

**A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF
ACUPRESSURE Vs REFLEXOLOGY ON PRE MENSTRUAL
SYNDROME AMONG ADOLESCENT GIRLS
IN SELECTED SCHOOLS AT ERODE,
TAMIL NADU**

By

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ABBREVIATIONS

WHO	World Health Organization
DSM-IV	Diagnostic and statistical manual of mental disorders, fourth edition
DRSP	Daily record of severity of problems
UNICEF	United Nations Children's Fund
PMS	Premenstrual syndrome
PMDD	Premenstrual Dysphoric Disorder.
ACOG	American College of Obstetricians and Gynecologists
ICD – 10	International Classifications of Diseases
QOL	Quality of Life
IMPS	Inventory to Measure Psychosocial Stress
BREF- WHOQOL	World Health Organization's Quality of Life
HRQOL	Health-related quality of life
MMPI	Minnesota Multiphasic Personality Inventory
PSST	Premenstrual Syndrome Screening Tool
DSR	Daily Symptom Rating
PAS	Premenstrual Assessment Scale
ORD	Office of Rare Diseases
SF-36	Short Form Health Survey
NIH	National Institutes of Health.
CI	Confidence Interval

OR	Odds Ratio
BMI	Body Mass Index
NWHIC	The National Women's Health Information Center, CDC
CAM	Complementary and Alternative Medicine
RCTs	Relevant Randomized Clinical Trials
Plasma BDNF	Plasma Brain Derived Neurotrophic Factors
FP	Follicular phase
LP	Luteal phase

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ABSTRACT

A True experimental design was used to assess the effectiveness of acupressure Vs reflexology on premenstrual syndrome among adolescent girls in selected schools at Erode, Tamilnadu.

The objectives of the study were

1. To assess the level of premenstrual syndrome among experimental group I of adolescent girls before and after acupressure
2. To assess the level of premenstrual syndrome among experimental group II of adolescent girls before and after reflexology.
3. To determine the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.
4. To compare the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.
5. To find out the association between post test scores of pre menstrual syndrome among experimental group I and II of adolescent girls with their demographic variables.

The theoretical framework used in this study was based on Imogene King's Goal Attainment theory. The sample size of the study was 250 adolescent girls, the instrument

used for data collection were a structured interview to collect demographic variable. Assessment of level of premenstrual syndrome was measured by Premenstrual Syndrome Scale (PMSS). Acupressure (Experimental group I) and Reflexology (Experimental group II) was given to adolescent girls on individual basis. Assessment of Effectiveness of Acupressure and Reflexology on level of premenstrual syndrome was measured by using same pre test scale.

The major findings of the study was

- ◆ Acupressure and reflexology is an intervention in reducing premenstrual syndrome as the pre test mean premenstrual syndrome score (161.98 ± 6.63 , which is 81%) and (160.61 ± 7.15 , which is 80%) was less than the post test mean premenstrual syndrome score (82.48 ± 4.23 , which is 41%) and (76.74 ± 5.2 , which is 38%) in experimental group I and II respectively. The calculated unpaired 't' value ($t = 21.91$ and $t = 23.46$) was higher than the table value ($t_{124} = 1.980$, $p < 0.05$).
- ◆ There was a significant reduction in post test premenstrual syndrome score of adolescent girls in experimental group I than the post test premenstrual syndrome score of experimental group II. The computed 't' value ($t = 9.56$) was greater than the table value ($t_{248} = 2.828$, $p < 0.05$).
- ◆ There is no significant association between post test premenstrual syndrome score with demographic variables of adolescent girls in experimental group I and II.
- ◆ There is significant association between post test premenstrual syndrome score with demographic variables of adolescent girls in experimental group I with education of parent and experimental group II with class (Standard).

Conclusion: Acupressure and reflexology is an effective intervention to reduce the level of premenstrual syndrome among adolescent girls. But reflexology was more effective than acupressure on premenstrual syndrome among adolescent girls. The result of the study showed that regular practice of acupressure and reflexology would be beneficial in reducing the premenstrual syndrome.

Key words: Acupressure, Reflexology, Premenstrual syndrome, Adolescent girls

CHAPTER I

INTRODUCTION

The word adolescent is derived from the Latin word 'adolescere', which means to grow in to maturity. It is the period of life during which the carefree child grows in to a reasonable adult. Adolescence is the period beginning with the gradual appearance of secondary sexual characteristics at about 12 years and ending with cessation of somatic growth at about 20 years¹

Adolescence is characterized by physical, psychological, and social changes. WHO has defined adolescence age range of 10 - 19 years. Adolescent girls constitute about 1/5th of total female population in the world. These years have been recognized as a special period in the life cycle of adolescent girls as it requires specific and special attention. A vast majority of adolescent girls in India are suffering from reproductive health morbidities. In India, adolescent girls account for a little more than one-fifth of the population (21.4%). Out of an estimated 200 million adolescents, girls account for slightly less than 100 million due to disproportionate sex ratio.²

Menstruation is a normal physiological phenomenon for females indicating her capability for procreation. However this normal phenomenon is not an easy one. It is often associated with some degree of sufferings and embarrassment. It is common observation that every woman does experience one or other type of menstrual problems in her lifetime. The prevalence of menstrual disorders has been recorded as high as 87 %.³

In the Indian, the age of onset of menstruation or menarche is generally between 11-15 years. Though, slight variations may occur according to the nutritional status,

heredity pattern and climate difference. After menarche, there are a number of common menstrual disorders that the female adolescent may encounter, including dysmenorrhea, irregularities in menstrual flow and premenstrual symptoms. These may lead problems in academic excellence and achievements in sports and other extracurricular fields as well as loss of self image.¹

Premenstrual syndrome (PMS) has been defined by National Institute of Mental Health as: the cyclic occurrence of symptoms that are of sufficient severity to interfere with some aspects of life and which appear with consistent and predictable relationship to menses.

Premenstrual syndrome (PMS) can be defined as a recurrent disorder that occurs every month in the luteal phase of the menstrual cycle, and remits with the onset of menstruation. PMS is characterized by a complex set of symptoms which include physical, psychological and behavioural changes of varying severity. This can interfere with the lives of the affected, as well as their interpersonal relationships.

The prevalence and the impact of premenstrual symptoms among Japanese adolescent girls, a total of 618 high school students were assessed. In that 64.6% were found to suffer from premenstrual symptoms, which is lower than that in adult women. The rates of prevalence of moderate to severe PMS and PMDD in girls were higher than those in adult women. Premenstrual symptoms could have significant consequences by interfering with the daily functioning of adolescent girls.⁴

1.1 BACKGROUND OF THE STUDY

Premenstrual syndrome (PMS) is a recurrent appearance of psychological (e.g. irritability) and physical (e.g. headache) symptoms that occurs during luteal phase of the menstrual cycles and remits shortly after the beginning of menses and during the follicular phase. The prevalence of all form of PMS in adolescent girls and women of reproductive age in Iran is about 30 % - 60 %.⁵

The prevalence of premenstrual syndrome among United States menstruating women, aged 18 years or older, range was 60 to 95%. In 10 to 15% of women experiencing severe or disabling symptom. Prevalence of other menstrual disorders like dysmenorrhea; 31.67% and 8.68% were frequently missing college & classes respectively. Premenstrual symptom was the second most (60.50%) prevalent disorder and 67.08% reported social withdrawal. Dysmenorrhea and PMS is highly prevalent among female medical students, it is related to college/class absenteeism, limitations on social, academic, sports and daily activities. Maximum participants do not seek medical advice and self treat.⁶

Incidence of PMS was between 5% and 97% of women reported as suffering from PMS. PMS was found to be high prevalence (47.2%) among females in El-salam district at Ismailia city. Of theses, 39.1% had moderate, and 8.1% had sever PMS. The Canal area reported prevalence rate of PMS was 69.6%.⁷

By the year 2010, the **World Health Organization (WHO)** estimated that 199million women had PMS, and this constituted 5.8% of the female population. 80% of menstruating women have experienced at least one symptom that could be attributed to PMS, estimates of prevalence range from as low as 3% to as high as 30%.⁸

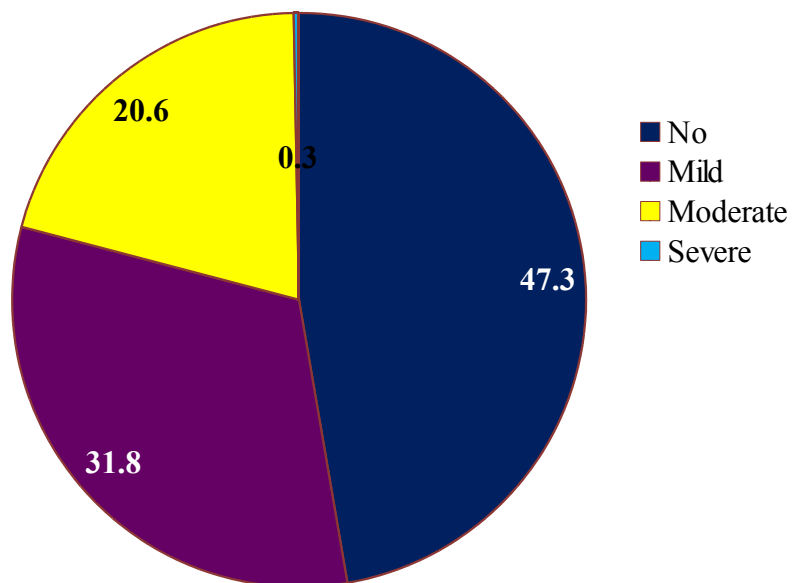
The prevalence of premenstrual syndrome and premenstrual disorder was 76.39% and 4.17%, respectively. The final statistical analysis revealed that only place of residence (large cities) increased the risk of premenstrual syndrome (OR = 3.58; P = 0.01). Adolescent females living in urban areas are more vulnerable to premenstrual syndrome.⁹

Epidemiology in Global scenario

Surveys indicate that PMS is among the most common health problems reported by reproductive age women. Current estimates of the prevalence of clinically significant PMS vary from 12.6% to 31% of menstruating women. Epidemiologic studies have identified approximately 20% of reproductive age women as having moderate to severe PMS.

According to NWHIC reported the prevalence of PMS was 30-40% women suffer some impairment of daily activity (NWHIC); 75% women have some premenstrual syndrome symptoms; 3-8% women have severe PMS. Approximately 1 in 6 or 15.00% or 40.8 million people in USA

Premenstrual syndrome is listed as a “rare disease” by the Office of Rare Diseases (ORD) of the National Institutes of Health (NIH). This means that Premenstrual syndrome, or a subtype of Premenstrual syndrome, affects less than 200,000 people in the US population. Totally 30-40% of women affected PMS in the US.¹⁰



PMS has been reported in 20-40% of reproductive age women, only 2-10% of women report severe PMS. The prevalence of PMS, among nurses, in Thailand, found to be 25.1%. The prevalence of PMS among students, in one prospective study, was found to be 100%, when only one menstrual cycle was assessed.¹¹

An observational study was conducted at Peshawar by convenient sampling on 384 young girls. The frequency of premenstrual syndrome was 53% according to ICD-10 criteria, among which 42% was mild, 18.2% moderate and 31.7% severe. A total of 64 girls (18.2%) met the DSM-IV criteria for severe PMS. Premenstrual syndrome is a common problem in young girls. Doctors should adopt comprehensive measures to reduce its incidence and improve the quality of life in the affected girls.¹²

It is estimated that 30-40% women suffer some impairment of daily activity; 75% women have some symptoms; 3-8% women have severe PMS. As calculated approx 1 in 6 or 15.00% or 40.8 million people in USA. In India the rate of PMS is at higher level, 159,760,591 against 1,065,070,607 populations.¹³

The mean age of subjects at menarche was 12.5 ± 1.52 years. The prevalence of dysmenorrhoea was 73.83% and prevalence of PMS was 60.50%. 67.08% reported class absenteeism, limitation on social, academic, sports and daily activities¹⁴.

According to a recent UNICEF study, 53% of adolescent girls in Nepal affected PMS. Another study on girls in India found that more than 50% were restricted in their movements during menstruation, suggesting that cultural beliefs about menstruation can also play a role in girls' monthly school absences.¹⁵

Study was conducted to investigate the frequency and severity of this syndrome and its associated signs and symptoms. out of 500 students 255 (about 50%) completed and returned the premenstrual daily symptom diary forms .Out of the 255 students 200 (78.43%) were suffering from some degree of PMS (62% mild, 36% moderate, and 2% severe). Mood symptoms in 24% and the behavioral symptoms in 3% of them can be considered to be severe. There were significant positive relationship between behavioral symptoms and physical and mood symptoms. Therefore, health professionals should notice mood and behavioral as well as physical symptoms and signs of PMS and provide them with an appropriate consultation or medical intervention if necessary.¹⁶

PMS is experienced by at least 75% to 85% of females who have menstrual flow. Approximately 31% to 61% of adolescents have the condition. PMS is more common in females. Certain mental disorders increase the risk, such as a personal or family history of major depressive disorder, postpartum depression, or any affective mood disorder (e.g., seasonal affective disorder).¹⁷

The abnormal cycle length (menstrual cycle longer than 35 days or cycle length between 14 to 20 days or irregular pattern) was common and affected 37.2 percent. The majority (74.6 percent) experienced premenstrual syndrome and 69.4 percent had dysmenorrhoea. About 18 percent reported excessive menstrual loss. Only 11.1 percent of school girl's sought medical consultation for their menstrual disorders. Mothers remained the most important source of information (80 percent). Menstrual disorders were significantly more common in female adolescents who smoke and had suicidal behaviors (p-value is less than 0.05). The study concluded that menstrual problems among adolescent female are common¹⁸.

Descriptive analysis of the prevalence of the menstrual disorders among adolescent's aged 12 -21 years. The result was 91.5% of the respondents were African-American. Premenstrual syndrome (PMS) was the most prevalent reported menstrual disorder (84.3%) followed by dysmenorrhea (65%), abnormal cycle lengths (13.2%), and excessive uterine bleeding (8.6%). Only 2% of teens report receiving information about menstruation from their health care provider. Negative expectations regarding menstruation were associated with higher rates of school absenteeism and missed activities ($P = 0.0790$ and $P = 0.0297$ respectively). The study concluded that PMS and dysmenorrhea are prevalent medical disorders among urban adolescents.¹⁹

A cross sectional study was conducted Dabat and Kola Diba, northwest Ethiopia. Totally 612 of the adolescent females were included, of which 305 were from Koladiba High School and 307 from Dabat. The result was age ranges between 14 and 19 with a mean (standard deviation) of 16.9 ± 1 year. The average age at menarche was 15.8 ± 1 year. A cycle length between 21 and 35 days was observed in 70.3% of the girls. The mean duration of flow was 4 ± 1.3 days with a range of 2-7 days. The menstrual cycles were irregular in 42.8% of the subjects. The overall prevalence of dysmenorrhoea was 72% and premenstrual symptoms were present in 435 of the females (75.4%). The leading sources of menarcheal information to the adolescents were mothers (39.7%), followed by their friends (26.6%) and teachers (21.8%).²⁰

The prevalence and the impact of premenstrual symptoms among Japanese adolescent girls, a total of 618 high school students were assessed. Of them, 64.6% were found to suffer from premenstrual symptoms, which is lower than that in adult women. Premenstrual symptoms could have significant consequences by interfering with the daily functioning of adolescent girls.⁴

Premenstrual symptoms are defined as one or more types of physical, physiological or emotional changes before the starting of menstrual cycles. The study showed that mean age at menarche as 12.94 ± 1.61 years. Majority of the subjects (96.1%) reported any 2 or more premenstrual symptoms. The correlation between PMS and percent body fat was statistically significant. The both PMS and dysmenorrhea as well as obesity was found to be highly prevalent.²¹

1.1.1 Prevalence of PMS in Western Countries

Reference	Study Design	Prevalence (with 95% CI)
Singh 1998	Population based cross-sectional	41% - PMS, with only 42% of them took medication
Tschudin 2010	Population based cross-sectional	91% - mild PMS 10.3% - moderate to severe PMS
Parker 2010	Population based cross-sectional	93% - mild PMS
Campbell 1997	Cross – sectional	11-32% - severe to extreme PMS
Heinemann 2010	Cross – sectional	57% - mild PMS 30% - moderate to severe PMS
Pinar 2011	Cross – sectional	70% - PMS

1.1.2 Prevalence of PMS in Asian Countries²²

Reference	Study Design	Prevalence (with 95% CI)
Lee 2006	Population based cross-sectional	75% - PMS 70% - dysmenorrhoeal
Takeda 2006	Cross-sectional	95% - mild PMS 5% - moderate to severe PMS
Chau 1998	Cross-sectional	19% - PMS
Chang 1999	Cross – sectional	92 % - PMS
Wang 2012	Cross – sectional	53% - moderate to severe PMS

In India the premenstrual syndrome is the second (60.50%) most syndrome prevalent among the women of the reproductive age group after social withdrawal (67.08%). According to a cross sectional descriptive study conducted in Tamilnadu, to evaluate the prevalence of menstrual problems especially dysmenorrhoea and its severity in female medical students and its association with college absenteeism. The prevalence of pre menstrual syndrome was 67%, only 9.7% of students consulted a physician and, 22.1% of students with dysmenorrhoea reported irritation of daily activities.²³

This cross sectional study conducted from October 1st to November 30th 2007 at St. Theresa's girls Higher Secondary School at Chengaroor of Pathanamthitta district.

503 girls from 6th std. to 9th std were included. Prepared questionnaire and general physical examination was done who had menstrual problems. The result was age group ranged from 10 yrs to 15 yrs. The mean age of onset of menarche was 12.2yrs. 70.1% of adolescent had problems related to menstruation, of which dysmenorrhea and premenstrual syndromes was the major problem (88.8%). Other problems were menorrhoea, hypomenorrhoea, polymenorrhoea, oligomenorrhoea and menometrorrhagia (11.2%). 23% had missed school days for 1-3 days.¹

In India a descriptive study was undertaken among 300 B.Sc Nursing students in selected Nursing colleges in Mangalore, aged 17-25 using stratified random sampling technique. The finding was the prevalence of PMS is 13.33%. Based on PMTS scale the majority (76%) of the samples had mild, 15% as moderate 7% as severe and 2% of the subjects reported to have no impairment. Commonest symptom experienced by the subjects was abdominal discomfort. The study shows that Premenstrual Syndrome is higher in younger aged women whereas performing relaxation technique reduces the severity of the premenstrual symptoms.²⁴

The exact cause of Premenstrual Syndrome is not known. It is believed that the changes in the hormones level before the menstrual cycle begins may be the cause of Premenstrual Syndrome. Females have a natural balance of both the male and female hormones in their body. An increase in the level of prolactin (responsible for producing breast milk) and male hormones in the body of women can decrease the level of progesterone and delay ovulation. This could also be a possible reason of Premenstrual Syndrome. Premenstrual Syndrome could also be due to imbalance in magnesium and calcium levels in the body.²⁵

The exact cause of PMS has not been identified. Changes in brain hormone levels may play a role, but this has not been proven. Women with PMS may also respond differently to these hormones. PMS may be related to social, cultural, biological, and psychological factors. PMS is thought to be caused by an underlying neurobiological vulnerability to normal fluctuations in the circulating sex hormones, estrogen and progesterone levels during the menstrual cycle. Various biosocial and psychological causes have been proposed as the cause of the syndrome, including abnormal serotonin function, presence of progesterone, altered endorphin modulation of gonadotrophins secretion, exercise habits and a diet rich in beef or caffeine containing beverages.²⁶

Fluctuations in gonadal hormones (progesterone or estrogen) and brain chemicals may play a role. Not getting enough vitamin B6, calcium, or magnesium in the foods you eat can increase your chances of getting PMS. High stress, a lack of exercise, and too much caffeine can make premenstrual symptoms worse.²⁷

High fat and low fibre diet was reported which resulted in menstrual problems among them. There were differences in the appetite during premenstrual and postmenstrual phases. Increased appetite was seen at the premenstrual phase and low intake of fibre, vitamin A, vitamin C, calcium and iron showed adverse effects on health of the respondents during premenstrual phase.²⁸

Stress early in the monthly cycle contributes to more pronounced symptoms before and during menstruation. Stress in the weeks before menstruation could worsen the

symptoms typically associated with premenstrual syndrome and menstruation. Women who reported feeling stressed two weeks before the beginning of menstruation were two to four times more likely to report moderate to severe symptoms than were women who did not feel stressed.²⁹

A cross-sectional questionnaire based study was conducted in adolescent girls who attained menarche in four secondary schools of Pondicherry, India. The results were Dysmenorrhea and premenstrual symptoms were the most frequent problems encountered. Premenstrual symptoms were significantly more common among girls who were overweight, in girls who were eating junk food regularly, in girls who were eating less food (dieting) in order to lose weight and in those who were not doing regular physical activity. Dysmenorrhea was significantly more common in the girls who were dieting to lose weight. Passage of clots was also significantly high in the girls who were dieting.³⁰

A school based study was conducted to find out the prevalence of stress among 667 children age groups from 4-17 years in Kerala. The results indicated 98.1% of the children aged 4 to 17 years showed medium to moderate stress while 1.9% severe stress. Only 1.79% came under normal group. Also more than 97% of the children above 10 years showed above average stress. More number of children with severe stress was observed at the age of 14 whereas the majority of the children between 13 to 15 showed moderate or severe level of stress than any other age groups. This suggests that in every age more than 90% of the school children of the state are facing above normal levels of stress and tension.³¹

Premenstrual syndrome (PMS) is reported in women in many cultures worldwide. About 80% of women in their reproductive years have some emotional and physical symptoms before their periods that impair daily activities. A number of factors play a major role in higher risk for PMS. It includes PMS is higher in younger women, depression, mother who had PMS, sedentary worker, Stress, High-sugar diet, Consumption of large amounts of caffeine.³²

Symptoms of premenstrual syndrome begin in the luteal phase about 7 to 10 days before menses and end with the onset of menses. There may be a heightened sense of creativity and increased mental and physical energy. Negative symptoms are related to edema (abdominal bloating, pelvic fullness, edema of the lower extremities, breast tenderness and weight gain) or emotional instability (depression, crying spells, irritability, panic attacks, and impaired ability to concentrate). Headache, fatigue and backache are common complaints. A lack of understanding of premenstrual syndrome may result in poor self-esteem and stress relationships to the breaking point.³³

The common symptoms of PMS and PMDD include breast tenderness, body aches, headache, bloating, sleep disturbances, appetite change, poor concentration, decreased interest, social withdrawal, irritability, mood swings, anxiety/tension, depression, and feeling out of control. Of these, six symptoms identified as core symptoms suggesting that clinical diagnosis of PMS can be developed around a core symptom group. The identified core symptoms are: anxiety/tension, mood swings, aches, appetite/food cravings, cramps, and decreased interest in activities. However, it has been estimated that a high proportion of women in reproductive age (up to 90%) experience some degree of premenstrual symptoms.³⁴

Premenstrual syndrome (PMS) is a set of physical, emotional, and behavioral symptoms that occur a week before menstruation in most cycles. The physical symptoms are: breast tenderness or swelling; weight gain due to fluid retention; abdominal bloating; fatigue; dizziness; nausea and vomiting; acne or worsening of an existing skin disorders; muscle aches; pelvic heaviness; appetite change; constipation; headache and backache. The emotional symptoms are: insomnia; sadness; irritability; tension; anxiety; restlessness; loneliness and food cravings. There are also behavioral symptoms such as: difficulty concentrating; forgetfulness and social avoidance.³⁵

Several different symptoms have been associated with PMS, but the three most prominent symptoms are irritability, tension and dysphoria. The presence of exclusively physical symptoms associated with the menstrual cycle, such as bloating, abdominal cramps, constipation, swelling or tenderness of the breasts, cyclic acne and joint or muscle pain.³⁶

The common PMS symptoms include backache, abdominal bloating and pain, irritability, muscle cramps, headache, breast swelling and pain, anxiety, weight gain, fatigue, changes in sleep, mood swings, appetite changes, depression, decreased concentration, unrest, aggression, stress, and excessive food desires. These symptoms can interfere with daily functioning, interpersonal relationships, occupational performance and educational performance (impaired attention in the classroom and frequent absences from school) and are economically costly for the involved people and have negative effects on quality of life of millions of women, including adolescents.³⁷

A cross-sectional study was carried out in 2005 among female students of Zahedan University, Iran, aged 12-18 years. Overall 300 participants were asked to complete an anonymous questionnaire assessing PMS. Among 300 participants, 98.2% reported at least one mild to severe premenstrual symptom and 16% met the criteria of PMS. Most common symptoms were feeling of tiredness or lethargy (84%), depressed mood (72.3%), sudden feeling of sadness or tearfulness (70.3%), anxiety (70%), backache (69%) and sleep problems (66%). There was no significant difference in severity of symptoms based on marital status and living conditions (living with parents or away from parents), but severity of symptoms were significantly higher for the younger women (12-15 years) compared to the older women (16-19). Preventive and treatment strategies for PMS are highly recommended.⁷⁴

The prevalence of most commonly occurring premenstrual symptoms was found out of 206 students, back and generalized body ache (118) followed by nervous tension (76), depression and crying (70) and irritability (68). Pain in stomach had the prevalence rate of 36. Least commonly occurring symptoms were identified as dizziness (16), palpitation (14) and diarrhea (14).²¹

A survey was conducted to examine the level of academic stress and overall adjustment among 50 Public and 50 Government high school students and also to see relationship between the two variables (academic stress and adjustment) in New Delhi. The study results indicated that magnitude of academic stress among high school students was found to be high particularly among the public school students as the mean scores were 22.44 and 16.90 respectively for public school and private

school students, where as Government school students were significantly better in terms of their level of adjustment. However, inverse but significant relationships between academic stress and adjustment were found for both the group of students and for each type of school. The study concluded that private school students by and large suffer from higher level of academic stress than their Government school counterparts.³⁹

The experience of pain with menstruation is common for 70–91% of teenagers. Also, there are a number of physical, psychological and emotional symptoms that occur premenstrual and during menstruation, which are reported by 96% of teenagers.⁴⁰

In India the adolescent, young people between the ages of 10 to 19 accounts for nearly one quarter of total population. Developmentally it is a crucial period, particularly with reference to reproductive health especially among adolescent girls. Menstrual cycle is a normal monthly function, but the menstrual related problems are one of the most common problems among adolescent girls and might have an adverse effect on their performance in academic and other activities of daily life which may lead to school absenteeism during menstrual days. School absenteeism due to menstrual problems.⁴¹

The Complementary and Alternative Medicine (CAM) can be defined as "Medical and health care practices outside the realm of conventional medicine, which are yet to be validated using scientific methods. The NIH defined CAM as 'Healthcare systems, practices, and products not presently considered to be part of conventional medicine.'⁴²

Complementary and Alternative Medicine (CAM) is a large and diverse set of systems of diagnosis, treatment, and prevention based on philosophies and techniques. Complementary and Alternative Medicine is characterized by its focus on the whole person as a unique individual, on the energy of the body and its influence on health and disease, on the healing power of nature and the mobilization of the body's own resources to heal itself, and on the treatment of the underlying causes, not symptoms, of disease. Complementary and Alternative Medicine therapies are used with the intent to reduce stress, improve well-being, prevent illness, avoid or minimize side effects and symptoms, and/or to control or cure disease.⁴³

Up to 25 % of women may warrant treatment for the distress or impaired functioning associated with PMS. Both physical and mental premenstrual symptoms have significant impact on quality of life. Symptoms of PMS can be relieved or reduced through lifestyle modifications, such as dietary changes, yoga, meditation and exercise, and drug therapy with hormonal or psychotropic agents.²⁵

Acupressure is an ancient healing art that uses the fingers to press key points on the surface of the skin to stimulate the body's natural self-curative abilities. When these points are pressed, they release muscular tension and promote the circulation of blood and the body's life force to aid healing. Acupuncture and acupressure use the same points, but acupuncture employs needles, while acupressure uses the gentle but firm pressure of hands (and even feet).

Randomized clinical trials were conducted on efficacy of acupressure for symptoms management. The study result revealed that forty-three studies were included in this

review. Investigators in 16 of 23 studies concluded acupressure was effective, primarily for the management of nausea and vomiting in patients during pregnancy and during chemotherapy. Investigators in nine of 10 studies concluded that acupressure was effective for pain in patients with dysmenorrhea and PMS, during labor and after trauma. Investigators of four studies concluded that acupressure was effective in the management of dyspnea and investigators in six studies concluded that acupressure was effective in improving fatigue and reducing insomnia in a variety of populations. It concluded that acupressure may be a useful strategy for the management of multiple symptoms in a variety of patient populations. Inclusion of acupressure as an intervention may improve patient outcomes.⁴⁴

Acupressure stimulation is a highly recommended treatment for insomnia sufferers. Not only is it a natural form of treatment, but is a very effective one as well. Insomnia is often related to anxiety, and acupressure is an effective way to treat both anxiety and insomnia⁴⁵.

Robinson, N, Lorenc, A, Liao, X. (2011), Recommended that acupressure was evidence is improving in quality, quantity and reporting but is lacking in regards to Shiatsu. Acupressure is reported to possibly benefit pain, nausea/vomiting, and sleep⁴⁶

Acupressure stimulation is a highly recommended treatment for insomnia sufferers. Not only is it a natural form of treatment, but is a very effective one as well. Insomnia is often related to anxiety, and acupressure is an effective way to treat both anxiety and insomnia⁴⁷.

Reflexology is one of the alternative and ancient therapies known to promote the body's own healing powers. It is suitable for any age groups, from babies to seniors. Reflexology is a natural healing therapy which is highly effective in dealing with many health complaints. Foot reflexology promotes equilibrium and well being with long lasting impact. The benefits of reflexology is that; it reduces premenstrual syndrome, release stress and tension, improve blood circulation and activates lymph drainage, assist in elimination of toxins, strengthen the immune system and harmonizes vital functions, enable a deep state of relaxation and well being and ease pregnancy, labour and delivery.

A randomized clinical trial study was conducted on Reflexology is a popular form of complementary and alternative medicine (CAM). The aim of this update is to critically evaluate the evidence for or against the effectiveness of reflexology in patients with any type of medical condition. Six electronic databases were searched to identify all relevant randomized clinical trials (RCTs). Their methodological quality was assessed independently by the two reviewers using the Jadad score. Overall, 23 studies met all inclusion criteria. They related to a wide range of medical conditions. The methodological quality of the RCTs was often poor. Nine high quality RCTs generated negative findings; and five generated positive findings. Eight RCTs suggested that reflexology is effective for the following conditions: diabetes, premenstrual syndrome, cancer patients, multiple sclerosis, symptomatic idiopathic detrusor over-activity and dementia yet important caveats remain. It is concluded that the best clinical evidence does not demonstrate convincingly reflexology to be an effective treatment for any medical condition⁴⁸

A quasi-experimental study conducted on effects of aroma-foot-reflexology on premenstrual syndrome, dysmenorrhea and lower abdominal skin temperature of nursing students. The study used a pretest posttest quasi-experimental study design. The participants were divided into two groups, a control group with 37 students and a treatment with 24 students. A 35 minutes three times a week aroma-foot-reflexology was carried out for the treatment group. The results showed that aroma-foot reflexology was significantly effective in reducing premenstrual syndrome and dysmenorrhea, and raised lower abdominal skin temperature of the students. The results of this study indicated that aroma-foot-reflexology is an effective nursing intervention in reducing premenstrual syndrome and dysmenorrhea and in improving lower abdominal skin temperature. It is, therefore, recommended that the aroma-foot reflexology should be a clinical practice as an effective nursing intervention to reduce premenstrual syndrome and dysmenorrhea and to improve lower abdominal skin temperature of nursing students⁴⁹.

