopausal Symptoms**

A systematic review and meta analysis was conducted by Holger C, Wenbopeng R [2017] on yoga for Post Menopausal Symptoms. The result shows that yoga reduced total Post Menopausal Symptoms (SMD = −1.05; 95% CI −1.57 to −0.53), psychological (SMD = −0.75; 95% CI −1.17 to −0.34), somatic (SMD = −0.65; 95% CI −1.05 to −0.25), vasomotor (SMD = −0.76; 95% CI −1.27 to −0.25), and urogenital symptoms (SMD = −0.53; 95% CI −0.81 to −0.25). Compared with exercise controls, only an effect on vasomotor symptoms was found (SMD = −0.45; 95% CI −0.87 to −0.04).The researcher concluded that the Yoga seems to be effective and safe for reducing Post Menopausal Symptoms50.

A Clinical trial study was conducted by **Rafsanjani SM.et.al,[2016] on** comparison of the Efficacy of Massage and Aromatherapy Massage with Geranium on Depression in Postmenopausal Women. The total sample, 120 menopausal women were selected and randomly divided into three groups, namely control aromatherapy massage and massage group. In an aromatherapy massage group, essential oil of geranium (2%) in almond oil was used. Both groups were treated for 8 weeks, once a week for 30 minutes and their depression rate was assessed before and after the intervention and were compared with the control group. The result shows that aromatherapy massage reduced the mean depression score (MD: 0.51, 95%). Massage therapy also reduced depression score (MD: 0.20, 95%). The study concluded that aromatherapy massage beneficial in reducing the symptoms of depression and recommended it as a complementary therapy51.

A Research study conducted by **Roxana M, García P [2016],** Aromatherapy with two essential oils from Satureja genre and mindfulness meditation to reduce anxiety in humans Trujillo, Peru. The anxiety index was evaluated by State-Trait Anxiety Inventory (STAI). State and Trait anxiety scores showed a decrease in post test study phase incomparison with pretest in all experimental groups (p < 0.005), especially in those where aromatherapy and mindfulness meditation were used together. Percentages of change showed reductions of anxiety vary, ranging between 20% and 47%. All treatments used isolated or associated, may be considered alternative treatmentoptions for anxiety52.

A Crossover randomized clinical trial study conducted by **Zadeh R. et. al. [2014**] on effectiveness of lavender aromatherapy on reduce menopausal hot flushes at Iran. A total sample of 100 menopausal women between 45-55 years of age were selected by using simple random technique and divided into two intervention (lavender) and control (diluted oil) groups. Lavender aroma was smelled for 20 minutes twice a day, over a 12- week period. The result showed that the both the groups had no significant difference, according to demographic characteristics (p>0.05). Additionally, the flushing number significantly decreased in the intervention group than in the control group (p<0.001). The study concluded that use of lavender aromatherapy reduced menopause flushing and quality of life53.

A randomized study was conducted by **Varghee S et.al,[2014**] Aromatherapy on joint pain and quality of life among the women with menopause India. Sixty menopausal women with joint pain and impaired quality of life aged 45-55 years were divided as 30 in both the study and the joint pain and quality of life. The participant received 15mins massage on knee joints for thrice a week for 4 weeks with eucalyptus oil routine practices were followed in the control group. The result shows that significant difference at the level of (p<0.001). The study concluded that aromatherapy massage was more effective and raised the quality of life in women54.

A crossover randomized study was conducted by **Oliveria D et al [2012],** on the effect of therapeutic massage on insomnia and climacteric symptoms in postmenopausal women. Forty four volunteers were randomly distributed into three groups; Therapeutic massage [TM], Passive Movement [PM] and control [CTL]. The women received 32 therapeutic massage sessions and passive movement twice a week. Questionnaires were given in the pretrial and 16th and 32nd sessions. The result shows that there was an improvement in the TM group than the PM. A decrease in the BDI occurred in the TM group (p=0.004), and the MENQOL improved in the TM group (p=0.015). The researcher concluded that the TM group exhibited improved subjective data considering the changes in symptoms, according to the Insomnia Severity Index and the MENQOL and a decrease in symptoms according to the Beck Depression Inventory55.

A randomized placebo – controlled clinical trial was conducted by **Darsareh F et al [2012]** on the effect of aromatherapy massage on Post Menopausal Symptoms in Tehran. Each participant in the aromatherapy massage group received 30 minute treatment sessions twice a week for 4 weeks with aroma oil, whereas participants in the placebo massage group received the same treatment with plain oil. The result shows that the mean baseline level of the menopausal scores, however, after eight sessions of intervention. When the aromatherapy massage and the placebo massage groups were compared, the menopausal score for the aromatherapy group was found to be significantly lower (P<0.001) than for the placebo group. The study concluded that demonstrate that both massage and aromatherapy massage were effective in reducing Post Menopausal Symptoms. However, aromatherapy massage was more effective than only massage56.

**2.4 Effectiveness of Essential Oils for Management of Post Menopausal Symptoms**This study aimed to investigate the effects of inhalation of the essential oil of *Citrus aurantium* L. var. *amara* (neroli oil) on menopausal symptoms, stress, and estrogen in postmenopausal women. Sixty-three healthy postmenopausal women were randomized to inhale 0.1% or 0.5% neroli oil or almond oil (control) for 5 minutes twice daily for 5 days. Menopause-related symptoms, as determined by the Menopause-Specific Quality of Life Questionnaire (MENQOL); sexual desire visual analog scale (VAS); serum cortisol and estrogen concentrations, blood pressure, pulse, and stress VAS, were measured before and after inhalation. Compared with the control group, the two neroli oil groups showed significant improvements in the physical domain score of the MENQOL and in sexual desire. Systolic blood pressure was significantly lower in the group inhaling 0.5% neroli oil than in the control group. Compared with the control group, the two neroli oil groups showed significantly lower diastolic blood pressure and tended to improve pulse rate and serum cortisol and estrogen concentrations. These findings indicate that inhalation of neroli oil helps relieve menopausal symptoms, increase sexual desire, and reduce blood pressure in postmenopausal women. Neroli oil may have potential as an effective intervention to reduce stress and improve the endocrine system.

A pilot study was conducted by **Han X et al [2017]** on Bergamot (Citrus bergamia) Essential Oil Inhalation Improves Positive Feelings in the Waiting Room of a Mental Health Treatment Center, USA. Fifteen minutes of bergamot essential oil exposure improved participants' positive feelings compared with the control group (17% higher). This study provides preliminary evidence of the efficacy and safety of bergamot essential oil inhalation on mental well-being in a mental health treatment center, suggesting that bergamot essential oil aromatherapy can be an effective adjunct treatment to improve individuals' mental health and well-being57.

A randomized Controlled Trial was conducted by **Choi S, Park K[2016]**on Effect of Inhalation of Aromatherapy Oil in Patients with Perennial Allergic Rhinitis. Fifty-four men and women aged between 20 and 60 were randomized to inhale aromatherapy oils containing essential oil of sandalwood, geranium, and Ravensara or almond oil (the placebo) for 5 minutes twice daily for 7 days. The aromatherapy group also showed significantly higher improvements in the total score of RQLQ and CFS. These findings indicate that inhalation of certain aromatherapy oil helps relieve PAR symptoms, improve rhinitis-specific quality of life, and reduce fatigue in patients with PAR. In conclusion, inhalation of aromatherapy essential oil may have potential as an effective intervention to alleviate PAR58.

A systematic review conducted by **Cirmi S et al (2016),** on anti-infective potential of Citrus bergamia Risso et Poiteau (bergamot) derivatives Infectious diseases remain among the leading causes of morbidity and mortality worldwide, mainly because of the increase of resistance to chemotherapeutic drugs. Nature is the major source of anti-infective drugs and could represent a font of medicines that may help overcome antibiotic resistance. Recently, the potential antimicrobial effect of certain plant extracts has attracted attention within the scientific community as alternatives to synthetic drugs. Here, we present a systematic review of the anti-infective properties of bergamot derivatives that highlight the activity of bergamot essential oil against bacteria, mice and larvae, as well as the anti-Helicobacter pylori effect of bergamot juice and the antimicrobial properties of extracts from bergamot peel. The findings presented herein could be used to develop novel and alternative preventive and therapeutic strategies aimed to overcome antibiotic resistance59.

A quantitative study was conducted by **Kang-Ming et al [2015],** on Aromatherapy Benefits Autonomic Nervous System Regulation for Elementary School Faculty in Taiwan. Further subgroups were divided by gender, position, age, and anxiety degree. Bergamot essential oil was used for aromatherapy spray for 10 minutes. Blood pressure and autonomic nervous system parameters were recorded 5 minutes before and after the application of the aroma spray. Results showed that there were significant decreases in blood pressure, heart rate, (*P <.*001) after application of the aromatherapy spray. Parasympathetic nervous system activation was measured after aromatherapy in this study. In the future, aroma within air conditioning will be beneficial to create a better working environment60.

A study was conducted by **Wag L et al [2014],** on anticancer activities of Citrus Peel Polymethoxy flavones Related to Angiogenesis and Others. Citrus is a kind of common fruit and contains multiple beneficial nutrients for human beings. Flavonoids, as a class of plant secondary metabolites, exist in citrus fruits abundantly. Due to their broad range of pharmacological properties, citrus flavonoids have gained increased attention. Accumulative in vitro and in vivo studies indicates protective effects of polymethoxy flavones (PMFs) against the occurrence of cancer. PMFs inhibit carcinogenesis by mechanisms like blocking the metastatic cascade, inhibition of cancer cell mobility in circulatory systems, proapoptosis, and anti angiogenesis. This review systematically summarized anti carcinogenic effect of citrus flavonoids in cancer therapy, together with the underlying important molecular mechanisms, in purpose of further exploring more effective use of citrus peel flavonoids61.

A double-blind, placebo-controlled study was conducted by **Kaata GR et al [2013**], on Safety Study involving Citrus aurantium (bitter orange) extract. Bitter orange (Citrus aurantium) extract and its primary protoalkaloid p-synephrine are widely consumed in dietary supplements for weight management and sports performance. The purpose of this study was to assess the safety of bitter orange extract (approximately 49mg p-synephrine) alone or in combination with naringin and hesperidin twice daily given to 25 healthy subjects per group for 60days in a double-blinded, placebo-controlled protocol. No significant changes occurred in systolic or diastolic blood pressures, blood chemistries or blood cell counts in the control or p-synephrine treated groups. Small, clinically insignificant differences in heart rates were observed between the p-synephrine plus naringin and hesperidin group and the p-synephrine alone as well as the placebo group. No adverse effects were reported in the three groups. Bitter orange extract and p-synephrine appear to be without adverse effects at a dose of up to 98 mg daily for 60days based on the parameters measured62.

**2.4 Epilogue**

This chapter dealt with description of literature review supporting the study undertaken. It is presented under three headings, namely reviews related to Prevalence of Post Menopausal Symptoms among women, reviews related Management of Post Menopausal Symptoms and reviews related to Effectiveness of Citrus Oil for Management of Post Menopausal Symptoms.

The next chapter deals with the research methodology adapted for the present study.

**CHAPTER - III**

**3. RESEARCH METODOLOGY**

The research methodology indicates the general pattern for organizing the procedure for gathering valid and reliable data for investigating.

The Methodology of a research study is defined as the way the pertinent information is gathered in order to answer the research question or analyze the problem. Enables the research to project a blue print of the research undertaken.

Methodology is most important in research as it is the framework for conducting the study. The research methodology is a systematic procedure which the researcher starts from the initial identification of the problem to its final conclusion. The role of methodology consists of procedure and techniques for conducting a study21.

The present study was a True Experimental ‘Pretest posttest only design’’ on Effectiveness of Citrus Oil of Management of Post Menopausal Symptoms among Women in a selected Urban Communities in Hyderabad.

This chapter deals with research approach, research design, variables under the study, the setting of the study, population, sample and sampling technique, criteria for selection of sample, selection and development of the study instrument, a description of the tool, pilot study, procedure for data collection and plan for data analysis of the undertaken by the investigators.

**3.1 Research Approach**

The selection of research approach is the basic procedure for the research of inquiry. The research approach helps the researcher to determine what data to collect and how to analyze it21.

It also suggests possible conclusions to be drawn from the data. The Quantitative Approach was considered as an appropriate research approach for the present study. In order to accomplish the objectives, in the present study, the investigator aims at evaluating the Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among women.

**3.2 Research Design**

“Research design spells out the basic strategies that the researcher adapts to develop information which accurate and interpretable21.”

The research design is the master plan specifying the methods and procedures for collecting and analyzing the needed information in a research study21.”

A researcher overall plan for obtaining answers to the research questions or for testing the research hypothesis is referred to as research design. The essential questions that research design concerned, which how the study subjects will be brought into the research and how they will be employed within the research design21.

“True Experimental ‘Pretest posttest Control group only design’’ was selected for the present study. A Pretest observation dependent variability of both the groups has seen before the treatment. Later the Citrus Oil is given for the experimental group only, and after – treatment observation of the dependent variable is made for both the groups to examine the effectiveness of Citrus Oil.

The research design for this study is “True Experimental ‘Pretest posttest Control group only design’’ was considered appropriate for the study. The research design is presented in Table no: 1

The symbolic representation of the research design is given below.

**Table No: 1**

**Schematic representation of the Research Design**

|  |  |  |  |
| --- | --- | --- | --- |
| **GROUP** | **PRE – TEST** | **INTERVENTION** | **POST – TEST** |
| Experimental | O1 | X | O2 |
| Control group | O1 | Placebo | O2 |

E = Experimental group

O1 = Pre test before administration of Citrus Oil

X = Intervention is Citrus Oil

O2 = Post test after administration of Citrus Oil

C = Control group

O1 = Pre test before administration of Almond Oil (placebo)

O2 = Post test after administration of Almond Oil

The study design depicted in Table no: 1 shows that on day pretest was conducted to Women to assess the Blood Pressure, Post Menopausal Symptoms and Stress Level followed by treatment with Citrus Oil for Experimental group and placebo for the control group was given and assessed fastest by using the same assessment tool.

**Research Approach:** Quantitative Research Design

**Research Design:** True Experimental Pre test post test control group design

**Study Setting:** Premnagar, OldSultannagar in Sanathnagar, Hyderabad

**Target Population:** Women with Post Menopausal Symptoms, Hyderabad

**Accessible Population:** Women who are associated with Post Menopausal Symptoms and residing in Premnagar, OldSultannagar in Sanathnagar, Hyderabad

**Sample, Sample size & Sample technique:** 30 Experimental and 30 Control Group Women with Post Menopausal Symptoms, Simple Random Sampling Technique

**Development of tool for data collection &Preparation of Citrus Oil**

Control group

**STEP: 1**

* **Section A:** Demographic profile of Menopausal women
* **Section B:** Measurement of Blood pressure among Menopausal Women
* **SectionC:** Five point Likert’s rating scale on Post Menopausal Symptoms
* **Section D:** VAS (Visual Analogue Scale) for Stress

**STEP: 2**

* Validity of Tool and intervention
* Reliability of the Tool
* Pilot Study

**Pilot**

Experimental group

Pretest

Pretest

Administration of placebo

Administration of Citrus Oil

Post test

Post test

**Data Analysis:** Descriptive and Inferential Statistics

**Conclusion and Dissemination of findings**

**FIGURE No: 2 Schematic representation of Research Design**

**3.3 Research Variables**

Variables are characteristics that vary among the subject being studied. It is the focus of study and reflects empirical aspects of the concept being studied21.

**3.3.1 Independent Variable**

The independent variables are conditions are characteristic that the researcher manipulate or controls in an attempt to ascertain their relationship to observe the phenomenon21.

In this study independent variable is Citrus Oil

**3.3.2 Dependent Variable**

The dependent variables are conditions or response due to the effect of the independent variable21.

In this study the dependent variable is the “Post Menopausal Symptoms’’ among Women.