1.2 NEED AND SIGNIFICANCE OF THE STUDY

Adolescence in girls has been recognized as a special period which signifies the transition from girlhood to womanhood. This transitional period is marked with the onset of menarche, an important milestone. Menstruation is a normal physiological process that begins during adolescence and may be associated with various symptoms occurring before or during the menstrual flow. Adolescent girls constitute a vulnerable group, particularly in India where female child is neglected one. Menarche is a part of the complex process of growing up. The age of onset of menstruation varies from 9 to 18 years with the average age in United States being about 12 years and 8 months, whereas in India it is slightly lower and has been reported to be around 12 years. The age at menarche shows many socioeconomic, environmental, nutritional and geographical differences in the societies.⁵⁰

In India, the adolescent population constitutes more than one fifth (23%) of the total population. It is estimated that there are almost 200 million adolescents in India between that age group of 10-19 years. It is expected that these age group will continue to grow reaching over 214 million by 2020. According to 1992-1993 DHS data on adolescents in India, especially girls, in urban consists of 26% and girls in rural consists of 74% between the age group of 10-14years. There is wide disparity between educational achievement for boys and girls; however rates between 1993 and 1999 are improving for girls. Unmet need among adolescents has declined by about 3% between 1993 and 1999; in 1999, unmet need was 27.1% among adolescent girls 15-19 age group.⁵¹

Adolescence is the transitional phase of physical and mental development between childhood and adulthood and is characterized by immense hormonal changes. The

most striking change in adolescent girls is the onset of menstruation. In the Indian context, the age of onset of menstruation or menarche is generally between 11-15 years. Slight variations in the age of menarche may occur according to the nutritional status, hereditary pattern, and climate difference. After menarche, common menstrual abnormalities that the female adolescent may encounter include dysmenorrhea, irregularities in menstrual flow and premenstrual symptoms. 75% of girls experience some problems associated with menstruation. These may lead to problems in academic excellence, achievements in sports as well as loss of self image.³⁰

Premenstrual syndrome is a common disorder of young and middle aged women, characterized by cyclic occurrence in the luteal phase of menstrual cycle of a combination of distressing physical, psychological and behavioural changes of a sufficient severity which results in deterioration of interpersonal relationship or interference with normal activities; which remit upon onset or immediately after menstruation. Premenstrual syndrome (PMS) symptoms are identified in adolescents and can begin around age 14, or 2 years post-menarche, and continue until menopause. Premenstrual syndrome is one of the unresolved problems. The first report on the prevalence was in 1997. It was described to occur in 15-100% of women of reproductive age, with 5-10% reporting severe symptoms.⁵²

A majority of adolescents would have experienced some degree of premenstrual problems especially in the first years of their reproductive life. The prevalence at premenstrual problems is very high; at least fifty percentages of adolescents experience this problem during their reproductive years. Upto forty percentage

women at childbearing age have some forms of premenstrual syndrome and upto ten percentages have severe signs and symptoms.⁵³

Premenstrual syndrome is reported in women of all cultures the world over, although only 2% of women fit the strict criteria for premenstrual syndrome. In a survey of adolescents, 88% reported moderate to severe premenstrual symptoms.⁵⁴

Premenstrual disorders likely start in the teen years. At least 20% of adolescents may experience moderate-to-severe premenstrual symptoms associated with functional impairment. Premenstrual syndrome (PMS) consists of physical and/or psychological premenstrual symptoms that interfere with functioning. The prevalence of premenstrual dysphoric disorder (PMDD), a severe form of PMS accompanied by affective symptoms, is likely equal to or higher than in adults.⁵⁵

A working definition of PMS is “a condition which manifests with distressing physical, behavioral and psychological symptoms not due to organic or underlying psychiatric disease, which regularly recurs during the luteal phase of each menstrual (ovarian) cycle and which disappear or significantly regresses by the end of menstruation, Where women with more severe affective symptoms are classified as having premenstrual dysphoric disorder.⁵⁶

Meta-analysis systematically reviewed the prevalence of PMS. The overall, 17 studies met our inclusion criteria. The pooled prevalence of PMS was 47.8% (95% CI: 32.6-62.9). The lowest and highest prevalence were reported in France 12% (95% CI: 11-13) and Iran 98% (95% CI: 97-100) respectively. However, meta-regression scatter

plot showed an increasing trend in the prevalence of PMS during 1996-2011 but correlation between prevalence of PMS and year of study was not significant ($p=0.797$).⁵⁷

A cross sectional descriptive survey was conducted in Thailand among 266 female students of Assumption University, Bangkok. The subjects were between 16-35 years and were selected by random sampling technique. Data was collected with the help of a self administered questionnaire. The results indicate PMS is very common among females at Assumption University. According to the data, more than 98% of the respondents indicated one or more PMS symptoms. However, only 28% reported feeling of PMS symptoms before every period. The pharmacological treatments were, 41.4% used paracetamol, 24.4% used Ponstan and 3.4% used Advil. Other non-pharmacologic treatments were sleep (75.9%), exercise (23%), and dietary change (10%).⁵⁸

A cross-sectional study was examined the prevalence of Premenstrual Syndrome and Its Impact on Quality of Life among University Medical students. A cross-sectional study included unmarried medical students aged 18-25 years with regular menstrual period for the last 6 months. Socio-demographic data, DSM-IV (Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association) criteria questionnaire for PM/PMDD as well as the daily record of the severity of PMS problems scale (DRSP) was collected for each student for two prospective cycles. Health-related quality of life (HRQOL) data questionnaire was collected on medical outcome study Short Form 36 (SF-36) after taking informed consent from the students. The result revealed that prevalence of PMS among the studied group was

78.5%, of them, 5.9% had severe form of PMS. It showed that students with PMS reported a poorer health-related quality of life as measured by SF-36 than those without PMS. It concluded that PMS/PMDD is a prevalent disorder among medical students in KSA, which adversely affected their quality of life³⁴.

A study was examined Problems related to menstruation amongst adolescent girls. Girls in the age group 13-19 years had menarche and 198 adolescent girls were included. Semi-structured questionnaire include menstrual problems, regularity of menses in last three cycles of menstruation and the effect of these problems on the daily routine. The result was more than a third (35.9%) of them in the age group 13-15 years followed by 17-19 years, 15-17 years respectively. Dysmenorrhea (67.2%) was the commonest problem and (63.1%) had one or the other symptoms of Pre-menstrual syndrome (PMS). Other related problems were present in 55.1%. Daily routine of 60% girls was affected due to prolonged bed rest, missed social activities/commitments, disturbed sleep and decreased appetite. 17.24% had to miss a class and 25% had to abstain from work. Mothers and friends were the most common source of information on the issue⁵⁹.

A survey was conducted to examine the level of academic stress and overall adjustment among 50 Public and 50 Government high school students and also to see relationship between the two variables (academic stress and adjustment) in New Delhi. The study results indicated that magnitude of academic stress among high school students was found to be high particularly among the public school students as the mean scores were 22.44 and 16.90 respectively for public school and private school students, where as Government school students were significantly better in

terms of their level of adjustment. However, inverse but significant relationships between academic stress and adjustment were found for both the group of students and for each type of school. The study concluded that private school students by and large suffer from higher level of academic stress than their Government school counterparts.³⁹

Menstrual problems are common among young girls. Premenstrual syndrome (67%) and dysmenorrhea (33%) were perceived by the study subjects as the most distressing problems associated with menstruation. The most common effect of menstrual problems on daily routine reported by the study subjects was in the form of prolonged resting hours (54%) followed by inability to study (50%). More than half (52%) of the subjects discussed their problems with their mother, and 60% of the study subjects were opted for allopathic treatment for their menstrual problems.⁶⁰

A study investigated on menstrual problems and menstrual hygiene practices of adolescent girls in Thiruvananthapuram City Corporation. Students of class XI and XII in the age group 15-19 years, belonging to ten Higher Secondary Schools within the Thiruvananthapuram City Corporation area were selected by multistage sampling procedure and screened using a pretested self evaluation questionnaire. The result was menstrual disorders were reported in 21.1%. The most frequently reported problem during menstruation was premenstrual syndrome (72.4%) followed by oligomenorrhoea (11.3%). Only 11.5% of the girls who had menstrual problems sought treatment and majority from a gynecologist. Out of 81.5% girls who reported abnormal pain, only 5.7% had breast tenderness. Menstrual hygiene was adequate in the majority of girls. Menstrual disorders are common in adolescence and can have significant consequences on future reproductive health⁶¹.

A cross sectional study was conducted among 350 each adolescent school going girls from urban and rural school in Ambajogai, Maharashtra. The age of girls ranged from 10-18 years with maximum girls of 13 years of age were randomly selected. Data was collected through pretested proforma. Fullness in breast and abdomen, headache and irritability were the common premenstrual symptoms. Significantly more rural girls (28.57%) were free from premenstrual symptoms than urban girls (6.82%) ($z=3.60$ $P<0.05$). Average premenstrual symptoms per girl was higher in urban than in rural girls.⁶²

A cross-sectional descriptive study was conducted on 300 female medical students in SRM medical Hospital, Kattankulathur, Kanchipuram district. The questionnaire includes menstruation elucidating variations in menstrual patterns, history of dysmenorrhea and pre-menstrual syndrome and its severity and absenteeism from college/class; to detect the severity of dysmenorrhe. The finding was prevalence of dysmenorrhea was 51% and pre-menstrual syndrome was 67%. Only 9.7% of the students consulted a physician or pharmacist. 22.1% of students with dysmenorrhoea reported limitation of daily activities. Increase in BMI is significantly associated with pre-menstrual syndrome ($p = 0.035$) but its association with dysmenorrhoea was not significant ($p = 0.259$). There exists a strong association between lack of physical exercise and pre-menstrual syndrome (p value 0.005) but not with dysmenorrhoea ($p = 0.3$). Diet pattern of consuming fast foods frequently is significantly associated with pre-menstrual syndrome ($p = 0.05$) and not with dysmenorrhoea. Severity of dysmenorrhoea is significantly associated with college absenteeism ($p = 0.005$). The study revealed that Dysmenorrhea and PMS is highly prevalent among female

medical students, it is related to college/class absenteeism. Maximum participants do not seek medical advice and self-treat themselves⁶³.

The exact cause of Premenstrual Syndrome is not known. It is believed that the changes in the hormones level before the menstrual cycle begins may be the cause of Premenstrual Syndrome. Females have a natural balance of both the male and female hormones in their body. An increase in the level of prolactin (responsible for producing breast milk) and male hormones in the body of women can decrease the level of progesterone and delay ovulation. This could also be a possible reason of Premenstrual Syndrome. Premenstrual Syndrome could also be due to imbalance in magnesium and calcium levels in the body.⁶⁴

A cross-sectional questionnaire based study was investigated the Menstrual Abnormalities in School Going Girls in Pondicherry and their association with dietary and exercise habits. A cross-sectional questionnaire based study was conducted in adolescent girls who attained menarche in four secondary schools of Pondicherry, India. All (853) students who attained menarche and willing to participate in the study were included. The questionnaires are anthropometric data, socioeconomic data, menstrual history, and diet and exercise pattern. The result was dysmenorrhea and premenstrual symptoms were the most frequent problems encountered. Premenstrual symptoms were significantly more common among girls who were overweight, eating junk food regularly, eating less food (dieting) in order to lose weight and not doing regular physical activity. The study concluded that lifestyle modifications like regular physical activity, decreasing the intake of junk food and promoting healthy eating

habits should be emphasized in school health education programs to improve their menstrual health³⁰.

A cross-sectional study was undertaken using a random-digit dialing method. A total of 874 women between the ages of 18-44 residing in the state of Virginia were interviewed. Cases were defined as women who reported severe or extreme PMS symptom changes using the Shortened Premenstrual Assessment Form. Obesity as measured by Body Mass Index. The result was prevalence of PMS in Virginia was 10.3 percent. Obese women (BMI \geq 30) had nearly a three-fold increased risk for PMS than non-obese women OR = 2.8 (95% CI = 1.1, 7.2). PMS was more prevalent among whites, younger women, and smokers. The study concluded that obesity is strongly associated with PMS.⁶⁵

A study was examined the relationship between Calcium and Magnesium contents, dietary changes, health remedies and occurrence of PMS among students at the college of pharmacy-Al Azhar University –Gaza (Palestine). The study included 49 Cases of PMS and 49 controls. On PMS scale, more than 82% don't have PMS (Premenstrual Syndrome) complications. The results show that; students who suffer from such complications are influenced by many variables by different ratios such as dietary changes, natural health remedies, and lifestyle. The research has strongly revealed that there is a strong relationship between Calcium and Magnesium with Premenstrual Syndrome; since the reduction of Ca or Mg levels will increase the score of Premenstrual Syndrome⁶⁶.

The students who consumed excess fast food as (71.4%) of them had PMS. Decreased intake of fruits and vegetables was significantly related to the occurrence of PMS. About 86% of those without sufficient intake of fruits and vegetables had PMS versus (13.9%) who had not.⁶⁷

A study was explored the factors associated with PMS in new female university students in Taiwan. The test battery included a self-administered structured questionnaire, the five-item brief symptoms rating scale, the Pittsburgh Sleep Quality Index and the Chinese Premenstrual Symptom Questionnaire. Additionally, details of the participants' lifestyles and family and personal histories of physical illness were recorded. Serum lipids were also measured. The result shows that, all the participants 39.85% were defined as having PMS. There was a positive relationship between PMS and consuming more foods containing egg yolk, greater alcohol intake, poorer sleep quality, higher likelihood of psychiatric morbidity, family history of dyslipidemia, and a higher serum cholesterol level. The results show that PMS is prevalent among new female university students and that lifestyle and nutritional/metabolic factors may play a role in this disorder⁶⁸.

Feeling stressed out in the weeks preceding your menstrual cycle may raise your risk for experiencing more severe premenstrual syndrome (PMS) symptoms. The study shows that Women who reported high levels of stress in the two weeks before they got their period were two to three times more likely to experience [depression](#), sadness, and crying spells as well as physical PMS symptoms such as body aches, bloating, low back pain, cramps, and headache, compared to women who did not feel stressed early on in their cycles. "Stress early in the cycle is a risk factor for PMS. Women

who had high stress before both cycles were 25 times more likely to experience physical and psychological PMS symptoms than those who reported low stress before both cycles.⁶⁹

A cross-sectional study was undertaken among Japanese college students, measuring psychosocial stress levels by means of IMPS (The Inventory to Measure Psychosocial Stress). Totally 221 were analyzed were included. Anthropometric data, lifestyle, menstrual history, and menstrual health status were collected. The result was students reported premenstrual symptoms, menstrual pain, and the experience of irregular menstrual cycles were 79%, 79%, and 63%, respectively. Students who reported premenstrual symptoms, menstrual pain, and the experience of irregular menstrual cycles had higher stress scores than those who did not. Stress score, heavy menstrual flow, and menstrual pain were significant predictors for premenstrual symptoms, while age at menarche and having premenstrual symptoms were significant predictors for menstrual pain. The results suggest that psychosocial stress is independently associated with premenstrual symptoms and the experience of irregular menstrual cycles among college students.⁷⁰

A study undertaken that high stress (fourth quartile PSS) was associated with an increased risk of reporting ≥ 8 or more (OR 7.2, 3.3-15.8) and ≥ 5 (OR 2.5, 1.6-4.1) symptoms as moderate/severe during the perimenstrual period compared with lower stress (quartiles one, two, and three). Stress scores were positively ($p < 0.0001$) associated with increased symptom severity scores for total, psychological, and physical symptoms. The finding was higher perceived stress precedes an increased

severity of perimenstrual symptoms. Stress reduction programs may be an effective, nonpharmaceutical treatment for physical and psychological symptom relief.⁷¹

Adolescent constitute over 21.4 % of the population in India. Dysmenorrhoea (44.2%) was the most common problem reported to be associated with menstruation by the study subjects. Dysmenorrhoea has been reported to be (28) 56% in girls in rural areas (X^2 df = 0.1, P = 0.05) (30). Premenstrual syndrome (PMS) was reported by almost all the subjects. Dysmenorrhoea (44.2%) was the commonest problem faced by adolescent girls. More than half of the study subjects had one or the other symptoms of premenstrual syndrome (PMS), namely; irregular menses 16.9%, irritation-21.7%, malaise _ 9.5%, headache-14.2, chest pain- 8.2%, abdominal bloating 20.3%, constipation- 11.3%, tightness in chest 10.6% and white discharge-38.3 %.⁷²

Women aged 18-45 years were screened for PMS and PMDD based on the ACOG recommendations for a diagnosis of PMS and (DSM-IV). The result was, the incidence of PMDD was 2.1% and PMS was 21.1%. The most common symptoms were irritability (91.21%), breast tenderness (77.62%), depression (68.31%), abdominal bloating (63.70%) and angry outbursts (59.62%).⁷³

The most prevalent symptoms of PMS were feelings of tiredness or lethargy (84%), depressed mood (72.3%), sudden feeling of sadness or tearfulness (70.3%), anxiety (70%), backache (69%) and sleep problems (66%). The most common physical premenstrual symptoms were backache (69%), abdominal bloating (55.3%), joint or muscle pain (52%), acne (48.3%) and headache (47%) while the most common psychological symptoms were tiredness (84%), depressed mood (72.3%), mood

changes (sudden feeling of sadness or tearfulness) (70.3%), anxiety (70%), and sleep problems (66%)⁷⁴.

A cross-sectional study was examined among Zahedan University (Iran), female students aged 18-27 years. The result showed that out of 300 participants, 98.2% reported at least one mild to severe premenstrual symptom and 16% met the criteria of DSM-IV for PMS. Most common symptoms were feeling of tiredness or lethargy (84%), depressed mood (72.3%), sudden feeling of sadness or tearfulness (70.3%), anxiety (70%), backache (69%) and sleep problems (66%). There was no significant difference in severity of symptoms based on marital status and living conditions (living with parents or away from parents), but severity of symptoms were significantly higher for the younger women (18-20 years) compared to the older women (21-24 and 25-27 years). The finding was high frequency of premenstrual symptoms and significant prevalence of PMS.⁷⁵

PMS interferes with day to day activity of women's life. In a study done in India, it has been reported that daily routine of 60% of the studied girls were affected due to missed social activities /commitments, disturbed sleep and decreased appetite. 17.4% had missed class and 25% had to abstain from work (**Prayya et. al, 2008**)⁷⁶

The most common symptoms were abdominal cramp 229 (75.3%), backache 238 (74.4%), tiredness 225 (70.3%), anger 24 (70%), acne 193 (60.3%), sadness 184 (57.5%), social withdrawal 180 (55.6%), breast tenderness 162 (50.6%), irritability 150 (46.9%), stomach discomfort 144(45%), anxiety 145 (45.3%), and foot ache 142 (44.4%).⁷⁷

The common symptoms of PMS are 42% were found to be suffering regularly & 58% occasionally. The most common symptoms they suffered with were backache (68%), leg cramps (64%), fatigue (62%), breast tenderness (62%), anger (62%), anxiety (58%) and generalized body ache (58%).⁷⁸

The most commonly reported physical premenstrual (PM) symptoms were: easy fatigability affecting 170(70.2%), appetite change in 150(61.9%), sleep change in 14(60.3%). The commonest psycho - behavioral PM symptom reported by 17(73.1%) of the study subjects was decreased interest in the usual activities like studies, lectures, friends, hobbies etc. Other most commonly reported psycho - behavioral symptoms were: depressed mood by 145(59.9%), becoming easily upset by 127(52.5%) and irritability by 120(49.6%). Ninety-six students (39.8%) reported their symptoms as minor, 80(33.2%) as moderate, 53(22%) as severe interfering daily activities and 12(5%) as extreme hindering participation in any activity. PMS is related to high suicide and accident rates, employment and school absentee rates, poor academic performance and acute psychiatric problems.⁷⁹

Psychiatric symptoms are predominant in the girls suffering from premenstrual syndrome. According to a cross sectional survey conducted in India, it is found that the prevalence of premenstrual symptoms were low back pain (72%), depressed mood (40%), the premenstrual symptoms affected students and self employed women(63%), respectively reported one or more days missed from school or work.⁶³

A study was conducted on the prevalence of physical and psychological symptoms of pre-menstrual syndrome among female students of technical institution in Gorakhpur.

Two hundred students aged between 15 to 30 years participated in the study and revealed that all the participants of study experienced at least 1 symptom of PMS. The most common physical symptom was joint\muscle pain (77.5%). Lethargy (83%) was reported as most common psychological symptom in the study. The study concluded that prevalence of PMS is 100%, and most of the participants (42.5%) have more than 5 symptoms of PMS⁸⁰.

A study tested the Premenstrual Symptoms and Academic Stress in Emerging Adulthood Women. The study results was there were significantly higher numbers of symptoms perceived (7.16 ± 3.8 follicular and 6.18 ± 3.3 luteal, $p = .001$ and higher distress ($.39 \pm .3$ follicular and $.31 \pm .3$ luteal, $p = .003$) in the follicular phase than in the luteal phase. During follicular phase number of assignments due was significantly correlated to symptom perception and distress (.31, .37, respectively) and the number of projects/presentations due was correlated to symptom distress (.25) at $p < .05$. There were significant correlations between follicular phase symptom perception and distress, and luteal phase symptom distress with academic demand distress for assignments, papers, projects/presentations and time studying, indicating a relationship between distress components of symptom experience and some components of academic stress⁸¹.

A descriptive study was conducted at Government high schools in rural field practice area of Kempegowda Institute of Medical Sciences, Bangalore, India. Girls ($n = 304$) studying in high schools attained menarche were included. The result was dysmenorrhea was 183 (60.19%) and PMS was 159 (52.30%) subjects. During menstruation, 208 (68.42%) of them reported that they could not attend school, 196

(65.13%) reported that they could not concentrate on studies, 181 (60%) reported inability to participate in sport activities. Whereas 235 (77.30%) reported inability to carry out household activities like cooking and 76 (25%) study subjects did not attend any social gatherings. The finding revealed that more than half of study subjects suffered from dysmenorrhea and PMS which significantly affected school attendance and daily routine activities.³⁸

The pre experimental research approach was undertaken among adolescent students in Mangalore. Stratified random sampling was used. The study result was majority of adolescent students (70%) were in the age group of 13–14 years and majority (60%) attained menarche were in the age group of 12–13 years. 50% of the adolescent students were Hindus. Majority percentage (80%) belongs to 8th-9th standard. Majority percentage (90%) of them was having more than Rs. 9001 family income. The study concluded that adolescents premenstrual syndrome particularly affect school functions and social interactions.⁸²

A descriptive analytic study was undertaken to assess adolescent student's knowledge toward premenstrual syndrome in nursing secondary schools at Al- Diwanyia governorate. The result revealed that the majority of the study sample 44.6 % had insufficient knowledge toward premenstrual syndrome. The study recommended to development of school health services for better detection and management of PMS in the adolescent population. Encourage affected girls to seek medical advice from the medical staff. Enhance adolescent's student's knowledge regarding PMS as well as adapt healthy life style.⁸³

The quasi experimental design was undertaken to assess the impact of educational sessions about PMS management using CAM on young adult females' knowledge and practice. The result revealed that, the mean age of the sample was 21.98 + 1.23years old. About two thirds (66.3%) of the sample reported that they got their knowledge from family and friends. There was a significant improvement of the subjects' knowledge regarding PMS after the educational session which included definition, time, and symptoms of PMS ($p = 0.000$ for each). Also the knowledge of the participants was significantly improved after the educational session regarding CAM use to manage PMS. This included Diet, supplements, herbal, mind body intervention, manipulative and body-based methods ($p= 0.000$ for each). The total knowledge score increased significantly after the educational session ($P = 0.000$). The study concluded that educational session significantly increased female awareness and practice about PMS.⁸⁴

Nowadays, the usage of CAM to manage PMS is remarkable. However, one of the major reasons cited for the current revival of CAM is the growing awareness of occurrence of side effects due to women misconceptions that these medicines are inherently safer and more healthful. It was highly informative to assess the impact of educational sessions about PMS management Using CAM on young adult females' knowledge and awareness

Acupressure Therapy is an ancient healing arts developed in Asia over 5,000 years ago. Using the power and sensitivity of the hand instead of needles, acupressure points are effective in relieving stress-related ailments, in self treatment and in

preventive health care. Acupressure releases tension, increases circulation, reduces stress and pain.

A quasi experimental study was evaluated the effectiveness of acupressure on achievement stress among high school students in Udupi. The result revealed that acupressure was effective in reducing achievement stress among students within the intervention group ($t= 13.498, p<0.001$). The study concluded that acupressure was effective in reducing achievement stress among students.⁸⁵

A quasi-experimental pre-test post-test control group study was undertaken to determine the effectiveness of acupressure on physical stress among high school students in Karnataka. Statistical analysis of data revealed that acupressure was effective in reducing physical stress among students within the intervention group ($Z = -5.803, P < .001$). The study concluded that acupressure was effective in reducing physical stress among students.⁸⁶

The quasi experimental design was adopted to evaluate a effectiveness of acupressure on premenstrual symptoms among adolescent girls at Vidyakirana public school, Bangalore. 50 adolescent girls were selected by using simple random sampling technique. The result was pre and post test values of mean percentage and standard deviation are $m_1=50.02$ $m_2=36.5$ and $SD=5.32, 8.2$ respectively. The paired 't' value was 22.14, is highly significant at $p<0.001$ level. There was significant association between posttest scores of the adolescent girls and demographic variables such as weight of adolescent girls and duration of menstrual flow, at $P<0.05$ level. It revealed that acupressure was effective in reducing premenstrual symptoms among adolescent girls.⁸⁷

Reflexology is one of the mild forms of exercise by stimulating the function of the vital organ through, massage and applying pressure to reflexed points on the joints, foot and hand. Reflexology therapists believe that each point corresponds to different body parts and functions. Reflexology is a therapy using the pressure points of the hands and feet which gives a reflex action through the nervous system of the body. Reflexology offers a natural approach to restoring balance and harmony within the body, mind, and spirit. Reflexology is an entirely natural treatment whose aim is to normalize and harmonize the functions of the body.

A single-blind controlled clinical trial of two groups in which, 120 students with premenstrual syndrome were include in two groups of foot reflexology and control. Intensity of stress and anxiety was recorded by subjects in two cycles: pre – intervention cycle and intervention cycle. The study result showed that there was no significant statistical difference between under research variables in the respect of interventional variables. In comparison of pre and post intervention in reflexology significantly led to decrease of average of stress (9.2 %), anxiety (11.3 %), ($p < 0.0001$) in comparison with control group, there was signification difference between the average of stress and anxiety in reflexology group was signification less than control group ($p < 0.0001$). It seems that, foot reflexology is effective in improvement of stress and anxiety.⁸⁸

A quasi-experimental design was undertaken, the Effect of Foot Reflexology on Premenstrual Syndrome and Dysmenorrhea in Female College Students. Of the forty female college students, twenty were assigned to the experimental group and, twenty

to the control group. The data were obtained over 2 months. The instrument used to assess premenstrual syndrome and dysmenorrhea was Keele'sVAS (Visual Analogue Scale) and opening records. Subjects in the experimental group received foot reflexology for 6 times with 1 hour during 60 days, and subjects assigned to the control group did not receive foot reflexology.

The results of the study revealed that,

1. The symptoms which the group of experimental and the group of control discomfort the most are sensitiveness (35%), abdominal pain (30%), lower abdominal pain (30%) and lumbago (20%). The method of relieve premenstrual syndrome and dysmenorrhea by which the subjects employ the most to solve their premenstrual syndrome and dysmenorrhea is the getting along by enduring(67.5%) and bed rest (32.5%).
2. The mean score of the premenstrual syndromes and dysmenorrhea before foot reflexology was 8.35, it was 4.16 at the first menstruation after foot reflexology and 3.25 at the second menstruation for the experimental group.
3. The relieved symptoms after foot reflexology was fatigue (50%), insomnia (40%), abdominal pain(35%), lower abdominal pain (30%) and constipation(30%).

The study concluded that Foot reflexology was effective in improves the symptoms of the female college students who have the premenstrual syndrome and dysmenorrhea.⁸⁹

A single blinded clinical trial was undertaken to explore the effect of sole reflexology (Reflex Zone Therapy) on the intensity of premenstrual syndrome among students at Tehran University of Medical sciences. 120 volunteer students were divided in to two groups of real and unreal reflex zone therapy (intervention and control group) and

received this treatment for eight continuous weeks, for 30 minutes once a week. The results of research in the two treatment groups show that real reflex zone therapy can reduce the behavioral symptoms by 20% though such reduction does not show a statistically significant difference ($p=0.16$). According to the results, although the effect of this method of the behavioral part of this syndrome was not significant, regarding the results of other researches for the effectiveness of this method of decreasing the PMS, it is hoped to use for reducing the symptoms by more researches in this area of complementary medicine together with other common treatments in gynecological conditions.⁹⁰

Although there is no therapeutic cure for premenstrual symptoms, the good news is that there are significant, new advancements in understanding and managing it. Though there is no doubt that adolescent suffer from premenstrual syndrome they may endure the discomfort and pain in silence and complain only to family and friends because they don't realize that anything can be done to help them.

Despite the efforts of researchers in this study for widely reviewing the texts related to the effect of acupressure and reflex zone therapy on PMS, no study was seen in the country and a few studies were done in foreign countries. Regarding the high prevalence of PMS, side effects and costliness of pharmaceutical methods and ever-increasing tendency toward complementary medicine, and the necessity of midwives' being upgraded with modern treatment methods; the researchers were persuaded to do this study.

Further investigator experienced that the adolescence girls have at least 4 or 5 physical, 3 or 4 psychological and 4 or 5 behavioral symptoms during their menstrual cycle. They are not seeking proper treatment. So, the investigator was developed the complementary therapy likes acupressure and reflexology which is cost effective and has no side effects, but also reduces the usage of premedication, reduces the period of school absentee and prevents complications during premenstrual syndrome. This further promotes early recovery of the patients and enhances them comfort and promotes early participation in normal life.

1.3 STATEMENT OF THE PROBLEM

A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF ACUPRESSURE Vs REFLEXOLOGY ON PRE MENSTRUAL SYNDROME AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS AT ERODE, TAMIL NADU.

1.4 OBJECTIVES

1. To assess the level of premenstrual syndrome among experimental group I of adolescent girls before and after acupressure
2. To assess the level of premenstrual syndrome among experimental group II of adolescent girls before and after reflexology.
3. To determine the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.
4. To compare the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.


- To find out the association between post test scores of pre menstrual syndrome among experimental group I and II of adolescent girls with their demographic variables.

1.5 OPERATIONAL DEFINITIONS

1.5.1 Compare the effectiveness

It refers to significant difference in reduction of pre menstrual symptoms, as determined by significant difference between the post test scores of experimental group I (Acupressure) and experimental group II (Reflexology).



1.5.2 Acupressure (Experimental group I)

Acupressure Points and Location	Technique / Procedure
<p>1. Sanyinjiao point (San Yin Jiao (Sp6)) This is located on the inside of leg, just above ankle. To find this point, (1) locate the highest peak of the ankle (2) four finger widths up leg, apply deep pressure slightly behind the bone (tibia)</p>  <p>2. Grandfather Grandson (Sp4)</p>	<ol style="list-style-type: none"> The adolescent girls was made to lie down/ sit comfortably The investigator was given acupressure to the alternate legs at the Sanyinjiao point (San Yin Jiao (Sp6)) and Grandfather Grandson (Sp4) acupoints. For each pressure cycle on each side Sp6 and Sp4 was pressed with a thumb for 6 seconds and released for 2 seconds without pressure. This was continued for 5 minutes on each point on each leg, to bring the total duration of 20 minutes Treatment duration 20 minutes (10

This point is located in the upper arch of the foot, one thumb width from the ball of the foot. Apply deep pressure slightly behind the bone.	minutes in each leg) once in a week for 8 weeks
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1.5.3 Reflexology (Experimental group II)

Reflexology is a technique; investigator applied the pressure on the reflex point with thumb

Reflex points	Technique/ Procedure
	<ol style="list-style-type: none"> 1. The adolescent girls was made to lie down on table comfortably in supine position 2. Relaxation exercises – massage the foot all over slowly and gently twist the spine area on the foot. (1 minute for each foot)
	<ol style="list-style-type: none"> 3. Thumb walking up and down on the spine (2 minute for each foot)
<p style="text-align: center;">Appropriate Foot Reflex Points</p> 	<ol style="list-style-type: none"> 4. Stimulate the meridian points such as <ol style="list-style-type: none"> 1. Ovary 2. Uterus 3. Pituitary gland and endocrine system 4. Solar plexus 5. Adrenal gland 6. Kidney 7. Sympathetic nervous system (1 minute for each point, 7 minutes/foot). Total duration of treatment was 10 minutes/foot (total 20 minutes) 5. Treatment duration 20 minutes (10 minutes in each leg) once in

	a week for 8 weeks
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1.5.4 Pre menstrual syndrome

Premenstrual syndrome includes

1. **Physical symptoms** includes Breast tenderness and swelling, Abdominal bloating, weight gain, Headache, Dizziness/fainting, Fatigue, Palpitations, Pelvic discomfort and pain, Abdominal cramps, Change in bowel habits, Increased appetite, Generalized aches and pains, Food cravings (Sugar/ Salt), Skin changes, rashes, pimples, Nausea/vomiting and Muscle and Joint pain
2. **Psychological symptoms** includes Irritability, Anxiety, Tension, Mood swings, Loss of concentration, Depression, Forgetfulness, Easy crying/ Crying spells, Sleep changes (Insomnia/ hypersomnia), Confusion, Aggression and Hopelessness
3. **Behavioral symptoms** includes Social withdrawal, Restlessness, Lack of self control, Feeling guilty, Clumsiness, Lack of interest in usual activities, Poor judgment, Impaired work performance, Obsessional thoughts, Compulsive behavior, Irrational thoughts and Being over sensitive

The above symptoms are measured by using Premenstrual Symptoms Scale (PMSS)

1.5.5 Adolescent Girls

Adolescent girls with premenstrual syndrome in the age group of 13 – 17 years

1.6 HYPOTHESES

Level of significance at 0.05

RH₁: There is a significant difference in level of premenstrual syndrome among experimental group I and II of adolescent girls before and after acupressure and reflexology

RH₂ There is a significant difference between acupressure and reflexology on premenstrual syndrome among adolescent girls in experimental group I and experimental group II.

RH₃: There is a significant association between post test scores of premenstrual syndrome among experimental group I and II of adolescent girls with their demographic variables.

1.7 ASSUMPTION

The study assumes that:

1. Premenstrual syndrome is distressing for many girls.
2. Acupressure and Reflexology on premenstrual syndrome has an impact on reduce premenstrual symptoms and relaxation.
3. Adolescent girls require complimentary therapy to maintain quality of life.

1.8 DELIMITATIONS

The study was limited to,

- Adolescent girls with pre menstrual syndrome
- Adolescent girls studying in Municipal Girls Higher Secondary School, Karungalpalayam, Erode and GTS Government Girls Higher School P.S Park, Erode.
- Comparing the effectiveness of Acupressure Vs Reflexology on pre menstrual syndrome
- The study limited to 250 adolescent girls

1.9 CONCEPTUAL FRAMEWORK

Conceptual framework is a theoretical approach to the study of problems that are scientifically based and emphasizes the selection and clarification of its concepts. A conceptual framework states functional relationship between events and is not limited to statistical relationships.

1.9.1 CONCEPTUAL FRAMEWORK BASED ON IMOGENE KING'S GOAL ATTAINMENT THEORY FOR THE PRESENT STUDY

Theoretical framework provides clear description of variables suggesting ways or methods to conduct the study and guiding the interpretation, evaluation and integration of study findings⁹¹

A theoretical framework can be defined as set of concepts and assumptions that integrates them into meaningful configuration⁹²

This study is based on Imogene King's Goal Attainment theory, (1997) which would be relevant to reduce the level of premenstrual symptoms by providing acupressure and reflexology among adolescents' girls.

Imogene King's system is an "open" system. In this system, humans are in constant interaction with their environment. According to Imogene King each individual on this system has good directed choice of perceived alternatives in made and acted by individuals or groups to attain a goal. It is a process of human interaction in which two people who are usually strangers come together in a health care organization to help and to be helped to maintain a state of health that permit, functioning the roles.

The main concepts in Imogene King's open system are:

1. Perception

A process of organizing, interpreting and transforming information from sense data and memory that gives meaning to one's experience represents one's image of reality and influences one's behaviour.

2. Judgement

Each member of the dyad perceives the other and makes judgment for goal attainment.

3. Action

Each member dyad makes judgement and thereby action follows to attain goal.

4. Mutual goal setting

It is an activity that includes the client and family when appropriates in prioritizing the goal care and in developing a plan of action to achieve the goal.

5. Interaction

The acts of two or more persons in mutual presence a sequence of verbal and non verbal behaviors that are goal directed.

6. Transaction

A process of interaction in which human beings communicate with the environment to achieve goals directed human behavior. In this model, human are in constant interaction with their environment. Adjustment to life and health are influenced by individual interaction with the environment. Each human being perceives the world as a total person in making transaction with the individual and things in the environment.

1.9.2 APPLICATION OF CONCEPTUAL FRAMEWORK BASED ON IMOGENE KING'S GOAL ATTAINMENT THEORY FOR THE PRESENT STUDY

The main concepts in Imogene King's open system are:

Perception

In this study the researcher and the subjects were come together for an interaction, a different set of perception to exchange. The researcher perceived that adolescents had premenstrual syndrome distressing their activity, school absentee, impairment of academic performance and poor social interaction.

Judgement

The researcher wants to reduce the level of premenstrual symptoms.

Action

In this study, during the action phase, the investigator prepares premenstrual syndrome rating scale and to identify the level of premenstrual syndrome among adolescent girls in experimental group I and experimental group II.

Mutual goal setting

It is an activity that includes the adolescent girls and their parents when appropriates in prioritizing the goal care and in developing a plan of action to achieve the goal. The investigator administered acupressure (Experimental group I) and reflexology (Experimental group II) to the adolescent girls on

fourth day of menstruation for the duration of 20 minutes once a week for 8 weeks.

Interaction

In this study the researcher and samples interact with each other. After administered acupressure (Experimental group I) and reflexology (Experimental group II), there were changes in physiological, behavioral and psychological symptoms of adolescent girls.

Reflexology is to eliminate toxins and wastes and strenghten and balance the energy flow in the body thereby promoting and maintaining homeostasis.

Acupressure stimulation removes energy blockages by diffusing the toxins, clears the meridians and improves the flow of energy.

Transaction

The transactions between the subjects and the researcher, post test was conducted by using Premenstrual syndrome scale (PMSS) to assess and compare the premenstrual syndrome among experimental group I and II adolescent girls. The goal is achieved when there is reduce the premenstrual symptoms among adolescent girls in both the groups.

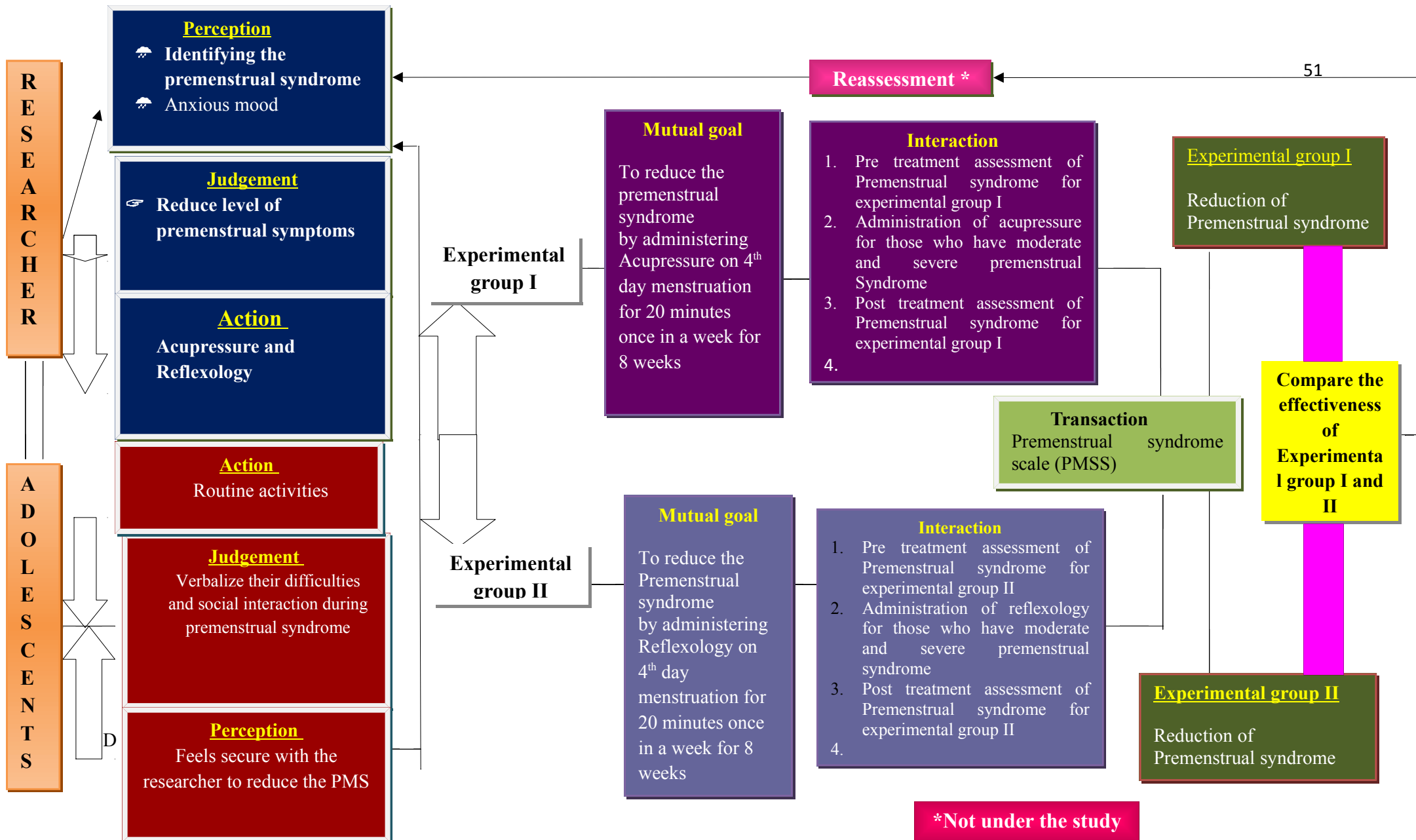


Fig. 1.1.2 MODIFIED CONCEPTUAL FRAMEWORK BASED ON KING'S GOAL ATTAINMENT THEORY - 1997

SUMMARY

This chapter has dealt with Introduction, need for the study and statement of the problem, objective, operational definitions, hypothesis, delimitation and conceptual framework of the study.

OUTLINE OF THE REPORT

Further aspects of the study are presented in the following chapters.

Chapter II: Review of related literature.

Chapter III: Review Methodology which includes research approach design, setting, population, sample, and sampling technique, data collection, description of tools, validity and reliability of tools, development of acupuncture and reflexology intervention, pilot study, data collection procedure, and plan for analysis of data.

Chapter IV: Analysis and data interpretation

Chapter V: Discussion

Chapter VI: Summary, conclusion, nursing implications, recommendations and limitations of the study.

The report end with bibliography and Appendices

REVIEW OF LITERATURE

Conduction research is based on thorough undertake of review of literature which familiarize the researcher themselves with the knowledge base. The most important of research literature review is written part of summary on state of evidence related to research problem.⁹³

Review of literature serves as essential background for any researcher for understanding current knowledge of the topic, eliminate the significance of new study, formulating and delimit the problem, suggesting a theoretical framework to choose most appropriate design for study, throws light on the flexibility and reveals constraints of data collection .⁹³

The major steps in preparing written research review includes formulating a question, conducting a search through relevant resource retrieving, abstracts and encoding information, analyzing the aggregated information and critiquing the studies, and involves written summary preparation. The review of literature related to present study were from, unbound Medline, books and published articles search to broaden the understanding and gain insight into the selected problem under study.

The review of literature is divided in to two parts.

2.1 Part 1: Review of literature related to general concepts of premenstrual syndrome and related intervention in treatment of premenstrual syndrome individual.

2.2 Part 2: Review literature on studies related to

2.2.1 Review related to studies on prevalence of premenstrual syndrome.

2.2.2 Review related to studies on causes of premenstrual syndrome.

2.2.3 Research studies related to severity of problems of premenstrual syndrome.

2.2.4 Research studies on effectiveness of acupressure on premenstrual syndrome

2.2.5 Research studies on effectiveness of reflexology on premenstrual syndrome

2.1 Part 1: REVIEW OF LITERATURE RELATED TO GENERAL CONCEPTS OF PREMENSTRUAL SYNDROME AND RELATED

INTERVENTION IN TREATMENT OF PREMENSTRUAL SYNDROME INDIVIDUAL.

Premenstrual syndrome (PMS) is characterized by significant mood, behavioral, and physical changes that occur several days to 2 weeks before menses and abate during the menstrual flow.

CLASSIFICATIONS OF PREMENSTRUAL SYNDROME

Dr. Guy Abraham developed a system for categorizing premenstrual syndrome into four distinct subgroups. The following is a summary of these categories:

- PMS-A (anxiety) is believed to be related to high levels of estrogen and deficiency of progesterone. Women experience irritability, anxiety, and emotional lability.
- PMS-C (carbohydrate craving) is of unclear etiology but may be caused by enhanced intracellular binding of insulin. Women experience increased appetite, sugar and carbohydrate craving, headache, and heart palpitations.
- PMS-D (depression) is most likely caused by low levels of estrogen, which leads to excessive breakdown of neurotransmitters. Low estrogen levels may be caused by enhanced adrenal androgen or progesterone secretion.
- PMS-H (hyperhydration) is the result of increased water retention secondary to elevated levels of aldosterone. Elevated levels of aldosterone in the premenstrual period may be the result of excess estrogen, excessive salt intake, stress, or magnesium deficiency. Women report weight gain, breast tenderness and fullness, swelling of the hands and feet, and abdominal bloating.

PREDOMINANT SYMPTOMS OF PREMENSTRUAL SYNDROME

1. **Mood**
 - Irritability
 - Mood swings
 - Anxiety/tension
 - Depression
 - Feeling out of control
2. **Behavioral**
 - Sleep disturbances
 - Appetite changes
 - Poor concentration
 - Decreased interest
 - Social withdrawal
3. **Physical**
 - Swelling
 - Breast tenderness
 - Aches
 - Headache
 - Bloating/weight gain

ACOG DIAGNOSIS OF PREMENSTRUAL SYNDROME

Symptoms consistent with PMS that may include:

- ➔ Affective symptoms: depression, angry outbursts, irritability, anxiety, confusion, social withdrawal
- ➔ Somatic symptoms: breast tenderness, abdominal bloating, headache, swelling of extremities
- ➔ Restriction of these symptoms to the luteal phase of the menstrual cycle assessed prospectively
- ➔ Impairment of some facet of the woman's life
- ➔ Exclusion of other diagnoses that may better explain the symptoms

TREATMENT APPROACH

Alternative medicine

The effectiveness of complementary remedies used to soothe the symptoms of premenstrual syndrome:

- **Calcium.** Consuming 1,200 milligrams (mg) of dietary and supplemental calcium daily, such as chewable calcium carbonate (Tums, Rolaids, others), may reduce the physical and psychological symptoms of PMS. Regular, long-term use of calcium carbonate also reduces your risk of osteoporosis.
- **Magnesium.** 400 mg of supplemental magnesium daily may help to reduce fluid retention, breast tenderness and bloating in women with premenstrual syndrome.
- **Vitamin B-6.** A daily dose of 50 to 100 mg of vitamin B-6 may help some women with troublesome PMS symptoms.
- **Vitamin E.** This vitamin, taken in 400 international units daily, may ease PMS symptoms by reducing the production of prostaglandins, hormone-like substances that cause cramps and breast tenderness.
- **Herbal remedies.** Some women report relief of PMS symptoms with the use of herbs such as black cohosh, ginger, raspberry leaf, dandelion, chasteberry and evening primrose oil. However, few scientific studies have found that any herbs are effective for relief of PMS symptoms.
- **Natural progesterone creams.** These are derived from wild yams and soybeans. Women report that these creams relieve symptoms.

There are other natural remedies commonly used for PMS, including:

- Ginkgo
- Royal jelly
- OPCs (oligomeric proanthocyanidins)

- Uva ursi
- St. Johns wort
- [Wild yam](#)
- Dandelion
- [Reflexology](#)
- Acupuncture
- Chiropractic
- Progesterone crea^{94,95,164,165}

2.2.1 REVIEW RELATED TO STUDIES ON PREVALENCE OF PREMENSTRUAL SYNDROME.

A comparative study was conducted to assess the menstrual characteristics among the adolescents of rural and urban West Bengal, India. The sample of the study constituted 715 adolescent girls from rural (325) and urban (390) areas of West Bengal, a State of India. Data on socio-economic variables and menstrual characteristics were collected using pretested questionnaires. The result showed that the rural and urban adolescents differed significantly ($p < \text{or} = 0.05$) with respect to age at menarche, skipped and irregular cycles, premenstrual syndrome, duration of menstrual discharge, mean number of days of peak discharge and problems related to menstrual discharge. Place of residence was found to be a significant predictor of age at menarche ($\text{beta} = 0.27, p < 0.01$). Significant association was observed between some of the socio-economic variables and various menstrual characteristics among the study participants. Menstrual characteristics differ significantly between rural and urban adolescents.⁹⁶

A cross sectional study was conducted on premenstrual disorders: prevalence and associated factors in a sample of Iranian adolescents. The research design was a cross sectional study. A sample of adolescent school girls aged between 14 and 19 years were included in the study. Diagnostic assessments were based on Premenstrual Assessment Scale (PAS). The result revealed that, 1379 female students were included in the study. About 99.5 % of the students reported at least one premenstrual symptom. Of these, 66.3% was mild, 31.4% moderate and 2.3% severe. A total of 814 girls (59%) met the diagnostic criteria for premenstrual dysphoric disorder (PMDD). Most frequently reported symptoms were back pain, lethargy, fatigue and anxiety. Early menarche, lower education was associated with higher scores on PAS. The study concluded that, premenstrual disorders are common in adolescent girls. Preventive and treatment strategies are highly recommended.⁹⁷

A study was undertaken to assess the prevalence and severity of premenstrual syndrome and its associated signs and symptoms among college students in Iran university of medical sciences. 500 undergraduate students were selected for this study randomly. Results showed that out of 500 students, 255 (about 50%) completed and returned the premenstrual daily symptoms dairy forms. Out of the 255 students 200 (78.43%) were suffering from some degree of premenstrual syndromes, (62%) mild , 36% moderate and 2% severe). Mood symptoms in 24% and the behavioural symptoms in 3% of them considered to be severe. Study concluded that premenstrual syndrome can be considered as a common disorder of reproductive age. Therefore health professional should notice

mood and behavioural as well as physical signs and symptoms of premenstrual syndrome and provide them with an appropriate consultation or medical interventions if necessary.¹⁶

A cross-sectional survey was conducted on Survey of premenstrual symptom severity and impairment in Korean adolescents: premenstrual dysphoric disorder, subthreshold premenstrual dysphoric disorder and premenstrual syndrome. A cross-sectional survey was conducted among adolescents from an urban area. The 984 girls divided into the following four groups, by using a premenstrual symptoms screening tool: PMDD, subthreshold PMDD, moderate/severe PMS and no/mild PMS. An Adolescent Mental Problem Questionnaire, Center for Epidemiological Studies-Depression Scale, revised Children's Manifest Anxiety Scale, and a menstrual information questionnaire were also used to collect the data from the participants. The result showed that, Sixty-three (6.76%) of the subjects met the criteria for PMDD and 58 (6.2%) were subthreshold PMDD. The subthreshold PMDD group included 79.3%, who met the symptom criteria for PMDD, but their impairment was moderate, and 21.7% who were falling short by the number of symptoms for PMDD diagnosis, though reporting severe impairment. The symptom intensity and frequency of the subthreshold PMDD subjects were similar to those in subjects with PMDD. In these two groups, 69% had moderate to severe physical symptoms. Psychiatric problems, including depression and anxiety, were higher in the PMDD and subthreshold PMDD groups than in the moderate/severe PMS and no/mild PMS group. It concluded that, 20% of adolescents reported suffering from distressing premenstrual symptoms, and girls with PMDD and subthreshold PMDD were very similar in their symptom severity and characteristics.⁹⁸

A study was investigated on Perception of premenstrual syndrome and attitude of evaluations of work performance among incoming university female students. Premenstrual syndrome (PMS) is a common condition, and for 5% of women, the influence is so severe as to interfere with their mental health, interpersonal relationships, or studies. Severe PMS may result in decreased occupational productivity. A total of 1971 incoming female university students were recruited in September 2009. A simulated clinical scenario was used, with a test battery including measurement of psychological symptoms and the Chinese Premenstrual Symptom Questionnaire. The results showed that, when evaluating employee performance in the simulated scenario, 1565 (79.4%) students neglected the impact of PMS, while 136 (6.9%) students considered it. The perception of daily function impairment due to PMS and frequency of measuring body weight was significantly associated with consideration of the influence of PMS on evaluation of work performance.⁹⁹

Menstruation in adolescent girls is often associated with menstruation related problems and poor practices. The study was planned to investigate the menstrual related problems and menstrual practices among school going adolescent girls. The study was a community based cross sectional study in a girls' school in Nagpur. Three hundred and eighty seven girls in the age group of 12-16 years, with the mean (SD) age of 13.82 (0.83) years, were studied. Majority of the participants, 62.3% belonged to urban areas. Majority (92.5%) mothers of the study participants were educated. Majority of the girls (71.8%) had one or the other problem related to menstrual cycles. Dysmenorrhoea in

(61%), PMS in (55.8%) and other problems pertaining to menstruation were reported in (55.3%) of the study participants. Three (1%) girls had menstrual period for less than two days whereas the bleeding of 27 (7%) subjects lasted for more than six days. Abnormal bleeding was reported in 35 (9%) of the subjects. About 15% had irregular cycles and a few had missed their cycles. The comparison of menstruation related issues among rural and urban girls. Dysmenorrhoea and PMS were significantly more in urban than the rural girls ($P=0.01$). Menstrual problems are a common source of morbidity in this population.¹⁰⁰

Chronic inflammation associated with menstrual symptom severity and premenstrual syndrome (PMS)? Cross-sectional study of 277 women aged 18-30 years. Serums levels of inflammatory markers include are interleukin (IL)-2, IL-4, IL-10, IL-12 and interferon (IFN)- γ was positively associated with menstrual symptom severity and/or PMS in young women. The tools were information on menstrual symptoms, lifestyle, diet, anthropometry and other factors by questionnaire and/or direct measurement, and a mid-luteal phase fasting blood sample was taken between 7 a.m. and 12 p.m. Total, physical and affective menstrual symptom scores were calculated for all participants, of whom 13% ($n = 37$) met criteria for moderate-to-severe PMS and 24% ($n = 67$) met PMS control criteria. The finding was age, smoking status and BMI, total menstrual symptom score was positively associated with levels of IL-2 (percentage difference in women at the 75th percentile of total symptom score versus at the 25th percentile = 24.7%; $P = 0.04$), IL-4 (21.5%; $P = 0.04$), IL-10 (28.0%; $P < 0.01$) and IL-12 (42.0%; $P = 0.02$) in analyses including all participants. Affective menstrual symptom score was linearly

related to levels of IL-2 (percentage difference at 75th percentile versus 25th percentile = 31.0%; $P = 0.02$), while physical/behavioral symptom score was linearly related to levels of IL-4 (19.1%; $P = 0.03$) and IL-12 (33.2%; $P = 0.03$). Additionally, mean levels of several factors were significantly higher in women meeting PMS criteria compared with women meeting control criteria, including IL-4 (92% higher in cases versus controls; $P = 0.01$); IL-10 (87%; $P = 0.03$); IL-12 (170%; $P = 0.04$) and IFN- γ (158%; $P = 0.01$). The study result revealed that inflammatory factors may be elevated in women experiencing menstrual symptoms and PMS.¹⁰¹

A cross sectional study undertaken a study on age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. A cross sectional study was conducted in Dabat and Kola Diba, northwest Ethiopia. Systematic sampling method was used to select 622 school girls from two secondary schools. Only 612 of the adolescent females were included, of which 305 were from Koladiba High School and 307 from Dabat. The result was average age at menarche was 15.8 +/- 1 years. The mean age at menarche was 0.3 years younger for urban females compared with rural ones ($p < 0.001$). A cycle length between 21 and 35 days was observed in 70.3% of the girls. The mean duration of flow was 4 +/- 1.3 days with a range of 2-7 days. The menstrual cycles were irregular in 42.8% of the subjects. The overall prevalence of dysmenorrhoea was 72%. Premenstrual symptoms were present in 435 of the females (75.4%). The leading sources of menarcheal information to the adolescents were mothers (39.7%), followed by their friends (26.6%) and teachers (21.8%). The study finding was significant number of

students complain of abnormal menstrual cycle, dysmenorrhoea and premenstrual symptoms.¹⁰²

A study was conducted on Prevalence and pattern of menstrual disorders among Lebanese nursing students. Totally 352 students completed a written questionnaire, the most common menstrual disorders were irregular frequency of menstruation (80.7%), premenstrual syndrome (54.0%), irregular duration of menstruation (43.8%), dysmenorrhoea (38.1%), polymenorrhoea (37.5%) and oligomenorrhoea (19.3%). There were significant associations between irregular cycles and marital status (OR 2.18) and menarcheal age (OR 4.76); oligomenorrhoea and residency (OR 2.06) and menarcheal age (OR 3.17); abnormal blood loss and menarcheal age (OR 6.92); dysmenorrhoea and marital status (OR 8.93) and residency (OR 2.04); and premenstrual syndrome and marital status (OR 2.10). Dysmenorrhoea and premenstrual symptoms were serious enough to affect daily activities or academic attendance in many cases and this is a concern for policy-makers.⁵

A Cross sectional study undertaken a study on the common problems, related to menstruation faced by Adolescent girls. Cross sectional study conducted at St. Theresa's girls Higher Secondary School at Chengaroor of Pathanamthitta district. The study included 503 girls from 6th std. to 9th std. The result revealed mean age of onset of menarche was 12.2yrs. 70.1% of adolescent had problems related to menstruation, of which dysmenorrhea and premenstrual syndromes was the major problem (88.8%). Other problems were menorrhoea, hypomenorrhoea, polymenorrhoea, oligomenorrhoea and

menometrrhagia (11.2%). 23% had missed school days for 1-3 days. The study concluded that 70.1% of school girls have menstrual problems, the commonest being dysmenorrheal and premenstrual syndromes (88.8%). Problems like menorrhoea, hypo menorrhoea, polymenorrhoea, oligomenorrhoea and menometrrhagia contributed to 11.2%. School absenteeism due to menstrual problems was detected up to 23%¹.

A cross-sectional descriptive study was undertaken on age at menarche and menstrual cycle pattern among school adolescent girls in Central India. A cross-sectional descriptive study was carried out on 1100 school adolescent girls in district Wardha, Central India. Data were collected by using a self-administered structured questionnaire on menstruation. The finding revealed that mean ages of menarche were 13.51 ± 1.04 years and 13.67 ± 0.8 years for urban and rural areas respectively. Abnormal cycle length was common and affected 30.48%. The majority 56.15 experienced dysmenorrhoea and 56.16 percent had premenstrual syndrome. Self medication was practiced by 7.13% of the adolescent girls. The most common premenstrual symptom was headache 26.74%. Absenteeism from the school 13.9% was the effect of menstruation related problems on their daily routine. Dysmenorrhoea and premenstrual symptoms were perceived as most distressing symptoms leading to school absenteeism. Majority of the girls 75.58% had discussed menstrual problems with someone, most commonly with their mothers 38.15%. There was a general lack of information about menstrual issues especially with regards to cycle length, duration of menses and age at menarche. Girls from families of high socio-economic class have significantly lower mean menarcheal age in both urban and rural area. The mean age of menarche was significantly higher in girls involved in vigorous

sporting activity in urban area compared to their non-sporting counterparts. The finding concluded age at menarche was delayed. The menstrual disorders among female adolescents are common. A school health education on menstrual problems among adolescent girls and their parents and routine screening for menstrual problems by healthcare providers can help to prevent the absenteeism in the school.¹⁰³

A systematically reviewed a Meta analysis study aimed to determine the overall mean age at menarche of the girls in Iran. Two raters verified a total of 1088 articles based on the inclusion criteria of this study. Forty-seven studies were selected. The finding was homogeneity assumption for the 47 reviewed studies was attained (Tau-square = 0.00). The mean (95% CI) menarche age of Iranian girls from the random effects was 12.81 (95% CI: 12.56-13.06) years. The finding showed that mean age at menarche was less than that of some European developed countries such as Switzerland, Sweden, and Denmark, more than that reported in some countries such as Greece and Italy, and similar to the values obtained in the United States of America and Colombia. Lower age at menarche in Iran may be largely attributed to the changes in lifestyle and diet of the children.¹⁰⁴

A study evaluated whether plasma BDNF levels in women with PMS differ from those of normally menstruating women without PMS. Sixty-two women were divided into two groups: one group of women (n=35) with PMS and one group (n=27) composed by normally menstruating women. Plasma samples were collected at day 7 (follicular phase) and day 21 (luteal phase) of the menstrual cycle. Plasma BDNF of the control group

significantly increased ($p < 0.001$) from the follicular phase ($402.90 \pm 74.41 \text{ pg/ml}$) to the luteal phase ($1098.79 \pm 146.49 \text{ pg/ml}$). In the PMS group plasma BDNF levels significantly decreased ($p < 0.001$) from the follicular phase ($412.45 \pm 78.35 \text{ pg/ml}$) to the luteal phase ($233.03 \pm 75.46 \text{ pg/ml}$). Luteal BDNF levels of the PMS women were significantly lower than those of the control group ($p < 0.001$). In women with PMS, plasma BDNF decreases during the ovarian cycle, whereas increased women without PMS. The lower luteal BDNF levels of the PMS women might be a consequence of an altered hormonal response and might play a role in the onset of the symptoms PMS related.¹⁰⁵

A study evaluated the risk factors for premenstrual dysphoric disorder in Polish women, considering their reproductive history, socio-economic factors, as well as lifestyle and health-related factors. Totally 1540 females aged 18 to 45. Tools were socio-economic status, general health, lifestyle, medical and reproductive history, premenstrual symptoms based on the American Psychiatric Association's criteria for diagnosing premenstrual dysphoric disorder, and patient prospective daily ratings of symptoms. The finding was the mean age of the studied population was 31.9 ± 7.3 years. The majority of the studied women was married (57.9%), lived in large cities (42.0%) and had tertiary education (43.2%). The prevalence of premenstrual dysphoric disorder was 2.1%. The statistical analysis revealed that only tertiary education decreased the risk of premenstrual dysphoric disorder (OR = 0.08; $p < 0.05$). The result showed that women with tertiary education are less vulnerable to premenstrual dysphoric disorder than women with a lower level of education. Reproductive and lifestyle factors seem to be lesser role.¹⁰⁶

A study examined the prevalence and predictors of premenstrual syndrome and premenstrual dysphoric disorder in a population-based sample. Premenstrual syndrome screening tool developed to collect the data. A total of 3,913 women aged 15 to 54 years answered the questions on PMS symptoms, and 3,522 of them additionally answered the questions on interference of PMS with life. The finding was Ninety one percent of the participants reported at least one symptom, 10.3% had PMS and 3.1% fulfilled the criteria for PMDD. The prevalence of PMS was higher in non-married women, in women aged 35-44 years and in women of the Italian-speaking region of Switzerland. Both PMS and PMDD were strongly associated with poor physical health and psychological distress. Socio-cultural factors seem to determine the prevalence, perception and handling of PMS.¹⁰⁷

A cross-sectional study proved to determine the prevalence of premenstrual syndrome (PMS) between university medical students, and to evaluate the impact of the condition on their quality of life (QOL). A cross-sectional research design was used. The unmarried medical students aged 18-25 years with regular menstrual period for the last 6 months. Socio-demographic data, DSM-IV (Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association) criteria questionnaire for PM/PMDD as well as the daily record of the severity of PMS problems scale (DRSP) was collected for each student for two prospective cycles. Health-related quality of life (HRQOL) data questionnaire was collected on medical outcome study Short Form 36 (SF-36) after taking informed consent from the students. The finding was the prevalence of PMS among the studied group was 78.5%, of them, 5.9% had severe form of PMS. This study

showed that the burden of PMS/PMDD on health-related quality of life was on mental and emotional health-related quality of life domains beside on physical health-related quality of life domains as the students with PMS reported a poorer health-related quality of life as measured by SF-36 than those without PMS. The study revealed that PMS/PMDD is a prevalent, yet undertreated, disorder among medical students in KSA, which adversely affected their quality of life.³⁴

A cross-sectional study investigated the frequency of premenstrual disorders (PMS and PMDD) based on Premenstrual Assessment Scale (PAS) and also to determine the association of some demographic and menstrual characteristics with these disorders in adolescent girls. Cross sectional research design was used. A sample of adolescent school girls aged between 14 and 19 years were included in the study. Diagnostic assessments were based on Premenstrual Assessment Scale (PAS). The result was 1379 female students were included in the study. About 99.5 % of the students reported at least one premenstrual symptom. Of these, 66.3% was mild, 31.4% moderate and 2.3% severe. A total of 814 girls (59%) met the diagnostic criteria for premenstrual dysphoric disorder (PMDD). Most frequently reported symptoms were back pain, lethargy, fatigue and anxiety. Early menarche, lower education was associated with higher scores on PAS. The finding revealed that premenstrual disorders are common in adolescent girls. Preventive and treatment strategies are highly recommended.⁹⁷

Analytical-descriptive research study was undertaken the premenstrual syndrome among single and married women in the city of Eyvan-e-Gharb. Analytical-descriptive research

was used. The premenstrual syndrome questionnaire was used to collect the data. The result was significant difference between the two age groups of single girls (15- 28 and 21-28 years old) and the married women (31-38 years old) in terms of the intensity of symptoms. Prevalence and type of physical and psychological symptoms of premenstrual syndrome were different in each group. The 21-28 year-old girls, mean of 26.87, 31-38 year-old women, with the mean of 26.8, and the 15-18 year-old girls, with the mean of 20.54, indicated the minimum level of prevalence. The findings showed that premenstrual syndrome is a common problem among the girls and women of different age groups. It occurs as both physical psychological symptoms in females and disturbs their compatibility.¹⁰⁸