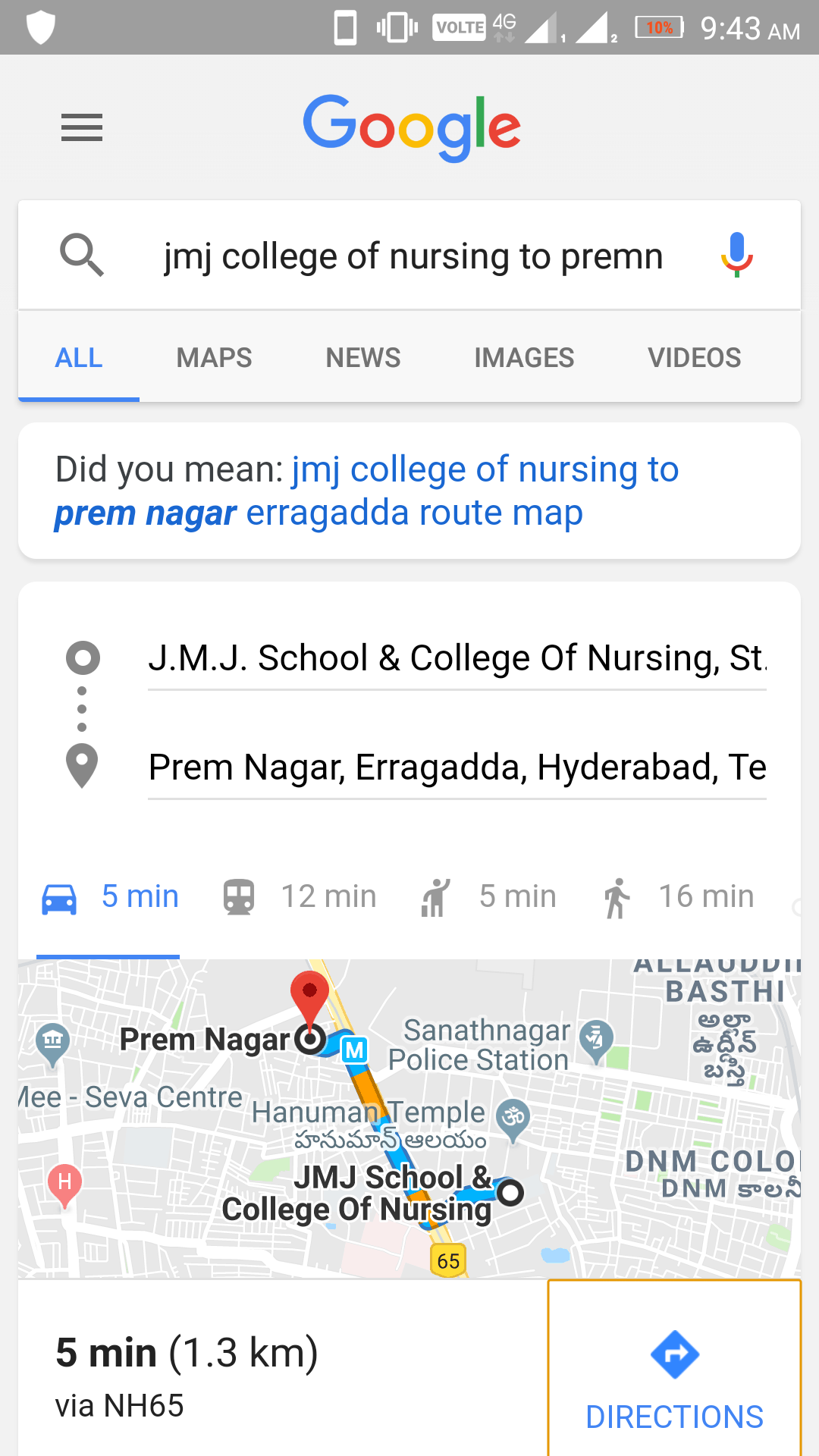
**3.3.3 Demographic Variables**

It contains demographic variables of Women such as Age, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

**3.4 Setting of the Study**

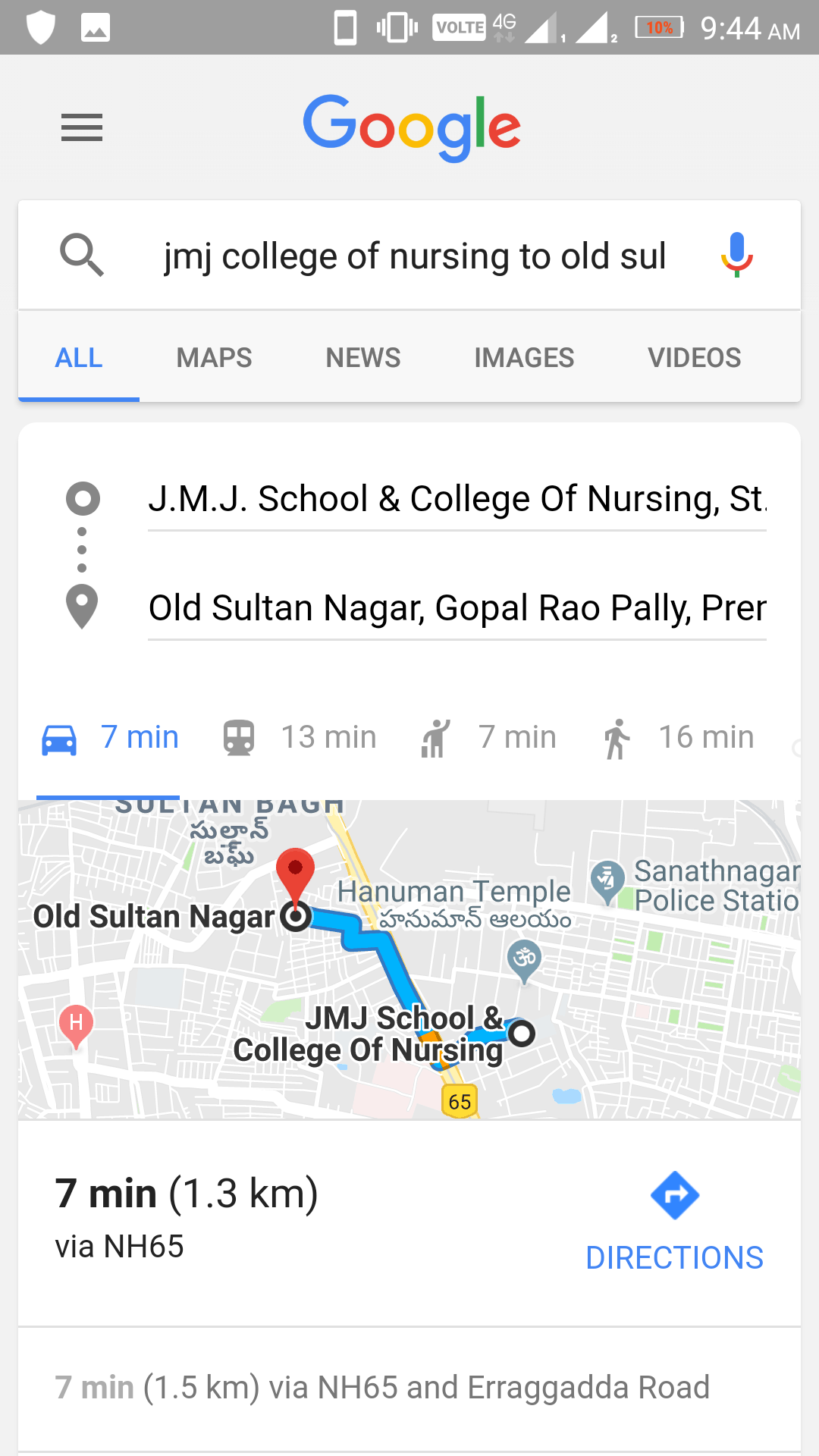
“Research setting is defined as the physical, social and cultural sight in which the researcher conducts the study21.

The setting selected for the study is Premnagar, Old Sultannagar in Sanathnagar, Hyderabad. The investigator surveyed the number of communities surrounding to JMJ College of Nursing in Hyderabad. There are two communities in that area. Out of this Premnagar, Old Sultannagar in Sanathnagar community was randomly selected by using lottery method (Figure no 3, 4).This Premnagar is 1.3 K.m away from JMJ College of Nursing.



**Fig No:3 Study setting of Prem Nagar**

Old Sultannagar is 1.3 Km away from JMJ College of Nursing, and it was selected on the basis of feasibility and availability of the sample was selected by using simple random technique that is lottery method.



**Fig No: 4 Old Sultan Nagar**

**3.5 Population**

“Population is identified as the entire aggregation of cases that meet a designated set of criteria21.”

The population selected for the study included all the Women who are associated with Post Menopausal Symptoms from selected Communities in Hyderabad.

**Target population**

“A target population consists of the total number of people or objects which are meeting the designated set of criteria21.

It includes all the Women above 45 years of age who are associated with Post Menopausal Symptoms

**Accessible population**

**“**It is theaggregate of cases that conform to designated criteria and also accessible as subjects for a study21.”

**“**Women who are associated with Post Menopausal Symptoms and residing at Premnagar, Old Sultannagar in Sanathnagar, Hyderabad.

**3.6 Sample**

Sample is the process of selecting a portion of population to present the entire population21.

The sample for the study comprised of 60 Women who were associated with mild, moderate and severe Post Menopausal Symptoms identified by using five point Likert rating scale on Post Menopausal Symptoms. Among them, 30 women from Premnagar and 30 women from Old Sultan Nagar, Hyderabad, were selected.

**3.7 Sample Size and Sampling Technique**

A sample size of 60 was selected for the study. Out of 520 Women in Prem Nagar 230 women were associated with Post Menopausal Symptoms, among them 30 Women were selected by Simple Random Sampling Technique. Out of 684, 200 women in Old Sultan Nagar were associated with Post Menopausal Symptoms of which 30 women were selected by simple random sampling technique. First the investigator collected the names of the Women residing in community and assigned a specific number to each woman, and then 60 women were selected randomly by using the lottery method.

**3.8 Criteria for Sample Selection**

**Inclusive criteria:**

The sample includes Women are;

* Age group of 45 years and above
* Attained menopause and associated with Post Menopausal Symptoms
* Willing to participate in the study
* Available at the time of study

**Exclusive Criteria:**

The sample excludes Menopausal Women who are:

* Women who had undergone hysterectomy
* Women who are as associated with terminally ill

**3.9 Development and Description of Tool**

The data collected tool consisted of a Measurement of Blood Pressure, Pulse Rate, and five point rating scale to check the Post Menopausal Symptoms and VAS (Visual Analogue Scale) for Stress levels among Women.

Based on the extensive review of literature, discussion with the expert’s investigator and with professional experience, the investigator structured the tool.

Based on the objectives of the study the tool was divided into following sections.

**Section A:** Demographic Profile of Women

**Section B:** Measurement of Blood Pressure among Women

**Section C:** Five point Likert rating scale on Post Menopausal Symptoms

**Section D:** VAS (Visual Analogue Scale) for Stress

**3.9.1 Section A: Demographic Profile of Women**

In the present study demographic variables of Menopausal Women consists of Age, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

**3.9.2. Section B: Measurement of Blood pressure among Women**

This section was meant to measure the Blood Pressure.

The level of Blood Pressure among Post Menopausal Women was measured by using the WHO classification, where it is divided into normal, mild, moderate and severe.

* Normal (120-130 mm of Hg**)**
* Mild (140-150 mm of Hg)
* Moderate (151 – 170 mm of Hg)
* Severe (>180 mm of Hg)

**3.9.3. Section C: Five Point Likert rating scale on Post Menopausal Symptoms**

This section was meant to assess the Post Menopausal Symptoms among Women. It consists of four categories like Vasomotor, Physical, Psychological and Sexual symptoms and 30 statements. It is a five point Likert Rating scale.

**Scoring Key:**

* Not At All **:** 1
* Little Bit **:** 2
* Little More **:** 3
* Even More **:** 4
* Worst **:** 5

The level of Post Menopausal Symptoms Categorized into

* Mild (0-50)
* Moderate (51 - 100)
* Severe (101 - 150)

**3.9.4 Section D: VAS (Visual Analogue Scale) for Stress**

This section was meant to assess the Stress Levels of Women.

The Stress levels categorized into

* Mild (1-3)
* Moderate (4 - 6)
* Severe (7 - 10)
  1. **Content Validity of the Tool**

In order to establish content validity of the tool, along with the instrument objectives of the study were given to eight experts in the field of Obstetrics & Gynecological Nursing, a Gynecologist, Three Naturopathy Doctors and One Statistician. Then, the tool was modified according to the suggestions of the expert’s opinions and finally the tool was constructed.

**Modified Tool:**The tool was modified according to the suggestions of the experts.

**Demographic Variable:** Experts advised to add Occupation and Diet

**Preparation of Citrus Oil for the study**

Citrus Oil is an essential oil produced by cell within the rind of citrus fruits such as orange, lemon. This is prepared by heating the Olive Oil and citrus fruits peel at 1500 c in order to acquire the Oil for inhalation. The obtained Citrus Oil (Neroli Oil) is given at a concentration 0.1% sprayed on Pad to inhale for 5 minutes twice daily for 20 days.

**Placebo for the Study**

Almond Oil is given as a placebo to the control group at a concentration of 0.1% which is sprayed on a pad to inhale for the same duration as like the experimental group.

* 1. **Reliability of the Tool**

“Reliability of research instrument is defined as the degree of consistency or dependability with which an instrument measures an attribute21.”

Reliability is defined as the ability of an instrument to create reproducible results. Therefore, reliability is concerned with the consistency of the measurement tools. A tool can be considered reliable if it measures can attribute with similar results on repeated use21.

The tool was tried out on 12 samples in Banjara Nagar, Hyderabad and assessed the Blood Pressure, Post Menopausal Symptoms and Stress Levels.

The time taken from the sample to complete the tool was 20 days and each day for above five minutes. The reliability of the tool was tested by Test – Retest method using the Karl Pearson’s formula. The ‘r’ value obtained for Blood Pressure is 0.9, Rating Scale on Post Menopausal Symptoms the ‘r’ value obtained is 0.9, and VAS (Visual Analogue Scale) Stress the ‘r’ value obtained is 0.8.This indicates that the tool is highly reliable.

* 1. **Pilot Study**

“A pilot study is a rehearsal for major study to test the reliability. Practicability, appropriateness and feasibility of the methodology to be used in the study21.

After obtaining formal permission from the concerned authority of Medical officer, Sanathnagar, Hyderabad, the investigator conducted a pilot study with 12 samples in an urban community, Banjara Nagar, Hyderabad by using Simple Random Sampling Technique from 24/03/2018 to 12/04/2018. The selected sample was explained about the purpose of the study and confidentiality of their responses. The pretest was conducted for 12 samples by using Sphygmomanometer for Blood pressure, Likert five point Rating scale on Post Menopausal Symptoms and Visual Analogue Scale for Stress, including demographic profiles for both the experimental group and the control group.

The total time taken to complete 30 minutes. Citrus Oil was given for 0.1% for experimental group daily five minutes in the morning as well as in the evening for 20 days through Inhalation Method while control group the Almond Oil was given as a placebo. Post test was conducted on the twenty first day after the treatment and assessed the Blood pressure,Post Post Menopausal Symptoms and Stress levels in both the groups. Pilot study revealed that the tool was feasible and comprehensive for the final study.

* 1. **Procedure for data collection**

Prior to the main study, formal permission was obtained from the Medical Officer of Primary Health Center, Santhnagar, Hyderabad. The tool consists of measurement of blood pressure, five point rating scale on Post Menopausal Symptomsand Visual Analogue Scale for Stress levels was used for data collection. The period of data collection wasfrom April 16th 2018 to May 05th 2018.

The investigator established rapport with Women explained about the purpose of data collection and confidentiality of their answers.

The selected sample for the study was given Pre – test using validated Measurement of Blood pressure, five point likert rating scale on Post Menopausal Symptoms and VAS for Stress Levels. The total time taken to respond to the tool was about 30 minutes.

The investigator used Simple random sampling technique was used to select the sample of 60 Women with Mild to severePost Menopausal Symptoms by using the lottery method. The sample was assigned to specific numbers and then divided into even and odd numbers. Women with even numbers were allotted under experimental group and with odd numbers under the control group.

After the pre test, Citrus Oil 0.1% we given by gauze pad to inhale for 5 minutes to each participant in the experimental group and Almond Oil were given to a control group for 20 days. After 20 days Post test was conducted to assess the Blood pressure by using Sphgymanometer, rating scale on Post Menopausal Symptoms and VAS for Stress Levels. The participants cooperated well with research for data collection.

* 1. **Plan for Data analysis**

Both descriptive and inferential statistics were used to analyze the obtained data in order to achieve the result based on the objectives of the study.

* + 1. **Descriptive Statistics**
* To analyze the demographic data, frequency and percentage distribution was used.
* The mean and standard deviation was used to analyze the level of Post Menopausal Symptoms among women
  + 1. **Inferential statistics**
* Paired ‘t’ ‘test was used to evaluate the effectiveness of Citrus oil among Post Menopausal Women
* Chi-Square test was used to find out the association between selected demographic variable with post test scores
  1. **Ethical Consideration**

Formal permission was obtained from the Medical Officer of Primary Health Center, Sanathnagar. Informed consent was obtained from the subjects in oral and written formats after explaining about the purpose of the study and maintained confidentiality of the data collected.

**3.17. Epilogue**

This chapter dealt with a description of the methodology and different steps, which were undertaken for organizing data of the investigation. It included a description of Research Approach, Research Design, Research Setting, Sampling, Sampling Technique, Development and Description of the Tool, Pilot study, Data Collection Procedure, Processing of data, Plan for data analysis and Ethical considerations.

The next chapter will discuss about data analysis and interpretations.

**CHAPTER – IV**

**4. DATA ANALYSIS AND INTERPRETATION**

Statistical analysis is a method of rendering quantitative information in meaningful and intelligible way, without the aid of statistics the quantitative data collected in a research project would be little more than a chaotic mass of numbers21.

Statistical procedure enables the researcher to reduce, summarize, organize, interpret and communicate numeric information. They also point out that the interpretation of statistical finding is essentially a search for the border meaning and implications of those findings. The result of the analysis need to be interpreted with due consideration of the overall aims of the project, its theoretical framework, the specific hypothesis being tested, the existing body of related research knowledge and limitation of the adapted research method21.

This chapter deals with the analysis and interpretation of data collected from the sample. Data was collected from 60 Women with Post Menopausal Symptoms who meet the selection criteria. Measurement of Blood Pressure by Sphygmomanometer, Likert five point rating scale on Post Menopausal Symptoms and VAS [Visual Analogue Scale] for Stress levels were used to collect the data. Analysis and interpretation were done with the help of descriptive and inferential statistics to meet the objectives and test the hypothesis of the study.

**4.1 Objectives of the Study**

* To assess the level of Post Menopausal Symptoms among Women in both experimental and control groups in terms of pretest and post test scores.
* To evaluate the effectiveness of Citrus Oil in terms of decrease in Post Menopausal Symptoms among Women in the experimental group than the placebo in control groups.
* To find out the association between post test scores of Post Menopausal Symptoms among Women with selected demographic variables in the experimental and control groups.

**4.2 Hypotheses**

**H1**There will be a significant decrease of Post Menopausal Symptoms in the post test scores of Women in the experimental group than the control group after administration of Citrus Oil and placebo respectively at 0.05 level of significance.

**H2**There will be a significant association between post test scores of Post Menopausal Symptoms among Women with selected demographic variables at 0.05 level of significance.

**4.3 Presentation of Data Analysis**

The data were organized and presented in the following sections.

**4.3.1 Section I:** Description of the demographic variables in terms of frequency and percentage.

**4.3.2 Section II:** Description of the sample in terms of pre- test and post- test Blood Pressure, Post Menopausal Symptoms and Stress levels scores among Women in both experimental and control groups.

**4.3.3 Section III:** Mean, Standard deviation and ‘t’ test Blood Pressure, Post Menopausal Symptoms and Stress levels among Women in both experimental and control groups.

**4.3.4 Section-IV:** Association between post-test levels of Blood Pressure, Post Menopausal Symptoms and Stress levels among Women with selected demographic variables in experimental group and control groups.

**4.3.1 Section 1**

**Description of Demographic variable of Women on Menopause in terms of Frequency and Percentage.**

.

The first section of the questionnaire elicited information about the demographic features of the sample which consists of Age, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms. (Table No.2)

**Table No – 2**

**Frequency and percentage distribution of Women on Menopause according to the Demographic variable Experimental and Control Group n=60**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.no** | **Demographic variables** | **Experimental group** | | **Control group** | |
| ***f*** | **%** | ***f*** | **%** |
| **1** | **Age (in years)**  a.46-50  b.51-55  c.56-60 | 15  10  05 | 50  33.3  16.7 | 18  7  5 | 60  23.3  16.7 |
| **2** | **Religion**  a. Hindu  b. Muslims  c. Christian  d. Others | 09  16  05  00 | 30  53.3  16.7  00 | 08  20  02  00 | 26.6  66.7  2.7  00 |
| **3** | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 18  05  06  01  00 | 60  16.7  20  3.3  00 | 19  5  6  00  00 | 63.3  16.7  20  00  00 |
| **4** | **Occupation**  a. Housewife  b. Employee  c. Daily wages  d. Business | 19  00  7  4 | 63.3  00  23.3  13.4 | 19  00  7  4 | 63.3  00  23.3  13.4 |
| **5** | **Diet**  a. Vegetarian  b. Non Vegetarian | 5  25 | 16.7  83.3 | 00  30 | 00  100 |
| **6** | **Age at Menarche**  a.< 11years  b.12 Years  c.13 years  d.14 and above | 3  18  9  00 | 10  60  30  00 | 2  20  8  00 | 6.7  66.7  26.7  00 |
| **7** | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 04  26  00 | 13.3  86.7  00 | 02  28  00 | 6.7  93.3  00 |
| **8** | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 00  04  05  21 | 00  13.3  16.7  70 | 03  00  20  07 | 10  00  66.7  23.3 |
| **9** | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 08  17  05  00 | 26.7  56.7  16.7  00 | 00  22  08  00 | 00  73.3  26.7  00 |
| **10** | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 2  00  28 | 6.7  00  93.3 | 00  00  30 | 00  00  100 |

Table no -2 indicates the data on demographic variables of demographic features of the sample which consists of Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms. The detailed descriptions of these variables were presented in figure no, 5, 6, 7, 8, 9, 10, 11 12,13 and 14.

**Figure No.5: Percentage distribution of Women according to Age in years in experimental and control group**

**Figure No.6: Percentage distribution of Women according to Religion in experimental and control group**

**Figure No.7: Percentage distribution of Women according to Education of Menopause Women in experimental and control group**

**Figure No.8: Percentage distribution of Women according to Occupation in experimental and control group**

**Figure No.9: Percentage distribution of Women according to Diet in experimental and control group**

**Figure No.10: Percentage distribution of Women according to Age at Menarche in experimental and control group**

**Figure No.11: Percentage distribution of Women according to Age at Marriage in experimental and control group**

**Figure No.12: Percentage distribution of Women according to Number of Children in experimental and control group**

**Figure No.13: Percentage distribution of Women according to Age at Menopause in experimental and control group**

**Figure No.14: Percentage distribution of Women according to using any Relieving measures for Post Menopausal Symptoms in experimental and control group**

The figure No.5 shows the data on the percentage distribution of age of Women’s. Majority i.e.50 percent of them belongs to the age group of 46 –50 years, while 33.3 percent of them belong to the age group of 51-55 years, whereas 16.7 percent of them belong to the age of 56-60 years.

The figure No.6 illustrates the data on the percentage distribution of Religion Women’s. Majority i.e. 53.3 percent of Women’s were belonged to the Muslim religion, while 30 percent of them were Hindu religion and remaining 16.7 percent of them belong to the Christian religion.

The figure No.7 depicts the data on the percentage of Education of Menopausal Women. The majority, i.e. 60 percent of Women’s were Illiterates, while 20 percent of them had Secondary education (6-10), While 16.7 percent of them had Primary education and remaining 3.3 percent of them were educated Intermediate level.

The figure No.8 shows the percentage of Occupation of Menopausal Women. Majority i.e. 63.3 percent of them were housed wife’s, while 23.3 percent of them were going for daily wages and remaining 13.4 percent of their Occupation was business.

The figure No.9 depicts the percentage of the Dietary pattern of Menopausal Women Majority of them, i.e. 83.3 percent of them were Non vegetarian and only 16.7 percent of them were vegetarian.

The figure No.10 illustrates the data on the percentage distribution of Women’s age of menarche. Majority i.e. 60 percent of women’s were attained menarche at the age of 12 years, while 30 percent of them had attained 13 years of age remaining 10 percent of them attained at less than or equal to 11 years age group.

The figure No.11 depicts the data on the percentage of Age at marriage of the Women. The majority, i.e. 86.7 percent of Women’s were married at the age of 16- 25 years, while 13.3 percent of them were married at the age less than or equal to 15 years of age.

The figure No.12 shows the percentage of Number of children. Majority i.e. 70 percent of women's had three and above children, while 16.7 percent of them had two children and remaining 13.3 percent of them had only child.

The figure No.13 illustrates the data on the percentage distribution of the age of menopause. Majority i.e. 56.7 percent of women’s were attained menopause at the age of 46- 50 years, while 26.7 percent of them were attained menopause at the age of 41–45 years and remaining 16.7 percent of them were attained menopause at the age of 51–55 years.

The figure No.14 depicts the percentage of the women using relieving measures for Post Menopausal Symptoms. The majority of them, i.e. 93.3 percent of them were not used any reliving measures in the experimental group and only 6.7 percent of them were using relieving measures like natural therapy for Post Menopausal Symptoms in experimental group.

**4.3.2 Section-II**

**Description of the sample in terms of pre test and post test Blood pressure levels, Post Menopausal Symptoms and Stress levels among women in both experimental and control groups.**

  In section II the sample is described in terms of the Blood pressure levels obtained in pre-test and post test in both experimental and control groups. It includes representation of the sample according to their Blood Pressure levels, Post Menopausal Symptoms, and Stress levels in terms of descriptive statistics like frequency and percentage.

**H1**There will be a significant decrease of Post Menopausal Symptoms in the post test scores of Women in the experimental group than the control group after administration of Citrus Oil and placebo respectively at 0.05 level of significance.

**Table No.3**

**Frequency and percentage distribution of pretest and post test level of Blood Pressure among Women in experimental and control group. n = 60**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no** | **Blood Pressure** | **Experimental group** | | | | **Control group** | | | |
|  |  | **Pre test** | | **Post test** | | **Pre test** | | **Post test** | |
|  |  | ***f*** | **%** | ***f*** | **%** | ***f*** | **%** | ***f*** | **%** |
| **1** | Normal  (120 – 130 mm 0f Hg) | 02 | 6.7 | 16 | 53.3 | 0 | 0 | 2 | 6.7 |
| **2** | Mild  (140 – 150 mm of Hg) | 9 | 30 | 10 | 33.3 | 19 | 63.3 | 22 | 73.3 |
| **3** | Moderate  (151 – 170 mm of Hg) | 16 | 53.3 | 04 | 13.3 | 10 | 33.3 | 06 | 20 |
| **4** | Severe  (>180 mm of Hg) | 03 | 10 | 00 | 00 | 01 | 3.3 | 00 | 00 |

The table no 3 depicts the findings on pre-test and post test level of Blood pressure levels among women in both experimental and control group.

The pretest blood pressure level in the experimental group that is 53.3 percent women had moderate blood pressure levels, whereas 30 percent had mild blood pressure, while 10 percent of them had severe blood pressure and remaining 6.7 percent of them having normal blood pressure levels. Whereas in a control group that is 63.3 percent women had mild blood pressure levels, whereas 33 percent of them had moderate blood pressure and remaining 3.3 percent had severe blood pressure levels.

The post test scores of blood pressure in the experimental group that is 53.3 percent of women had normal blood pressure levels, whereas 33.3 percent of them had mild blood pressure and remaining 13.3 percent of them had moderate blood pressure levels. Whereas in control group that is 73.3 percent women had mild blood pressure levels, whereas 20 percent of them had moderate blood pressure and remaining 6.7 percent of them had normal blood pressure levels.

**Table No.4**

**Frequency and percentage distribution of pre-test and posttest level of Post Menopausal Symptoms among Women in experimental and control groups. n=60**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no** | **Menopausal**  **Symptoms** | **Experimental group** | | | | **Control group** | | | |
|  |  | **Pre test** | | **Post test** | | **Pre test** | | **Post test** | |
|  |  | ***f*** | **%** | ***f*** | **%** | ***f*** | **%** | ***F*** | **%** |
| **1** | Mild  ( 0 – 50 ) | 00 | 00 | 22 | 73.3 | 00 | 00 | 00 | 00 |
| **2** | Moderate  (51 – 100) | 00 | 00 | 08 | 26.7 | 00 | 00 | 06 | 20 |
| **3** | Severe  (101 –150) | 30 | 100 | 00 | 00 | 30 | 100 | 24 | 80 |

The table no 4; depicts the findings on Frequency and percentage distribution of pretest and posttest level of Post Menopausal Symptoms among Women in experimental and control group**.**

The pretest level of Post Menopausal Symptoms in experimental and control group that is 100 percent of the women had severe Post Menopausal Symptoms.

The posttest scores of Post Menopausal Symptoms in the experimental group that is 73.3 percent of women had Mild symptoms and remaining 26.7 percent of them had moderate symptoms. Whereas control group that is 80 percent women had severe symptoms and remaining 20 percent of them had moderate symptoms.

**Table No.5**

**Frequency and percentage distribution of pre-test and post test level of Stress levels among Women in experimental and control group.**

**n=60**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no** | **Stress levels** | **Experimental group** | | | | **Control group** | | | |
|  |  | **Pre test** | | **Post test** | | **Pre test** | | **Post test** | |
|  |  | ***f*** | **%** | ***f*** | **%** | ***f*** | **%** | ***F*** | **%** |
| **1** | Mild  (1- 3) | 00 | 00 | 09 | 30 | 00 | 00 | 00 | 00 |
| **2** | Moderate  (4 - 6) | 02 | 6.7 | 21 | 70 | 00 | 00 | 10 | 33.3 |
| **3** | Severe  (7 - 10) | 28 | 93.3 | 00 | 00 | 30 | 100 | 20 | 66.7 |

The table no 5; depicts the findings on Frequency and percentage distribution of pre-test and the posttest level of Stress levels among Women in experimental and control group

The pre-test Stress level in the experimental group that is 93.3 percent Women had Severe Stress levels and remaining 6.7 percent of them had moderate Stress levels. Whereas in control group that is 100 percent of women had Severe Stress levels.

The post-test Stress level in the experimental group that is 70 percent of women had Moderate Stress levels and remaining; whereas 30 percent had mild Stress levels and none of them had severe Stress levels. Whereas in control group that is 66.7 percent of women had Severe Stress levels and only 33.3 percent had moderate Stress, levels.

**4.3.3 Section III**

Mean, standard deviation and ‘t’ test Blood pressure, Post Menopausal Symptoms and Stress levels among Women in both experimental and control groups.

In section III the difference between pretest and posttest Blood pressure, Post Menopausal Symptoms and Stress levels were described from the experimental group and the control group.

The‘ t’ test was applied to find the significant difference between two means. The paired ‘t’ test is applied on paired data of independent observations made on the same sample before and after the intervention in experimental and before and after placebo in the control group. In order to find the significant difference between the mean pre-test Blood pressure levels, Post Menopausal Symptoms and Stress levels and the mean post-test Blood pressure levels, Post Menopausal Symptoms and Stress levels in experimental and control group and to test this following hypothesis was stated.

**H1**There will be a significant decrease of Post Post Menopausal Symptoms in the post test scores of Women in the experimental group than the control group after administration of Citrus Oil and placebo respectively at 0.05 level of significance.

**Table no. 6**

**Mean, Standard deviation and ‘t’ test Blood Pressure, levels among Women in both experimental and control groups. n = 60**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Groups** | **Scores** | **Mean** | **Standard**  **Deviation** | **Standard**  **Error** | **t value** | |  |  |
| **Cal**  **Value** | **Tab value** | **df** | **Inferences** |
| Exp  Group | Pretest | 158 | 14.47 | 2.644 | 23.33 | 3.66 | 29 | **S\*\*\*** |
| Post test | 134.67 | 13.83 | 2..525 |
| Control  Group | Pretest | 153 | 11.186 | 2.043 | 5.13 | 2.045 | 29 | **S\*** |
| Post test | 146.3 | 8.89 | 1.625 |

**S\*\*\* Significant at 0.001 level S\* Significant at 0.05 level**

The table no 6 shows that the mean, standard deviation and standard error score of Blood Pressure in pre- test and post test. The mean pretest score of Blood Pressure was 158 with SD of 14.47 and it decreased to 134.67 with SD of 13.83 in the post test. It can be interpreted that decrease in the post test Blood Pressure than the pretest Blood Pressure. Where as in the control group the mean pretest score of Blood Pressure was 153 with SD of 11.186 and it was slightly decreased to 146.3 with SD of 8.89 in the post test.

The SD of Pre and Post Test Blood Pressure scores of the sample shows consistency. It indicates that the samples were characterized homogenous in experimental and control group.

The paired ‘t’ test was computed to find the effectiveness of Citrus Oil on Management of Post Menopausal Symptoms.

The calculated value of ‘t’was 8.35 which was greater than the tabulated value of ’t’ 3.66 with 29 degrees of freedom was found to be highly significant at 0.001 level of significance. The result indicates that the Inhalation of Citrus Oil was effective in terms of reducing the Blood Pressure of Women. Where as In the control group there showed a slight decrease in Blood Pressure and paired “t” test calculated value is 5.13 at 29 degrees of freedom was found to be significant at 0.05 levels of significance. Hence, it is inferred that there is a slight decrease in Blood Pressure among control group due to extraneous variables and Placebo (Almond Oil) was given.

Hence, research hypothesis H1 was accepted as there was a significant decrease of Posttest Post Menopausal Symptom Scores among Women indicating that the decrease of Post Menopausal Symptoms as a result of Inhalation of Citrus Oil.

**Table no. 7**

**Mean, Standard deviation and ‘t’ test Post Menopausal Symptoms Scores among Women in both experimental and control groups. n = 60**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Groups** | **Scores** | **Mean** | **Standard**  **Deviation** | **Standard**  **Error** | **t value** | |  |  |
| **Cal**  **Value** | **Tab value** | **df** | **Inferences** |
| Exp  Group | Pretest | 121.9 | 4.877 | 0.89 | 39.146 | 2.045 | 29 | S\*\*\* |
| Post test | 47.0 | 7.64 | 1.39 |
| Control  Group | Pretest | 120.1 | 4.29 | 0.78 | 2.169 | 2.045 | 29 | S\* |
| Post test | 115.9 | 10.04 | 1.83 |

**S\*\*\* Significant 0.001 level S\* Significant at 0.05 level**

The table no 7 shows that the mean, standard deviation and standard error score of Post Menopausal Symptoms in pre test and post test. The mean pretest score of Post Menopausal Symptoms was 121.9 with SD of 4.877 and it decreased to 47.0 with SD of 7.64 in the post test. Whereas in the control group the mean pretest score of Post Menopausal Symptoms was 120.1 with SD of 4.29 and it was slightly decreased to 115.9 with an SD of 10.04 in the post test. It can be interpreted that a slight decrease in the posttest Post Menopausal Symptoms than the pretest Post Menopausal Symptoms.

The SD of Pre and Post Test Post Menopausal Symptoms scores of the sample shows consistency. It indicates that the samples were characterized homogenous in experimental and control group.

The paired ‘t’ test was computed to find the effectiveness of Citrus Oil on Management of Post Menopausal Symptoms.

The calculated value of ‘t’was 39.146 which was greater than the tabulated value of 't' 3.66 with 29 degrees of freedom was found to be highly significant at 0.001 level of significance. The result indicates that the Inhalation of Citrus Oil was effective in terms of reducing the Post Menopausal Symptoms of Women. Where as in the control group showed a slight decrease in Post Menopausal Symptoms and paired, “t” test calculated value is 2.169 at 29 degrees of freedom was found to be significant at 0.05 levels of significance. Hence, it is inferred that there is a slight decrease in Post Menopausal Symptoms among control group due to extraneous variables and Placebo (Almond Oil) was given.

Hence, research hypothesis H1 was accepted as there was a significant decrease of Posttest Post Menopausal Symptom Scores among Women indicating that the decrease of Post Menopausal Symptoms as a result of Inhalation of Citrus Oil.