A Cross-sectional study was conducted the prevalence of premenstrual syndrome and associated functional disability among female students, Ethiopia, Cross-sectional study was conducted. A total of 210 female students were included in the study. A pre-designed self administered questionnaire was used. The finding was One hundred eighty female students completed questionnaire making a response rate of 85.7%. One hundred fifty five (86.1%) reported to have experienced premenstrual syndrome, out of which 71 (41.3%) had mild, moderate 47(27.3%), severe 29 (26.9%) and extremely severe (3.5%) forms of premenstrual syndrome. Premenstrual syndrome for most of them started at their age of menarche (45.9%). 73% reported that the symptoms have interfered and decreased their daily activity. Eighty nine (49.4%) reported to have changed their diet (10.5%) used analgesics and exercise (3.9%) as coping mechanism to relieve the symptoms. Statistical significant association was observed between occurrences of premenstrual syndrome and

academic year ($p < 0.05$). The prevalence of premenstrual syndrome is high among the studied female students. Even though nearly half of them used some form of coping mechanism, the symptoms have interfered their daily activity. There is significant association between occurrence of premenstrual syndrome and their academic activities. Identifying and providing appropriate medical treatment and counseling for the female students at school clinics needs to be considered. Information education communication on premenstrual syndrome and possible coping method should be provided at schools.¹⁰⁹

A study investigated the phenomenology of premenstrual syndrome in female medical students. The study included 250 medical students the tools were American College of Obstetrics and Gynecology (ACOG) criteria to diagnose PMS, demographic & reproductive factors, physical activity and mental condition. The result showed that PMS was diagnosed in 35.6% of cases, distributed as 45% mild, 32.6% moderate and 22.4% severe. There were significant trends for older age, rural residence, family income and family history of PMS. The dominant limited activity was concentration in class (48.3%). Limitations of activities were significantly more frequent among severe cases. The prevalence of anxiety and depression was statistically more evident in the PMS group. PMS was significantly associated with older age groups, rural residence, lower age at menarche, regularity of menses and family history. The premenstrual syndrome (PMS) is common in the younger age groups and, therefore represents a significant public health problem in young girls.¹¹⁰

A cross-sectional study explored the premenstrual syndrome and quality of life in Iranian medical students, design was cross-sectional study, and 142 female medical students at Urmia University of Medical Sciences were included. The data were PMS questionnaire based on the (DSM-IV) criteria, “Premenstrual Syndrome Scale” as well as the “World Health Organization's Quality of Life (WHOQOL-BREF)” questionnaire. The finding was 142 (39.4%) female medical students met the DSM-IV criteria for PMS. In the PMS group, more than half of the girls, i.e. 60.6% had mild, 25.1% had moderate and 14.2% had severe PMS. PMS was found to be significantly high in students who have positive history of PMS and who have used drugs to relieve PMS symptoms ($P < 0.05$). Life quality score was low in more than half of them, especially in psychological and social components ($P > 0.05$). However, the quality of life score means in mental health ($P = 0.02$) and environmental health ($P = 0.002$) decreases as the PMS score average increases. The result showed that premenstrual syndrome prevalence and their severity suggest that PMS is common in medical students and this adversely affects some domains of the quality of life.¹¹¹

A study was examined the Prevalence and Symptoms of Premenstrual Syndrome under Examination. The setting was Sistan and Baluchestan University (Iran) in the academic year 2013-2014. Two hundred and one female university students living in dormitories were randomly selected. The tools are demographic Information and Symptom Assessment based on the criteria of ACOG and DSM-IV. The result was “36.3%” of them suffered Premenstrual Dysphoric Disorder (PMDD) and “85.6%” of them had symptoms of PMS. The severity of PMS in 14(7%) subjects was high. Out of 86 and 72

subjects “42.8%” and “35.8%” was moderate respectively, it was mild. The most common mood symptom (emotional) and somatic symptom (physical) were fatigue and lethargy and abdominal pain (“72.6%” and “62.7%”, respectively). PMS was significantly related to dysmenorrhea and severity of menstrual pain ($p < 0.05$). The finding was high prevalence of this syndrome and its effect on various aspects of life, we highly recommend informing young individuals through books, workshops and media in order to identify the symptoms, provide information about methods of control and treatment of this syndrome, and apply non-interventional treatments and methods to reduce the symptoms.¹¹²

A prospective cohort study was investigated Premenstrual syndrome and dysmenorrhea: symptom trajectories over 13 years in young adults. A prospective cohort study, included 9671 young women selected by random sampled from national Medicare database and followed up for 13 years, examined the prevalence, the trend and the symptom trajectories of the conditions. The result was prevalence of PMS varied between 33 and 41% and dysmenorrhea between 21 and 26%. The probabilities of reporting PMS and dysmenorrhea were 0.75 (95% CI, 0.73, 0.76) and 0.70 (95% CI, 0.68, 0.72), respectively, among women in three previous consecutive surveys. Four unique trajectories were identified for both conditions. PMS was experienced by 80% of women some time during the study period, with normative (22.1%), late onset (21.9%), recovering (26.5%) and chronic (29.5%) groups revealed. Dysmenorrhea occurred in 60% of women with normative (38.3%), low (28.0%), recovering (17.2%) and chronic (16.5%) groups identified. The study finding revealed that PMS and dysmenorrhea are common among young women.¹¹³

A cross sectional study, included 250 medical student. American College of Obstetrics and Gynecology (ACOG) criteria to diagnose PMS, demographic & reproductive factors, physical activity and mental condition was analyzed. The result revealed that PMS was diagnosed in 35.6% of cases, distributed as 45% mild, 32.6% moderate and 22.4% severe. There were significant trends for older age, rural residence, family income and family history of PMS. The dominant limited activity was concentration in class (48.3%). Limitations of activities were significantly more frequent among severe cases. The prevalence of anxiety and depression was statistically more evident in the PMS group.

The finding was PMS is a common problem in young Saudi students in Al Ahsa. Severe PMS was associated with more impairment of daily activities and psychological distress symptoms.¹¹⁴

A study was conducted the menstruation of Korean adolescent girls in Seoul. The study surveyed 538 teenage girls who visited our hospital between July and November 2007. Items included are age at menarche, general menstrual characteristics, occurrence of premenstrual syndrome and treatment, and an association between present dysmenorrhea and a family history of the condition. The results was average age at menarche was 12.6 years, with 29% (n=156) menstruation at age 12 years. The prevalence of dysmenorrhea was 82% (n=435). The main symptoms were abdominal (53.2%) and lower back pain (34.2%), and 15.2% of girls who experienced such symptoms required medication. Present dysmenorrhea, and a family history thereof, were statistically correlated ($P<0.05$). 58.8% (n=316) of teenage girls had symptoms of premenstrual syndrome. The most frequent psychological symptoms were fatigue (36.4%) and nervousness (38.7%), whereas the most common physical symptom was menstrual cramps (46.5%). Most subjects (87.6%) tolerated the symptoms of premenstrual syndrome without medication; 11.4% took medicines including painkillers; but only 0.1% of subjects visited a doctor. The study concluded that average age at menarche in Korean girls was 12.6 years, thus younger than in the past. Most teenage girls experienced dysmenorrhea and premenstrual syndrome, but few consulted a doctor. Organized treatment plans are required to manage menstrual problems in teenage girls.¹¹⁵

A study was replicated prevalence and pattern of menstrual disorders among Lebanese nursing students. Totally 352 students completing a written questionnaire, the most common menstrual disorders were irregular frequency of menstruation (80.7%), premenstrual syndrome (54.0%), irregular duration of menstruation (43.8%), dysmenorrhoea (38.1%), polymenorrhoea (37.5%) and oligomenorrhoea (19.3%). On logistic regression analysis, there were significant associations between irregular cycles and marital status (OR 2.18) and menarcheal age (OR 4.76); oligomenorrhoea and residency (OR 2.06) and menarcheal age (OR 3.17); abnormal blood loss and menarcheal age (OR 6.92); dysmenorrhoea and marital status (OR 8.93) and residency (OR 2.04); and premenstrual syndrome and marital status (OR 2.10). Dysmenorrhoea and premenstrual symptoms were serious enough to affect daily activities or academic attendance in many cases and this is a concern for policy-makers.⁵

A study was undertaken Premenstrual Syndrome of Adolescent Girls in Cuddalore District, Tamil Nadu. The sample size is 300 comprising of 158 adolescent girls from rural and 142 from urban areas respectively. A detailed survey schedule was administered to collect data. The result was about 55.3 per cent suffered from premenstrual syndrome. The major syndromes include white discharge and pains of various natures. The incidences of premenstrual syndromes are comparatively high in urban areas. Some socio-economic factors are closely associated with such incidences which could also be statistically evident through logistic regression results. The incidence of premenstrual syndrome is more common among adolescents that too among urban adolescent girls.

Family environment is found to have an influence over the incidence of premenstrual syndrome.¹¹⁶

A Cross sectional observational study undertaken on premenstrual Syndrome in Adolescents of Anand, a small town in western India. Cross sectional observational study in which Premenstrual Symptoms Screening Tool for Adolescents (PSST-A) questionnaire was self-administered to screen PMS and Premenstrual Dysphoric Disorder (PMDD). 1355 girls of Gujarati ethnicity in age group 10 to 23 years with regular menstrual cycles were included. Obesity was assessed through Body Mass Index. The result revealed that prevalence of moderate to severe PMS was 17.3% and PMDD was 4.7%. 95.0% girls had at least one PMS symptom, 68.8% had at least one moderate to severe PMS symptom, 49.9% had one or more physical symptoms and 89.8% had more than one PMS symptom. 37.1% had disruption of daily activities while 24.2% remained absent from school/college due to PMS. 75.4% girls felt that PMS was a normal part of menstruation and 50.0% reported moderate to severe stress. 21.4% had physical symptoms every menstrual cycle. Age, weight, BMI, stress level, dysmenorrhoea and menorrhagia contribute significantly to PMS, whereas menorrhagia, stress level and junk food contribute significantly to PMDD. Prevalence of moderate to severe PMS and PMDD in this population is higher. PMS interferes with day to day life significantly.¹¹⁷

A study was investigated on Effect of educational program on premenstrual syndrome in adolescent school girls. An educational program was conducted in two rural and two urban secondary schools of Pondicherry in girls suffering from premenstrual symptoms.

We assessed the symptom severity before conducting the educational program (pre-test) and three months following the program (post-test) by using a self-administered semi structured questionnaire. The result found that 40.9% of the urban girls and 51.6% of the rural girls were suffering from premenstrual symptoms. A significant decrease in the total PMS scores and all the subscale scores (PMS - A, C, D, H and others) of the students three months after the educational program when compared to the scores before the program. The study suggested that health education programs regarding PMS and other menstrual problems must be included in the curriculum of secondary schools to bring down the prevalence of such problems.¹¹⁸

2.2.2 REVIEW RELATED TO STUDIES ON CAUSES OF PREMENSTRUAL SYNDROME.

A cross-sectional study was undertaken on determine the score and frequency of premenstrual syndrome (PMS) among female college students and to detect the possible risk factors of PMS. A cross-sectional study was conducted on 253 El-Minia University unmarried female students. A self-administered questionnaire inquiring about symptoms of PMS in the previous three months and risk factors possibly related to it was used. PMS score was calculated and life style modification counseling was done to prevent and control PMS. The result revealed that 80.2% of the participants experienced various degrees of PMS symptoms which were significantly associated with a family history of PMS, physical inactivity, habitual excess consumption of coffee, BMI, frequent consumption of fast food, and smoking, but these factors explained only 52% of the variability in the logistic regression model.¹¹⁹

A study was evaluated on prevalence and risk factors of premenstrual disorders among Polish adolescent girls. Seventy-two adolescent girls, aged 16 to 19 years, were included in the final analysis. The research was based on a self-prepared questionnaire containing socio-economic status, general health, medical and reproductive history, premenstrual symptoms based on American College of Obstetricians and Gynecologists criteria for diagnosing premenstrual syndrome as well as American Psychiatric Association criteria for premenstrual dysphoric disorder and patient prospective daily ratings of symptoms. The result revealed that majority of the adolescent girls lived in large cities of over 50,000 citizens (54.29%), were physically active declaring daily physical exercise (55.22%) and sexually active (54.17%). Study results indicated that the prevalence of premenstrual syndrome and premenstrual dysphoric disorder was 76.39% and 4.17%, respectively. The statistical analysis revealed that only place of residence (large cities) increased the risk of premenstrual syndrome (OR=3.58; P=0.01). The study concluded that adolescent females living in urban areas are more vulnerable to premenstrual syndrome.¹²⁰

A study was investigated the relationship of leptin with body mass index based categories in different phases of menstrual cycles of both normal and premenstrual syndrome (PMS) symptoms. Female subjects (no=112; age: 20±1.94, 19-21years), were included. The result was slightly higher but significant values during the luteal phase compared to the follicular phase only in subjects with less than 26.8 BMI. Further, PMS subjects depicted significantly higher plasma leptin levels ($p<0.001$) in both follicular and luteal phases

compared to their corresponding controls of all the categories of BMI. The increased level of leptin in PMS subjects; suggest it could have an important role in the pathophysiology of PMS.¹²¹

A case-control study was assessed the relation of plasma 25-hydroxyvitamin D (25OHD), total calcium and parathyroid hormone levels with risk of PMS and specific menstrual symptoms in a case-control study. Cases were 401 women free from PMS at baseline who developed PMS during follow-up. Controls were women not experiencing PMS. The finding was cases who had already been diagnosed with PMS at the time of blood collection (n = 279), 25OHD levels were positively associated with PMS, with each 10 nmol/L change in 25OHD associated with a 13% higher risk. Among cases who developed PMS after blood collection (n = 123), 25OHD levels were unrelated to risk of PMS overall, but inversely related to risk of specific menstrual symptoms. The study suggests that higher 25OHD levels may be inversely related to the development of specific menstrual symptoms.¹⁰¹

A cross sectional study was evaluated the association between occurrence of PMS and body mass index (BMI) among adolescent girls. Cross sectional study was conducted on 407 healthy adolescent girls in 12-18 years age group. The result was, mean observed body mass index was found to be 22.86 +/- 5.22 kg/m². The study revealed that PMS occurred in 63.2% of the participants and Occurrence of PMS was significantly high (p<0.05) in participants with high BMI. The study revealed that PMS occurs in a high

proportion of adolescent age group. Furthermore, this study reveals that high body mass index is positively associated with PMS.¹²²

2.2.3 RESEARCH STUDIES RELATED TO SEVERITY OF PROBLEMS OF PREMENSTRUAL SYNDROME

A cross sectional study was explored on Health related quality of life among adolescents with premenstrual disorders: a cross sectional study. A sample of adolescent schoolgirls aged between 14 and 19 years were included in the study. Premenstrual disorders were indicated according to the International Classification of Diseases (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Health-related quality of life was measured using the Short Form Health Survey (SF-36). In all 602 female students were studied. All students reported at least one premenstrual symptom. Of these, 224 (37.2%) met the diagnostic criteria for premenstrual dysphoric disorder (PMDD). Comparing the SF-36 scores between female students with and without PMDD, it was found that there were significant differences between these two groups in all measures ($P < 0.001$) except for physical functioning ($P = 0.274$). These differences were more evident on role emotional, role physical, social functioning and bodily pain. The study findings affirm the fact that adolescents with premenstrual disorders suffer from poor health-related quality of life. In order to improve quality of life in female adolescent's appropriate support should be provided for this population especially for those who suffer from more severe premenstrual disorders.⁹⁷

A case study was undertaken a study on effect of the menstrual cycle on bipolar disorders. With respect to the menstrual cycle, the focus has been on dysphoric symptoms [e.g., premenstrual dysphoric disorder (PMDD)], and the exacerbation of depression, in the premenstrual phase. Case study design was used. The findings were overall, 25 case reports, ten retrospective studies, and 11 prospective studies were identified. The majority (64%) of case reports involved hypomanic or manic episodes in the premenstrual phase. Retrospective results suggest that 25-77% and 15-27% of women with BD meet the criteria for premenstrual syndrome (PMS) and PMDD, respectively. Menstrual cycle-related mood changes were reported by 64-68% of women with BD in retrospective studies, and were displayed by 44-65% of women in prospective studies. The findings revealed that premenstrual phase to the neglect of the periovulatory phase, it appears that a subgroup of women with BD, possibly those with hormonal sensitivity, experience menstrual cycle effects on depressive, hypomanic, and manic episodes.¹²³

A study was investigated on premenstrual syndrome (PMS) and the related symptoms among students of Iran University of Medical Science (IUMS). Five hundred students, who were enrolled at BS level in the academic year 1384 at the schools of nursing-midwifery as well as the school Management of IUMS, were included in the study. They were asked to complete the premenstrual daily symptom diary (PDSD) for 2 months. The students with PMS were confirmed according to the APA criteria and their intensity was assessed by the mean of scores of each sign which varied from 0 to 3. The result revealed that out of the 255 students, 200 students (78.43%) were suffering PMS to some

degrees (62% mild, 36% moderate, 2% severe). Mood symptoms in 24% and the behavioral symptoms in 3% of the subjects were in severe level. None of the students suffered from severe physical symptoms. The study results revealed a significant positive relationship between behavioral symptoms and physical mood symptoms ($r=0.55$, $r=0.398$, $P=0.00$) respectively. Also there was a significant relationship between physical symptoms and mood symptoms ($r=0.305$, $P=0.00$). The investigators concluded that PMS can be considered as a common disorder in young Iranian women at the reproductive age. To detect and diagnose the PMS related symptoms could help provide the most effective treatment strategies.¹²⁴

A study was investigated on compared women with a menstrually related mood disorder (MRMD) with women who have suffered from depression for stress reactivity phenotypes. The was assessed cardiovascular reactivity to stress in four groups: 1) Women with a MRMD without a history of depression ($n=37$); 2) women with a MRMD plus a history of depression ($n=26$); 3) women without a MRMD and without a history of depression ($n=43$); and 4) women without a MRMD but with a history of depression ($n=20$). The finding was women with a MRMD showed blunted myocardial (heart rate and cardiac index) reactivity to mental stress compared to non-MRMD women, irrespective of histories of depression. Hypo-reactivity to stress predicted greater premenstrual symptom severity in the entire sample. Women with a MRMD showed blunted norepinephrine and diastolic blood pressure stress reactivity relative to women with no MRMD, but only when no history of depression was present. Both MRMD

women and women with depression histories reported greater negative subjective responses to stress relative to their non-MRMD and never depressed counterparts.¹²⁵

A study on daily assessments can provide insight into the temporal characteristics of fatigue. The study adapted a fatigue measure from the Patient-Reported Outcomes Measurement Information System (PROMIS) for daily assessment and examined its psychometric properties in a month-long prospective study. Three groups of 100 participants each were drawn from two fatigue-related clinical disorders [osteoarthritis (OA) and premenstrual syndrome/premenstrual dysphoric disorder (PMS/PMDD)], and a general population sample (GP). They completed brief daily web-based fatigue measures at home on 28 consecutive evenings. The finding was compliance was high for all samples, based on the percent of participants who remained in the study (98 % for GP and OA, 95 % for PMS/PMDD). The scale was sensitive to change, with the PMS/PMDD sample showing a linear increase in fatigue prior to menses onset, and a sharp drop off afterward.¹²⁶

A study was conducted on menstrual cycle phase modulates emotional conflict processing in women with PMS relates to stress levels compared to women without PMS. The study measured performance in an emotional conflict task and stress levels in women with PMS (n = 15) and women without PMS (n = 15) throughout their menstrual cycle. The finding was significant increase (p = 0.001) in the mean reaction time for resolving emotional conflict from the follicular to the luteal cycle phase in all subjects. Only women with PMS demonstrated an increase in physiological and subjective stress

measures during the luteal menstrual cycle phase. The findings suggest that the menstrual cycle modulates the integration of emotional and cognitive processing in all women.¹²⁷

A study was examined the interactive effects of Anxiety Sensitivity (AS) and menstrual cycle phase in the experience of menstrual-related symptoms. Participants were 55 community women who completed prospective tracking of menstrual-related symptoms across at least one full menstrual cycle using the Daily Record of Severity of Problems (DRSP) and completed the Menstrual Distress Questionnaire (MDQ) once in their premenstrual and follicular cycle phases. Results revealed that women with higher levels of AS reported greater menstrual-related symptoms, regardless of cycle phase, as compared to women with lower levels of AS. These findings suggest that AS may be an important psychological factor involved in the experience of psychological and somatic symptoms across the menstrual cycle. Results are consistent with previous literature documenting the role of AS in menstrual-related symptoms as well as in other physical health conditions.¹²⁸

A study was undertaken a cross-sectional study during a three months period. Four hundred and twenty two women between the ages of 15 and 45 years, who were seen in the gynecology outpatient department, maternal child health (MCH) centre Pakistan Institute of Medical Sciences, Islamabad, were recruited. Of these, 350 (83%) respondent women were interviewed on pre-tested and validated questionnaire. The result was 167 had diagnosis of PMS; 51% had mild, 37% had moderate and 12% had severe symptoms. Women with PMS were statistically significantly different in age, residence and income

from women without PMS. The prevalence of abdominal bloating, headache, breast tenderness, anxiety and depression and anger outburst was higher in women with PMS than those without PMS.¹²⁹

A cross sectional study was explored a Health related quality of life among adolescents with premenstrual disorders. Totally 602 adolescent school girls aged between 14 and 19 years were included in the study. Premenstrual disorders were collected by using International Classification of Diseases (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Health-related quality of life was measured by using the Short Form Health Survey (SF-36). The result revealed that all students reported at least one premenstrual symptom. Of these, 224 (37.2%) met the diagnostic criteria for premenstrual dysphoric disorder (PMDD). Comparing the SF-36 scores between female students with and without PMDD, it was found that there were significant differences between these two groups in all measures ($P < 0.001$) except for physical functioning ($P = 0.274$). These differences were more evident on role emotional, role physical, social functioning and bodily pain. The findings showed that adolescents with premenstrual disorders suffer from poor health-related quality of life. In order to improve quality of life in female adolescents' appropriate support should provided for this population especially for those who suffer from more severe premenstrual disorders.¹³⁰

A descriptive study was conducted on Pattern of moderate-to-severe symptoms of premenstrual syndrome. Totally 142 women with age group between 18-45 years were

included. Premenstrual symptoms were retrospectively assessed by using screening questionnaires modified with the DSM-IV. In total, 126 eligible subjects were asked to record their daily symptoms during two consecutive menstrual cycles by using a premenstrual syndrome diary (PMSD). The finding was mood swings were the most common moderate-to-severe symptom prospectively reported by the subjects. The symptoms of PMS were relatively consistent across the two cycles. The study revealed that women with moderate-to-severe PMS were vulnerable to psychological symptoms.¹³¹

A study was conducted to assess the association between premenstrual syndrome and major depression, to analyze PMS and major depression differ and to characterize the group of women report both PMS and major depression. The population-based sample consisted of 3518 women. The prevalence rates and relative risk ratios for PMS, major depression and women who reported both PMS and major depression were calculated. The finding was prevalence of major depression was 11.3% in women screening positive for moderate PMS and 24.6% in women screening positive for severe PMS. Women reporting work dissatisfaction had a higher risk for PMS. A higher relative risk to report both PMS and major depression compared to women without PMS or major depression was related to factors such as high psychological distress, low mastery, psychotropic drug consumption, and low self-rated health.¹³²

A study was undertaken on attitudes toward menstruation, menstrual-related symptoms, and premenstrual syndrome among adolescent girls. A cross-sectional survey of 1,295 rural adolescent girls aged 13 to 19 years was included. The finding was higher score

indicating a more positive attitude toward menstruation, the mean attitude score was 3.84 (SD \pm 1.62) out of a maximum of six. No significant association was observed between the severity of menstrual symptoms and attitudes. Most (63.1%) of the participants identified themselves as having premenstrual symptoms, and 61.1% viewed premenstrual symptoms as a normal part of menstrual cycle. Participants with a higher severity of symptoms in the premenstrual (OR 1.05, 95% CI 1.01-1.10) and menstrual phase (OR 1.04, 95% CI 1.01-1.07), were more likely to consult a physician for premenstrual symptoms, and having a divorced/separated parents was associated with a reduced odds of consulting a physician compared to those having parents that were married (OR 0.19, 95% CI 0.05-0.83). The findings imply the need for education to help adolescent girls manage menstrual symptoms and increase awareness of the benefit of treating them. Given that menstrual-related information was widely available from mothers, family, and social culture are potentially important in shaping good menstrual attitudes.¹³³

A cross-sectional study explored menstrual-related attitudes and symptoms among multi-racial Asian adolescent females. The study included 1,092 adolescent females from schools in the Federal Territory of Kuala Lumpur, Malaysia. A self-administered semi-structured questionnaire was used. The results showed the mean scores on the menstrual attitude questionnaire to be 2.80 (SD \pm 1.88) out of six. A total of 80.7% and 83.6% of the participants experienced one or more affective and somatic symptoms respectively in the premenstrual phase. Irritability, mood swing and tension were the three most frequently reported affective symptoms, while fatigue and menstrual cramps were highly prevalent somatic symptoms in both the premenstrual and menstrual phases. The effects on

functional impairment and quality of life, in order of importance, include poor class concentration, restriction of social and recreational activities, difficulty to mingle with friends, and poor class performance. Only 10.3% of adolescent girls consulted doctors for PMS symptoms, while one-third did nothing about their condition. The findings revealed that education program related to PMS and menstrual-related disorders to provide information and support to adolescents. It helps them to cope better with menstrual-related problems, and encourage positive attitudes to menstruation.¹³⁴

A descriptive cross-sectional study was evaluated the pattern of premenstrual symptoms among pre-clinical female medical students at the University of Nigeria, Enugu Campus. The second-year and third-year pre-clinical female medical students filled the questionnaires. The tools used were socio-demographic characteristics, premenstrual symptoms, severity of symptoms and effects on quality of life. The findings showed that 183 students completed their questionnaires with a mean age and standard deviation (SD) of 21.33(2.9) years. Of these, 38.3% had recurrent symptoms in the luteal phase of the three previous menstrual cycles. Pelvic discomfort (65.8%) and breast fullness (59.5%) were the most common physical symptoms, while mood changes (27.9%) were the most common psychological symptom, and 9.8% reported lowered concentration to academic work at school. Treatment with pharmacologic agents was employed by 81.4%, while 12.6% each stayed at home and avoided social activities, respectively. The result concluded that predominance of physical symptoms and mood related changes which interfered which school activities. Health education with emphasis on reproductive health component is necessary to enable students cope with premenstrual symptoms.¹³⁵

Descriptive analytic study was used to assess adolescent student's knowledge toward premenstrual syndrome in nursing secondary schools at Al- Diwanyia Governorate. Totally 282 adolescent student with premenstrual syndrome was selected by using purposive sampling. Tools were demographic information, menstrual cycle characteristics and knowledge toward premenstrual syndrome. The result revealed that the majority of the study sample 44.6 % had insufficient knowledge toward premenstrual syndrome. The study recommended that to development of school health services for better detection and management of PMS in the adolescent population.¹³⁶

Descriptive-analytic study was evaluated of the frequency of premenstrual dysphoric disorder and premenstrual syndrome in students of girls' high schools of Kermanshah- Iran. Totally 800 students of girls' were chosen by incidentally and clustery sampling. Only volunteer were included. The diagnosis was made according to DSM.IV.TR. The finding was frequencies of PMS and PMDD were 41.5% and 9.4% respectively and disorder was more frequent in students older than 16 years-old. Mood symptoms were the most frequent, followed by physical and behavioral symptoms respectively, lower frequency of the disorder in students whose mothers were high educated and PMS was higher in those with positive family history. The finding was high frequencies of PMS and PMDD was result to problems in education of students.¹³⁷

The cross-sectional study was conducted the Impact of Premenstrual Disorders on Health related Quality of Life (HRQOL), practice in clinical psychology. The sample of women

aged 15–45 years, who lived in Tehran, was randomly recruited according to demographic questionnaire. Premenstrual Symptoms Screening Tool (PSST), Short Form Health Survey (SF-36), and Premenstrual Symptoms Impact Survey (PMSIS) were used to evaluate health-related quality of life. The result was 44% had PMS, 16% met the diagnostic criteria for Premenstrual Dysphoric Disorder (PMDD) and 40% were in General Population (GP) group. The SF-36 scores showed that in all dimensions except for physical functioning there were statistically significant mean differences among the three groups. Women with premenstrual dysphoric disorder and PMS group had significantly different social function, validity, and mental health. Comparing the Premenstrual Symptoms Impact Survey scores between the three groups mean, scores of feeling frustration, fatigue and mood swings for the premenstrual dysphoric disorder were significantly higher than the two other groups. The finding was premenstrual symptoms have significant impact on health-related quality of life.¹³⁸

Cross sectional study was undertaken on health related quality of life among adolescents with premenstrual disorders. A sample of (n =602) adolescent schoolgirls aged between 14 and 19 years were included. Premenstrual disorders were assessed by International Classification of Diseases (ICD-10) and the Diagnostic and Statistical manual of Mental Disorders (DSM- IV). Health-related quality of life was measured using the Short Form Health Survey (SF-36). The result was all students reported at least one premenstrual symptom. 224 (37.2%) met the diagnostic criteria for premenstrual dysphoric disorder (PMDD). Comparing the SF-36 scores between female students with and without PMDD, it was found that there were significant differences between these two groups in all

measures ($P < 0.001$) except for physical functioning ($P = 0.274$). These differences were more evident on role emotional, role physical, social functioning and bodily pain. The study concluded that adolescents with premenstrual disorders suffer from poor health-related quality of life. To improve quality of life in female adolescents appropriate support should be provided for this population especially for those who suffer from more severe premenstrual disorders.⁹⁷

A study was conducted on Current State of College Women and Coping Behaviors against Peri-menstrual Symptoms and Educational Challenges in Thailand. Female college students ($n=122$) were recruited from the Faculty of Nursing, Chiang Mai University. Subjects responded to questionnaires about menstruation, peri-menstrual symptoms, and coping behaviors (examples, satisfaction), and three psychometric measurements (State Trait Anxiety Inventory (STAI), Generalized Self-Efficacy Scale, and the Tri-Axial Coping Scale). 25 subjects suffering from premenstrual syndrome (PMS) and 25 Non-PMS Subjects were included. Surveys were conducted twice: once before and once after ovulation. The result was subjects who had severe menstrual problem showed significantly low satisfaction with their coping behaviors. Half of the subjects were not satisfied with their coping behaviors because they need more practical information about methods of coping. In the secretory phase, there was no significant difference in levels of coping satisfaction. However, Low satisfied group showed a relatively high STAI score and a low Self-Efficacy score. Activated sympathetic nerves appeared to become dominant over the parasympathetic nerves in the secretory phase. The study finding suggested providing more practical education for young women.¹³⁹

A cross-sectional study was conducted among systematically selected female students of Mekelle University College of Health Sciences, Mekelle town, northern Ethiopia from March to April 2013. A structured and pretested self-administered questionnaire was used for data collection. 258 samples included. The result was age ranged from 18 to 25 years, with mean age of 20.86 ± 1.913 years. 144(83.2%) have had at least one PM symptoms with their menstrual period. The prevalence of PMS according to DSM-IV was 37.0%. About 49(28.3%) frequent class missing, 17(9.8%) exam missing, 14(8.1%) low grade scoring and 3(1.7%) of them reported withdrawal from their learning associated with their PMS. Only 83(48.0%) participants sought medical treatment for their PMS. The treatment modalities used were pain killers, 63(36.4%), hot drinks like coffee and tea, 13(7.5%), and massage therapy and exercise, 7(4.0%). The study revealed a high prevalence and negative impact of PMS on students.¹⁴⁰

A study was explored on Knowledge and Practice of Female Employee about Premenstrual Syndrome and its Effect on Daily Life Activities in ELMinia University. A cross sectional descriptive study was conducted on one hundred and thirteen women. A specially designed self-administered questionnaire was developed which included socio-demographic data, obstetrical history, symptoms of premenstrual syndrome (PMS), and source of information about PMS, its effect on daily life activities and work and management of premenstrual syndrome. The result revealed that the mean age \pm SD of the sample was (31.7 ± 9) years, (84.96%) of them were normal age of menarche, 61.95% of them were taken information about PMS from mothers, 63.72% of the samples were

had an effect on work. The most common physical symptom of PMS was backache (79.64%) and psychiatric symptom (76.99%) was worry. The measures practiced by the sample to overcome symptoms of PMS were (warm drinks, warm bathing, sports and activities, comfortable and rest period and medications). PMS had an effect on work and daily life activities of females.¹⁴¹

A study was conducted on Relationship between Symptoms of Premenstrual Syndrome (PMS) and Quality of Life (QOL) in the Adolescents. The setting was adolescents of Iranian high school students. This study conducted on 157 adolescents of high school students at Zahedan (Iran) in 2012. The participants were recruited through Cluster sampling method. Examine Premenstrual Symptoms, PMS questionnaire and for assessing quality of life BREF- WHOQOL questionnaire was used. The result showed a significant negative correlation between premenstrual symptoms and quality of life, significant negative correlation between psychological Premenstrual Symptoms ($r=-$, $p=0/032$) and physical symptoms($r=-$, $p=0/0001$) with quality of life among adolescents. There was negative correlation between a premenstrual symptoms and quality of life among adolescents.¹⁴²