**Table no. 8**

**Mean, Standard deviation and ‘t’ test Stress levels among Women in both Experimental and Control groups. n = 60**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Groups** | **Scores** | **Mean** | **Standard**  **Deviation** | **Standard**  **Error** | **t value** | | **df** | **Inference** |
| **Cal**  **Value** | **Tab value** |
| Exp  Group | Pretest | 8.07 | 1.112 | 0.203 | 9.029 | 2.045 | 29 | **S\*\*\*** |
| Post test | 4.70 | 1.343 | 0.245 |
| Control  Group | Pretest | 8.30 | .877 | 0.160 | 7.490 | 2.045 | 29 | **S\*** |
| Post test | 6.93 | 1.202 | 0.219 |

**S\*\*\* Significant 0.001 level S\*Significant at 0.05 level**

The table no 8 shows that the mean, standard deviation and standard error and “t” score of Stress levels in pre- test and post - test. The mean pretest score of Stress levels was 8.07 with SD of 1.112 and it decreased to 47.0 with SD of 1.343 in the post test. Whereas in the control group the mean pretest score of Stress levels was 8.30 with SD of.877 and it was slightly decreased to 6.93 with SD of 1.202 in the post test. The findings in the present study revealed that the SD of the sample had less variability in the posttest compared to pretest. Hence, it can be inferred that the sample was homogenous sample.

The SD of Pre and Post test Stress level scores of the sample shows consistency. It indicates that the samples were characterized homogenous in experimental and control group.

The paired ‘t’ test was computed to find the effectiveness of Citrus Oil on Management of Stress levels.

The calculated value of ‘t’was 9.029 which was greater than the tabulated value of t 3.66 with 29 degrees of freedom was found to be highly significant at 0.001 level of significance. The result indicates that the Inhalation of Citrus Oil was effective in terms of reducing the Stress levels among Women. In the control group showed a slight decrease in Stress levels and paired, “t” test value is 7.490 at 29 degrees of freedom was found to be significant at 0.05 levels of significance. Hence, it is inferred that there is a slight decrease in Stress levels among control group due to extraneous variables and Placebo (Almond Oil) was given.

Hence, research hypothesis H1 was accepted as there was a significant decrease of Posttest Post Menopausal Symptom Scores among Women indicating that the decrease of Post Menopausal Symptoms as a result of Inhalation of Citrus Oil.

**Table No – 9**

**Comparing the independent paired ‘t’ test - post test scores of Blood pressure levels, Post Menopausal Symptoms and Stress levels among Women in experimental and control groups n=60**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Categories** | **Groups**  **Post test** | **Mean** | **SD** | **SE** | **Cal value** | **Tab value** | **df** | **Inference** |
| BP | **EXP** | 129 | 13.83 | 2.525 | 5.763 | 3.46 | 59 | **S\*\*\*** |
| **CON** | 146.3 | 8.89 | 1.62 |
| PMS | **EXP** | 47 | 7.674 | 1.401 | 29.912 | 3.46 | 59 | **S\*\*\*** |
| **CON** | 115 | 10.04 | 1.833 |
| STRESS | **EXP** | 3.00 | 1.343 | 0.245 | 11.943 | 3.46 | 59 | **S\*\*\*** |
| **CON** | 6.93 | 1.202 | 0.219 |

**S\*\*\* Significant at 0.001 level**

The Table no 9 shows the t – test values obtained in the post test scores of experimental and control group with regard to Blood pressure levels, Post Menopausal Symptoms and Stress levels which were 5.763, 29.912 and 11.943 respectively.It revealed that the calculated ‘t’ values for all the three components were higher than the tabulated value ‘t’ values at 59 degrees of freedom as well as found to be statistically highly significant at 0.001 level.

This shows that the Citrus Oil was found to be effective than the Placebo in relieving the Post Menopausal Symptoms among women.Hence, research hypothesis H1 was accepted as there was a significant decrease of Posttest Post Menopausal Symptom Scores among Women.

**4.3.4 Section-IV**

**Association between pretest and post-test levels of Blood Pressure, Post Menopausal Symptoms and Stress levels among Women with selected demographic variables in experimental group and control group.**

The association between Blood Pressure, Post Menopausal Symptoms and Stress levels Scores among Women with selected demographic variable such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

To determine the significant association between Blood pressure, Post Menopausal Symptoms and Stress levels with selected demographic variables chi-square was computed.

The Chi-square statistic is a non-parametric test and the chi-square test of independence determines whether two variables are independent or associated.

In order to test the significance of the association between Blood Pressure, Post Menopausal Symptoms and Stress level scores with selected demographic variable such as the Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms and to test the significance of the association the following hypothesis was stated.

**H2** There will be a significant association between the post test scores of Post Menopausal Symptoms among Women with selected demographic variables at 0.05 level of significance.

**Table No – 10**

**Association between the Post test levels of Blood Pressure among Women with selected Demographic Variables in experimental group. n = 30**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Demographic Variable** | **Blood Pressure** | | | | **Cal** | **Tab** | **df** | **Inference** |
| **Normal** | **Mild** | **Moderate** | **Severe** |
| 1 | **Age (in years)**  a.46-50  b.51-55  c.56-60 | 4  7  5 | 7  3  0 | 4  0  0 | 0  0  0 | 11.06 | 9.48 | 4 | S\* |
| 2 | **Religion**  a. Hindu  b. Muslims  c. Christian  d. Others | 4  8  4  0 | 3  6  1  0 | 2  2  0  0 | 0  0  0  0 | 2.39 | 9.48 | 4 | NS |
| 3 | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 12  00  03  01  00 | 05  04  01  00  00 | 01  01  02  00  00 | 00  00  00  00  00 | 10.87 | 12.5 | 6 | NS |
| 4 | **Age at Menarche**  a.<11years  b.12years  c.13 years  d.14 and above | 02  07  07  00 | 00  08  02  00 | 01  03  00  00 | 00  00  00  00 | 6.063 | 9.4 | 4 | NS |
| 5 | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 04  12  00 | 00  10  00 | 00  04  00 | 00  00  00 | 4.038 | 5.99 | 2 | NS |
| 6 | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 00  01  01  14 | 00  00  04  06 | 00  03  00  01 | 00  00  00  00 | 20.31 | 9.48 | 4 | S\* |
| 7 | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 05  06  05  00 | 02  08  00  00 | 01  03  00  00 | 00  00  00  00 | 6.907 | 9.48 | 4 | NS |
| 8 | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 02  00  14 | 00  00  10 | 00  00  04 | 00  00  00 | 1.875 | 5.99 | 2 | NS |

**NS – Non Significant S\*Significant at 0.05 level**

The Table No: 10 presents the result of the association between post test levels of Blood pressure and selected demographic variables of Women such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Any allergies, Using any relieving measures for Post Menopausal Symptoms.

The chi- square analysis was carried out to determine the association between Blood Pressure and demographic variables. The association between Blood Pressure and Age in years (**χ2** value = 11.06), Number of Children (**χ2**value = 20.31), was found to be significant at 0.05 level of significance.

It was evident from the results that Women were influenced by Age in years and Number of Children.

However, variables such as Religion (**χ2**value = 2.39), Education (**χ2**value = 10.87), Occupation (X2 value =. 756), Diet (**χ2**value = 0 .930), Age at Menarche (**χ2** value = 6.063), Age at Marriage (**χ2** value = 4.038), Age at Menopause (**χ2** value = 6.907), Using any relieving measures for Post Menopausal Symptoms (**χ2** value = 1.875) were not found to be significant at 0.05 levels of significance.

Hence the H2 was accepted for Demographic variables Age in years and Number of Children and research hypothesis H2 was not accepted for the variable such as Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

**Table No – 11**

**Association between the Post– test levels of Post Menopausal Symptoms among Women with selected Demographic Variables in experimental group. n=30**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Demographic Variable** | **Post Menopausal Symptoms** | | | **Cal** | **Tab** | **df** | **Inference** |
| **Mild** | **Moderate** | **Severe** |
| 1 | **Age (in years)**  a.46-50  b.51-55  c.56-60 | 12  08  02 | 03  02  03 | 00  00  00 | 3.409 | 5.99 | 2 | NS |
| 2 | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 12  05  04  01  00 | 06  00  02  00  00 | 00  00  00  00  00 | 2.727 | 7.81 | 3 | NS |
| 3 | **Occupation**  a. Housewife  b. Employee  c. Daily wages  d. Business | 15  00  03  04 | 04  00  04  00 | 00  00  00  00 | 6.1 | 5.99 | 2 | **S\*** |
| 4 | **Diet**  a. Vegetarian  b. Non Vegetarian | 04  18 | 01  07 | 00  00 | 0.136 | 3.84 | 1 | NS |
| 5 | **Age at Menarche**  a.< 11years  b.12 Years  c.13 Years  d.14 and above | 00  14  08  00 | 03  04  01  00 | 00  00  00  00 | 9.545 | 5.99 | 2 | **S\*** |
| 6 | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 04  18  00 | 00  08  00 | 00  00  00 | 1.678 | 3.84 | 1 | NS |
| 7 | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 00  04  04  14 | 00  00  01  07 | 00  00  00  00 | 2.045 | 5.99 | 2 | NS |
| 8 | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 06  12  04  00 | 02  05  01  00 | 00  00  00  00 | 0.191 | 5.99 | 2 | NS |
| 9 | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 02  00  20 | 00  00  08 | 00  00  00 | 0.779 | 3.84 | 1 | NS |

**NS = Non Significant S\* Significant at 0.05 level**

The Table No: 11 presents the result of the association between Post - test levels of Post Menopausal Symptoms and selected demographic variables of Women such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

The chi- square analysis was carried out to determine the association between Post Menopausal Symptoms and demographic variables. The association between Post Menopausal Symptoms and Occupation (**χ2**value = 6.1), and Age at Menarche (**χ2**value = 9.545), was found to be significant at 0.05 level of significance.

It was evident from the results that Women were influenced by Occupation and Age at Menarche.

However, variables such as Age in years (**χ2**value = 3.409), Religion (**χ2**value =0.568), Education (**χ2** value = 2.727), Diet (**χ2**value =0.136), Age at Marriage (**χ2**value = 1.678), Number of Children (**χ2**value = 2.045), Age at Menopause (**χ2**value =0.191), Using any relieving measures for Post Menopausal Symptoms (**χ2**value =0.779) was not found to be significant at 0.05 levels of significance.

Hence the H2 was accepted for Demographic variables Occupation and Age at Menarche and research hypothesis H2 was not accepted for the variable such as Age in years, Religion, Education, Diet, Age at Marriage, Age at Menopause, Any allergies, and Using any relieving measures for Post Menopausal Symptoms.

**Table No – 12**

**Association between the Post – test levels of Stress levels among Women with selected Demographic Variables in experimental group. n = 30**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Demographic Variable** | **Stress levels** | | | **Cal** | **Tab** | **df** | **Inference** |
| **Mild** | **Moderate** | **Severe** |
| 1 | **Age (in years)**  a.46-50  b.51-55  c.56-60 | 03  04  02 | 12  06  03 | 00  00  00 | 1.429 | 5.99 | 2 | NS |
| 2 | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 06  02  01  00  00 | 12  03  05  01  00 | 00  00  00  00  00 | 1.270 | 7.81 | 3 | NS |
| 3 | **Occupation**  a. Housewife  b. Employee  c. Daily wages  d. Business | 06  00  02  00 | 13  00  05  03 | 00  00  00  00 | 0.077 | 5.99 | 2 | NS |
| 4 | **Diet**  a. Vegetarian  b. Non Vegetarian | 00  09 | 05  16 | 00  00 | 2.571 | 3.84 | 1 | NS |
| 5 | **Age at Menarche**  a.<11years  b.12years  c.13 years  d.14 and above | 00  06  03  00 | 03  12  06  00 | 00  00  00  00 | 1.429 | 5.29 | 2 | NS |
| 6 | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 00  09  00 | 04  17  00 | 00  00  00 | 1.978 | 3.84 | 1 | NS |
| 7 | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 00  02  02  05 | 00  02  03  16 | 00  00  00  00 | 1.383 | 5.99 | 2 | NS |
| 8 | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 03  02  04  00 | 05  15  01  00 | 00  00  00  00 | 8.859 | 5.99 | 2 | **S\*** |
| 9 | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 00  00  09 | 02  00  19 | 00  00  00 | 0.918 | 3.84 | 1 | NS |

**NS = Non Significant S\* Significant at 0.05 level**

The Table No: 12 presents the result of the association between Post - test levels of Stress levels and selected demographic variables of Women such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

The Chi- square analysis was carried out to determine the association between Stress levels and demographic variables. The association between Stress levels and Age at Menopause (**χ2**value = 8.859), was found to be significant at 0.05 level of significance.

It was evident from the results that Women were influenced by Age at Menopause.

However, variables such as Age in years (**χ2**value = 1.429), Religion (**χ2**value = 2.593), Education (**χ2**value = 1.270), Occupation (value =0.077), Diet (**χ2**value = 2.571), Age at Menarche (**χ2**value =1.429), Age at Marriage (**χ2**value =1.978), Number of Children (**χ2**value =1.383), Using any relieving measures for Post Menopausal Symptoms (**χ2**value =.918) were not found to be significant at 0.05 levels of significance.

Hence the H2 was accepted for Demographic variables Age at Menopause and research hypothesis H2 was not accepted for the variable such as Age in years, Religion, Education of Menopausal Women, Diet, Age at Menarche, Age at Marriage, Number of Children, and Using any relieving measures for Post Menopausal Symptoms.

**Table No – 13**

**Association between the Post test levels of Blood Pressure among Women with selected Demographic Variables in control group. n = 30**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Demographic Variable** | **Blood Pressure** | | | | **Cal** | **Tab** | **df** | **Inference** |
| **Normal** | **Mild** | **Moderate** | **Severe** |
| 1 | **Age (in years)**  a.46-50  b. 51-55  c. 56-60 | 2  0  0 | 13  4  5 | 3  3  0 | 0  0  0 | 5.0 | 9.48 | 4 | NS |
| 2 | **Religion**  a. Hindu  b. Muslims  c. Christian  d. Others | 1  1  0  0 | 6  16  0  0 | 1  3  2  0 | 0  0  0  0 | 9.091 | 9.48 | 4 | NS |
| 3 | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 1  0  1  0  0 | 14  3  5  0  0 | 4  2  0  0  0 | 0  0  0  0  0 | 3.703 | 9.48 | 4 | NS |
| 4 | **Age at Menarche**  a. <11years  b.12years  c.13 years  d.14 and above | 0  1  1  0 | 2  17  3  0 | 0  2  4  0 | 0  0  0  0 | 7.591 | 9.48 | 4 | NS |
| 5 | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 0  2  0 | 2  22  0 | 0  6  0 | 0  0  0 | 0.779 | 5.99 | 2 | NS |
| 6 | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 0  0  1  1 | 2  0  15  5 | 1  0  4  1 | 0  0  0  0 | 1.303 | 9.48 | 4 | NS |
| 7 | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 0  2  0  0 | 0  18  4  0 | 0  2  4  0 | 0  0  0  0 | 6.446 | 5.99 | 2 | **S\*** |
| 8 | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 0  0  2 | 0  0  22 | 0  0  6 | 0  0  0 | 1.875 | 5.99 | 2 | NS |

**NS – Non Significant S\*Significant at 0.05 level**

The Table No: 13 presents the result of the association between post test levels of Blood pressure and selected demographic variables of Women such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Any allergies, Using any relieving measures for Post Menopausal Symptoms.

The chi- square analysis was carried out to determine the association between Blood Pressure and demographic variables. The association between Blood Pressure and Age at Menoapuse (**χ2** value = 6.446), was found to be significant at 0.05 level of significance.

It was evident from the results that Women were influenced by Age at Menoapuse.

However, variables such as Age in years (**χ2**value = 5.0), Religion (**χ2**value = 9.09), Education (**χ2**value = 3.703), Occupation (**χ2**value = 1.112), Diet (**χ2**value = 0 .930), Age at Menarche (**χ2** value = 7.591), Age at Marriage (**χ2** value = 0.779), Number of Children (**χ2** value = 1.303), Using any relieving measures for Post Menopausal Symptoms (**χ2** value = 1.875) were not found to be significant at 0.05 levels of significance.

Hence the H2 was accepted for Demographic variables Age at Menoapuse and research hypothesis H2 was not accepted for the variable such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children and Using any relieving measures for Post Menopausal Symptoms.

**Table No – 14**

**Association between the Post– test levels of Post Menopausal Symptoms among Women with selected Demographic Variables in control group. n=30**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Demographic Variable** | **Post Menopausal Symptoms** | | | **Cal** | **Tab** | **Df** | **Inference** |
| **Mild** | **Moderate** | **Severe** |
| 1 | **Age (in years)**  a.46-50  b.51-55  c.56-60 | 0  0  0 | 3  3  0 | 15  4  5 | 3.661 | 5.99 | 2 | NS |
| 2 | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 0  0  0  0  0 | 4  2  0  0  0 | 15  3  6  0  0 | 2.763 | 5.99 | 2 | NS |
| 3 | **Occupation**  a. Housewife  b. Employee  c. Daily wages  d. Business | 0  0  0  0 | 6  0  0  0 | 13  0  7  0 | 4.342 | 5.99 | 2 | NS |
| 4 | **Diet**  a. Vegetarian  b. Non Vegetarian | 0  0 | 0  6 | 0  24 | 0.136 | 3.84 | 1 | NS |
| 5 | **Age at Menarche**  a.< 11years  b.12 Years  c.13 Years  d.14 and above | 0  0  0  0 | 0  5  1  0 | 2  15  7  0 | 1.094 | 5.99 | 2 | NS |
| 6 | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 0  0  0 | 0  6  0 | 2  22  0 | 0.536 | 3.84 | 1 | NS |
| 7 | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 0  0  0  0 | 0  0  4  2 | 3  0  16  5 | 1.071 | 5.99 | 2 | NS |
| 8 | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 0  0  0  0 | 0  5  1  0 | 0  17  07  0 | 0.384 | 3.84 | 1 | NS |
| 9 | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 0  0  0 | 0  0  6 | 0  0  24 | 0.779 | 3.84 | 1 | NS |

**NS = Non Significant S\* Significant at 0.05 level**

The Table No: 14 presents the result of the association between Post - test levels of Post Menopausal Symptoms and selected demographic variables of Women such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

The chi- square analysis was carried out to determine the association between Post Menopausal Symptoms and demographic variables.

However, variables such as Age in years (**χ2**value = 3.61), Religion (**χ2**value = 1.563), Education (**χ2** value = 2.763), Occupation (**χ2**value = 4.342), Diet (**χ2**value =0.136), Age at Menarche (**χ2** value = 1.094), Age at Marriage (**χ2**value = 0.536), Number of Children (**χ2**value = 1.071), Age at Menopause (**χ2**value =0.384), Using any relieving measures for Post Menopausal Symptoms (**χ2**value =0.779) was not found to be significant at 0.05 levels of significance.

Hence the H2 was not accepted for the variable such as Age in years, Religion, Education, Occupation, Diet, Age at Meanrche, Age at Marriage, Age at Menopause, and Using any relieving measures for Post Menopausal Symptoms. H2  was rejected in the control group

**Table No – 15**

**Association between the Post – test levels of Stress levels among Women with selected Demographic Variables in control group. n = 30**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Demographic Variable** | **Stress levels** | | | **Cal** | **Tab** | **df** | **Inference** |
| **Mild** | **Moderate** | **Severe** |
| 1 | **Age (in years)**  a.46-50  b. 51-55  c. 56-60 | 0  0  0 | 7  0  3 | 11  7  2 | 5.350 | 5.99 | 2 | NS |
| 2 | **Education of Menopausal Women**  a. Illiterate  b. Primary  c. Secondary  d. Intermediate  e. Degree and above | 0  0  0  0  0 | 6  2  2  0  0 | 13  3  4  0  0 | 0.126 | 5.99 | 2 | NS |
| 3 | **Occupation**  a. Housewife  b. Employee  c. Daily wages  d. Business | 0  0  0  0 | 7  0  5  3 | 12  0  5  3 | 0.302 | 5.99 | 2 | NS |
| 4 | **Diet**  a. Vegetarian  b. Non Vegetarian | 0  0 | 0  10 | 0  20 | 2.571 | 3.84 | 1 | NS |
| 5 | **Age at Menarche**  a.<11years  b.12years  c.13 years  d.14 and above | 0  0  0  0 | 1  8  1  0 | 1  12  7  0 | 2.213 | 5.99 | 2 | NS |
| 6 | **Age at Marriage**  a.<15 years  b.16-25 years  c.26-35 years | 0  0  0 | 1  9  0 | 1  19  0 | 0.268 | 3.84 | 1 | NS |
| 7 | **Number of Children**  a. No Children  b. One  c. Two  d. Three and above | 0  0  0  0 | 1  0  7  2 | 2  0  13  5 | 0.96 | 5.99 | 2 | NS |
| 8 | **Age at Menopause**  a.41-45 years  b.46-50 years  c.51-55 years  d.56-60 years | 0  0  0  0 | 0  9  1  0 | 0  13  7  0 | 2.131 | 3.84 | 1 | NS |
| 9 | **Using any Relieving Measures for Post Menopausal Symptoms**  a. Natural therapy  b. Hormonal therapy  c. None | 0  0  0 | 0  0  10 | 0  0  20 | 0.918 | 3.84 | 1 | NS |

**NS = Non Significant S\* Significant at 0.05 level**

The Table No: 15 presents the result of the association between Post - test levels of Stress and selected demographic variables of Women such as Age in years, Religion, Education, Occupation, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopause, Using any relieving measures for Post Menopausal Symptoms.

The Chi- square analysis was carried out to determine the association between Stress levels and demographic variables.

However, variables such as Age in years (**χ2**value = 5.350), Religion (**χ2**value = 0.413), Education (**χ2**value = 0.126), Occupation (value =0.302), Diet (**χ2** value = 2.571), Age at Menarche (**χ2**value =2.213), Age at Marriage (**χ2** value =0.268), Number of Children (**χ2**value =0.96),Age at Menopause(**χ2**value =2.131), and Using any relieving measures for Post Menopausal Symptoms (**χ2**value =0.918) were not found to be significant at 0.05 levels of significance.

Hence the H2 was not accepted for the variable such as Age in years, Religion, Education of Menopausal Women, Diet, Age at Menarche, Age at Marriage, Number of Children, Age at Menopauseand Using any relieving measures for Post Menopausal Symptoms. H2 was rejected for the control group

**4.4 Epilogue**

The chapter has dealt with the results and interpretation of data using the descriptive and inferential statistics. The sample characteristics were analyzed by using the frequency and percentage.

The Paired "t" was calculated between pre - test and post test Blood Pressure, Post Menopausal Symptoms and Stress levels the scores in both the Experimental and Control group. The calculated value of "t" test is higher than the tabulated value so the research hypothesis is accepted, that is there is a highly significant difference in pretest and posttest Blood Pressure, Post Menopausal Symptoms and Stress levels scores in experimental and control group regarding the Management of Post Menopausal Symptoms with Inhalation of Citrus Oil.

Chi - square test was computed to find the association between Blood Pressure, Post Menopausal Symptoms and Stress levels and the selected demographic variables in experimental and control group and it has shown that there is significant association between the Blood pressure scores and demographic variables like Age in years, Number of Children, Post Menopausal Symptoms and demographic variables like Occupation, Age at Menarche and Stress levels and demographic variables like Age at Menopause were found to be significant.Whereas in control group thre is significant association between the Blood pressure and Age at Menaopuse.

The next chapter deals with Summary, Discussion, Implications, Limitations, Recommendations and Conclusion.

**CHAPTER – V**

**SUMMARY, DISCUSSION, IMPLICATION, LIMITATIONS,**

**RECOMMENDATIONS, CONCLUSION**

**5.1 Summary of the Study**

A True Experimental Pretest Posttest only design was adopted to evaluate the Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women at selected Urban Communities in Hyderabad, Telangana.” Sample was selected by simple random sampling technique. Data collected from 60 Women in Selected Urban Communities from Sanathnagar, by using Sphynomanometer for blood pressure, Rating scale on Post Menopausal Symptoms and Visual analogue scale for stress.

**5.1.1 Objectives of the study**

* To assess the level of Post Menopausal Symptoms among women in terms of pretest and post test scores in both experimental and control groups.
* To evaluate the effectiveness of Citrus Oil in terms of decrease in Post Menopausal Symptoms among women in the experimental group than the placebo in control group
* To find the association between post test scores of Post Menopausal Symptoms among Women with selected demographic variables in the experimental and control groups.

**5.1.2 Hypotheses**

* **H1** There will be a significant decrease of Post Menopausal Symptoms in the post test scores of women inexperimental group than the control group after the administration of Citrus Oil and placebo respectively at 0.05 level of significance.
* **H2** There will be a significant association between post test scores of Post Menopausal Symptoms among Women with selected demographic variables at 0.05 level of significance.

The conceptual framework of the study was based on Modified Imogene King’s Goal Attainment model and it provided a comprehensive framework for the achievement of the objectives of the study. The quantitative research approach was adopted to evaluate the “Effectiveness of Citrus Oil of Management of Post Menopausal Symptoms among Women in selected Urban Communities in Hyderabad, Telangana.”

The study was conducted at Premnagar and Old sultan Nagar, in Sanathnagar Community, Hyderabad. The investigator got the permission from the concerned Community Officer. True experimental pretest posttest only design was adopted to evaluate the “Effectiveness of Citrus Oil of Management of Post Menopausal Symptoms among Women. A tool consists of Blood Pressure levels, Likert Five point rating scale foe Post Menopausal Symptoms and Visual analogue scale for stress levels on Menopause.

The tool consisted of Blood pressure by using Sphygmomanometer, 30 questions to assess the Post Menopausal Symptoms and Visual analogue scale for stress levels of Women.

The content validity of the tool was obtained from experts' suggestions and the reliability was obtained byTest – Retest method using the Karl Pearson’s formula. The ‘are’ value obtained from Blood Pressure is 0.9, Rating Scale on Post Menopausal Symptoms the ‘are’ value obtained is 0.9, and VAS (Visual Analogue Scale) Stress the ‘are’ value obtained is 0.8. This indicates that the tool is highly reliable. Feasibility of the study was confirmed by the pilot study, which was conducted between 24th March 2018 to 12th April 2018 at Banjaranagar, Sanathnagar, Hyderabad.

The data obtained was analyzed and interpreted in terms of the objectives of the study. Descriptive and Inferential statistics were used for data analysis and the level of significance was set at 0.05 levels.

**5.2 Major findings of the Study**

**5.2.1 Section – 1: Findings related to Demographic Variables**

* Majority 50 percent Women were in the Age group of 46- 50 years
* The majority of the Women 53.3 percent was Muslim religion
* The maximum number of Women 60 percent was Illiterates
* 63.3 percent Women's were House wife’s
* The maximum number of Women 83.3 percent were Non vegetarians
* Majority 60 percent of the Women’s were attained Menarche at the Age of 12 years.
* Majority 86.7 percent Women got Marriage at the Age of 16-25 years.
* Majority 70 percent of the Women have Three and above Children
* The maximum number of 56.7 percent Women attained the Menopause at the Age of 46-50 years
* 93.7 percent Women are not Using any Relieving Measures for Post Menopausal Symptoms.

**5.2.2 Section II:Findings related to analysis of pre test and post test Blood Pressure, Post Menopausal Symptoms and Stress levels scores among Women in both experimental and control groups.**

* The pre-test Blood pressure level in the experimental group that is 53.3 percent women had Moderate Blood pressure levels, 30 percent of them had mild Blood pressure, 10 percent of them had severe blood pressure and remaining 6.7 percent of them had Normal blood pressure levels. Whereas in the control group that is 63.3 percent women had Mild Blood pressure levels, whereas 33 percent had moderate Blood pressure and remaining 3.3 percent had severe blood pressure levels.
* The post-test Blood pressure level in the experimental group that is 53.3 percent women had Normal Blood pressure levels, whereas 33.3 percent had mild Blood pressure levels and remaining 13.3 percent of them had Moderate Blood pressure levels. Whereas in the control group that is 73.3 percent women had Mild Blood pressure levels, whereas 20 percent had Moderate Blood pressure and remaining 6.7 percent of them Normal blood pressure levels.
* The pre-test Post Menopausal Symptoms in experimental and control group that is 100 percent had severe Post Menopausal Symptoms.
* The post-test scores of Post Menopausal Symptoms in the experimental group that is 73.3 percent of women had Mild symptoms and remaining 26.7 percent of them had moderate symptoms. Whereas in a control group that is 80 percent women had severe symptoms and remaining 20 percent had moderate symptoms.
* The pre-test Stress level in the experimental group that is 93.3 percent of women had Severe Stress levels and only 6.7 percent of them had moderate Stress levels. Whereas in control group that is 100 percent women had Severe Stress levels.
* The post-test Stress level in the experimental group that is 70 percent of women had Moderate Stress levels and remaining 30 percent had mild Stress, levels. Whereas in a control group that is 66.7 percent women had Severe Stress levels and remaining 33.3 percent of them had moderate Stress, levels.

**5.2.3 Section IIIMean, standard deviation and ‘t’ test Blood pressure, Post Menopausal Symptoms and Stress levels among Women in both experimental and control groups.**

* The mean post test score of Blood Pressure was 134.67 with an SD of 13.83 in the experimental group. It can be interpreted that decrease in the post test Blood Pressure than the pretest Blood Pressure. Where as in the control group the mean post test score of Blood Pressure was 146.3 with SD of 8.89 and it was slightly decreased
* The calculated value of ‘t’was 23.33 which was greater than the tabulated value of t 3.66 with 29 degrees of freedom was found to be 0.001 level of significance. Whereas in the control group there showed a slight decrease in Blood Pressure and paired “t” test value 5.13 at 29 degrees of freedom was found to be significant at 0.05 levels of significance. Hence, it is inferred that there is a slight decrease in Blood Pressure among control group due to extraneous variables and Placebo (Almond Oil) was given.
* The mean post test score of Post Menopausal Symptoms was 47.0 with SD of 47.64 in the experimental group. It can be interpreted that decrease in the post test Post Menopausal Symptoms than the pretest Post Menopausal Symptoms. Where as in control group the mean post test score of Post Menopausal Symptoms was 115.9 with SD of 10.04.
* The calculated value of ‘t’was 39.146 which was greater than the tabulated value of ‘t’ 3.66 with 29 degrees of freedom was found to be significant at 0.001 level of significance. Whereas in the control group there showed a slight decrease in Post Menopausal Symptoms and paired “t” test value 2.169 at 29 degrees of freedom was found to be significant at 0.05 levels of significance. Hence, it is inferred that there is a slight decrease in Post Menopausal Symptoms among control group due to extraneous variables and Placebo (Almond Oil) was given.
* The mean post test score of Stress levels was 4.70 with SD of 1.343 in the experimental group. It can be interpreted that the decrease in the post test Stress levels than the pretest Stress levels where as in the control group the mean post test scores was 6.93 with SD 1.202.
* The calculated value of ‘t’was 9.029 which was greater than the tabulated value of ‘t’ test 3.66 with 29 degrees of freedom was found to be significant at 0.001 level of significance. The result indicates that the Inhalation of Citrus Oil was effective in terms of reducing the Stress levels among Women. Whereas in the control group there showed a slight decrease in Stress levels and paired “t” test value 7.490 at 29 degrees of freedom was found to be significant at 0.05 levels of significance. Hence, it is inferred that there is a slight decrease in Stress levels among control group due to extraneous variables and Placebo (Almond Oil) was given.
* The ‘t’ test values obtained on calculating the post test scores of experimental and control group with regard to Blood pressure levels, Post Menopausal Symptoms and Stress which were 5.763, 29.912 and 11.943 respectively. It revealed that the calucalted ‘t’ values for all the three components were higher than the tabluted value ‘t’ values at 59 degrees of freedom as well as found to be statistically highly significant at 0.001 level.

**5.2.4 Section IV Findings related to the Association between pretest and post-test levels of Blood Pressure, Post Menopausal Symptoms and Stress levels among Women with selected demographic variables in the experimental group and the control group.**

* The chi- square analysis was carried out to determine the association between Blood Pressure and demographic variables in experimental group. The association between Blood Pressure and Age in years (**χ2** value = 11.06), Number of Children (**χ2**value = 20.31), was found to be significant at 0.05 level of significance. It was evident from the results that Women were influenced by Age in years and Number of Children. However, others were not found to be significant at 0.05 levels of significance.
* Like wise, chi square analysis was carried out to determine the association between Blood Pressure and demographic variables in control group where a significant association was found between Blood Pressure and Age at Menopause at 0.05 level of significance, whose chi square value 6.99 was greater than the table value at 4 degrees of freedom.
* The association between Post Menopausal Symptoms and Occupation (**χ2**value = 6.1), and Age at Menarche (**χ2**value = 9.545), was found to be significant at 0.05 level of significance in experimental group. It was evident from the results that Women were influenced by Occupation and Age at Menarche. However, other variables were not found to be significant at 0.05 levels of significance in experimental group. However, in control group, the demographic variables showed no association with the Post Menopausal Symptoms at 0.05 level of significance.
* The association between Stress levels and Age at Menopause (**χ2**value = 8.859), was found to be significant at 0.05 level of significance in experimental group. It was evident from the results that Women were influenced by Age at Menopause. However, other variables were not found to be significant at 0.05 levels of significance in control group. By contrast, in control group, there was no association between the Post Menopausal Symptoms and the demographic variables at 0.05 level of significance.

**5.3 Discussion**

This section discusses the findings of the study derived from statistical analysis. This study was to evaluate the “Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women at selected Urban Communities, Hyderabad, Telangana.” The discussion was based on the objective s and hypotheses specified in the study.

**To assess the level of Post Menopausal Symptoms among Women in terms of pretest and post test scores in both experimental and control groups.**

* The present study revealed that before the administration of Citrus Oil, majority ofWomen Blood pressure levels in the experimental group that is 53.3 percent women had Moderate Blood pressure levels, whereas in a control group that is 63.3 percent women had Mild Blood pressure levels.
* After administration of Citrus Oil Blood pressure level in the experimental group that is 53.3 percent women had Normal Blood pressure levels. Whereas in control group that is 73.3 percent women had Mild Blood pressure levels.
* The pre test Post Menopausal Symptoms level in experimental and control group that is 100 percent had severe Post Menopausal Symptoms.
* The post test Post Menopausal Symptoms level in the experimental group that is 73.3 percent women had Mild symptoms. Whereas in control group that is 80 percent women had severe symptoms.
* The pre-test Stress level in the experimental group that is 93.3 percent women had Severe Stress levels, whereas in a control group that is 100 percent women had Severe Stress levels.
* The post-test Stress level in the experimental group that is 70 percent of women had Moderate Stress levels, whereas in a control group that is 66.7 percent of women had Severe Stress levels.

A cross sectional study was conducted by **Jayabharathi B, A. Judie [2015]** on severity of Post Menopausal Symptoms and its relationship with quality of life in postmenopausal women, at Tamil Nadu, India. The result shows that 72% of them had hot flushes, 71.5% of them had night sweats, and 63% of them had a lack of energy. These are the most prevalent symptoms experienced by post-menopausal women. In that majority of the women 56 [44%] had very poor quality of lifse and 59 [44%] were dissatisfied about their health status63.