A cross sectional study was investigated the Stress Levels and Characteristics of Medical Faculty Students Undergoing Premenstrual Syndrome and its Association with Academic Achievements. A "cross sectional design" by means of an analytical observational approach. The data were collected at one certain time from one subject group. The sample filtering process was concluded by an interview and a specified lie test, conducted by using the L-MMPI scale. Totally 50 subjects were obtained, 30 subjects were

categorized as Mild Premenstrual Syndrome and 20 subjects into moderate-severe premenstrual syndrome. The result was there significant association between stress levels based on the adrenal stress degree on Premenstrual Syndrome. A p-value of 0,005 was obtained association between Premenstrual with Academic Index achievement of students undergoing Premenstrual Syndrome, which indicated a significant relationship between Premenstrual Syndrome and academic achievement. The BMI characteristic p-value was 0,203, menarche age characteristic p-value was 0,243, and menstrual length characteristic p-value was 0,140, indicating the absence of a significant relationship between all the characteristics stated above with Premenstrual Syndrome.¹⁴³

2.2.4 RESEARCH STUDIES ON EFFECTIVENESS OF ACUPRESSURE ON PREMENSTRUAL SYNDROME

The quasi-experimental design was evaluated on identify the effect of ear acupressure therapy on premenstrual syndrome of the female college students. Out of the 27 female college students, 13 were assigned to the experimental group and 14 to the control group. The data was obtained over 3 months from K College located in G city. Premenstrual syndrome is Keele's VAS (Visual Analogue Scale) was used. The subject of the experimental group received the ear acupressure therapy for 3 times for 60 days and the other control group did not get the ear acupressure therapy treatment. The result revealed that, the VAS score of the premenstrual syndromes before the ear acupressure therapy was 7.3(experimental group), 7.46(control group) but after the ear acupressure therapy, the VAS score of the premenstrual syndromes was 3.36(experimental group),

7.17(control group). The ear acupressure therapy was effective in improving the symptoms of the female college with premenstrual syndromes.¹⁴⁴

Randomized clinical trial was evaluated the effects of auricular acupressure on relieving menstrual symptoms and decreasing nitric oxide (NO) for women with primary dysmenorrhea at northern and central Taiwan. Randomized clinical trial was used to comparing the effects of auricular acupressure by seed-pressure method and placebo adhesive patch. The study included 36 college females randomized to acupressure group, 35 to control group. The acupressure group received auricular acupressure by seed-pressure method on liver (CO12), kidney (CO10), and endocrine (CO18) acupoints. The control group had a plain adhesive patch placed on the same acupoints with no seed attached. Acupressure protocol included massaging 15 times on each acupoint, 3 times a day, for a total of 20 days. Short-form Menstrual Distress Questionnaire (MDQs) and blood sample of NO were performed at baseline and within the first 2 days of their next menses (after completion of 20 days of acupressure). The study result was, the overall menstrual symptoms (95% confidence interval [CI] 49.8 to 6.5, effect size [ES] 0.43, $p < 0.01$) and two subscales, menstrual pain (95% CI 16.4 to 2.2, ES 0.45, $p < 0.01$) and negative affects (95% CI 11.9–2.0, ES 0.38, $p < 0.04$), revealed that menstrual symptoms decreased significantly after auricular acupressure by the seed-pressure method. NO level increased in the acupressure group, although this difference did not achieve statistical significance ($p > 0.05$). The study concluded that auricular acupressure by seed-pressure method in improving menstrual symptoms.¹⁴⁵

A single blind randomized experimental study was replicated on Effects of acupressure on menstrual distress in adolescent girls. Adolescents ($n = 134$) randomly assigned to experimental groups Zusanli ($n = 30$), Hegu ($n = 33$) and Hegu–Sanyinjiao Matched Points ($n = 36$) received acupressure intervention protocol for 20 minutes, while the control group ($n = 35$) did not receive any acupressure intervention. Four instruments were used to collect data: (1) the Visual Analog Scale for Pain; (2) the Menstrual Distress Questionnaire Short Form; (3) the Short-Form McGill Pain Questionnaire and (4) the Visual Analog Scale for Anxiety. The result showed that acupressure at matched points Hegu and Sanyinjiao reduced the pain, distress and anxiety perception. Acupressure at single point Hegu was found, effectively, to reduce menstrual pain during the follow-up period, but no significant difference for reducing menstrual distress and anxiety perception was found. Zusanli acupressure had no significant effects of reducing menstrual pain, distress and anxiety perception. Acupressure is an effective and safe non-pharmacologic strategy for the treatment of primary dysmenorrhoea and premenstrual syndrome. These points are easy for adolescent girls to learn and practice.¹⁴⁶

A study was conducted the Acupressure for Sleep and insomnia. The setting was University of Hong Kong. The results was Individuals who suffered from insomnia and between the ages of fifteen to ninety-eight were given acupressure treatments, along with other kinds of acupuncture such as auricular magnetic and seed therapy and transcutaneous electrical acupoint stimulation. The results show that the acupressure treatments helped to improve the subjects' sleep quality scores. The benefits of using acupressure therapy in treating insomnia were not only immediate, but long lasting as

well. The participants in the above-mentioned study were able to improve their sleep quality scores beyond the treatment period for two weeks.⁴⁵

The randomized, single-blind clinical trial was conducted to evaluate the effectiveness of Sanyinjiao point (SP6) acupressure on women's general health. The setting was at Medical University, Bojnourd University of Medical Science, Bojnourd, Iran. Eighty-six (86) university students were recruited. The demographic characteristics and General Health Questionnaires (GHQ) were used to collect the data. The samples were randomly assigned to either the acupressure-receiving group or the sham-pressure-receiving group. The study group received acupressure at the Sanyinjiao point and the control group received sham pressure. Both groups completed GHQ after both the first and second months of intervention. The results showed that mean scores of GHQs were similar between groups before intervention ($p > 0.05$). The general health of participants in both groups improved after intervention, and the amelioration in four domains was significant in the groups ($p < 0.05$ within group). It was found that acupressure was more effective than sham pressure. There was a statistically significant difference between the two groups in the four domains of their general health after the first month of the intervention ($p < 0.0001$). The general health status of the participants changed much more after the second month in both the acupressure intervention and the sham pressure groups; the acupressure was more effective than sham pressure ($p < 0.05$). The findings showed that both acupressure and sham pressure were effective in promoting women's general health. The SP6 acupressure could be regarded as a self-manageable approach to improve women's general health.¹⁴⁷

A study was conducted on effectiveness of additional self-care acupressure for women with menstrual pain compared to usual care alone. The study was designed using multiple mixed methods for stakeholder engagement. Based on the results of a survey and focus group discussion, a stakeholder advisory group developed the study design. Stakeholder engagement resulted in a two-arm pragmatic randomized trial. Two hundred and twenty women aged 18 to 25 years with menstrual pain were included. Outcome measurement was done using electronic questionnaires provided by a study specific mobile application (*App*). Primary outcome was, mean pain intensity at the days of pain during the third menstruation after therapy start. Stakeholder engagement helped to develop a study design that better serves the needs of decision makers, including an *App* as a modern tool for both intervention and data collection in a young target group.¹⁴⁸

2.2.5 RESEARCH STUDIES ON EFFECTIVENESS OF REFLEXOLOGY ON PREMENSTRUAL SYNDROME

Randomized Controlled Study Of Premenstrual Symptoms Treated with Ear, Hand, and Foot Reflexology. Thirty-five women with premenstrual syndrome (PMS) were randomly assigned to be treated by ear, hand, and foot reflexology or to receive placebo reflexology. All subjects completed a daily diary, which monitored 38 premenstrual symptoms on a four-point scale. Somatic and psychological indicators of premenstrual

distress were recorded each day for 2 months before treatment, for 2 months during reflexology and for 2 months afterward. The reflexology sessions for both groups were provided by a trained reflexology therapist once a week for 8 weeks, and lasted 30 minutes each. The study reported that 38 emotional and physical pre-menstrual symptoms were reduced by an average of 46% for the two months during which the 18 women being studied received weekly reflexology sessions. There was a significantly greater decrease in premenstrual symptoms for the women given true reflexology treatment than for the women in the placebo group. The study concluded that clinical findings support the use of ear, hand and foot reflexology for the treatment of PMS.¹⁴⁹

A single-blind controlled clinical trial was examined the effect of foot reflexology on premenstrual Syndrome. The research design was a single-blind controlled clinical trial of two groups in which, 90 students with premenstrual syndrome were include in two groups of foot reflexology and control. Intensity of premenstrual syndrome was recorded by subjects in two cycles: pre – intervention cycle and intervention cycle. The tools used for gathering the data was Temporary diagnosis form of PMS, and Beck depression test. The study result showed that there was no significant statistical difference between under research variables in the respect of interventional variables. In comparison of pre and post intervention in reflexology significantly led to decrease of average of mental symptoms (25.12 %) and physical symptoms (19.34 %) ($p < 0.0001$). In comparison with control group, there was signification difference between the average of physical and mental symptoms in reflexology group was signification less than control group ($p < 0.0001$). It seems that, foot reflexology is effective in improvement of physical and mental

symptoms of premenstrual syndrome. To decrease the symptoms intensity of premenstrual syndrome by training of simple technique this doesn't need specialists in order to be done.¹⁵⁰

Quasi experimental was evaluated the effect of foot reflexology on premenstrual syndrome and dysmenorrhea in female college students. The forty female college students, twenty were assigned to the experimental group and, twenty to the control group. The data were obtained over 2 months from a nursing of college located in S city. The instrument used to assess premenstrual syndrome and dysmenorrhea was Keele's VAS(Visual Analogue Scale) and opening records. Subjects in the experimental group received foot reflexology for 6 times with 1 hour during 60 days, and subjects assigned to the control group did not receive foot reflexology. The results of the study showed that symptoms relieved after foot reflexology was fatigue (50%), insomnia (40%), sensitiveness (35%), abdominal pain (35%), lower abdominal pain (30%), constipation(30%). and lumbago (20%). The mean score of the premenstrual syndromes and dysmenorrhea before foot reflexology was 8.35, it was 4.16 at the first menstruation after foot reflexology and 3.25 at the second menstruation for the experimental group. The study concluded that Foot reflexology was effective in improves the symptoms of the female college students who have the premenstrual syndrome and dysmenorrheal.¹⁵¹

A single blinded clinical trial was replicated a study on the effect of sole reflexology (Reflex Zone Therapy) on the intensity of premenstrual syndrome. This research is a single blinded clinical trial which was done on 120 volunteer students in the University of

Tehran. The research units were divided into two groups of real and unreal reflex zone therapy (intervention and control group) and received this treatment for eight continuous weeks, for 30 minutes once a week. The results of research in the two treatment groups show that real reflex zone therapy can reduce the behavioral symptoms by 20% though such reduction does not show a statistically significant difference ($p=0.16$). The study concluded results, although the effect of this method of the behavioral part of this syndrome was not significant, regarding the results of other researches for the effectiveness of this method of decreasing the PMS, it is hoped to use for reducing the symptoms by more researches in this area of complementary medicine together with other common treatments in gynecological areas like other advanced countries.¹⁵²

A Quasi experimental study was undertaken on effectiveness of reflexology on premenstrual syndrome among students in selected nursing colleges, Mangalore. A quantitative research approach with non equivalent control group pre-test post test design (quasi experimental) was used. Thirty students who had moderate and severe premenstrual syndrome were selected by purposive sampling technique (fifteen students in the experimental group and fifteen students in the control group). Reflexology is given to experimental group on the fourth day of their menstruation and continued for 24 days twice daily. There was no treatment given for the control group. Data was collected by using demographic proforma and premenstrual syndrome rating scale. The study result showed that the mean post test score (5.67 ± 2.79) of premenstrual syndrome was lower than the pre test score (28.33 ± 5.34) of premenstrual syndrome. The computed 't' value ('t'=16.20) was higher than the table value ($t_{28}= 1.76$; $p<0.05$). Independent 't' test was

used to determine the effectiveness of post test premenstrual syndrome score in the experimental and the control group. The computed 't' value was ($t=12.95$) greater than the table value ($t_{28}=1.70$, $P<0.05$). This represents that reflexology is effective in reducing premenstrual syndrome. Chi square test showed that there was no association between pre test premenstrual syndrome score and selected demographic variables. The study concludes that reflexology is effective in reducing the premenstrual syndrome. The result of the study showed that regular practice of reflexology would be beneficial in reducing the premenstrual syndrome.¹⁵³

A single-blind controlled clinical trial was examined the Effect of foot reflexology on physical and psychological symptoms of premenstrual syndrome. This study was a single-blind controlled clinical trial of two groups in which, 90 students with premenstrual syndrome (who were resident in dormitory of Jahrom university) were include in two groups of foot reflexology and control. Intensity of premenstrual syndrome was recorded by subjects in two cycles: pre – intervention cycle and intervention cycle. The tools of data gathering consisted of Temporary diagnosis form of PMS and Beck depression test. The study results revealed that there was no significant statistical difference between under research variables in the respect of interventional variables. In comparison of pre and post intervention in reflexology significantly led to decrease of average of mental symptoms (25.12 %) and physical symptoms (19.34 %) ($p<0.0001$). In comparison with control group, there was signification difference between the average of physical and mental symptoms in reflexology group was signification less

than control group ($p < 0.0001$). It seems that, foot reflexology is effective in improvement of physical and mental symptoms of premenstrual syndrome¹⁵⁴.

CHAPTER III

MATERIALS AND METHODS

Research methodology is the conceptual structure within which the research is conducted. It is a blue print for collection, measurement and analysis of data. In research methodology researcher specify which specific design was adopted and how the samples were chosen.

Research methodology is a systematic way to solve the research problem and also to carry out the academic study and research in a correct manner.⁹³

The present study was conducted to compare the effectiveness of acupressure Vs reflexology on premenstrual syndrome among adolescent girls in selected setting.

This chapter describes the aspects like research approach, research design, variables, setting, population, samples, sampling technique, criteria for sample selection, development and description of instruments, description of intervention tool, reliability and validity of the tools, ethical consideration, pilot study, data collection procedure and plan for data analysis.

3.1 RESEARCH APPROACH

The research approach is the most essential part of any research. The entire study based on it. The research approach used in the study is an applied form of research to find out how well the intervention is effective. In this study the effectiveness of acupressure and reflexology on premenstrual syndrome among adolescent girls was evaluated. Therefore on quantitative evaluation research approach was essential to test the effectiveness of the intervention for this study.

3.2 RESEARCH DESIGN

It refers to the overall plan for addressing a research question, including specifications for enhancing the integrity of the study.⁹³

The design used for the present study was True experimental - Factorial design where the two group pre and post test design was selected to compare the effectiveness of Acupressure and Reflexology on premenstrual syndrome among adolescent girls.

Simple Factorial design is an effect of varying two factors on the dependent variable. In this design the extraneous variable to be controlled by homogeneity and the independent variable, which is manipulated. One group is control over the other group.¹⁵⁵

Fig 3.1 Diagrammatic presentation of the design

Randomly selected Adolescent girls	Pre test	Treatment	Post Test
Experimental Group I	O₁ Assess the level of premenstrual syndrome through premenstrual syndrome scale (PMSS) – rating scale (Day 1)	X₁ Acupressure intervention starts from fourth day menstrual cycle and continued for 8 weeks (first and second menstrual cycle)	O₂ Assess the level of premenstrual syndrome through premenstrual syndrome scale – ie during third menstrual cycle
Experimental Group II	O₁ Assess the level of premenstrual syndrome through premenstrual syndrome scale (PMSS) – rating scale (Day 1)	X₂ Reflexology intervention starts from fourth day menstrual cycle and continued for 8 weeks (first and second menstrual cycle)	O₂ Assess the level of premenstrual syndrome through premenstrual syndrome scale – ie during third menstrual cycle

- O₁ : Pre test on adolescent girls regarding premenstrual syndrome in experimental group I
- X₁ : Acupressure.
- O₂ : Post test on adolescent girls regarding premenstrual syndrome in experimental group I
- O₁ : Pre test on adolescent girls regarding premenstrual syndrome in experimental group II
- X₂ : Reflexology.
- O₂ : Post test on adolescent girls regarding premenstrual syndrome in experimental group II

3.3 SETTING OF THE STUDY

Research settings are specific places in a research where data collection is to be made. The selection of setting was done on the basis of feasibility of conducting the study, availability of subject and permission of authorities.⁹³

The setting chosen for the study was,

1. **Municipal Girls Higher Secondary School, Karungalpalayam, Erode.** It is 10 kms away from the Dhanvantri College of Nursing. Totally 523 students are studying from 9th standard to 12th standard
2. **GTS Government Girls Higher School P.S Park, Erode.** It is 10 kms away from the Dhanvantri College of Nursing. Totally 514 students are studying from 9th standard to 12th standard.

3.4 VARIABLES FOR THE STUDY

Variables are characters that can have more than one value. The categories of variables discussed in the present study was,

3.4.1 Independent Variable : Acupressure Vs Reflexology

3.4.2 Dependent Variable : Premenstrual syndrome among adolescent girls

3.4.3 Demographic Variables : It consists of demographic characteristics of adolescent girls , i.e. age, , class (standard) , education of the parents, occupation of the parents, religion, age at menarche, duration of menstrual cycle, days of menstrual flow, family history of premenstrual syndrome , and practice of home remedies

3.5 POPULATION

Population is entire aggregation of subject similar characteristics and on whom the researcher would generalize the study findings. The population encompassed the target and accessible population.

3.5.1 Target Population

The population, the investigator had chosen for the present study to make generalization. The target population for the study was all the adolescent girls with pre menstrual syndrome.

3.5.2 Accessible Population:

Refers to the aggregate of subject with whom the designated criteria are conformed and accessible population was adolescent girls with pre menstrual syndrome who were studying in Municipal Girls Higher Secondary School, Karungalpalayam, Erode and GTS

Government Girls Higher School P.S Park, Erode, consisted of 125 adolescent girls from each school. Total sample was 250 adolescent girls.

3.6 SAMPLE AND SAMPLE SIZE

A sample is the basic element of the population about whom the information was collected, to represent the concept of interest. Adolescent girls with premenstrual syndrome were selected from these 2 schools, which fulfill the inclusion criteria were selected as the samples of the study.

3.6.1 SAMPLE SIZE

The sample size comprised of 250 adolescent girls with premenstrual syndrome from 2 Government Higher Secondary Schools. The sample size was estimated using the Power Analysis with 227 adolescent girls, but additional 23 subjects were included to meet the expected attrition rate 10% ($227+23 = 250$). The researcher included 250 samples for the study, out of which 125 were experimental group I and 125 were experimental group II.

By using power analysis

$$\text{Sample Size} = \frac{Z\alpha^2 (p \times q)}{d^2}$$

$Z\alpha^2 = 1.96$ it is table value score for 95% interval.

$p =$ assumed or estimated proportion of clients 82% (0.82)

$q = 1 - p$ ($1 - 0.82 = 0.18$)

$d =$ Margin error, i.e. 5% (0.05)

$$n = \frac{(1.96)^2 \times 0.82 (1 - 0.82)}{(0.05)^2}$$

$$n = 227$$

Considering the attrition rate as 10% another 23 members included in the study.

Total sample size = 250

3.7 SAMPLING TECHNIQUE

Multistage random sampling technique was adopted for the study.

Multistage Sampling is a sampling strategy (e.g., gathering participants for a study) used when conducting studies involving a very large population. The entire population is divided into naturally-occurring clusters and sub-clusters, from which the researcher randomly selects the sample.

The investigator selected Erode District. In that totally 84 Government Higher Secondary Schools, out of which 12 were Government Girls Higher Secondary Schools. The investigator selected 2 schools among 12 schools by using Simple Random Sampling technique (Lottery Method) in first stage.

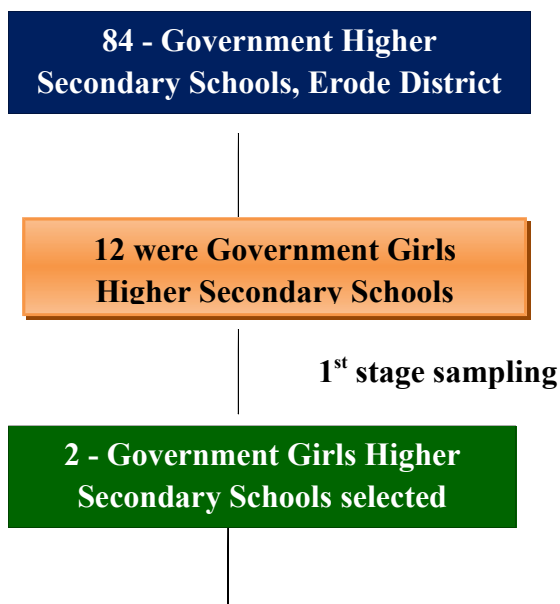
In second stage random sampling, from among the 2 schools through lottery method the investigator allotted experimental group I and experimental group II

Experimental group I: The adolescent girls studying at Municipal Girls Higher Secondary School, Karungalpalayam, Erode. The adolescent girls from 9th to 12th standard were totally 523 students. Premenstrual syndrome scale was administered to adolescent girls, in that scale, adolescent girls scored more than 120 were 244 subjects,

out of which the investigator selected 125 samples by using Simple Random Sampling technique (Lottery Method) in third stage random sampling

Experimental group II: The adolescent girls studying at GTS Government Girls Higher School P.S Park, Erode. The adolescent girls from 9th to 12th standard were totally 514 students. Premenstrual syndrome scale is administrated to adolescent girls, in that scale, adolescent girls scored more than 120 were 235 subjects, out of which the investigator selected 125 samples by using Simple Random Sampling technique (Lottery Method) in third stage random sampling.

MULTI STAGE SAMPLING



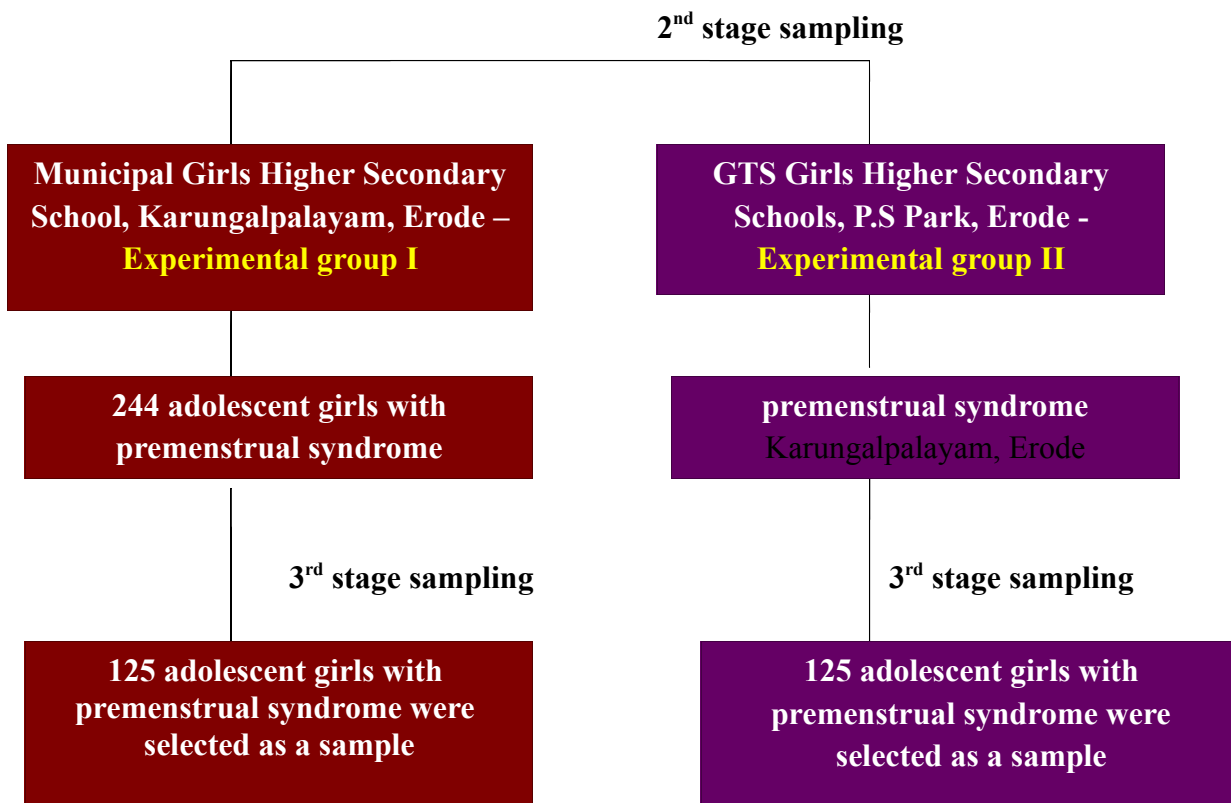


Fig 3.1.1 Diagrammatic presentation of sampling Technique

3.8 CRITERIA FOR THE SELECTION OF SAMPLE

3.8.1 Inclusion Criteria:

Adolescent girls,

- With premenstrual symptoms
- With age group between 13 – 17 Years
- Who were having 2 or 3 consecutive months of premenstrual symptoms
- Who were having regular menstrual period
- Who were having score more than 120 in premenstrual syndrome scale
- Who gave consent to participate in this study.

- Who were present during the period of data collection

3.8.2 Exclusion Criteria:

Adolescent girls,

- Who were receiving steroid drugs
- Who were having any other medical, psychiatric and gynecological problems
- Who were frequently using pain killer
- Who have any bleeding disorders
- Who were practicing relaxation technique within the past 6 months

3.9 DATA COLLECTION INSTRUMENTS

A. DEVELOPMENT OF THE TOOL

The investigator used the following steps for preparation of the tools for the study

- Extensive review of literature
- Preparation of the blue print for the tools
- Consultation with experts from the field of study
- Preparation of the final draft of the tools
- Editing of the tools
- Review of literature

The investigator did an extensive review of related literature from books, journals, manuals, reports published researches, newspapers and internet to develop study instruments

- **Preparation of blue print**

The blue print included Questionnaire to collect Demographic data and Premenstrual syndrome scale

- **Consultation with experts from the field of study**

The tools were sent to panel of experts comprising from the fields of Maternity Nursing, Medical Surgical Nursing, Child Health Nursing, Obstetrician, Gynecologist, Acupressure and reflexology therapist and nursing research department experts

- Preparation of the final draft
- Editing of the final tool

B. DESCRIPTION OF TOOLS:

There are two sections tools were used. They are;

- Section A: Demographic variables
- Section B: Premenstrual Syndrome Scale (PMSS)

3.9.1 Section A

It consists of demographic characteristics of adolescent girls , i.e. age, , class (standard) , education of the parents, occupation of the parents, religion, age at menarche, duration of menstrual cycle, days of menstrual flow, family history of premenstrual syndrome , and practice of home remedies

3.9.2 Section B It consists of Premenstrual syndrome assessment scale used to assess the premenstrual syndrome among adolescent girls. The symptoms are ;

- i. Physiological symptoms,
- ii. Psychological symptoms and
- iii. Behavioral symptoms

Grading of symptoms: – Premenstrual syndrome score (PMSS) was graded as follows:–

Grade 1 - Never

Grade 2	- Rarely
Grade 3	- Sometimes
Grade 4	- Very often
Grade 5	- Always

Scoring Procedure

Based on the percentage of scores the levels of premenstrual syndrome were graded in four categories. They are “No symptoms”, “Mild”, “Moderate” “severe” and very severe symptoms.

Scoring

Level of symptoms	Actual Scores	Percentage of Scores
No symptoms	1- 40	< 20
Mild symptoms - only slightly apparent	41 - 80	21 -40
Moderate symptoms - aware of symptom, but it doesn't affect daily activity at all	81 – 120	41 60
Severe - continuously bothered by symptoms	121 - 160	61 -80
very severe - symptom is overwhelming and /or interferes with daily activity+	161 -200	> 80

3.10 ACUPRESSURE AND REFLEXOLOGY (INTERVENTION)

The researcher developed Acupressure (Experimental group I) and Reflexology (Experimental group II) was given to the individual session of adolescent girls (one to one basis) for a period of 8 weeks for each subject in both the groups.

3.11 CONTENT VALIDITY OF THE TOOL

Content validity is the degree to which the items in the instruments adequately represent the content for the concept being measured.

The content validity of the demographic variables and premenstrual symptoms assessment scale was validated by the panel of experts comprising from the fields of Maternity Nursing, medical Surgical Nursing, Child Health Nursing, Obstetrician, Gynecologist, Statistician, Acupressure and Reflexology Therapists and nursing research department experts and the content validity index score was 8.5. The expert's suggestion were incorporated in designing the final tool for the study in consultation with Guide, Co-guide, Advisory Committee members and Statistician for its appropriateness. The tool was modified according to suggestions and recommendation of experts. **(Annexure VI)**

3.12 RELIABILITY OF THE TOOL:

Reliability is the degree of consistency with which an instrument measure what it designed to measure. Investigator administered the tool to 46 adolescent girls in selected private school, Namakkal District, to establish the reliability of the tool.

The tools were translated in Tamil and the reliability was tested. Internal consistency reliability was used. Reliability was assessed by using Cronbach's Alpha method. Alpha Correlation coefficient values for Premenstrual syndrome Scale (PMSS) was $r=0.97$, which was highly reliable.

3.13 ETHICAL CONSIDERATION

The investigator considered and followed the ethical principle preceding the investigation. The investigator adhered to the following actions in order to protect the ethical right of the adolescent girls with premenstrual syndrome.

Human Rights

1. Ethical committee approval was received from the Chief Educational.
2. Written consent was obtained from the Head master to conduct the study.
3. Content validity was received from the various experts in field of Maternity Nursing, medical Surgical Nursing, Child Health Nursing, Obstetrician, Gynecologist, Statistician, Acupressure and Reflexology Therapists and nursing research department experts

Beneficence & Non-Maleficence

4. The investigator is certified to execute the Acupressure and Reflexology.
5. Potential benefit and risk was explained to the subjects.

Dignity

6. Informed consent was obtained from the subjects related to the study purpose, type of data, nature of commitments, participations and procedure.
7. Pilot study was executed to check the feasibility and time requirement of the study.
8. Subjects' right to withdraw / withhold the information was ensured before data collection.
9. Investigator contact information was disseminated to all the subjects who participated in the study.

Confidentiality

10. Confidentiality and anonymity pledge was ensured.

Justice

11. Acupressure and Reflexology was given to all the subjects to general from moderate symptoms to very severe symptoms.

3.14 PILOT STUDY

The Investigator obtained formal consent from Chief Educational Officer, Head Master and adolescent girls. The purpose of this study and confidentiality was explained to the adolescent girls. Pilot study was conducted from 1.02.2013 – 15.5. 2013. The Investigator selected 30 adolescent girls from Government Girls Higher Secondary Schools at Kavindapadi and Bhavani, Erode. Pretest (first menstrual cycle) level of premenstrual syndrome was assessed by using Premenstrual syndrome Scale (PMSS) for 20 minutes. Experimental group I received acupressure (Investigator applied pressure to Sp⁶ and Sp⁴ point for 20 minutes once in a week for 8 weeks) and experimental group II received reflexology (It is a series of 3 steps which includes relaxation exercises, thumb walking up and down the spine and stimulate the meridian points for 20 minutes once in a week for 6 weeks). Post test was done after 8 weeks of intervention by using same pretest scale during fourth menstrual cycle. The result of the pilot study revealed that the tool was reliable and the study was feasible. The pilot study aided the investigator to determine the method of statistical analysis and the time requirement for data collection and intervention procedure.

3.15 METHOD OF DATA COLLECTION

The data is collected from adolescent girls with premenstrual syndrome in experimental group I and II, after permission obtained from Chief Educational Officer, Head Master and adolescent girls studying in Municipal Girls Higher Secondary School, Karungalpalayam, Erode and GTS Government Girls Higher School P.S Park, Erode. The data collection procedure started from June 2013 to September 2014. The investigator selected 250 adolescent girls (125 adolescent girls in experimental group I and 125 adolescent girls in experimental group II) who fulfilled the inclusive criteria were selected as a sample. The subjects were explained regarding the purpose and usefulness of the study. The investigator assured the subjects about the anonymity and confidentiality. Written consent was taken from each subject. The data collection for each subject was started with introduction of the investigator after confirming the subjects. The samples were made to sit comfortably in well ventilated place. After the brief introduction about the purpose of the study to the adolescent girls, demographic profile was collected. **(Annexure – III)**


Pretest

After obtaining the written consent from the adolescent girls, pretest level of premenstrual symptoms were assessed by using Premenstrual syndrome scale (PMSS) for 20 minutes for experimental group I and II in Day1.

Implementation of Acupressure Vs Reflexology

After pretest, acupressure (experimental group I) and reflexology (experimental group II) intervention was given to the adolescent girls from fourth day of menstruation cycle and continued for 8 weeks for the duration of 20 minutes once in a week.