**To evaluate the effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women in the experimental group than the Placebo in the control group**

* The mean post - test score of Blood Pressure was 134.67with SD of 13.83 significantly higher than the pre - test mean score. The calculated value of ‘t’was 8.35 which was greater than the tabulated value of 3.66 which indicates there was a decrease in the post test Blood pressure levels and was found to be significant at 0.001 level.
* The mean post - test score of Post Menopausal Symptoms was 47.0 with SD of 7.64 significantly higher than the pre - test mean score. The statistical paired ‘t’was 39.146 which was greater than the tabulated value of ‘t’ 3.66 which indicates there was a decrease in the post test Post Menopausal Symptoms and was found to be significant at 0.001 level.
* The mean post - test score of Stress levels was 47.0 with SD of 1.343significantly higher than the pre - test mean score. The calculated value of ‘t’was 9.029 which was greater than the tabulated value of 3.66 which indicates there was a decrease in the post - test Stress levels and was found to be significant at 0.001 level.
* The t – test values obtained on calculating the post test scores of experimental and control group with regard to Blood pressure levels, Post Menopausal Symptoms and Stress which were 5.763, 29.912 and 11.943 respectively. It revealed that the calucalted ‘t’ values for all the three components were higher than the tabluted value ‘t’ values at 59 degrees of freedom as well as found to be statistically highly significant at 0.001 level.

A Randomized control trail study was conducted by **Soe Yean et.al [2014]** on the effects of inhalation of the essential oil of Citrus aurantium L. var Amara (Neroli oil) on Post Menopausal Symptoms and estrogen in postmenopausal women. They have selected 63 healthy postmenopausal women were randomized to inhale 0.1% or 0.5% Neroli Oil or almond oil (control) for 5 minutes twice daily for 5 days. Menopause-Specific Quality of Life Questionnaire (MENQOL); sexual desire visual analog scale (VAS) were used to measure serum cortisol and estrogen concentrations, blood pressure, pulse, and stress VAS before and after inhalation. They compared with the control group, the two Neroli oil groups showed significant improvements in the physical domain score of the MENQOL and in sexual desire. Systolic blood pressure was significantly lower in the group inhaling 0.5% Neroli oil than in the control group. Compared with the control group, the two Neroli oil groups showed significantly lower diastolic blood pressure and tended to improve pulse rate and serum cortisol and estrogen concentrations. The study concluded that inhalation of citrus oil helps relieve Post Menopausal Symptoms, increase sexual desire, and reduce blood pressure in postmenopausal women64.

**To find the association between post test scores of Post Menopausal Symptoms among Women with selected demographic variables in the experimental group and control groups**

There was statistically significant association between the Blood Pressure scores with Demographic variables, i.e. Age in years (**χ2**value = 11.06), Number of Children (**χ2**value = 20.31), was found to be significant at 0.05 level of significance in experimental group. It was evident from the results that Women were influenced by Age in years and Number of Children in the post test scores. Hence H2 was accepted for variations such as Age in years and number of Children and other variables are rejected.

The association between Post Menopausal Symptoms and Occupation (**χ2**value = 6.1), and Age at Menarche (**χ2**value = 9.545), was found to be significant at 0.05 level of significance in the experimental group. It was evident from the results that Women were influenced by Occupation and Age at Menarche in the post test scores. Hence H2 was accepted for variations such as Occupation and Age at Menarche and other variables are rejected.

The association between Stress levels and Age at Menopause (**χ2**value = 8.859), was found to be significant at 0.05 level of significance in the experimental group. It was evident from the results that Women were influenced by Age at Menopause in the post test. Hence H2 was accepted as Age at Menopause and other variables are rejected.

Similarly, Chi- square analysis was carried out to determine the association between Blood Pressure levels and demographic variables. On analysis, association was found for the variable age at menopause with the Blood Pressure level at 0.05 level of significance. Likewise, Chi –square vlures were obtained for Post Menopausal Symptoms as well as Stress levels with the demographic variables in the control group to find the association. However, no association was found between them at 0.05 level of significance. Hence H2 was rejected for the control group.

A community based study conducted by **Delavar M A and Hajiahmadi M, [2011],** on factors affecting the age in normal menopause and frequency of Post Menopausal Symptoms in Northern Iran. The result shows that in urban areas, the median age at menopause was 48 years. The five most prevalent symptoms were irritabilities (72.1%), joint pains (70.6%), backache (61.2%), hot flushes (49.3%) and headache (49.2%) during the previous two weeks. More than 60% of women experienced hot flushes. Low educational level (OR=0.70; 95% CI= 0.54, 0.90), early age at menarche (OR=0.76; 95% CI=0.59, 0.99) and oral contraceptive use (OR=0.76; 95% CI=0.54, 0.97) were significantly associated with hot flushes65.

**5.4 Implications of the study**

The implications were given on various aspects like Nursing education, Nursing practice, Nursing administration and Nursing research.

**5.4.1 Nursing Education**

* Nurse educators play a significant role in the transmission of knowledge and information within health care regarding the Management of Acknowledgement on this aspect will protect the women in terms of improving the quality of life.
* Nursing Curriculum should emphasis more about management of Post Menopausal Symptoms and coping strategies to maintain Quality of Life.
* The student nurses and all health professionals should possess adequate information about Management of Post Menopausal Symptoms and the use of alternative and complementary therapies involve transforming the information at each setting.
* Nurse educators can work with the interdisciplinary team of the health care setting to improve the quality of life.
* Nurse educators can encourage the students to conduct the health education programmes and participates in research studies regarding the management the Women problems.

**5.4.2 Nursing Practice**

* Nurses address the physical, psychosocial, cultural and family concerns as well as promoting health and the encompassing the successful aging.
* Health care professionals ought to adopt a holistic model and carefully take into consideration each individual Woman’s conceptions about, attitudes towards the Menopausal transition.
* Nurses can focus on early case findings and treatment of crisis intervention, management of Pre-Post Menopausal Symptoms and involve the family members.
* The organization should provide the libraries, current research journals, and the internet for use in clinical practice. Devote the 15min a day to reading evidence related to clinical problems.
* Arrange continuing nursing education classless on current issues of Midlife women and best evidence to promote the health of the women and quality of life.
* Nurses should be involved actively to encourage a women’s to practice new interventions in treating Post Menopausal Symptoms at home levels like administration of Citrus Oil.

**5.4.3 Nursing Administration**

* Nurse as an administrator can plan and organize the educational programmes on Women’s health problems and its prevention or reduction
* Administrator of health agencies should supervise and guide the health workers to work effectively and efficiently for the prevention and reduction health problems and improve the quality of life.
* The administrators should plan and provide information for women’s through new interventions for enhancing the effective use of Citrus oil at home level.
* Nursing administrator should motivate women’s to use various alternative methods in order to reduce Post Menopausal Symptoms and see whether they are following new skills at home level.
* Nurse administrators can organize in-service education programmes, outreach programmes to abreast the knowledge on women health problems or promotion and improves the quality of life.
* The knowledge of women can be improved by conducting the training programmes related to physiological and psychological changes of women and its management.

**5.4.4. Nursing Research**

* The present study findings serve as a basis for the professionals and studies on various alternative methods to act immediately on Post Menopausal Symptoms
* The research will provide nurses the credibility to influence decision making to meet the needs of the Women. More research has to be undertaken to improve the knowledge regarding physiological changes occur in women as age increases.
* Nursing research is the means to develop advanced education and interventions, thereby contributing to the development of nursing profession**.**
* The generalization of the study results can be made by replication of various studies related to the effectiveness of Inhalation of citrus oil.

**5.5 Limitations of the study**

**The study was limited to:**

* Study results were confined only to selected communities in Hyderabad which is possibly will decrease credibility of the study.
* The number of subjects who participated in the study were small, which limits generalizability.
* Only those who attained Menopause Women were taken into the study
* The study was limited to use one alternative method, i.e., administration of Citrus oil to reduce the Post Menopausal Symptoms in experimental group.

**5.6 Recommendations**

On the basis of the study that had been conducted, certain suggestions are given for further studies.

* A similar study can be done on large population, with the intention that generalization might be possible for a larger population.
* A similar study can be conducted in other parts of India to validate and generalize the findings.
* A comparative study can be conducted between two alternative methods in reducing Post Menopausal Symptoms
* Other alternative methods like natural therapy and Yoga can be used; other assessment tools can be used to assess Post Menopausal Symptoms among women with Menopause
* Phenomological study can be conducted to know the living experiences of Women with Post Menopausal Symptoms towards Management

**5.6 Conclusion**

On the basis of the study, the researcher concluded that there was a need to manage the Post Menopausal Symptoms among women with alternative medicine rather than pharmacological methods. The Women need to be aware of the alternative method of treating Post Menopausal Symptoms by using Citrus Oil. As it is easily available and affordable by all to relieve Post Menopausal Symptoms without any side effects. The results showed that there is a significant improvement in the reduction of Post Menopausal Symptoms among women with Menopause by using Citrus Oil. Emphasis should be placed on practical education of women to raise their knowledge on Post Menopausal Symptoms and ways of increasing their understanding of midlife experiences.

Women constitute a priority group; they are the major consumers of health services and also special risk group. Menopause, as a part of a woman’s aging process, but it is more important to provide extra care to the women to reduce the risk of life. The citrus oil aims to relieve the Post Menopausal Symptoms by natural method and improves the quality of life. This enhances the women to develop a positive, healthy practice towards the usage of citrus oil and to maintain the quality of life

**5.8 Epilogue**

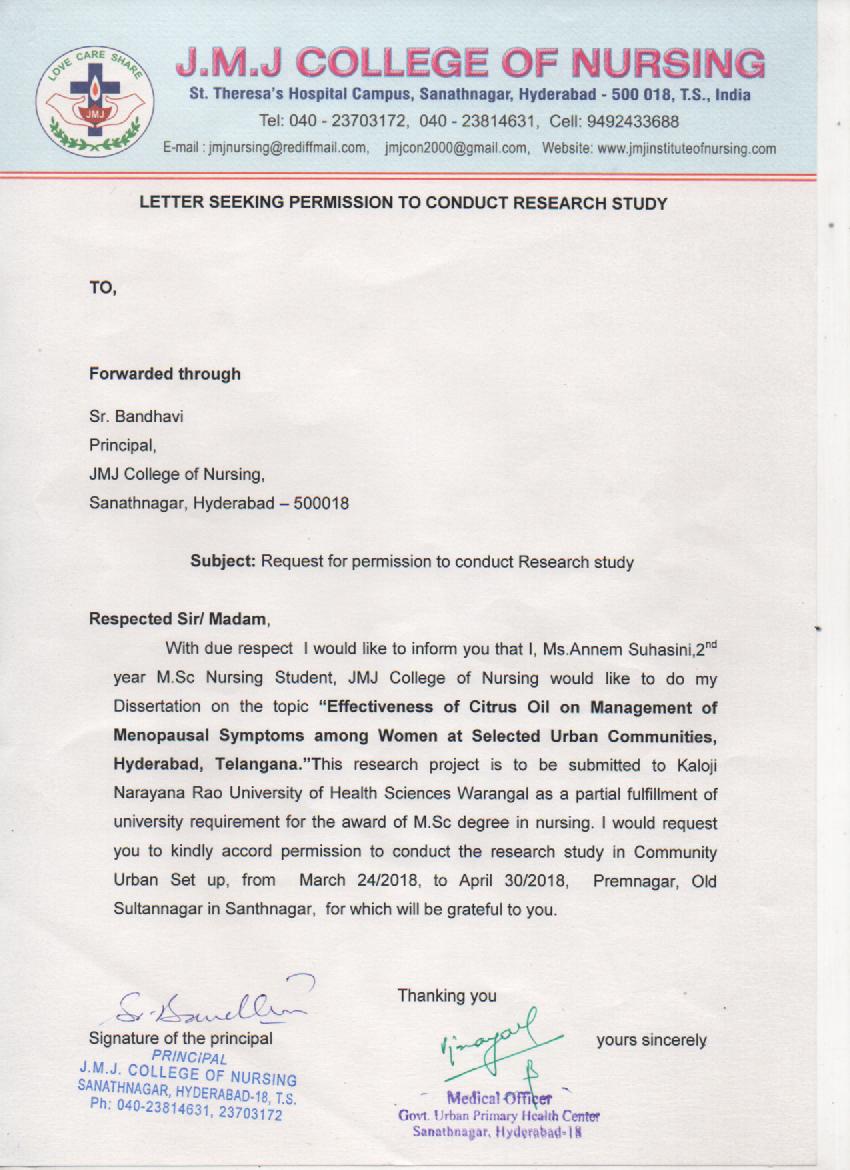
This chapter dealt with a summary of the findings, Discussion, Nursing implications, Limitations, Recommendations and Conclusion.

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**APPENDIX – A**

**APPENDIX – B**

**LETTER SEEKING THE OPINION OF EXPERTS ON CONTENT VALIDITY OF THE TOOL**

From,

Ms. Annem Suhasini,

2nd yr. M.S c Nursing Student,

Sanathnagar, Hyderabad -18

To,

**(Through the Principal, JMJ College of Nursing)**

**Subject:**Requesting the opinion and suggestions of experts for establishing content validity of the tool.

**Respected Sir/Madam,**

I, Annem. Suhasini, 2nd year M.Sc. Nursing Student, JMJ College of Nursing, sanathnagar, Hyderabad-18 humbly request you to go through the tool which is to be used for data collection of **“Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women at selected Urban Communities in Hyderabad, Telangana.”**

With regard to this, I request you to kindly validate my tool and content for its accuracy, appropriateness and relevance. I also request you to kindly sign the certificate for validation of the tool. Your kind cooperation and your expert judgment will be very much appreciated.

Thanking You,

Date: Yours sincerely,

Place: Sanathnagar Annem. Suhasini

**APPENDIX – C**

**CERTIFICATE OF VALIDATION BY EXPERTS**

This is to certify that the tool and the content developed by Ms. Annem Suhasini, 2nd Year M.Sc Nursing student of JMJ College of Nursing, Hyderabad – 18 (Affiliated to Kaloji Narayana Rao, University of Health Sciences) is validated by undersigned and can proceed with necessary modifications to conduct the main study for a dissertation entitled “Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women at selected Urban Communities in Hyderabad, Telangana.”

Signature of Experts

Designation:

Department:

**APPENDIX – D**

**LETTER TO THE PARTICIPANTS REQUESTING TO GIVE CONSENT TO PARTICIPATE IN THE STUDY**

**From,**

Ms. Annem. Suhasini

II Year M.Sc. Nursing

JMJ COLLEGE of Nursing

Santhanagar, Hyderabad-18

To,

Dear Participants

**I Ms. Annem Suhasini,** II Year M.Sc NursingStudent, JMJ College of Nursing, Santhnagar, Hyderabad – 18,conducting research project**“Effectiveness of Citrus Oil on Management of Post Menopausal Symptoms among Women at selected Urban Communities in Hyderabad, Telangana.”**

With regard to this request you kindly participate in the study. The information obtained will be confidential and anonymity will be maintained throughout and after the study.

Thanking You

Date: Yours faithfully

Place: Sanathnagar Annem. Suhasini

**APPENDIX – E**

**CONSENT FROM THE PARTICIPANTS**

Sample No:

I understand the purpose of this study and I am willing to participate in this study.

Signature of Participant

**APPENDIX – F**

**LIST OF EXPERTS FOR CONTENT VALIDITY**

1 Sr. Bandhavi, M. Sc. Nursing 5. Mrs. Siro Rani

Principal Assistant Professor,

J.M.J. College of Nursing OBG, Nursing

Santhnagar, Hyderabad Yashodha College of Nursing

Telangana – 500018 Hyderabad

2. Dr. V. Lakshmi, B.N.Y.S 6. Mrs.Archana Morey

Naturopathy Consultant Associate Professor

Mehdhipatnam OBG, Nursing

Hyderabad Apollo College of Nursing

Jubilee Hills, Hyderabad

3. Dr. Sneha, B.N.Y.S 7. Mrs. A. Jabila

Naturopathy Consultant Associate Professor

Dilshuknagar OBG, Nursing

Hyderabad Apollo College of Nursing

Jubilee Hills, Hyderabad

4. Dr. Murthy 8. Dr. Apar Saroji, B.N.Y.S

Dept of Gynecologist Naturopathy Consultant

St. Theresa Hospital, Hyderabad. Bangalore

9. Mrs. Jayalakshmi 12. Mrs. Evangeline

Vice principal Assistant Professor

Dept of OBG OBG, Nursing

Yasodha College of Nursing EBM, CON, Hyderabad

Saroor Nagar, Hyderabad

10. Mrs. Epseba 13. Dr. E. Krishna

Assistant Professor Statistician

OBG Nursing, Dept of Statistics

Vijay Marie College of Nursing, Hyderabad Osmania University

11. Mrs. Shanaz

Vice principal

Dept of OBG

Owaisi College of Nursing

Hyderabad

**APPENDIX – G**

**DESCRIPTION OF THE TOOL**

**Data Collection tool on Post Menopausal Symptoms among Women**

The tool consists of 4 sections

**Section A:** Demographic profile of Menopausal women

**Section B:** Measurement of Blood pressure amongPost Menopausal Women

**Section C:**Rating Scale (Five point Likert’s rating scale on Post Menopausal Symptoms)

**Section D:** Stress scale -VAS

**GENERAL INSTRUCTIONS**

* You are requested to provide some information about yourself and symptoms of Menopause
* Please be free and frank in answering the questions
* Provide appropriate answers for each question
* Your response will be used for the research purpose and will be confidential

**NOTE:** Give only one answer for each question

**SECTION - A**

**Demographic Data of Menopausal women**

Sample code:

1. **Age (in years) ( )**
2. 46-50
3. 51-55
4. 56-60

**2. Religion ( )**

1. Hindu
2. Muslim
3. Christian
4. Others

**3. Education of Menopausal Women ( )**

1. Illiterate
2. Primary
3. Secondary
4. Intermediate
5. Degree and above

**4. Occupation ( )**

1. Housewife
2. Employee
3. Daily wages
4. Business

**5. Diet ( )**

1. Vegetarian
2. Non-vegetarian

**6. Age at Menarche ( )**

1. <11 years
2. 12 years
3. 13 years
4. 14 and years

**7. Age at Marriage ( )**

1. <15 years
2. 16-25 years
3. 26-35 years

**8. Number of Children’s ( )**

1. No children
2. One
3. Two
4. Three and above

**9. Age at Menopause ( )**

1. 41- 45 years
2. 45 – 50 years
3. 51 – 55 years
4. 56 – 60 years

**10. Using any Relieving Measures for Post Menopausal Symptoms ( )**

1. Natural Therapy
2. Hormonal Therapy
3. None

**SECTION - B**

Measurement of Blood pressure among Post Menopausal Women, by using Sphygmomanometer.

|  |  |  |  |
| --- | --- | --- | --- |
| **S.no** | **Subject Code** | **Blood pressure** | |
| **Systolic** | **Diastolic** |
| **1** |  |  | |
| **2** |  |  | |
| **3** |  |  | |
| **4** |  |  | |
| **5** |  |  | |
| **6** |  |  | |

The level of Blood Pressure categorized according to the WHO Classification

* Normal - 120-130 mm of Hg
* Mild - 140-150 mm of Hg
* Moderate - 151 – 170 mm of Hg
* Severe - >180 mm of Hg

**SECTION – C**

**Likert’s Five points Rating scale on Post Menopausal Symptoms**

**GENERAL INSTRUCTIONS:**

* Listen each statement carefully and respond which you feel is the best
* Please give the most appropriate answer to your against the column that describe your opinion
* The information received will be kept confidential and used only for research purpose.