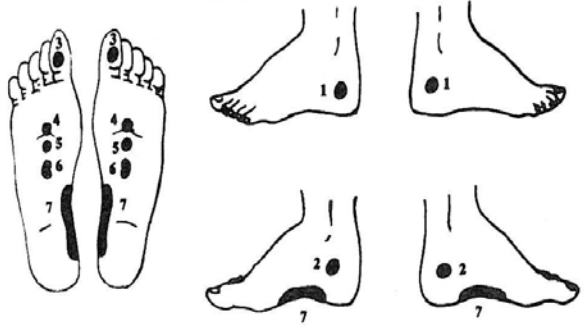
Acupressure (Experimental group I)

Acupressure Points and Location	Technique / Procedure
 <p>1. Sanyinjiao point (San Yin Jiao) (Sp6)</p> <p>This is located on the inside of leg, just above ankle. To find this point, (1) locate the highest peak of the ankle (2) four finger widths up leg, apply deep pressure slightly behind the bone (tibia)</p> <p>2. Grandfather Grandson (Sp4)</p> <p>This point is located in the upper arch</p>	<p>1. The adolescent girls was made to lie down/ sit comfortably</p> <p>2. The investigator was given acupressure to the alternate legs at the Sanyinjiao point (San Yin Jiao (Sp6) and Grandfather Grandson (Sp4) acupoints. For each pressure cycle on each side Sp6 and Sp4 was pressed with a thumb for 6 seconds and released for 2 seconds without pressure. This was continued for 5 minutes on each point on each leg, to bring the total duration of 20 minutes.</p> <p>3. Treatment duration 20 minutes (10 minutes each leg) once in a week for 8 weeks.</p>

of the foot, one thumb width from the ball of the foot. Apply deep pressure slightly behind the bone.	
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Reflexology (Experimental group II)

Reflexology is a technique; investigator applied the pressure on the reflex point with thumb

Reflex points	Technique/ Procedure
	<ol style="list-style-type: none"> <li>1. The adolescent girls was made to lie down on table comfortably in supine position <li>2. Relaxation exercises – massage the foot all over slowly and gently twist the spine area on the foot. (1 minute for each foot)
	<ol style="list-style-type: none"> <li>3. Thumb walking up and down on the spine (2 minute for each foot)
<p>Appropriate Foot Reflex Points</p> 	<ol style="list-style-type: none"> <li>4. Stimulate the meridian points such as <ol style="list-style-type: none"> <li>1. Ovary <li>2. Uterus <li>3. Pituitary gland and endocrine system <li>4. Solar plexus <li>5. Adrenal gland <li>6. Kidney <li>7. Sympathetic nervous system <p>(1 minute for each point, 7 minutes/foot). Total duration of treatment was 10 minutes/foot (total</p>

	treatment duration 20 minutes once a week for 8 weeks)
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Posttest

Post test was conducted after 8 weeks of intervention ie during 4th day of 3rd menstrual cycle by using Premenstrual syndrome scale (PMSS) to evaluate the premenstrual symptoms among adolescent girls in experimental group I and II.

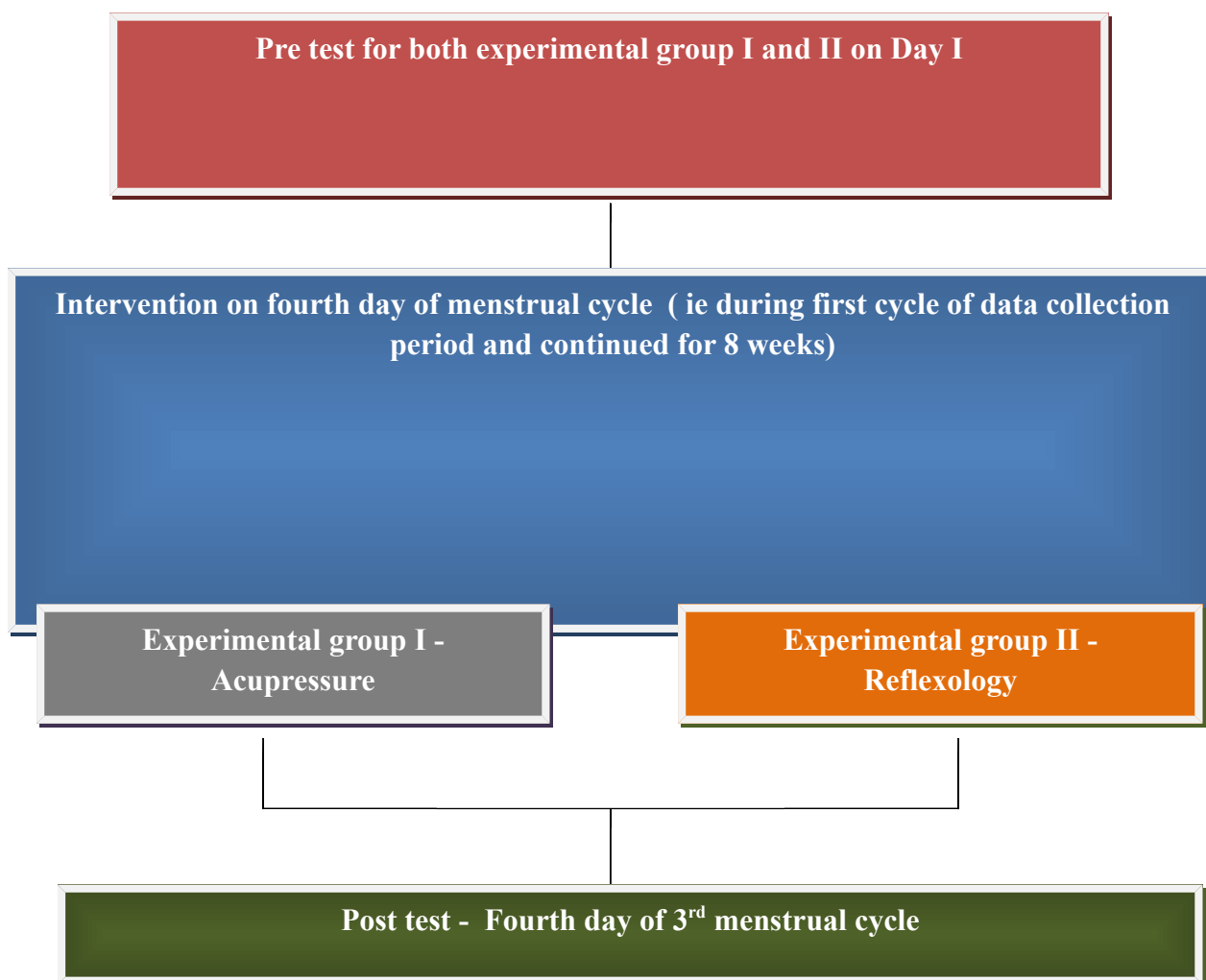


Fig.3.1.2 Schematic Representation of Data Collection Schedules

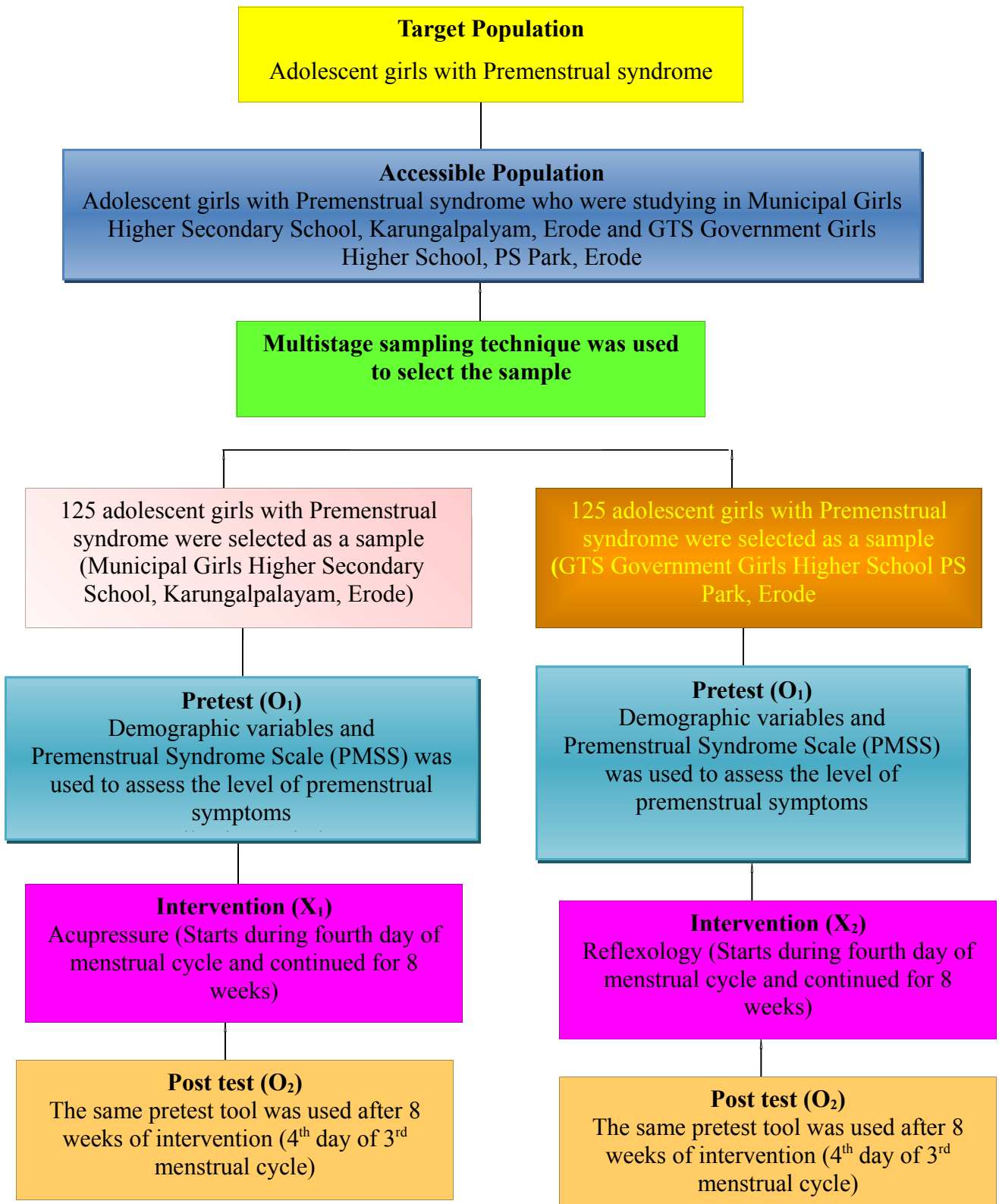


Fig.3.1.3 Schematic Representation of Data Collection Procedure

3.16 DATA ANALYSIS PROCEDURE

The data was collected from 250 adolescent girls with premenstrual syndrome were coded and entered into Microsoft Excel Spreadsheet. The data was analyzed using descriptive and inferential statistics.

Descriptive Statistics

- Frequency and percentage distribution to analyze the demographic variables.
- Mean, Standard deviation and Mean percentage was used to assess the level of premenstrual syndrome among adolescent girls.

Inferential Statistics

- Paired t test to compare the pre and post intervention level of premenstrual syndrome among adolescent girls in experimental group I and II.
- Unpaired t test to compare the post test intervention level of premenstrual syndrome among adolescent girls in both the groups.
- Chi-square test to associate the post test level of premenstrual syndrome among adolescent girl with demographic variables.

SUMMARY

True experimental design was carried on 250 adolescent girls with premenstrual syndrome studying in Municipal Girls Higher Secondary School, Karungalpalayam, Erode, GTS Girls Higher Secondary School, PS Park, Erode, by using Multistage sampling technique. Premenstrual syndrome scale was used to assess the premenstrual syndrome among adolescent girls. The data was collected after obtaining the permission from concerned personnel of the School. Analysis was planned to do by using descriptive and inferential statistics and to be presented in the form of tables, graphs and figures.

CHAPTER – IV

RESULTS AND ANALYSIS

The chapter deals with analysis and interpretation of data collected from the adolescent girls to analyze the effectiveness of acupressure and reflexology on premenstrual syndrome among experimental group I and experimental group II

Data analysis is to organize, provide structure to and elicit meaning and being with description that applies to any study in which data are numerical with some concepts. Descriptive statistics allows the research to summarize, describe the quantitative data and inferential statistics used to determine the relationship and causality

The data were entered into Excel Sheet and analyzed through statistical package for social science / PC+ Ver.17.

The findings of the study are organized and presented under following sections.

ORGANIZATION AND PRESENTATION OF DATA

The data collected are organized and presented under following sections.

SECTION 4.1 Description of demographic variables of adolescent girls

**SECTION 4.2 Assess the level of pre menstrual syndrome among
experimental group I of adolescent girls before and after
acupressure**

- 4.2.1 Frequency and percentage distribution of pre & post test scores on pre menstrual syndrome among adolescent girls in experimental group I
- 4.2.2 Items wise analysis of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group I

**SECTION 4.3 Assess the level of pre menstrual syndrome among
experimental group II of adolescent girls before and after
reflexology**

- 4.3.1 Frequency and percentage distribution of pre & post test scores on pre menstrual syndrome among adolescent girls in experimental group II
- 4.3.2 Items wise analysis of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group II

**SECTION 4.4 Determine the effectiveness of acupressure and reflexology on
pre menstrual syndrome among adolescent girls in
experimental group I and II.**

- 4.4.1 Paired “t” test value of pre and post test scores of experimental group I.
- 4.4.2 Mean, SD, and Mean percentage of experimental group I pre and post test scores on pre menstrual syndrome
- 4.4.3 Paired “t” test value of pre and post test scores of experimental group II.
- 4.4.4 Mean, SD, and Mean percentage of experimental group II pre and post test scores on pre menstrual syndrome

SECTION 4.5 Compare the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.

- 4.5.1 Frequency and percentage distribution of post test scores on pre menstrual syndrome among adolescent girls in experimental group I and II.
- 4.5.2 Unpaired “t” test value of post test scores of experimental group I and II.
- 4.5.3 Comparison of Mean, SD, and Mean percentage of experimental group I and II post test scores on pre menstrual syndrome.

SECTION 4.6 Find out the association between post test scores of pre menstrual syndrome among experimental group I and II of adolescent girls with their selected demographic variables.

- 4.6.1 Chi -square value of association between the post test scores of pre menstrual syndrome among adolescent girls in experimental group I with their demographic variables.
- 4.6.2 Chi -square value of association between the post test scores of pre menstrual syndrome among adolescent girls in experimental group II with their demographic variables.

SECTION 4.1 DESCRIPTIONS OF DEMOGRAPHIC VARIABLES OF ADOLESCENT GIRLS

Table 4.1.1 Frequency and percentage distribution of samples according to their demographic variables (N = 250)

S. No	Demographic variables	Experimental group I		Experimental group II	
		Frequency	Percentage	Frequency	Percentage

		(N ₁ =125)	(%)	(N ₂ =125)	(%)
1.	Age in Years				
	a. 14 -15 Years	39	31	58	47
	b. 15.1 – 16 Years	61	49	38	30
	c. Above 16 years	25	20	29	23
2.	Class (Standard)				
	a. 9 th standard	14	11	35	28
	b. 10 th standard	28	22	48	38
	c. 11 th standard	46	37	23	19
3.	Education of parents				
	a. No formal education	20	16	15	12
	b. Primary education	64	52	33	26
	c. Secondary education	15	12	37	30
	d. Higher secondary education	11	8	35	28
e. Graduate and above	15	12	5	4	
S.No	Demographic variables	Experimental group I		Experimental group II	
		Frequency (N₁=125)	Percentage (%)	Frequency (N₂=125)	Percentage (%)
4.	Occupation of parents				
	a. Health professional worker	23	18	27	22
	b. Non Health professional worker	102	82	98	78
5.	Religion				
	a. Hindu	88	70.4	90	72
	b. Muslim	34	27.2	26	21
	c. Christians	3	2.4	9	7
d. Others	0	0	0	0	
6.	Age at menarche				
	a. Less than 13 Years	76	61	59	47
	b. 13 – 14 Years	49	39	66	53
	c. 15 - 16 Years	0	0	0	0
7.	Duration of menstrual cycle				
	a. 20 – 22 days cycle	33	26.4	30	24
	b. 23 – 25 days cycle	64	51.2	57	46
	c. 26 - 28 days cycle	28	22.4	38	30

8.	Days of menstrual flow				
	a. Less than 3 days	0	0	0	0
	b. 3 – 5 days	69	55	91	73
	c. 6 - 8 days	55	45	34	27
9.	Family history of premenstrual syndrome				
	a. Yes	86	69	94	75
	b. No	39	31	31	25
S. No	Demographic variables	Experimental group II		Experimental group II	
		Frequency (N₁=125)	Percentage (%)	Frequency (N₂=125)	Percentage (%)
10.	Practice of home remedies				
	a. Yes	76	61	69	55
	b. No	49	39	56	45
11.	How frequently you observe these premenstrual problems?				
	a. Every cycle	76	61	44	35
	b. Alternate cycle	38	30	60	48
	c. Sometimes	11	9	21	17
12.	Source of information				
	a. Mother	90	72	81	65
	b. Friends	24	19	28	22
	c. Teacher	11	9	16	13
	d. Others	0	0	0	0

Table 4.1.1 depicts the frequency and percentage distribution of the demographic variables such as age, class (standard), education of the parents, occupation of the parents, religion, age at menarche, duration of menstrual cycle, days of menstrual flow, family history of premenstrual syndrome and practice of home remedies

Demographic profile of the participants from age point of view was found distributed with minor differences in few categories in experimental group I majority 61(49%) of adolescent girls were in the age of 15.1 – 16 years, 39 (31%) were in the age group of 14

-15 years and 25 (20%) were in the age group of above 16 years. In experimental group II majority 58 (47%) were in the age group of 14 -15 years, 38 (30%) were 15.1 – 16 years and 29 (23%) adolescent girls belong to the age group of above 16 years.

With regard to class (standard) in experimental group I majority 46 (37%) of adolescent girls studied 11th standard, 37 (30%) belongs to 12th, 28 (22%) were 10th standard and 14 (11%) studied 9th standard whereas in experimental group II majority 48 (38%) of adolescent girls belongs to 10th standard, 35 (28%) studied 9th standard, 23 (19%) studied 11th standard and 19 (15%) were 12th standard.

Distribution of demographic profile according to the work pattern in experimental group I and II depict that the majority 64 (52%) and 33 (26%) had primary education, 15 (12%) and 37 (30%) had secondary education, 11 (8%) and 35 (28%) had higher secondary education, 15 (12%) and 5 (4%) had graduate and 20 (16%) and 15 (12%) had no formal education.

While considering the occupation of parents displayed majority 102 (82%) and 98 (78%) were non health professional worker in both groups and 23 (18%) and 27 (22%) were belongs to health professional workers in both experimental group I and II.

Religion exhibited majority 88 (70.4%) 90 (72%) belongs to Hindus, 34 (27.2%) and 26 (21%) were Muslim and 3 (2.4%) and 9 (7%) were Christian in both experimental group I and II.

With regard to age at menarche of adolescent girls majority 76 (61%) and 59 (47%) had menarche at the age of less than 13 years in both groups and 49 (39%) and 66 (53%) had menarche at the age of 13 -14 years in both experimental group I and II.

Participants accordingly with duration of menstrual cycle on experimental group I and II demonstrated majority 64 (51.2%) and 57 (46%) had 23 -25 days cycle, 33 (26.4%) and 30 (24%) had 20 – 22 days cycle and 28 (22.4%) and 38 (30%) had 26 -28 days menstrual cycle.

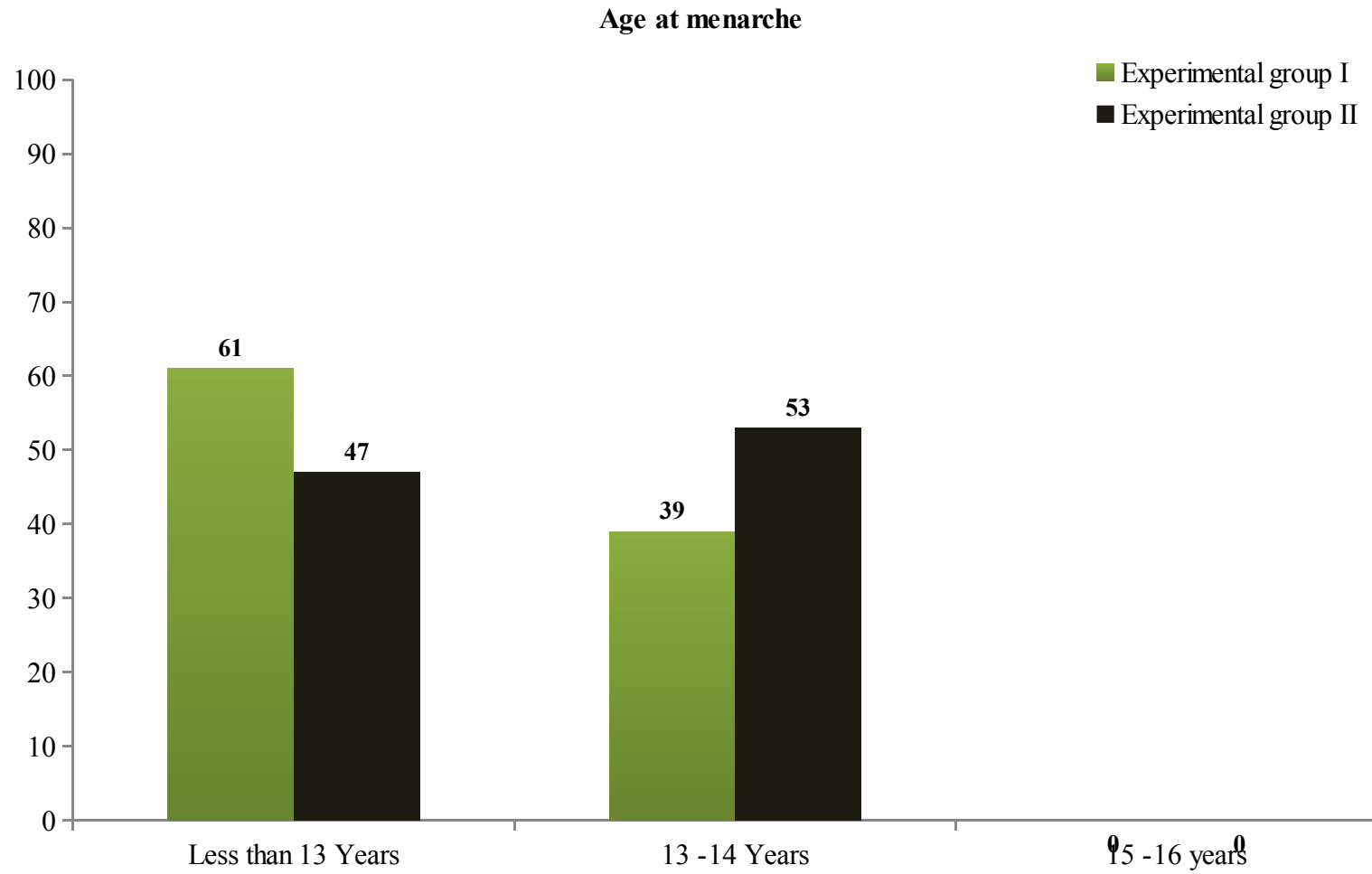
While considering the duration of menstrual flow of adolescent girls majority 69 (55%) and 91 (73%) had 3 -5 days menstrual flow in both groups and 55 (45%) and 34 (27%) had 6 -8 days menstrual flow in both experimental group I and II

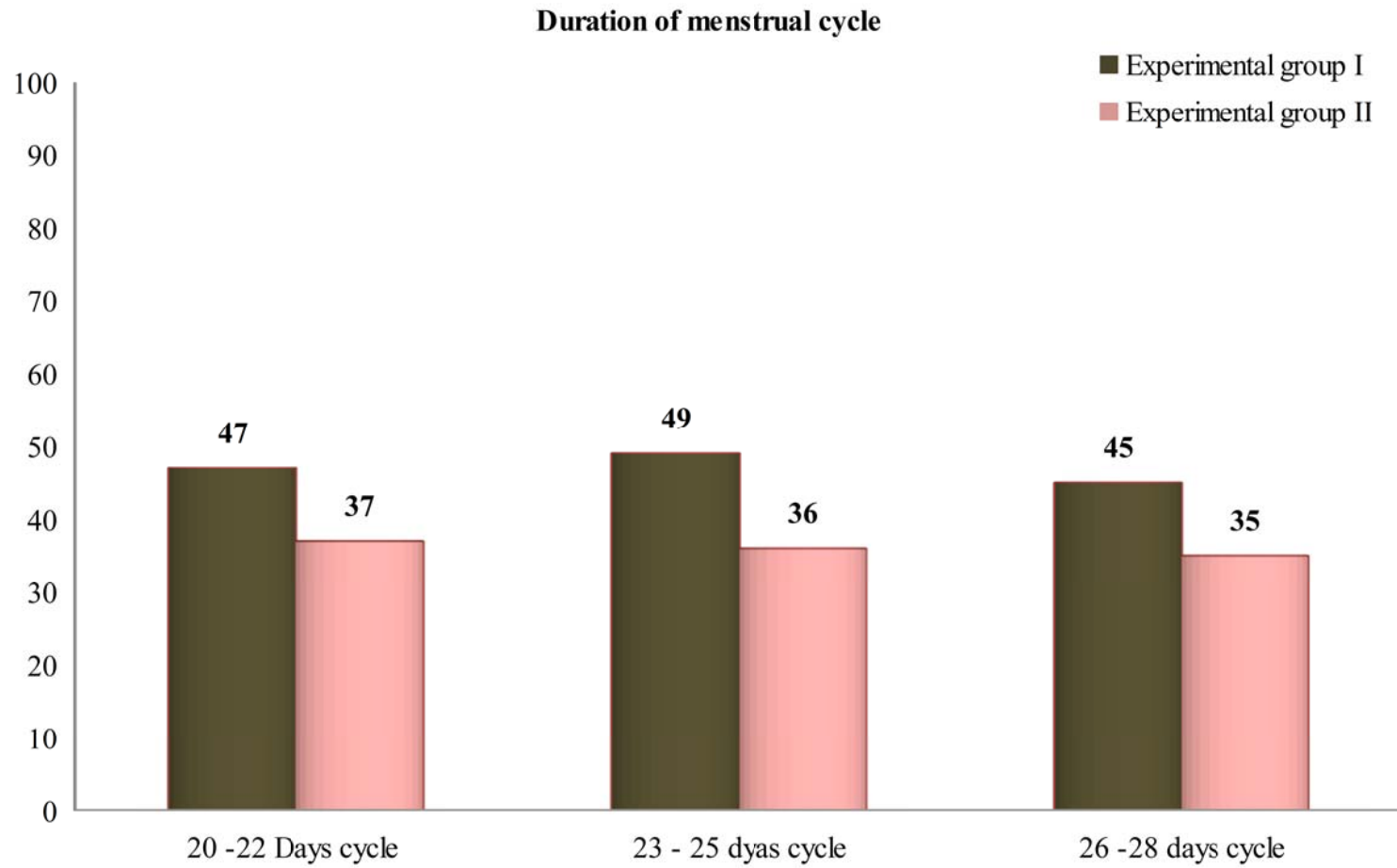
With regard to family history of premenstrual syndrome majority 86 (69%) and 94 (75%) had family history of premenstrual syndrome and 39 (31%) and 31 (25%) had no history of premenstrual syndrome in both experimental group I and II

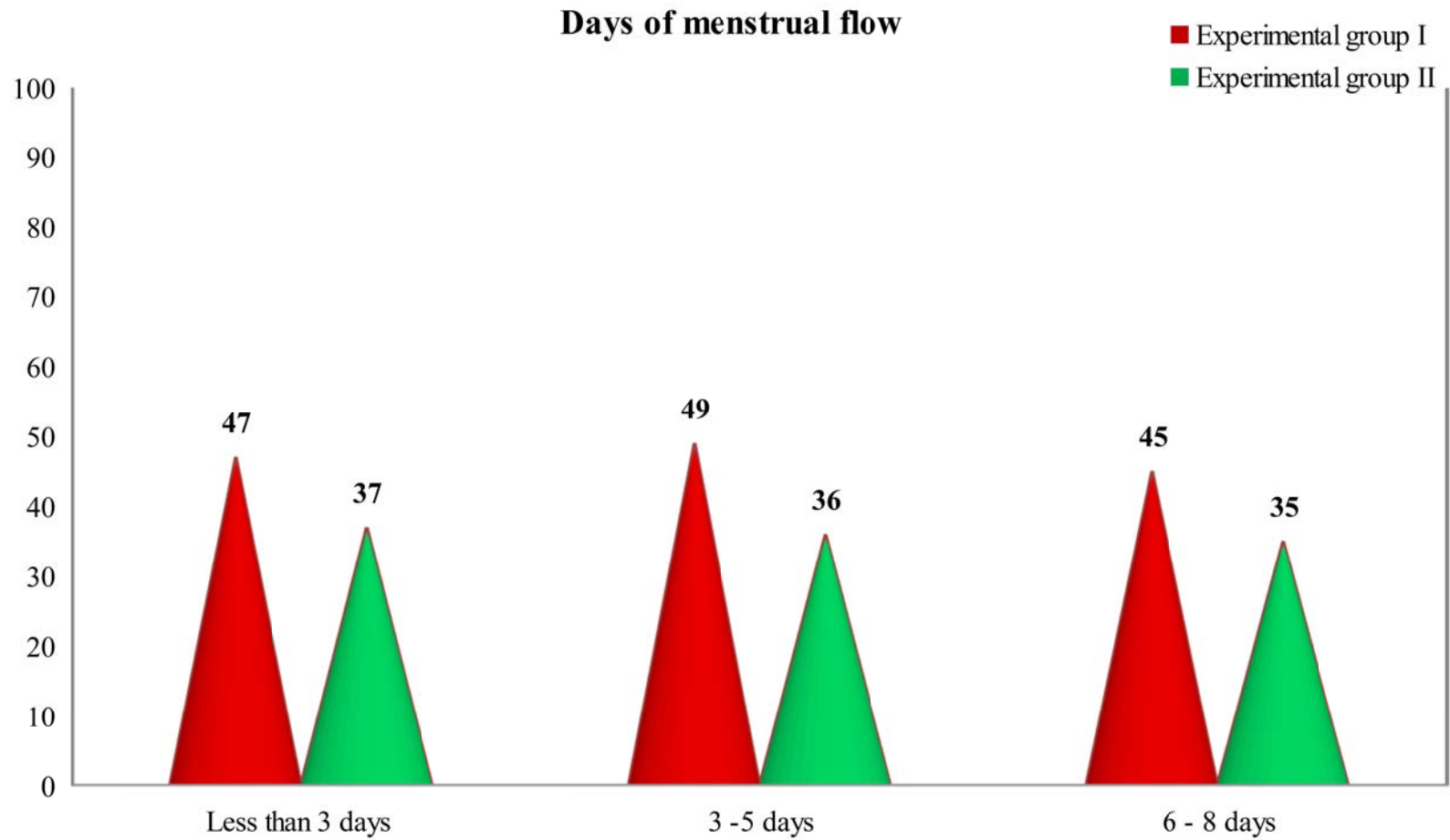
With respect of practice of home remedies majority 76 (61%) and 69 (55%) were practicing home remedies in both groups and 49 (39%) and 56 (45%) were not practicing home remedies in both groups

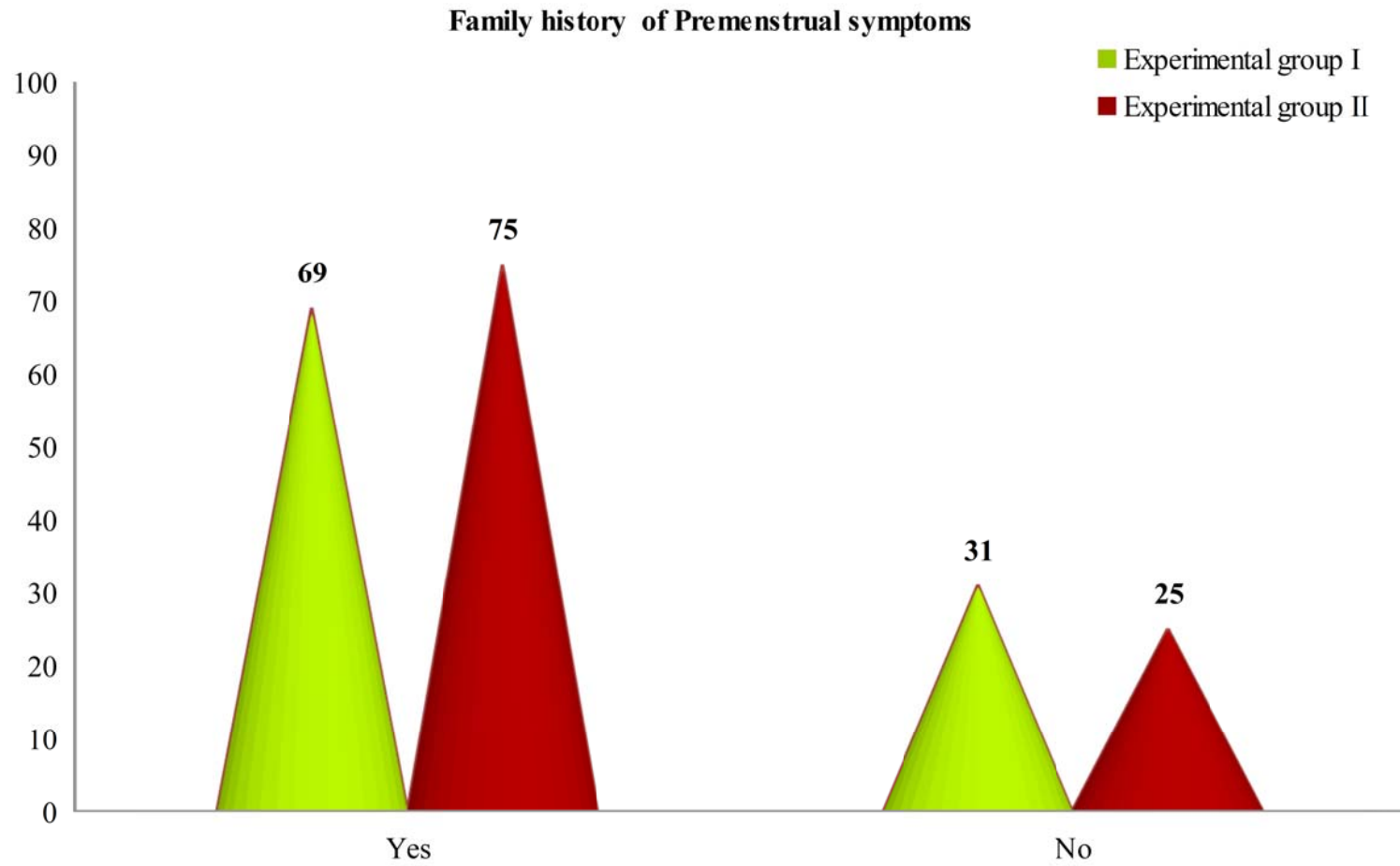
While considering the frequency of observing premenstrual syndrome in experimental group I majority 76 (61%) observed every cycle, 38 (30%) observed alternate cycle and 11 (9%) observed sometimes whereas in experimental group II majority 60 (48%) observed alternate cycle, 44 (35%) observed every cycle and 21 (17%) observed sometime the premenstrual syndrome.