**KEY:**

* **NA** - Not at All
* **LB**  – Little Bit
* **LM**  – Little More
* **EM** – Even More
* **W** - Worst

The level of Post Menopausal Symptoms Categorized into

|  |  |
| --- | --- |
| **SCORES** | **PERCENATGE** |
| Mild (0-50) | * (0-33.3%) |
| Moderate (51 - 100) | * (>33.3% - 66.6%) |
| Severe (101 - 150) | * ( >66.6%- 100%) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No** | **Content** | **Not at all**  **( 1 )** | **Little bit**  **( 2)** | **Little more**  **( 3 )** | **Even more**  **( 4)** | **Worst**  **( 5)** |
|  | **VASOMOTOR SYMPTOMS** |  |  |  |  |  |
| 1 | Do you feel hot flashes |  |  |  |  |  |
| 2 | Do you have night sweats |  |  |  |  |  |
| 3 | Do you have the sensation of pins and needles in the extremities |  |  |  |  |  |
| 4 | Do you have any heart palpitations |  |  |  |  |  |
|  | **PHYSICAL SYMPTOMS** |  |  |  |  |  |
| 5 | Do you have a headache |  |  |  |  |  |
| 6 | Do you have crying spells |  |  |  |  |  |
| 7 | Do you have breast tenderness |  |  |  |  |  |
| 8 | Did you gain weight? |  |  |  |  |  |
| 9 | Do you feel skin itching or crawling? |  |  |  |  |  |
| 10 | Do you have irritable than usual |  |  |  |  |  |
| 11 | Do you feel stomach bloated? |  |  |  |  |  |
| 12 | Do you have an uncontrollable loss of stool or gas |  |  |  |  |  |
| 13 | Do you need to urinate more often than usual? |  |  |  |  |  |
| 14 | Do you feel leaking of urine? |  |  |  |  |  |
| 15 | Do you have pain or burning sensation when urinating |  |  |  |  |  |
| 16 | Do you have vaginal dryness and itching |  |  |  |  |  |
| 17 | Do you have abnormal vaginal discharge? |  |  |  |  |  |
| 18 | Do you have joint pains |  |  |  |  |  |
|  | **PSYCHOLOGICAL SYMPTOMS** |  |  |  |  |  |
| 19 | Do you feel difficult to get to sleep? |  |  |  |  |  |
| 20 | Do you have Poor Memory level |  |  |  |  |  |
| 21 | Do you feel tired |  |  |  |  |  |
| 22 | Do you have difficulty in concentrating |  |  |  |  |  |
| 23 | Do you feel more anxious |  |  |  |  |  |
| 24 | Do you have depressed Moods |  |  |  |  |  |
| 25 | Do you have any Mood swings? |  |  |  |  |  |
|  | **SEXUAL SYMPTOMS** |  |  |  |  |  |
| 26 | Do you have any pain during intercourse |  |  |  |  |  |
| 27 | Do you have bleeding after intercourse |  |  |  |  |  |
| 28 | Do you have a lack of desire or interest in sexual activity |  |  |  |  |  |
| 29 | Do you have difficulty in achieving orgasm |  |  |  |  |  |
| 30 | Do you limit sexual activity |  |  |  |  |  |

**SECTION – D**

**STRESS SCALE –VAS (Visual Analogue Scale)**

AGONIZING

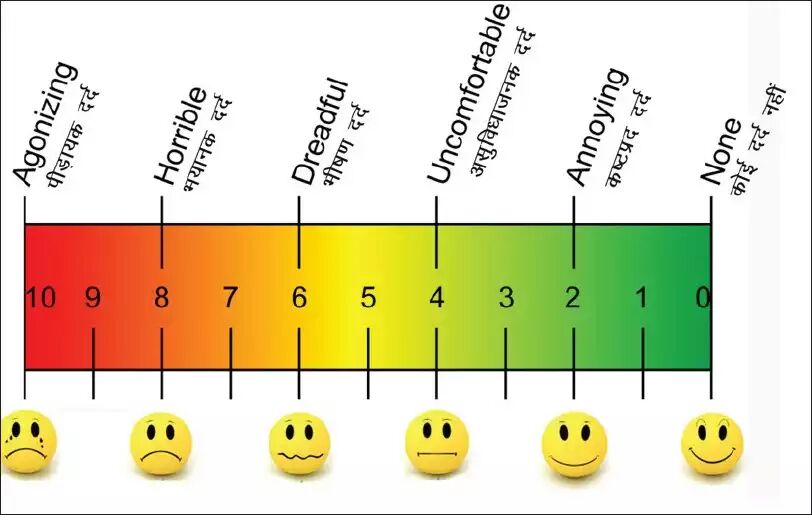
HORRIBLE

NONE

ANNOYING

UNCOMFORTABLE

DREADFUL



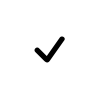
The Stress levels categorized into

* Mild - 1-3
* Moderate - 4 - 6
* Severe - 7 - 10

**APPENDIX – H**

**CHECKLIST FOR EVALUATING AND VALIDATING TOOL**

Respected Sir/ Madam,

Kindly go through the evaluation criteria checklist for validation of the tool. There are two columns given for your response (Yes or No) and columns for remarks. Kindly place tick mark () in the appropriate column and give your remarks.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.NO** | **CONTENT** | **YES** | **NO** | **REMARKS** |
| **1**  **2**  **3**  **4** | **DEMOGRAPHIC DATA**   * All characteristics necessary for the study are included   **MEASURES OF PULSE RATE AND BLOOD PRESSUREAMONG MENOPUSAL WOMEN**   * Appropriate or Not   **RATING SCALE (FIVE POINT LIKETR’S RATING SCALE ON POST MENOPAUSAL SYMPTOMS)**   * Covers adequate content about Post Menopausal Symptoms * Questions arranged in a logical order * Language is simple and easy to follow * All items necessary to achieve the objectives of the study included * Some technical terms that can be replaced by simple terms   **STRESS SCALE – VAS**   * Appropriate or Not |  |  |  |

Respected Sir/ Madam,

Kindly go through the content and place the tick mark against demographic data and rating scale in the following column ranging from relevant to not relevant. If the items need to be modified, kindly give your valuable opinion in the remarks column.

**SECTION – A**

**DEMOGRAPHIC DATA**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.No** | **ITEMS** | **RELEVANT** | **NEEDS MODIFICATION** | **NOT RELEVANT** | **REMARKS** |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |
| 7 |  |  |  |  |  |
| 8 |  |  |  |  |  |
| 9 |  |  |  |  |  |
| 10 |  |  |  |  |  |

**SECTION - B**

**MEASURES OF BLOOD PRESSURE AMONG POST MENOPAUSAL WOMEN BY USING SPHYGNOMANOMETER.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.No** | **ITEMS** | **RELEVANT** | **NEEDS MODIFICATION** | **NOT RELEVANT** | **REMARKS** |
| **1.** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |
| **5** |  |  |  |  |  |
| **6** |  |  |  |  |  |

**SECTION – C**

**LIKERT’S FIVE POINT RATING SCALE ON POST MENOPAUSAL SYMPTOMS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.No** | **ITEMS** | **RELEVANT** | **NEEDS MODIFICATION** | **NOT RELEVANT** | **REMARKS** |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |
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| 13 |  |  |  |  |  |
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| 22 |  |  |  |  |  |
| 23 |  |  |  |  |  |
| 24 |  |  |  |  |  |
| 25 |  |  |  |  |  |
| 26 |  |  |  |  |  |
| 27 |  |  |  |  |  |
| 28 |  |  |  |  |  |
| 29 |  |  |  |  |  |
| 30 |  |  |  |  |  |

**SECTION – D**

**STRESS SCALE – VAS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.No** | **ITEMS** | **RELEVANT** | **NEEDS MODIFICATION** | **NOT RELEVANT** | **REMARKS** |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |
| **5** |  |  |  |  |  |
| **6** |  |  |  |  |  |

**సాధనంవివరణ**

**రుతు క్రమం ఆగిపోయిన మహిళల యెక్క లక్షణాలపై డేటా సేకరణ**

**సాధనం నాలుగు విభాగాలను కలిగి ఉంటుంది**

**సెక్షన్ఎ :** రుతుక్రమం ఆగిపోయిన మహిళల యెక్క వివరాలు

**సెక్షన్బి :** రుతుక్రమం ఆగిపోయిన మహిళల యెక్క రక్తపోటుకొలత

**సెక్షన్సి :** రేటింగ్స్కేల్ (ఐదు) పాయింట్ల రేటింగ్కొలత

**సెక్షన్డి :** ఒత్తిడి స్థాయి కొలిచే కొలత

**సాధారణ సూచనలు**

* మీ గురించి మరియి మెనోపాజ్యెక్క లక్షణాలు గురించి కొంత సమాచారాన్ని అందిచమని మిమ్మల్ని కోరుతున్నాము
* దయచేసి ప్రశ్నలకు సమాధానం స్వేచ్ఛగాను మరియు నిష్కపటంగా ఇవ్వండి
* ప్రతి ప్రశ్నలకు తగిన సమాధానాలను అందించండి
* ఈ క్రింది ప్రశ్నలకు దయచేసి సమాధానము ఇవ్వగలరు
* మీ ప్రతిస్పందన పరిశోధన ప్రయోజనం కోరకు ఉపయోగించబడుతుంది మరియు రహాస్యంగా ఉంటుంది

**గమనిక:**ప్రతి ప్రశ్నకు ఒక సమాధానం ఇవ్వండి

**సెక్షన్ – ఎ**

**రుతుస్రావంఆగిపోయినమహిళలయొక్కసమాచారం**

**1.మీవయస్సు (సంవత్సరములలొ) ( )**

ఎ) 46-50సంవత్సరాలు

బి) 51-55 సంవత్సరాలు

సి) 56-60 సంవత్సరాలు

**2.మతం ( )**

ఎ) హింధువవులు

బి) ముస్లిం

సి) క్రైస్తవులు

డి) ఇతరులు

**3.రుతుస్రావంఆగినమహిళయొక్కవిద్యార్హత/ విద్యర్హత ( )**

ఎ) నిరక్షరాసులైన / చదువుకోలేని

బి) పాఠాశాలరకంప్రాధమికమరియుద్యితీయ

సి) ఇంటర్మీయట్

డి) డిగ్రీమరియుపైన

**4. వ్రత్తి ( )**

ఎ) నిరుద్యోగము

బి) కార్మికుడు /కార్మికురాలు

సి) గ్ర్**ృ**హిని

డి) వ్యాపారము

**5. ఆహారం ( )**

ఎ) శాఖాహారం

బి) శాఖాహారంకాదు

**6.రుతుస్రావంమెదలైనప్పుడువయస్సు ( )**

ఎ) < 11 సంవత్సరాలు

బి) 12 సంవత్సరాలు

సి) 13సంవత్సరాలు

డి) 14 సంవత్సరాలుమరియుపైన

**7.విహవంఅయినప్పుడువయస్సు ( )**

ఎ) <15 సంవత్సరాలు

బి) 16-25 సంవత్సరాలు

సి) 26-35 సంవత్సరాలు

**8. పిల్లలసంఖ్య ( )**

ఎ) పిల్లలులేరు

బి) ఒకరు

సి) ఇద్దరు

డి) ముగ్గురుమరియుఎక్కువ

**9.రుతుస్రావంఆగిపోయినప్పుడుమీవయస్సు/మెనోపాజ్వయస్సు ( )**

ఎ) 41-45 సంవత్సరాలు

బి) 46-50 సంవత్సరాలు

సి) 51-55 సంవత్సరాలు

డి) 56-60 సంవత్సరాలు

**10. మెనోపాజ్లక్షణాలుతగ్గడానికిఎమైనఉపశమనచర్యలుఉపయోగించారా ( )**

ఎ) హర్మోన్లచికిత్స

బి) సహజచికిత్స

సి) ఎమిలేవు

**సెక్షన్ – బి**

**రక్తపోటుకొలిచేపరికరంఉపయోగించిరుతుక్రమంఆగిపోయినమహిళలరక్తపోటుకోలుచుట**

**మెనోపాజ్మహిళలయొక్కరక్తపోటుకొలత**

|  |  |  |  |
| --- | --- | --- | --- |
| **క్రమసంఖ్య** | **విషయంసంకేతం /పేరు** | **రక్తపోటు** | |
| **సిస్టోలిక్** | **డయాస్టోలిక్** |
| **1** |  |  | |
| **2** |  |  | |
| **3** |  |  | |
| **4** |  |  | |
| **5** |  |  | |
| **6** |  |  | |

**సెక్షన్ - సి**

**రుతుక్రమంఆగిన / మెనోపాజ్లక్షణాలుకొలవడానికిఐదుపాయింట్లరేటింగ్స్కేలుఉపాయోగించుట**

**సాధారణసూచనలు :**

* ప్రతిప్రశ్ననుజాగ్రత్తగావినండిమరియుమీకుఏదిఉత్తమమోదానికిసమాధానమివ్వండి
* దయచేసిమీఅభిప్రయాన్నివివరించేకాలమునమీసరైనసమాధనంఇవ్వండి
* అందుకున్నసమాచారంరహస్యంగాఉంచబడుతుందిమరియుపరిశోధనప్రయోజనంకోసంమత్రమేఉపయోగించబడుతుంది

**కీ:**

* + అస్సలులేదు**:**0-30
  + కొద్దిగా **:**31-60
  + కొంచెంఎక్కువ **:**61-90
  + ఇంకాఎక్కువ **:** 91-120
  + చాలాఎక్కువ **:** 121-150

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **క్రమసంఖ్య** | **ప్రకటనలు** | **ఏమీలెదు**  **(ఒకటి)** | **కొద్దిగా**  **(రెండు)** | **కొంచెం**  **ఎక్కువ**  **(మూడు)** | **ఇంకా**  **ఎక్కువ**  **(నాలుగు)** | **చాలా**  **ఎక్కువ**  **(ఐదు)** |
|  | **వాసోమోటార్లక్షణాలు** |  |  |  |  |  |
| 1. | మీకు వెడిసెగలు వున్నాయా |  |  |  |  |  |
| 2. | మీకు రాత్రి చెమటలు వున్నాయా |  |  |  |  |  |
| 3. | మీకు అంత్యభాగంలో పిన్స్మరియు సూదులుయొక్క సంచలనాలను కలిగి ఉంటున్నరా |  |  |  |  |  |
| 4. | మీకు గుందె దడగా వుంటుందా |  |  |  |  |  |
|  | **భౌతికలక్షణాలు** |  |  |  |  |  |
| 5. | మీకు తలనొప్పిగ వుంటుందా |  |  |  |  |  |
| 6. | మీరు తరచుగా ఎడుస్తారా |  |  |  |  |  |
| 7. | మీకు రోమ్ము బాగం ఆతి సున్నితత్వంగా వుంటుందా |  |  |  |  |  |
| 8. | మీరు బరువు పెరుగుతున్నార |  |  |  |  |  |
| 9. | మీకు చర్మం దురధ గాని ఎమైన ప్రాకినట్లు గానివుంటుందా |  |  |  |  |  |
| 10. | మీకు తరుచుగా చిరాకుగా వుంటుందా |  |  |  |  |  |
| 11. | మీకు కడుపు ఉబ్బరంగా వుంటుందా |  |  |  |  |  |
| 12. | మీరు మలవిసర్జనని గానిగ్యాస్గాని ఆపుకోలేకపోతున్నారా/నియంత్రపరుచుకోలెకపొతున్నారా |  |  |  |  |  |
| 13. | మీరు సాదారణంగా కాకుండా ఎక్కువగా మూత్రవిసర్జనచేస్తారా /చేస్తున్నారా |  |  |  |  |  |
| 14. | మీకు మూత్రం కారిపోతువుంటుందా |  |  |  |  |  |
| 15. | మీకు మూత్రవిసర్జన చేసే సమయంలో నొప్పిగాని, మంటగాని వుంటుందా |  |  |  |  |  |
| 16. | మీ యోని బాగంలో పొడిబారినట్టుగా మరియుదురదగా వుంటుందా |  |  |  |  |  |
| 17. | మీకు యోని బాగం నుండి ఆసాదారణంగా వ్యర్దస్రావాలు వస్తున్నాయా |  |  |  |  |  |
| 18. | మీకు కీళ్ళానొప్పులు వున్నాయా |  |  |  |  |  |
|  | **మానసికలక్షణాలు** |  |  |  |  |  |
| 19. | నిద్ర పట్టడం చాలా కష్టంగా వుంటుదా |  |  |  |  |  |
| 20 | మీకు మెమరీ స్థాయు తగ్గిందా |  |  |  |  |  |
| 21. | మీకు బాగా అలసటగా వుంటుదా |  |  |  |  |  |
| 22 | మీరు ఏకగ్రతతో ఉండటం కష్టంగా వుంటుదా |  |  |  |  |  |
| 23 | మీరు ఎక్కువ ఆత్రుతతో కలిగివుంటారా? |  |  |  |  |  |
| 24 | మీ మనొభావాలు ఆణగారినట్లు వుంటయా |  |  |  |  |  |
| 25 | మీకు మానసికకల్లోలతలు వున్నాయా |  |  |  |  |  |
|  | **లైంగికలక్షణాలు** |  |  |  |  |  |
| 26 | మీకు లైంగిక సంబొగం జరిగే సమయంలో నొప్పి కలిగి వుంటుందా |  |  |  |  |  |
| 27 | లైంగిక సంపర్కం తరువాత రక్తస్రావం జరుగుతుందా |  |  |  |  |  |
| 28 | మీకు లైంగిక కార్యకలపాల్లోఆసక్తిగాని కోరికగాని లేక పోవడం జరుగుతుందా |  |  |  |  |  |
| 29 | మీకు (ఆర్గస్మ్) స్కలనం [ఉద్వేగం] సాధించే సమయంలో కషటతరంగా వుంటుందా |  |  |  |  |  |
| 30 | మీరు లైంగిక కార్యకలపాలు తగ్గించారా |  |  |  |  |  |

సెక్షన్ – డి

**ఒత్తిడిస్థాయికొలిచేకొలత - (VAS)**

ఏమీలెదు

చిరాకుకలిగించే / భయంకరంగా

భాధించే /

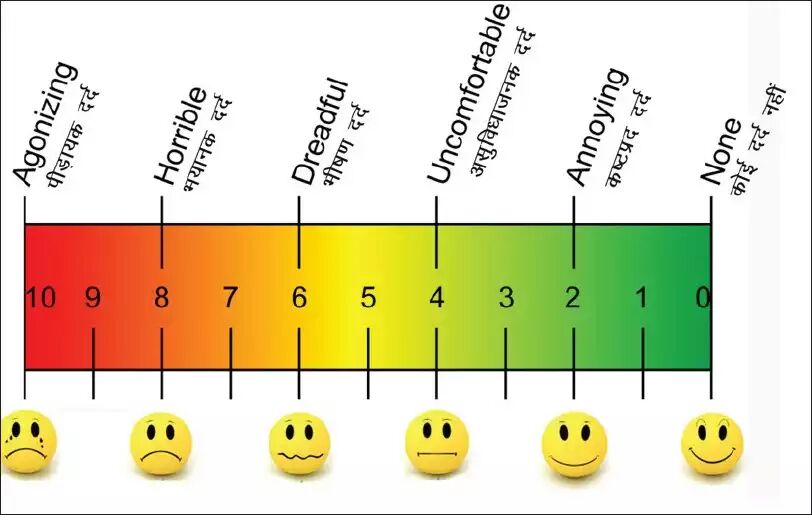
కోపంతెప్పించేది

భరించలేని

భయంకరమైన

అసౌకర్యంగా/

సంకటముగా



**స్కోరింగ్కీ**

ఏమిలేదు : (0)

తేలికాపటి : (1-3)

మోస్తరు : (4-7)

తీవ్రమైన : (8-10)

**APPENDIX - I**

**MASTER DATA SHEET ON PRETEST AND POSTTEST BLOOD PRESSURE LEVELS IN EXPERIMENTAL AND CONTROL GROUP**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample Number** | **EXPERIMENTAL GROUP** | | | |  | **CONTROL GROUP** | | | |
| **PRE TEST** | | **POST TEST** | |  | **PRE TEST** | | **POST TEST** | |
| **SYSTOLIC BP** | **DIASTOLIC BP** | **SYSTOLIC BP** | **DIASTOLIC BP** |  | **SYSTOLIC BP** | **DIASTOLIC BP** | **SYSTOLIC BP** | **DIASTOLIC BP** |
| 1 | 160 | 70 | 130 | 80 |  | 150 | 80 | 150 | 80 |
| 2 | 150 | 80 | 120 | 80 |  | 170 | 90 | 160 | 80 |
| 3 | 170 | 80 | 140 | 80 |  | 150 | 90 | 150 | 70 |
| 4 | 140 | 70 | 120 | 80 |  | 170 | 80 | 160 | 80 |
| 5 | 130 | 80 | 120 | 70 |  | 180 | 90 | 160 | 90 |
| 6 | 160 | 70 | 120 | 70 |  | 160 | 80 | 150 | 80 |
| 7 | 170 | 80 | 140 | 80 |  | 150 | 70 | 140 | 80 |
| 8 | 160 | 90 | 140 | 70 |  | 140 | 70 | 140 | 80 |
| 9 | 150 | 80 | 150 | 80 |  | 150 | 70 | 140 | 70 |
| 10 | 140 | 90 | 130 | 70 |  | 140 | 80 | 150 | 70 |
| 11 | 140 | 60 | 120 | 70 |  | 150 | 80 | 140 | 80 |
| 12 | 170 | 90 | 120 | 80 |  | 140 | 80 | 140 | 70 |
| 13 | 160 | 80 | 140 | 70 |  | 150 | 70 | 140 | 70 |
| 14 | 130 | 90 | 130 | 70 |  | 140 | 70 | 150 | 70 |
| 15 | 140 | 90 | 120 | 70 |  | 150 | 70 | 150 | 70 |
| 16 | 180 | 90 | 120 | 70 |  | 160 | 80 | 150 | 70 |
| 17 | 180 | 90 | 140 | 80 |  | 160 | 80 | 150 | 70 |
| 18 | 170 | 70 | 150 | 80 |  | 140 | 70 | 130 | 70 |
| 19 | 160 | 70 | 140 | 70 |  | 140 | 70 | 130 | 70 |
| 20 | 150 | 80 | 120 | 70 |  | 150 | 80 | 140 | 80 |
| 21 | 140 | 90 | 130 | 80 |  | 150 | 70 | 140 | 80 |
| 22 | 170 | 90 | 120 | 80 |  | 160 | 80 | 140 | 70 |
| 23 | 160 | 80 | 130 | 80 |  | 160 | 90 | 150 | 70 |
| 24 | 170 | 90 | 120 | 80 |  | 170 | 90 | 160 | 80 |
| 25 | 160 | 90 | 140 | 80 |  | 170 | 80 | 160 | 80 |
| 26 | 170 | 90 | 130 | 70 |  | 160 | 70 | 160 | 80 |
| 27 | 180 | 80 | 120 | 80 |  | 150 | 80 | 140 | 80 |
| 28 | 170 | 90 | 130 | 70 |  | 140 | 80 | 140 | 80 |
| 29 | 160 | 80 | 130 | 70 |  | 140 | 70 | 140 | 70 |
| 30 | 150 | 80 | 110 | 80 |  | 150 | 80 | 140 | 80 |

**APPENDIX – J**

**MASTER DATA SHEET ON PRE TEST SCORES OF POST MENOPAUSAL SYMPTOMS IN EXPERIMENTAL GROUP**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **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** |
| 1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 |
| 2 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| 3 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 3 |
| 4 | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 4 |
| 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 |
| 6 | 3 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 2 |
| 7 | 5 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 3 |
| 8 | 3 | 4 | 4 | 2 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 5 | 2 | 2 | 2 | 1 | 1 | 3 | 2 | 1 | 2 | 1 | 4 | 3 | 2 | 3 | 2 | 2 |
| 9 | 4 | 4 | 5 | 4 | 5 | 4 | 3 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 10 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 |
| 11 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| 12 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 3 | 4 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 5 |
| 13 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 5 | 4 | 5 | 4 | 5 | 4 | 4 |
| 14 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 5 |
| 15 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 3 | 4 | 5 | 5 | 2 | 4 | 4 | 3 | 4 | 5 | 3 | 4 | 5 | 4 | 5 | 4 | 5 | 2 | 5 | 4 | 4 |
| 16 | 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 |
| 17 | 4 | 4 | 5 | 4 | 4 | 5 | 3 | 2 | 1 | 5 | 4 | 5 | 5 | 5 | 2 | 4 | 3 | 1 | 4 | 5 | 4 | 5 | 2 | 5 | 4 | 4 | 5 | 4 | 4 | 2 |
| 18 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 |
| 19 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 |
| 20 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 21 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 |
| 22 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 3 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4 |
| 23 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 5 | 4 |
| 24 | 5 | 5 | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 5 | 5 | 3 | 5 | 4 | 4 |
| 25 | 4 | 5 | 4 | 4 | 4 | 1 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 1 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 1 | 4 | 4 | 5 |
| 26 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |
| 27 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 28 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 3 | 5 | 4 | 5 | 5 |
| 29 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 |
| 30 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 5 |
| TOTAL | 131 | 119 | 123 | 127 | 120 | 117 | 114 | 122 | 113 | 120 | 121 | 117 | 123 | 116 | 114 | 126 | 113 | 111 | 118 | 121 | 120 | 115 | 116 | 122 | 123 | 127 | 118 | 129 | 121 | 123 |

**MASTER DATA SHEET FOR EXPERIMENTAL GROUP POST TEST POST MENOPAUSAL SYMPTOMS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SAMPLE NUMBER** | **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** |
| 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 3 |
| 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 3 | 1 | 3 | 2 | 3 | 3 | 1 | 1 | 3 | 1 | 1 | 1 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 |
| 4 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| 7 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 2 | 1 | 1 |
| 8 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 9 | 1 | 2 | 2 | 3 | 3 | 1 | 3 | 2 | 2 | 4 | 3 | 1 | 2 | 4 | 2 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 4 | 2 | 2 | 3 |
| 10 | 2 | 1 | 1 | 3 | 1 | 3 | 2 | 1 | 1 | 3 | 3 | 1 | 3 | 3 | 1 | 1 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 1 | 3 | 1 | 3 | 1 | 3 |
| 11 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 3 | 1 | 3 | 1 | 2 | 2 | 2 | 2 | 3 | 1 | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 3 | 4 | 1 | 2 | 2 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| 14 | 1 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 3 | 2 | 1 |
| 15 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| 16 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 |
| 17 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 18 | 2 | 1 | 3 | 3 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 4 | 3 | 1 | 1 | 2 | 3 | 4 | 2 | 2 | 1 | 3 | 2 | 1 | 4 | 2 | 1 | 1 |
| 19 | 2 | 1 | 1 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 3 | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 4 | 2 | 1 | 3 |
| 20 | 1 | 3 | 2 | 3 | 3 | 3 | 3 | 1 | 2 | 4 | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 3 | 3 | 2 | 2 | 1 | 4 | 2 | 1 | 1 | 3 | 1 | 1 | 1 |
| 21 | 1 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 2 | 3 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| 22 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 1 | 1 | 1 |
| 23 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| 24 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 28 | 3 | 3 | 2 | 2 | 1 | 3 | 1 | 3 | 2 | 2 | 3 | 1 | 1 | 3 | 2 | 1 | 3 | 4 | 3 | 3 | 1 | 3 | 3 | 4 | 2 | 3 | 3 | 2 | 3 | 1 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 30 | 2 | 3 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 4 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 4 | 3 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 1 |
| TOTAL | 39 | 46 | 37 | 45 | 46 | 48 | 44 | 47 | 40 | 53 | 47 | 38 | 43 | 55 | 42 | 43 | 41 | 47 | 59 | 44 | 33 | 43 | 50 | 49 | 37 | 46 | 60 | 43 | 37 | 43 |

**MASTER DATA SHEET ON CONTROL GROUP PRE TEST POST MENOPAUSAL SYMPTOMS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample Number** | **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** |
| 1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 |
| 2 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| 3 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 3 |
| 4 | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 4 |
| 5 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 3 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 3 | 2 | 3 | 3 | 4 | 2 | 5 | 3 | 1 | 2 |
| 6 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| 7 | 5 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 3 |
| 8 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 1 | 4 | 4 | 5 | 4 | 4 | 5 |
| 9 | 3 | 4 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 2 | 1 | 2 | 4 | 4 | 3 | 2 | 3 | 254 | 1 |
| 10 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 |
| 11 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| 12 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 3 | 4 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 5 |
| 13 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 5 | 4 | 5 | 4 | 5 | 4 | 4 |
| 14 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 5 |
| 15 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 3 | 4 | 5 | 5 | 2 | 4 | 4 | 3 | 4 | 5 | 3 | 4 | 5 | 4 | 5 | 4 | 5 | 2 | 5 | 4 | 4 |
| 16 | 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 |
| 17 | 4 | 4 | 5 | 4 | 4 | 5 | 3 | 2 | 1 | 5 | 4 | 5 | 5 | 5 | 2 | 4 | 3 | 1 | 4 | 5 | 4 | 5 | 2 | 5 | 4 | 4 | 5 | 4 | 4 | 2 |
| 18 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 |
| 19 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 |
| 20 | 5 | 4 | 3 | 5 | 2 | 5 | 3 | 5 | 2 | 5 | 4 | 5 | 4 | 5 | 3 | 2 | 2 | 5 | 4 | 4 | 5 | 3 | 3 | 5 | 4 | 5 | 4 | 3 | 4 | 5 |
| 21 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 5 |
| 22 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 3 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4 |
| 23 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 5 | 4 |
| 24 | 5 | 5 | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 5 | 5 | 3 | 5 | 4 | 4 |
| 25 | 4 | 5 | 4 | 4 | 4 | 1 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 1 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 1 | 4 | 4 | 5 |
| 26 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |
| 27 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 28 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 3 | 5 | 4 | 5 | 5 |
| 29 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 |
| 30 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 5 |
| TOTAL | 131 | 119 | 123 | 127 | 120 | 117 | 114 | 122 | 113 | 120 | 121 | 117 | 123 | 116 | 114 | 126 | 113 | 111 | 118 | 121 | 120 | 115 | 116 | 122 | 123 | 127 | 118 | 129 | 121 | 123 |

**MASTER DATA SHEET ON CONTROL GROUP POST TEST POST MENOPAUSAL SYMPTOMS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SAMPLE NUMBER | **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** |
| 1 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 5 |
| 2 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 |
| 3 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 5 | 2 |
| 4 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 3 | 3 | 4 |
| 5 | 4 | 4 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 4 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 3 | 3 | 4 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| 7 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 5 |
| 8 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 5 |
| 9 | 3 | 4 | 1 | 2 | 2 | 1 | 3 | 2 | 2 | 4 | 3 | 1 | 2 | 4 | 2 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 4 | 2 | 2 | 3 |
| 10 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 4 |
| 11 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 3 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| 12 | 4 | 5 | 4 | 5 | 5 | 1 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 |
| 13 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 3 | 4 | 4 | 3 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 4 |
| 14 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 |
| 15 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 3 | 5 | 5 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 4 |
| 16 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 5 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 1 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 |
| 17 | 3 | 4 | 3 | 2 | 2 | 4 | 2 | 3 | 3 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 5 | 5 | 4 | 3 |
| 18 | 5 | 4 | 5 | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 5 |
| 19 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 3 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 |
| 20 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 2 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 21 | 5 | 5 | 5 | 5 | 3 | 4 | 4 | 2 | 3 | 4 | 5 | 3 | 5 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 3 | 3 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 5 |
| 22 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 5 |
| 23 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 4 |
| 24 | 5 | 5 | 3 | 3 | 3 | 4 | 5 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 3 | 4 | 4 | 5 | 5 | 4 | 4 |
| 25 | 4 | 4 | 3 | 4 | 1 | 4 | 5 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 3 | 4 | 4 | 5 |
| 26 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| 27 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 28 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 |
| 29 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| 30 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 55 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 4 |
| TOTAL | 36 | 42 | 36 | 44 | 46 | 45 | 44 | 43 | 39 | 51 | 41 | 38 | 43 | 52 | 40 | 43 | 38 | 42 | 54 | 40 | 33 | 39 | 47 | 44 | 35 | 43 | 56 | 41 | 34 | 43 |

**APPENDIX - K**

**STRESS LEVELS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SAMPLE NO | 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 |
| Pre Test Exp | 9 | 8 | 6 | 7 | 10 | 8 | 7 | 9 | 9 | 8 | 9 | 8 | 7 | 6 | 8 | 7 | 8 | 8 | 9 | 9 | 7 | 7 | 8 | 9 | 10 | 10 | 9 | 8 | 7 | 7 |
| Post Test Exp | 5 | 4 | 3 | 3 | 4 | 3 | 2 | 3 | 3 | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 1 | 2 |
| Pre Test Control | 7 | 8 | 9 | 9 | 7 | 8 | 7 | 8 | 9 | 10 | 10 | 7 | 7 | 8 | 8 | 9 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 7 | 8 | 8 | 9 | 9 | 8 | 9 |
| Post Test Control | 6 | 7 | 8 | 8 | 6 | 7 | 6 | 7 | 8 | 8 | 7 | 5 | 5 | 6 | 6 | 6 | 5 | 4 | 7 | 7 | 8 | 8 | 9 | 7 | 8 | 8 | 8 | 8 | 8 | 7 |