With respect of source of information majority 90 (72%) and 81 (65%) had mothers was source of information, 24 (19%) and 28 (22%) received information from friends and 11 (9%) and 16 (13%) received from teachers in both groups.









**SECTION 4.2 ASSESS THE LEVEL OF PRE MENSTRUAL SYNDROME
AMONG EXPERIMENTAL GROUP I OF ADOLESCENT GIRLS BEFORE AND
AFTER ACUPRESSURE**

**Table 4.2.1 Frequency and percentage distribution of pre and post test scores of
premenstrual syndrome among adolescent girls in experimental group I. (N_i= 125)**

Level of Premenstrual syndrome	Pre test score		Post test score	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
No symptoms	0	0	0	0
Mild	0	0	46	37
Moderate	0	0	79	63
Severe	51	41	0	0
Very sever	74	59	0	0

Amidst experimental group I during pre intervention out of 125 subjects majority 74 (59%) of them experienced very severe syndrome and 51 (41%) of adolescent girls marked severe syndrome. In the course of post intervention 79(63%) of them sensed moderate syndrome and 46 (37%) of them noticed mild syndrome. (Table 4.2.1)

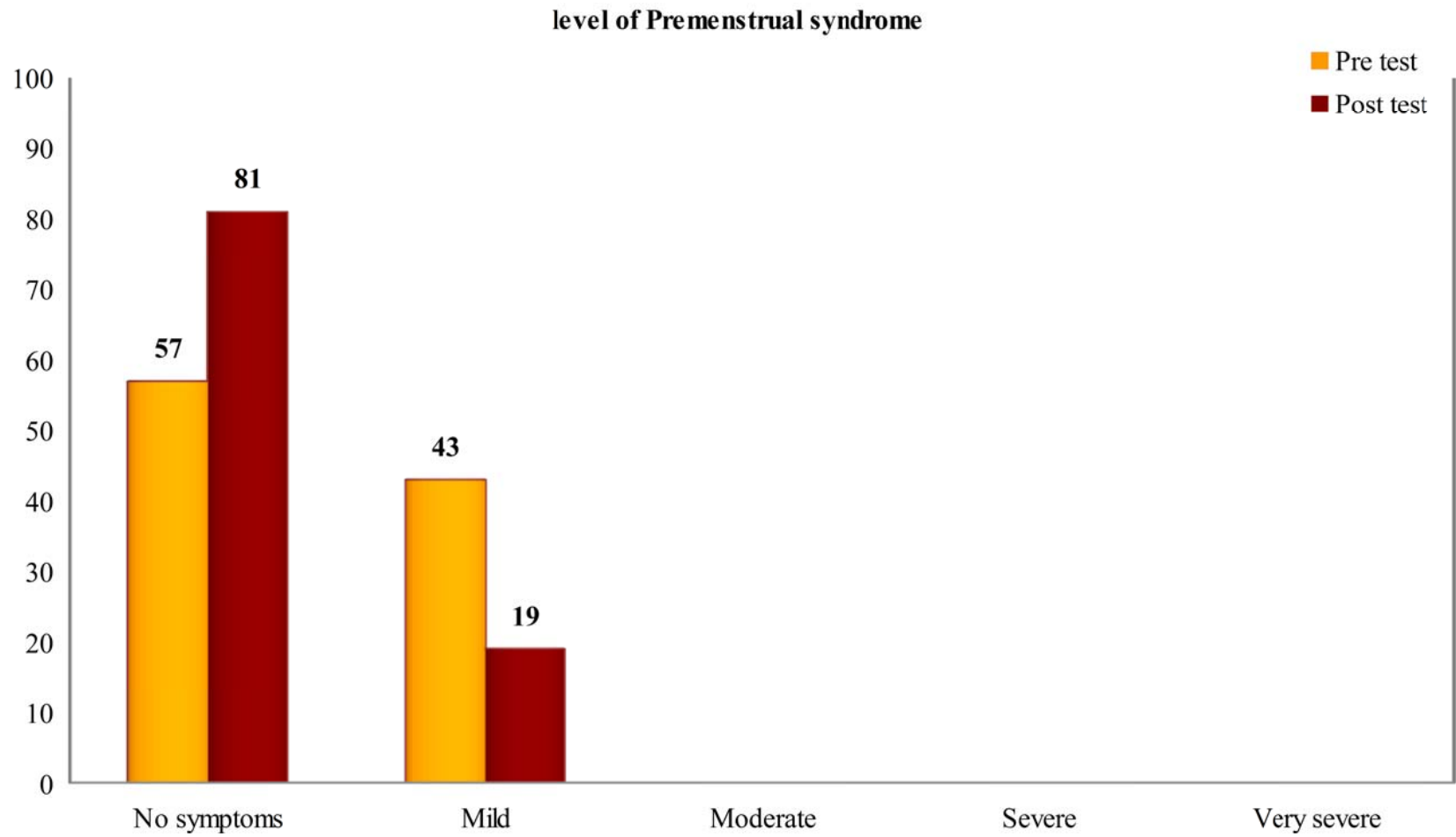


Table 4.2.2 Items wise analysis of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group I

S.No	Premenstrual syndrome scale (PMSS)	Pre test		Post test	
		Frequency (N ₁ =125)	Percentage (%)	Frequency (N ₂ =125)	Percentage (%)
	Physiological symptoms				
1	Breast tenderness and swelling	116	93	62	50
2	Abdominal bloating	108	86	66	53
3	weight gain	6	5	10	8
4	Headache	96	77	60	48
5	Dizziness/fainting.	66	53	40	32
6	Fatigue	60	48	52	42
7	Palpitations	19	15	19	15
8	Pelvic discomfort and pain	100	80	68	54
9	Abdominal cramps	112	90	58	46
10	Change in bowel habits	76	61	56	45
11	Increased appetite	81	65	64	51
12	Generalized aches and pains	92	74	52	42
13	Food cravings (Sugar/ Salt)	16	13	10	8
14	Skin changes, rashes, pimples	18	14	22	18
15	Nausea/vomiting	10	8	8	6
16	Muscle and Joint pain	94	75	56	45
	Psychological symptoms				
17	Irritability	109	87	69	55
18	Anxiety	111	89	64	51
19	Tension	96	77	67	54
20	Mood swings	102	82	63	51
21	Loss of concentration	61	49	48	38
22	Depression	101	81	68	54
23	Forgetfulness	62	50	53	42
24	Easy crying/ Crying spells	28	22	28	22
25	Sleep changes (Insomnia/ hypersomnia)	99	82	61	49

29	Social withdrawal	99	79	67	54
30	Restlessness	80	64	52	42
31	Lack of self control	71	59	42	34
32	Feeling guilty	16	13	16	13
33	Clumsiness	22	18	22	18
34	Lack of interest in usual activities	78	62	48	38
35	Poor judgment	72	57	41	33
36	Impaired work performance	91	73	59	47
37	Obsessional thoughts	26	21	26	21
38	Compulsive behavior	22	18	22	18
39	Irrational thoughts	18	14	18	14
40	Being over sensitive	13	10	13	10

Data suggested that the items wise comparison of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group I reported that, the common premenstrual symptoms experienced in pretest was breast tenderness and swelling (93%), abdominal bloating (86%), headache (77%), pelvic discomfort and pain (80%), abdominal cramps (90%), generalized aches and pains (74%), muscle and Joint pain (75%) irritability (87%), anxiety (89%), mood swing (82%), depression (81%), insomnia (82%), social withdrawal (79%) and impaired work performance (73%)

In course of post test intervention the symptoms marked was breast tenderness and swelling (50%), abdominal bloating (53%), headache (48%), pelvic discomfort and pain

seems the acupressure was effective in reducing the premenstrual symptoms among adolescent girls. (Table 4.2.2)

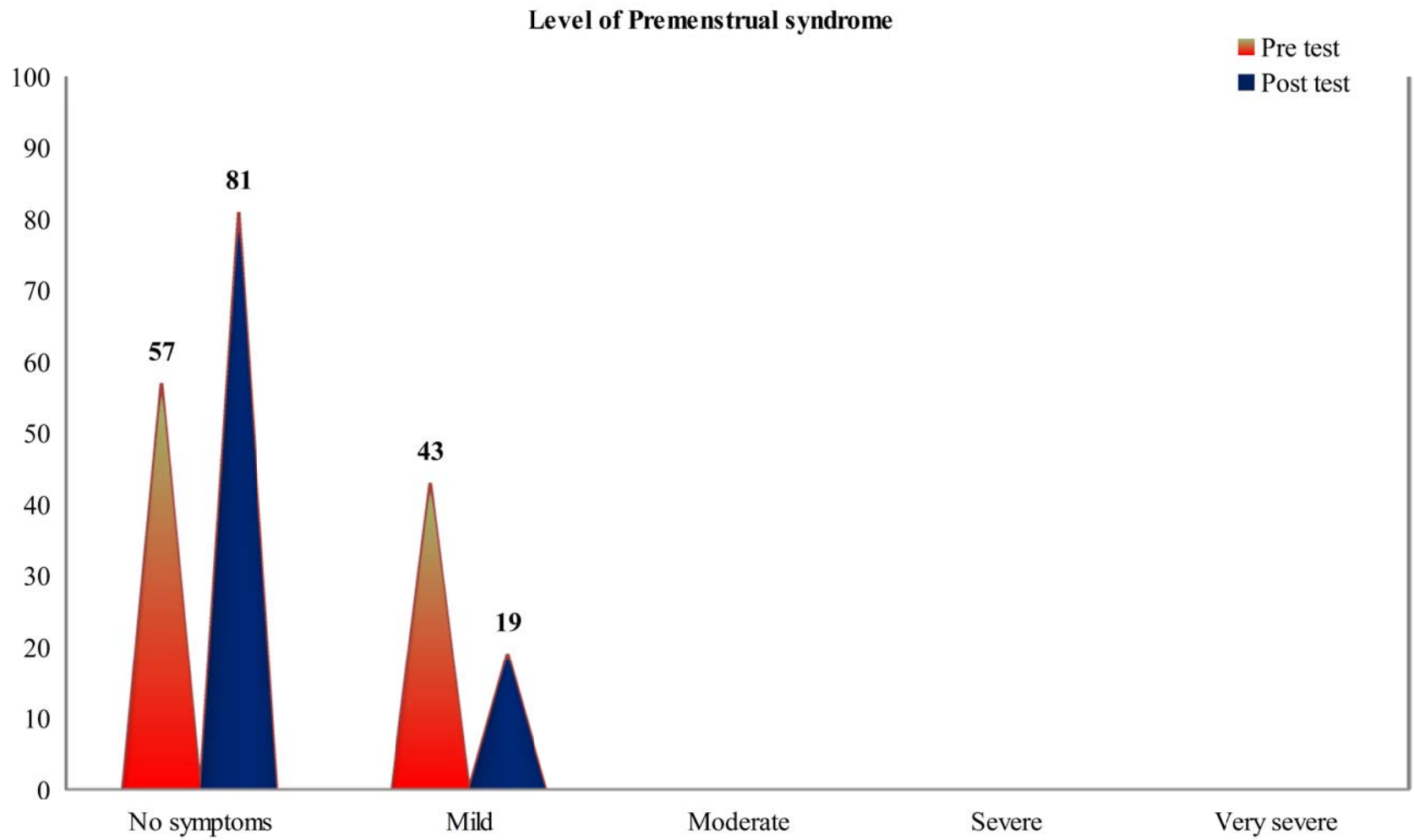
SECTION 4.3 ASSESS THE LEVEL OF PRE MENSTRUAL SYNDROME AMONG EXPERIMENTAL GROUP II OF ADOLESCENT GIRLS BEFORE AND AFTER REFLEXOLOGY

Table 4.3.1 Frequency and percentage distribution of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group II.

(N₂= 125)

Level of Premenstrual syndrome	Pre test score		Post test score	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
No symptoms	0	0	0	0
Mild	0	0	101	81
Moderate	0	0	24	19
Severe	71	57	0	0
Very severe	54	43	0	0

Experimental group II all along before intervention by the whole of 125 subjects 71 (57%) of them realized severe syndrome and 54 (43%) of adolescent girls experienced very severe syndrome. In the course of after intervention experimental group II illustrated 101 (81%) of them observed mild syndrome and 24 (19%) of them noticed moderate syndrome. (Table 4.3.1)



4.3.2 Items wise analysis of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group II

S.No	Premenstrual syndrome scale (PMSS)	Pre test		Post test	
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
	Physiological symptoms				
1	Breast tenderness and swelling	108	86	52	42
2	Abdominal bloating	112	90	56	45
3	weight gain	10	8	10	8
4	Headache	98	78	54	43
5	Dizziness/fainting.	64	51	42	34
6	Fatigue	62	50	40	32
7	Palpitations	22	18	22	18
8	Pelvic discomfort and pain	104	83	54	43
9	Abdominal cramps	116	93	54	43
10	Change in bowel habits	72	58	52	42
11	Increased appetite	76	61	50	40
12	Generalized aches and pains	92	74	42	34
13	Food cravings (Sugar/ Salt)	10	8	10	8
14	Skin changes, rashes, pimples	22	18	22	18
15	Nausea/vomiting	8	6	8	6
16	Muscle and Joint pain	99	79	42	34
	Psychological symptoms				
17	Irritability	116	93	51	41
18	Anxiety	110	88	54	43
19	Tension	93	74	52	42
20	Mood swings	101	81	48	38
21	Loss of concentration	94	75	58	46
22	Depression	102	82	38	30
23	Forgetfulness	72	58	52	26
24	Easy crying/ Crying spells	32	26	32	26
25	Sleep changes (Insomnia/ hypersomnia)	102	82	46	37

29	Social withdrawal	94	75	51	41
30	Restlessness	82	66	62	50
31	Lack of self control	67	54	48	38
32	Feeling guilty	12	10	12	10
33	Clumsiness	28	22	26	21
34	Lack of interest in usual activities	87	67	28	22
35	Poor judgment	62	50	46	37
36	Impaired work performance	99	79	52	42
37	Obsessional thoughts	28	22	28	22
38	Compulsive behavior	24	19	24	19
39	Irrational thoughts	16	13	16	13
40	Being over sensitive	12	10	12	10

Data presented that during pre intervention by the whole of 125 participants in experimental group I marked the common premenstrual symptoms in pretest was breast tenderness and swelling (86%), abdominal bloating (90%), headache (78%), pelvic discomfort and pain (83%), abdominal cramps (93%), generalized aches and pains (74%), Muscle and Joint pain (79%), irritability (93%), anxiety (88%), mood swing (81%), depression (82%), insomnia (82%), social withdrawal (75%) and impaired work performance (79%)

Besides in post test intervention the symptoms sensed was breast tenderness and swelling (42%), abdominal bloating (45%), headache (43%), pelvic discomfort and pain (43%), abdominal cramps (43%), generalized aches and pains and muscle and Joint pain (34%), irritability (41%), anxiety (43%), mood swing (38%), depression (30%), insomnia (37%), social withdrawal (54%) and impaired work performance (41%). It seems the reflexology was effective in reducing the premenstrual symptoms among adolescent girls. (Table

SECTION 4.4 Determine the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.

Table 4.4.1 Paired “t” test value of pre and post test scores of experimental group I.

Sl. No.	Areas	‘t’ Value	Table value	Level of Significant
1	Physiological	6.27	1. 980	P<0.05 significant
2	Behavioural	8.68	1. 980	P<0.05 significant
3	Psychological	6.96	1. 980	P<0.05 significant
	Total	21. 91	1. 980	P<0.05 significant

Df= 124

Table value = 1.980

P<0.05 significant

Equating the paired t test value of premenstrual syndrome scores evidenced distinct clinical significance ($p<0.05$) with physiological (6.27), behavioural (8.68) and psychological (6.96). The overall paired t test value commensuration on premenstrual syndrome scores evidenced distinct clinical significance ($p<0.05$) with experimental group I (21.91) (Table 4.4.1)

Table 4.4.2 Area wise comparison of mean, SD, and mean percentage of experimental group I pre and post test premenstrual syndrome scores

S. No	Areas	Max. scores	Pre test score			Post test score			Differen ce in Mean (%)
			Mean	SD	Mean (%)	Mean	SD	Mean (%)	
1.	Physiological	80	65.47	3.48	82	30.85	2.65	39	43
2.	Behavioural	60	48.66	5.10	81	27.23	2.57	45	36
3.	Psychological	60	47.86	3.49	80	24.40	2.38	41	39
	Total	200	161.98	6.63	81	82.48	4.23	41	40

Parallel comparison between mean, standard deviation and mean percentage concerning

161.98 ± 6.63 and 81% consequently and posttest mean, standard deviation and mean percentage score were 82.48 ±4.23 and 41% correspondingly.

Conclusion drawn contingent with significant difference between pretest and posttest premenstrual syndrome mean scores on acupressure was most effective in reducing the symptoms among adolescent girls. (Table 4.4.2)

Table 4.4.3 Paired 't' test value of pre and post test scores of experimental group II.

Sl. No.	Areas	't' Value	Table value	Level of Significant
1	Physiological	7.52	1. 980	P<0.05 significant
2	Behavioural	8.96	1. 980	P<0.05 significant
3	Psychological	6.98	1. 980	P<0.05 significant
	Total	23.46	1. 980	P<0.05 significant

Df= 124

Table value = 1.980

P<0.05 significant

Compatible paired t test value of premenstrual syndrome scores manifested distinct clinical significance ($p<0.05$) with physiological (7.52), behavioral (8.96) and psychological (6.98). The overall compatible paired 't' test of premenstrual syndrome scores evidenced distinct clinical significance ($p<0.05$) with experimental group II (23.46) (Table 4.4.3)

Table 4.4.4 Area wise comparison of mean, SD, and mean percentage of experimental group II pre and post test premenstrual syndrome scores

			Pre test score	Post test score	Differen
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	Total	200	160.61	7.15	80	76.74	5.21	38	42
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Comparison between mean, standard deviation and mean percentage pretest premenstrual syndrome scores with experimental group II, displayed the mean score with 60.70 ± 4.63 and mean percentage was 76% in physiological. Correspondingly in post test intervention mean score with 29.44 ± 3.02 and mean percentage was 37%. It was revealing the difference of 39%. In experimental group II overall reported the pre test mean score was 160.61 ± 7.15 and mean percentage was 80% consequently and post test mean score was 76.74 ± 5.21 and mean percentage was 38% showing the difference of 42%.

Culmination drawn contingent with significant difference between pretest and posttest premenstrual syndrome mean scores on reflexology was effective among adolescent girls. (Table 4.4.4)

SECTION 4. 5. COMPARE THE EFFECTIVENESS OF ACUPRESSURE VS REFLEXOLOGY ON PRE MENSTRUAL SYNDROME AMONG ADOLESCENT GIRLS IN EXPERIMENTAL GROUP I AND II.

syndrome	Frequency (N₁)	Percentage (%)	Frequency N₂)	Percentage (%)
No symptoms	0	0	0	0
Mild	46	37	101	81
Moderate	79	63	24	19
Severe	0	0	0	0
Very sever	0	0	0	0

Data suggested that during post intervention experimental group I out of 125 participants none reported with any symptoms, severe and very severe symptoms respectively. Likewise moderate syndrome was demonstrated by 79 (63%) participants and 46 (37%) showed mild syndrome in experimental group I. As long as experimental group II reported none with any symptoms, severe and very severe symptoms respectively, while 101 (81%) expressed mild syndrome and 24 (19%) revealed moderate syndrome. (Table 4.5.1)

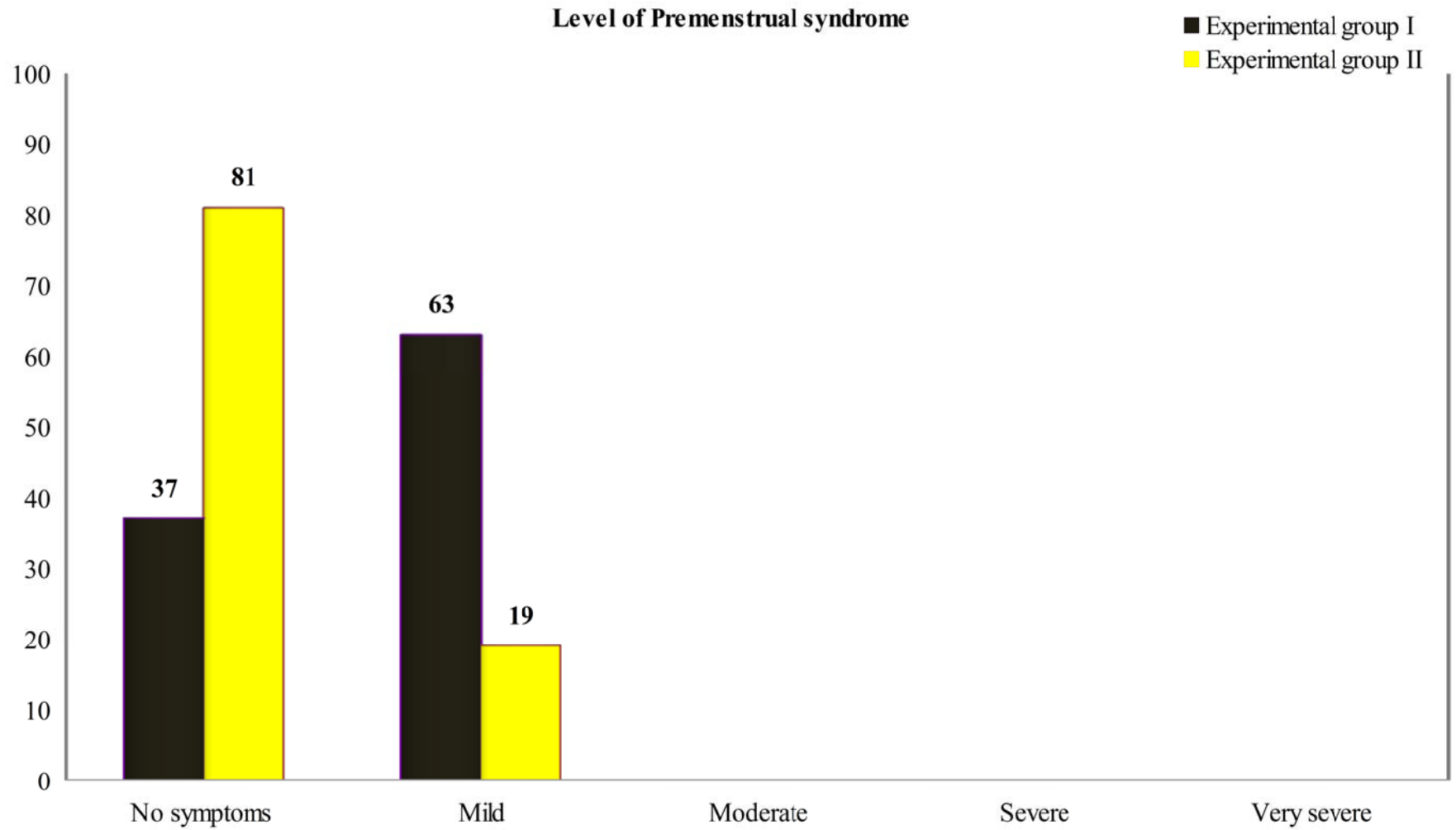


Table 4.5.2 Unpaired ‘t’ test value of post test scores of experimental group I and II.

S. No	Areas	Unpaired ‘t’ value	Table value	Level of significant
1.	Physiological	3.91	2.828	P<0.05 significant
2.	Behavioural	6.89	2.828	P<0.05 significant
3.	Psychological	6.03	2.828	P<0.05 significant
	Total	9.56	2.828	P<0.05 significant

Df 248**Table value = 2.828**

Unpaired‘t’ test was calculated to analyze the effectiveness between post test scores of experimental group I and II on different aspects on areas of premenstrual syndrome shows that the overall score was 9.56 when compared to table value (2.828) it was high. (Table 4.5.2)

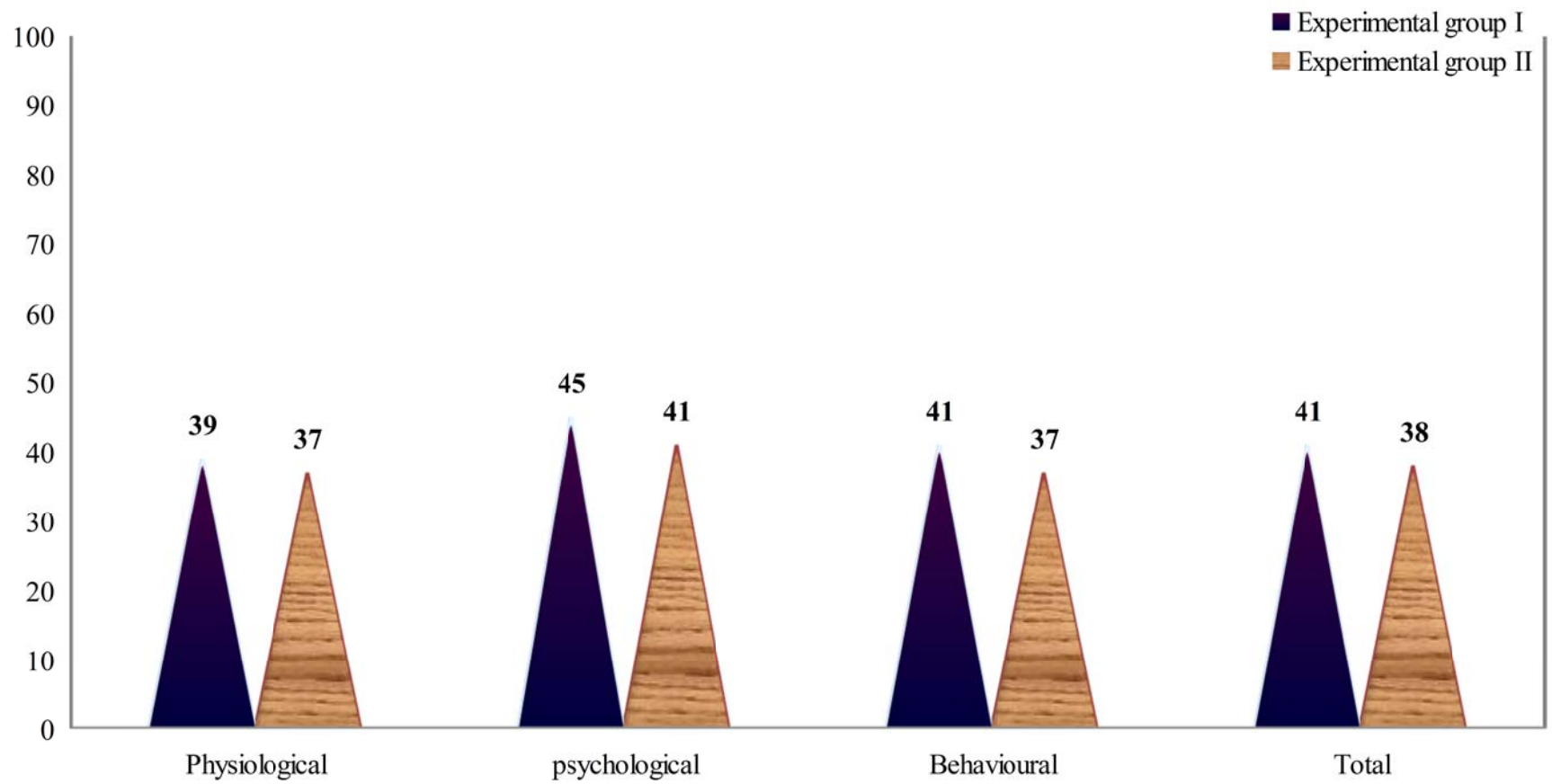
Table 4.5.3 Area wise comparison of mean, SD, and mean percentage of experimental group I and II post test premenstrual syndrome scores

S. No	Areas	Max. scores	Post test score						Differ ence in Mean (%)
			Experimental group I			Experimental group II			
			Mean	SD	Mean (%)	Mean	SD	Mean (%)	
1.	Physiological	80	30.85	2.65	39	29.44	3.02	37	2
2.	Behavioural	60	27.23	2.57	45	24.85	2.89	41	4
3.	Psychological	60	24.40	2.38	41	22.45	2.72	37	4
	Total	200	82.48	4.23	41	76.74	5.21	38	3

Lateral analogy between mean, standard deviation and mean percentage posttest premenstrual syndrome scores with experimental group I and II, disclosed the mean score with 30.85 ± 2.65 and mean percentage was 39%. Furthermore in experimental group II mean

Significant difference was observed between posttest premenstrual syndrome mean scores on reflexology group was more effective when compared with acupressure group. (Table 4.5.3)

Mean percentage level of Premenstrual symptoms



SECTIONS 4.6 FIND OUT THE ASSOCIATION BETWEEN POST TEST SCORES OF PRE MENSTRUAL SYNDROME AMONG EXPERIMENTAL GROUP I AND II OF ADOLESCENT GIRLS WITH THEIR DEMOGRAPHIC VARIABLES.

Table 4.6.1 Association between experimental group I post test scores and demographic variables of the adolescent girls

S. No	Demographic variables	Level of premenstrual syndrome		Df	Chi square value	Table value (P > 0.05)	Level of Significance
		Mild	Moderate				
1.	Age in Years						
	a. 13 -14 Years	14	25	2	1.076	5.99	NS
	b. 15 – 16 Years	25	36				
	c. 17 years and above	9	16				
5.	Class (Standard)						
	a. 9 th standard	3	11	3	2.451	7.82	NS
	b. 10 th standard	9	19				
	c. 11 th standard	18	28				
	d. 12 th standard	16	21				
10.	Education of parents						
	a. No formal education	3	17	4	10.487	9.49	S*
	b. Primary education	25	39				
	c. Secondary education	5	10				
	d. Higher secondary education	3	8				
	e. Graduate and above	10	5				
14.	Occupation of parents						
	Household	26	46				

		Mild	Moderate			0.05)	cance
17.	Religion						
	a. Hindu	34	54	2	1.908	5.99	NS
	b. Muslim	12	22				
	c. Christians	0	3				
	d. Others	0	0				
22.	Age at menarche						
	a. Less than 13 Years	28	48	2	0.990	5.99	NS
	b. 14 – 15 Years	10	18				
	c. 15 - 16 Years	8	13				
26.	Duration of menstrual cycle						
	a. 20 – 22 days cycle	7	18	2	4.672	5.99	NS
	b. 23 – 25 days cycle	29	35				
	c. 26 - 28 days cycle	10	26				
30.	Days of menstrual flow						
	a. Less than 3 days	14	27	2	2.344	5.99	NS
	b. 3 – 5 days	27	48				
	c. 6 - 8 days	5	4				
34.	Family history of premenstrual syndrome						
	a. Yes	33	53	1	0.293	3.84	NS
	b. No	13	26				
37.	Practice of home remedies						
	a. Yes	29	47	1	0.154	3.84	NS
	b. No	17	32				
40.	How frequently you observe these premenstrual problems?						
	a. Every cycle	28	48	2	0.464	5.99	NS
	b. Alternate cycle	13	25				
	c. Sometimes	5	6				

χ^2 Value with $P < 0.05$

S – Significant

N.S – Not Significant

$\chi^2=4.672$), days of menstrual flow ($\chi^2=2.344$), family history of premenstrual syndrome ($\chi^2=0.293$), practice of home remedies ($\chi^2=0.154$) and frequency of observing premenstrual problems ($\chi^2=0.464$), when compared to evidenced significance with ($p<0.05$)

Association marked between posttest premenstrual syndrome scores and education of the parents ($\chi^2=10.487$) when compared to evidenced significance with ($p<0.05$) (Table 4.6.1)

Table 4.6.2 Association between experimental group II post test scores and demographic variables of the adolescent girls

S. No	Demographic variables	Level of premenstrual syndrome		Df	Chi square value	Table value (P > 0.05)	Level of Significance
		Mild	Moderate				
1.	Age in Years						
	a. 13 -14 Years	34	4	2	5.019	5.99	NS
	b. 15 – 16 Years	42	16				
c. 17 years and above	25	4					
5.	Class (Standard)						
	a. 9 th standard	31	4	3	11.161	7.82	S*
	b. 10 th standard	43	5				
	c. 11 th standard	15	8				
d. 12 th standard	12	7					
10.	Education of parents						
	a. No formal education	13	2	4	1.125	9.49	NS
	b. Primary education	28	5				
	c. Secondary education	29	8				
d. Higher secondary	27	8					

15.	Occupation of parents						
	a. Health professional worker	26	7	1	0.117	3.84	NS
b. Non Health professional worker	75	17					
16.	Religion						
	a. Hindu	71	19	2	3.590	5.99	NS
	b. Muslim	24	2				
	c. Christians	6	3				
d. Others	0	0					
21.	Age at menarche						
	a. Less than 13 Years	52	8	2	2.292	5.99	NS
	b. 14 – 15 Years	32	10				
c. 15 - 16 Years	18	6					
25.	Duration of menstrual cycle						
	a. 20 – 22 days cycle	21	1	2	5.803	5.99	NS
	b. 23 – 25 days cycle	43	14				
c. 26 - 28 days cycle	15	4					
29.	Days of menstrual flow						
	d. Less than 3 days	72	19	2	2.066	5.99	NS
	e. 3 – 5 days	21	5				
f. 6 - 8 days	8	0					
33.	Family history of premenstrual syndrome						
	c. Yes	74	20	1	1.164	3.84	NS
d. No	26	4					
36.	Practice of home remedies						
	c. Yes	47	9	1	0.640	3.84	NS
d. No	54	15					
39.	How frequently you observe these premenstrual problems?						
	d. Every cycle	34	10	2	0.709	5.99	NS
	e. Alternate cycle	49	11				
f. Sometimes	18	3					

$\chi^2=0.117$), religion ($\chi^2=3.590$), age at menarche ($\chi^2=2.292$), duration of menstrual cycle ($\chi^2=5.803$), days of menstrual flow ($\chi^2=2.066$), family history of premenstrual syndrome ($\chi^2=1.164$), practice of home remedies ($\chi^2=0.640$) and frequency of observing premenstrual problems ($\chi^2=0.709$), when compared to evidenced significance with ($p<0.05$)

Association was analyzed between posttest premenstrual syndrome score and class ($\chi^2=11.161$) when compared to evidenced significance with ($p<0.05$) (Table 4.6.2)

CHAPTER – V

DISCUSSION

The present study was executed to assess the effectiveness of acupressure and reflexology on premenstrual syndrome among adolescent girls at selected setting. True experimental design was adopted for the study and sample was selected by using multistage random sampling technique. Sample size was 250 adolescent girls from 2 Government Girls Higher Secondary schools; their risk level of premenstrual syndrome was assessed by using Premenstrual syndrome rating scale (PMSS). The findings of the study had proved that there was a significant difference in the level of premenstrual syndrome among adolescent girls after acupressure and reflexology.

The conceptual framework based on Imogene King's Goal Attainment Theory was applied in the present study. The pre model for premenstrual syndrome helped the researcher to introduce the promotion of health intervention through acupressure and reflexology. This theory supported the researcher in planning and executing the present study in phased manner.

The findings are discussed objective wise and presented below:

Description of demographic variables of the adolescent girls

result agreed with another study which found that premenstrual syndrome is a common problem in young girls and identified in adolescents and can begin around age 14, or 2 years post-menarche. Premenstrual syndrome is one of the unresolved problems^{12, 136}. Another study reported that age of onset of menstruation varies from 9 to 18 years with the average age in United States being about 12 years and 8 months, whereas in India it is slightly lower and has been reported to be around 12 years. In the Indian context, the age of onset of menstruation or menarche is generally between 11-15 years⁵⁰. In another study marked that age of menstruating girls ranged from 14-17 years with maximum number of girls between 14 and 15 years¹⁵⁹. The similar study reported that the age of menstruating girls ranged from 12-17 years with maximum number of girls between 13 and 15 years of age¹⁶⁵. Another study also revealed that majority of adolescent students (70%) were in the age group of 13–14 years⁸².

- ◆ 37 % of them were 11th standard in 38 % of them were 10th standard. The current result not agreed with another study reported that majority percentage (80%) belongs to 8th-9th standard. This is because of researcher selected sample from 9th standard to 12th standard⁸².
- ◆ With respect to education of parents majority 64 (52%) and 33 (26%) had primary education, 15 (12%) and 37 (30%) had secondary education, 11 (8%) and 35 (28%) had higher secondary education, 15 (12%) and 5 (4%) had graduate and 20 (16%) and 15 (12%) had no formal education in both experimental group I and II of adolescent

- ◆ 82% of the parents were non health professionals in group I and Majority (78%) of the parents were non health professionals in group II
- ◆ In current study majority (70.4%) of the adolescent girls are hindus and majority (72%) of the adolescent girls are hindus. Thses result agreed with another found that age of menstruating girls ranged from 13 to 16 years. Maximum number of girls being between 15 and 16 years age group and among all these girls, 74 (92.5%) were Hindus, and 6 (7.5%) were Muslims¹⁶⁶. Another study also found that 50% of the adolescent students were Hindus⁸².
- ◆ The present study found that 61% them were less than 13 years and 53% of them age at menarche was 13 -14 years. 51% and 46% of them had 23 - 25 days of menstrual cycle. 55% and 73% of adolescent girls had 3-5 days menstrual flow in both experimental group I and II. These results agreed with another study found that average age at menarche in Korean girls was 12.6 years, thus younger than in the past¹¹⁵. The study found that average age at menarche was 15.8 ± 1 year. A cycle length between 21 and 35 days was observed in 70.3% of the girls. The mean duration of flow was 4 ± 1.3 days with a range of 2-7 days²⁰. Another study also found that the subjects who had attained menarche (n=369), about $\frac{1}{4}$ th of girls (24.92%) had their first menses before completing 12th year of age. 58.52% of them experienced their first menses before 13th year of age, 89.69% before 14th year of age and 98.63% of the girls had their first menses before completing 15th year of age¹⁵⁶. In

girls was 30/3 5 days followed by 28/5 - 7 days. Out of 725 girls, who had achieved menarche, 75% felt that the amount of menstrual flow was normal, while 8.8% felt that it was below normal and 8.7% felt that it was more than normal¹⁶⁸. The mean age of menarche came to 13.995 (S.D. Range of age of menarche was 12 - 14.6 years. The study reported that the average age at menarche by recall method was 15.8 years. A cycle length between 21 and 35 days was observed in 70.3% of the girls¹⁵⁹.

- ◆ The current study 69% and 75% of them had family history of PMS. The result agreed with another study revealed that 80.2% of the participants experienced various degrees of PMS symptoms which were significantly associated with a family history of PMS, physical inactivity, habitual excess consumption of coffee, BMI, frequent consumption of fast food, and smoking¹¹⁹.
- ◆ In present study 61% and 55% of adolescent girls are practicing home remedies.
- ◆ 61% of them every cycle observing the premenstrual problems in group I and 48% of them alternate cycle observing the premenstrual problems in group II

The current study 72% and 65% of adolescent girls source of information regarding menstrual problem was mothers. The another study found that the main source of information was mother (57.2%). An important finding was that in a girls' school, only 1.7 % girls got the information from their teacher. Other sources were elder sister, relatives, friends and books¹⁶⁸. The study also found that mother was the first informant for 77.4% of urban girls but friends were the first informants for 67.8% of

had consulted doctors and 3 (4.12%) girls had consulted health worker while 25 (34.25%) girls had discussed their problem with their mother¹⁵⁸. Another 3 studies noticed that the majority of girls learn about menstruation from their mothers, sisters and girl friends^{159, 170,171}. Another study also found the leading sources of menarcheal information to the adolescents were mothers (39.7%), followed by their friends (26.6%) and teachers (21.8%)¹⁰²

- ◆ The present study conducted in urban area. The prevalence of premenstrual syndrome was high. The following authors besides with current study reported that only place of residence (large cities) increased the risk of premenstrual syndrome (OR = 3.58; P = 0.01). Adolescent females living in urban areas are more vulnerable to premenstrual syndrome⁹. The study conducted to find out variation in menstrual characteristics between rural and urban adolescents in Kolkata, India. Results showed rural and urban adolescents differed significantly (p<0.05) with respect to age at menarche, skipped and irregular cycles, PMS and duration of menstrual discharge¹⁷².

The first objective was assess the level of premenstrual syndrome among experimental group I of adolescent girls before and after acupressure

Frequency and percentage distribution of pre and post test scores of premenstrual

Amidst experimental group I during pre intervention out of 125 subjects majority 74 (59%) of them experienced very severe syndrome and 51 (41%) of adolescent girls marked severe syndrome. In the course of post intervention 79(63%) of them sensed moderate syndrome and 46 (37%) of them noticed mild syndrome.

These result coincided with study marked that the overall menstrual symptoms (95% confidence interval [CI] 49.8 to 6.5, effect size [ES] 0.43, $p < 0.01$) and two subscales, menstrual pain (95% CI 16.4 to 2.2, ES 0.45, $p < 0.01$) and negative affects (95% CI 11.9–2.0, ES 0.38, $p < 0.04$), revealed that menstrual symptoms decreased significantly after auricular acupressure by the seed-pressure method. NO level increased in the acupressure group, although this difference did not achieve statistical significance ($p < 0.05$). It concluded that auricular acupressure by seed-pressure method in improving menstrual symptoms¹⁴⁵.

The current result agreed with another study stated that that acupressure at matched points Hegu and Sanyinjiao reduced the pain, distress and anxiety perception. Acupressure at single point Hegu was found, effectively, to reduce menstrual pain during the follow-up period, but no significant difference for reducing menstrual distress and anxiety perception was found. Zusanli acupressure had no significant effects of reducing menstrual pain, distress and anxiety perception. Acupressure is an effective and safe non-

Another study also marked that primary outcome was, mean pain intensity at the days of pain during the third menstruation after therapy start. It concludes that Self-care acupressure might be successful in treating menstrual pain among young women¹⁴⁸.

Items wise analysis of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group I

Data suggested that the items wise comparison of pre and post test scores of premenstrual syndrome among adolescent girls in experimental group I reported that, the common premenstrual symptoms experienced in pretest was breast tenderness and swelling (93%), abdominal bloating (86%), headache (77%), pelvic discomfort and pain (80%), abdominal cramps (90%), generalized aches and pains (74%), muscle and Joint pain (75%) irritability (87%), anxiety (89%), mood swing (82%), depression (81%), insomnia (82%), social withdrawal (79%) and impaired work performance (73%)

The current result agreed with study noticed that 87.5% stated that symptoms occurred prior to menstruation. The emotional and physical symptoms most frequently mentioned were anxiety (76.4%), mood swings/crying (55.7%), pain and breast tenderness (45.4)¹⁶⁰.

symptoms was significantly higher for the younger women (15-20 years) compared to the older women (21-24 and 25-27 years)⁷⁵.

Another study stated that 60% breast pain and discomfort, 50% lower abdominal cramp or discomfort, headache and increasing stress, 40% of them noticed that sadness, depression, confusion, weight gain, irritability and conflicts with friends, 30% reported high rate of anxiety, withdrawal feeling, ineffective coping and bloated body image¹⁶¹.

In course of post test intervention the symptoms marked was breast tenderness and swelling (50%), abdominal bloating (53%), headache (48%), pelvic discomfort and pain (54%), abdominal cramps (46%), generalized aches and pains (42%), muscle and Joint pain (45%), irritability (55%), anxiety (51%), mood swing (51%), depression (54%), insomnia (49%), social withdrawal (54%) and impaired work performance (47%). It seems the acupressure was effective in reducing the premenstrual symptoms among adolescent girls.

The study noticed that nine of 10 studies concluded that acupressure was effective for pain in patients with dysmenorrhea and PMS, during labor and after trauma. Investigators of four studies concluded that acupressure was effective in the management of dyspnoea and six studies concluded that acupressure was effective in improving

Another study supported current study also marked that true APA group who completed the 4-week APA treatment had a 70% reduction in worst pain intensity, a 75% reduction in overall pain intensity, and a 42% improvement in disability due to back pain from baseline assessment. The reductions of worst pain and overall pain intensity in the true APA group were statistically greater than participants in the sham group ($P < 0.01$) at the completion of a 4-week APA and 1 month follow up. The findings of this feasibility study showed a reduction in pain intensity and improvement in physical function¹⁷³.

Another study also noticed that reduced HR ($p < 0.001$), increased HRV ($p < 0.024$), reduced SCR ($p < 0.001$), reduced subjective stress scores ($p < 0.001$), and increased correct answers ($p < 0.001$). It showed that all the groups demonstrated stress reduction; there were no significant group differences after a single treatment. The study concluded that all (active acupressure, placebo acupressure, or a relaxation CD control) interventions significantly reduced the stress response¹⁷⁴.

The second objective was assess the level of premenstrual syndrome among experimental group II of adolescent girls before and after reflexology

Frequency and percentage distribution of pre and post test scores of premenstrual

very severe syndrome. In the course of after intervention experimental group II illustrated 101 (81%) of them observed mild syndrome and 24 (19%) of them noticed moderate syndrome. Ernst E. Posadzki P, Lee MS (2011)⁴⁸, found that reflexology is effective for the following conditions: diabetes, premenstrual syndrome, cancer patients, multiple sclerosis, symptomatic idiopathic over-activity and dementia yet important caveats remain. The current study result discrepancy with study investigated severe form of PMS among medical students in a university in the north central state of Nigeria. Result revealed that 36.1% of the respondents had severe form of PMS and concluded that college's health care providers should take in to account the issues of severe PMS by intensifying health education in order to improve the quality of life of the students¹⁷⁵. Another study revealed that 40.8% of them had mild PMS, 20.8% of them had moderate PMS and 8.6 % of them had severe mental and physical symptoms¹⁶². The result not agreed with current study noticed that 41% had symptoms with mild severity, that is, the symptoms were present but not a problem and did not interfere with daily functioning. But 53% reported moderate PMS symptoms with significant discomfort. 6% of the respondents reported severe PMS symptoms interfering daily function such as school performance and interpersonal relationships. When they noticed the symptoms, 41.4% of the PMS victims used Paracetamol, 24.4% used Ponstan and 3.4% used Advil. Other non-pharmacologic treatments were sleep (75.9%), exercise (23%) and dietary change (10%)¹⁶¹.

Data presented that during pre intervention by the whole of 125 participants in experimental group I marked the common premenstrual symptoms in pretest was breast tenderness and swelling (86%), abdominal bloating (90%), headache (78%), pelvic discomfort and pain (83%), abdominal cramps (93%), generalized aches and pains (74%), Muscle and Joint pain (79%), irritability (93%), anxiety (88%), mood swing (81%), depression (82%), insomnia (82%), social withdrawal (75%) and impaired work performance (79%). The current result agreed with another study marked that the frequency of symptoms were anger, irritability, anxiety, tiredness, and difficult concentration and concluded that PMS is a common problem in young girls which adversely affects their educational performance and emotional well being. Strategies should be adopted for detection and management of PMS in young girls¹⁷⁶.

The current result agreed with another study noticed that more than half of the study subjects had one or the other symptoms of premenstrual syndrome (PMS), namely; irregular menses 16.9%, irritation-21.7%, malaise _ 9.5% , headchae-14.2, chest pain- 8.2% , abdominal bloating 20.3% , constipation- 11.3%, tightness in chest 10.6% and white discharge-38.3 %⁷². Another study also marked the most common symptoms were irritability (91.21%), breast tenderness (77.62%), depression (68.31%), abdominal bloating (63.70%) and angry outbursts (59.62%)⁷³.

tearfulness (70.3%), anxiety (70%), backache (69%) and sleep problems (66%). The most common physical premenstrual symptoms were backache (69%), abdominal bloating (55.3%), joint or muscle pain (52%), acne (48.3%) and headache (47%) while the most common psychological symptoms were tiredness (84%), depressed mood (72.3%), mood changes (sudden feeling of sadness or tearfulness) (70.3%), anxiety (70%), and sleep problems (66%)⁷⁴.

Another study also found that the common symptoms of PMS are 42% were found to be suffering regularly & 58% occasionally. The most common symptoms they suffered with were backache (68%), leg cramps (64%), fatigue (62%), breast tenderness (62%), anger (62%), anxiety (58%) and generalized body ache (58%)⁷⁸.

Besides in post test intervention the symptoms sensed was breast tenderness and swelling (42%), abdominal bloating (45%), headache (43%), pelvic discomfort and pain (43%), abdominal cramps (43%), generalized aches and pains and muscle and Joint pain (34%), irritability (41%), anxiety (43%), mood swing (38%), depression (30%), insomnia (37%), social withdrawal (54%) and impaired work performance (41%). The current study result agreed with following studies stated that the symptoms relieved after foot reflexology was fatigue (50%), insomnia (40%), abdominal pain (35%), lower abdominal pain (30%) and constipation(30%)⁸⁹. Another study also found that comparison of pre and post

difference between the average of stress and anxiety in reflexology group was significant less than control group ($p < 0.0001$)⁸⁸.

Another study showed that symptoms relieved after foot reflexology was fatigue (50%), insomnia (40%), sensitiveness (35%), abdominal pain (35%), lower abdominal pain (30%), constipation(30%). and lumbago (20%)¹⁵¹.

Another study reported that 38 emotional and physical pre-menstrual symptoms were reduced by an average of 46% for the two months during which the 18 women being studied received weekly reflexology sessions. There was a significantly greater decrease in premenstrual symptoms for the women given true reflexology treatment than for the women in the placebo group¹⁴⁹.

Hence research hypothesis (RH₁) stated that “there is a significant difference in level of premenstrual syndrome among experimental group I and II of adolescent girls before and after acupressure and reflexology” was accepted.

The third objective was determine the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.

Equating the paired t test value of premenstrual syndrome scores evidenced distinct clinical significance ($p < 0.05$) with physiological (6.27), behavioural (8.68) and psychological (6.96). The overall paired t test value commensuration on premenstrual syndrome scores evidenced distinct clinical significance ($p < 0.05$) with experimental group I (21.91). The current result agreed with another study observed that the paired 't' value was 22.14, is highly significant at $p < 0.001$ level⁸⁷.

Another study found mean scores of GHQs were similar between groups before intervention ($p > 0.05$). The general health of participants in both groups improved after intervention, and the amelioration in four domains was significant in the groups ($p < 0.05$ within group). It was found that acupuncture was more effective than sham pressure. There was a statistically significant difference between the two groups in the four domains of their general health after the first month of the intervention ($p < 0.0001$). The general health status of the participants changed much more after the second month in both the acupuncture intervention and the sham pressure groups; the acupuncture was more effective than sham pressure ($p < 0.05$)¹⁴⁷.

Area wise comparison of mean, SD, and mean percentage of experimental group I pre and post test premenstrual syndrome scores

mean score with 30.85 ± 2.65 and mean percentage was 39%. It revealing the difference was 43%. Besides overall reported the pretest mean, standard deviation and mean percentage scores with 161.98 ± 6.63 and 81% consequently and posttest mean, standard deviation and mean percentage score were 82.48 ± 4.23 and 41% correspondingly. Furthermore the current study results agreed with study found that the VAS score of the premenstrual syndromes before the ear acupressure therapy was 7.3(experimental group), 7.46(control group) but after the ear acupressure therapy, the VAS score of the premenstrual syndromes was 3.36(experimental group), 7.17(control group). The ear acupressure therapy was effective in improving the symptoms of the female college with premenstrual syndromes¹⁴⁴.

Besides current study result also agreed another study also found that pre and post test values of mean percentage and standard deviation are $m_1=50.02$ $m_2=36.5$ and $SD=5.32$, 8.2 respectively. It revealed that acupressure was effective in reducing premenstrual symptoms among adolescent girls⁸⁷. These result agreed with another study found that acupressure was effective in reducing achievement stress among students within the intervention group ($t= 13.498$, $p<0.001$). The study concluded that acupressure was effective in reducing achievement stress among students⁸⁵. Another study also reported that acupressure was effective in reducing physical stress among students within the intervention group ($Z = -5.803$, $P < .001$). The study concluded that acupressure was

Paired 't' test value of pre and post test scores of experimental group II.

Compatible paired t test value of premenstrual syndrome scores manifested distinct clinical significance ($p < 0.05$) with physiological (7.52), behavioral (8.96) and psychological (6.98). The overall compatible paired 't' test of premenstrual syndrome scores evidenced distinct clinical significance ($p < 0.05$) with experimental group II (23.46)

The current result besides with another study also reported that calculated 't' value ($t = 16.20$) was higher than the table value ($t_{14} = 1.76, p < 0.05$)¹⁵³. The result coincides with another study noticed that there was no significant statistical difference between under research variables in the respect of interventional variables. In comparison of pre and post intervention in reflexology significantly led to decrease of average of mental symptoms (25.12 %) and physical symptoms (19.34 %) ($p < 0.0001$). In comparison with control group, there was significant difference between the average of physical and mental symptoms in reflexology group was significant less than control group ($p < 0.0001$). It seems that, foot reflexology is effective in improvement of physical and mental symptoms of premenstrual syndrome¹⁵⁴.

Another study also marked that there were significant improvements in the symptoms of negative feeling, pain, water retention, and total PMS symptoms in subjects receiving *qi* therapy compared to placebo controls. The study concluded that *Qi* therapy may be an effective complementary therapy for managing the symptoms of PMS¹⁷⁷.

Area wise comparison of mean, SD, and mean percentage of experimental group II pre and post test premenstrual syndrome scores

Comparison between mean, standard deviation and mean percentage pretest premenstrual syndrome scores with experimental group II, displayed the mean score with 60.70 ± 4.63 and mean percentage was 76% in physiological. Correspondingly in post test intervention mean score with 29.44 ± 3.02 and mean percentage was 37%. It was revealing the difference of 39%. In experimental group II overall reported the pre test mean score was 160.61 ± 7.15 and mean percentage was 80% consequently and post test mean score was 76.74 ± 5.21 and mean percentage was 38% showing the difference of 42%. The result accepted with another study found that the mean score of the premenstrual syndromes and dysmenorrhea before foot reflexology was 8.35, it was 4.16 at the first menstruation after foot reflexology and 3.25 at the second menstruation for the experimental group⁸⁹.

Another study also marked that research in the two treatment groups showed that real reflex zone therapy can reduce the behavioral symptoms by 20% though such reduction

lowest for physiological symptoms (7.04%) and the highest was for psychological symptoms(13.33%). The actual mean percentage reduction was for physical, psychological, emotional and physiological symptoms were 43.10%, 34.44%, 21.85% and 34.34% respectively. Overall mean post test score (5.67 ± 2.79) of premenstrual syndrome was lower than the pre test score (28.33 ± 5.34) of premenstrual syndrome¹⁵³.

Another study showed that the mean score of the premenstrual syndromes and dysmenorrhea before foot reflexology was 8.35, it was 4.16 at the first menstruation after foot reflexology and 3.25 at the second menstruation for the experimental group¹⁵¹.

The fourth objective was compare the effectiveness of acupressure and reflexology on premenstrual syndrome among adolescent girls in experimental group I and II

Frequency and percentage distribution of post test scores of premenstrual syndrome among adolescent girls in experimental group I and II

Data suggested that during post intervention experimental group I out of 125 participants none reported with any symptoms, severe and very severe symptoms respectively. Likewise moderate syndrome was demonstrated by 79 (63%) participants and 46 (37%) showed mild syndrome in experimental group I. As long as experimental group II

Unpaired 't' test value of post test scores of experimental group I and II.

Unpaired 't' test was calculated to analyze the effectiveness between post test scores of experimental group I and II on different aspects on areas of premenstrual syndrome shows that the overall score was 9.56 when compared to table value (2.828) it was high.

The present study agreed with another study marked that computed 't' value 12.95 was greater than the table value ($t_{28}=1.70, p<0.05$)¹⁵³.

Area wise comparison of mean, SD, and mean percentage of experimental group I and II post test premenstrual syndrome scores

Lateral analogy between mean, standard deviation and mean percentage posttest premenstrual syndrome scores with experimental group I and II, disclosed the mean score with 30.85 ± 2.65 and mean percentage was 39%. Furthermore in experimental group II mean score with 29.44 ± 3.02 and mean percentage was 37%. It was the showing the difference of 2%. Comparison of overall experimental group I mean score with 82.48 ± 4.23 and mean percentage was 41%. Besides in experimental group II mean score with 76.74 ± 5.21 and mean percentage was 38%. It revealing the difference was 3% correspondingly. Significant difference was observed between posttest premenstrual syndrome mean scores on reflexology group was more effective when compared with

The current study agreed with another study found that there were no significant differences in baseline characteristics among patients randomized into the two groups. The mean of post treatment pain score after a 4-week treatment (2.28, SD = 2.62) in the acupressure group was significantly lower than that in the physical therapy group (5.05, SD = 5.11) (P = 0.0002). At the 6-month follow-up assessment, the mean of pain score in the acupressure group (1.08, SD = 1.43) was still significantly lower than that in the physical therapy group (3.15, SD = 3.62) (P = 0.0004). The results suggest that acupressure is another effective alternative medicine in reducing low back pain¹⁷⁸.

Hence, research hypothesis (RH₂) stated that there is a significant difference between acupressure and reflexology on premenstrual syndrome among adolescent girls in experimental group I and experimental group II was accepted.

The fifth objective was find out the association between post test scores of premenstrual syndrome among experimental group I and II of adolescent girls with

Association between experimental group I post test scores and demographic variables of the adolescent girls

Experimental group I revealed no association between posttest premenstrual syndrome scores and age ($\chi^2=1.076$), class (standard) ($\chi^2=2.451$), occupation of the parents ($\chi^2=0.035$), religion ($\chi^2=1.908$), age at menarche ($\chi^2=0.990$), duration of menstrual cycle ($\chi^2=4.672$), days of menstrual flow ($\chi^2=2.344$), family history of premenstrual syndrome ($\chi^2=0.293$), practice of home remedies ($\chi^2=0.154$) and frequency of observing premenstrual problems ($\chi^2=0.464$), when compared to evidenced significance with ($p<0.05$)

Association marked between posttest premenstrual syndrome scores and education of the parents ($\chi^2=10.487$) when compared to evidenced significance with ($p<0.05$)

The current result contracted with another study found that there was significant

Association between experimental group II post test scores and demographic variables of the adolescent girls

Experimental group II determined no association between posttest premenstrual syndrome scores and age ($\chi^2=5.019$), education of parents ($\chi^2=1.125$), occupation of the parents ($\chi^2=0.117$), religion ($\chi^2=3.590$), age at menarche ($\chi^2=2.292$), duration of menstrual cycle ($\chi^2=5.803$), days of menstrual flow ($\chi^2= 2.066$), family history of premenstrual syndrome ($\chi^2=1.164$), practice of home remedies ($\chi^2=0.640$) and frequency of observing premenstrual problems ($\chi^2=0.709$), when compared to evidenced significance with ($p<0.05$)

Association was analyzed between posttest premenstrual syndrome score and class ($\chi^2= 11.161$) when compared to evidenced significance with ($p<0.05$)

The current result accepted with another study found that there was no association

The above discussion clearly represents that there has been a statistically significant difference in effectiveness of acupressure and reflexology on premenstrual syndrome among adolescent girls.

This draws the conclusion for the study that acupressure and reflexology on premenstrual syndrome can be used as an effective measures in the urban adolescent girls to bring out the change in behaviour symptoms, reduction of academic stress and improve the physical functioning, raise the awareness regarding menstruation problems.

Hence research hypothesis (RH₃) stated that there is a significant association between post test scores of premenstrual syndrome among experimental group I and II of adolescent girls with their demographic variables was rejected

The conceptual frame work for the study was based on Imogene King's system is an "open" system enabled the researcher to appreciate the overall research process, design her research, and analysis of research findings.

In this model, the researcher could bring behavioral, physiological and psychological change in adolescent girls moving through a several series of stages through an intervention strategy.

Next chapter will focused on summary, conclusion, implications, recommendations and Limitation.

CHAPTER – VI
SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS
AND LIMITATIONS

The aim of the present study was to assess the effectiveness of acupressure and reflexology on premenstrual syndrome among adolescent girls at selected settings.

6.1 SUMMARY

Premenstrual syndrome has been increasing steadily and the menstrual pattern which is prevalent in India, indicates the higher level of risk due to symptoms among adolescent girls. Problems related to menstruation especially during school age period is the major reproductive health problem, constitute serious hazard in all the aspects of individual life including health, family, occupational, social, financial.

Changing social norms, increase availability, high intensity mass marketing along with poor level of awareness related to premenstrual syndrome has contributed to increase in school activity and related disease contributed to premenstrual syndrome.

knowledge on effects of premenstrual syndrome and related diseases. This shows that need for acupressure and reflexology on awareness regarding premenstrual syndrome and nurses are in the ideal position to provide acupressure and reflexology therapy on premenstrual syndrome to individual, families and community at large.

The problem selected for the present study was “A comparative study to assess the effectiveness of acupressure Vs reflexology on premenstrual syndrome among adolescent girls in selected schools at Erode, Tamilnadu.”

The objectives of the study were

1. To assess the level of premenstrual syndrome among experimental group I of adolescent girls before and after acupressure
2. To assess the level of premenstrual syndrome among experimental group II of adolescent girls before and after reflexology.
3. To determine the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.
4. To compare the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.
5. To find out the association between post test scores of pre menstrual syndrome among experimental group I and II of adolescent girls with their demographic

- RH₁:** There is a significant difference in level of premenstrual syndrome among experimental group I and II of adolescent girls before and after acupressure and reflexology
- RH₂** There is a significant difference between acupressure and reflexology on premenstrual syndrome among adolescent girls in experimental group I and experimental group II.
- RH₃:** There is a significant association between post test scores of premenstrual syndrome among experimental group I and II of adolescent girls with their demographic variables.

The researcher formulated the following assumption for the study

1. Premenstrual syndrome is distressing for many girls.
2. Acupressure and Reflexology on premenstrual syndrome has an impact on reduce premenstrual symptoms and relaxation.
3. Adolescent girls require complimentary therapy to maintain quality of life.

The conceptual framework for the present study was based on Imogene King's Goal Attainment theory which guides the investigator to provide the acupressure and reflexology on improving awareness regarding premenstrual syndrome.

School, Karungalpalayam, Erode and GTS Government Girls Higher School P.S Park, Erode.

A multistage random sampling technique was adopted for the study. Sample size comprised of 250 adolescent girls with premenstrual syndrome was selected sample. The sample size was estimated by Power Analysis. Premenstrual syndrome scale was used for screening and assessing the level of premenstrual syndrome before and after acupressure and reflexology among adolescent girls. The tools were validated by various experts. The pilot study revealed that the tools and intervention were reliable

The identified adolescent girls with premenstrual syndrome were administered with acupressure for experimental group I and reflexology for experimental group II over a period of 8 weeks.

The investigator considered and followed the ethical principles preceding the investigation. The investigator adhered to the human rights, principles of beneficence, non Maleficence dignity and confidentiality.

Frequency and Percentage was used to analyze the demographic variables and level of premenstrual syndrome. Mean, Standard deviation and Mean percentage was used to assess the area wise (Physiological, behavioral and Psychological symptoms)

test scores of experimental group I and II. Chi square was used association between post test scores of premenstrual syndrome scores among adolescent girls in experimental group I and II with their demographic variables.

The major findings of the study were

I. Findings related to the level of premenstrual syndrome among experimental group I of adolescent girls before and after acupressure

❖ In experimental group I

- ◆ In pre test majority (59%) of adolescent girls marked very sever level of premenstrual syndrome.
- ◆ In post test majority (63%) of adolescent girls sensed moderate level of premenstrual syndrome.
- ◆ In pre test breast tenderness and swelling (93%), abdominal bloating (86%), abdominal cramps (90%), anxiety (89%), mood swing (82%), depression (81%) and insomnia (82%)
- ◆ In course of post test intervention the symptoms marked was breast tenderness and swelling (50%), abdominal bloating (53%), abdominal cramps (46%), anxiety (51%), mood swing (51%), depression (54%) and insomnia (49%).

II. Findings related to the level of premenstrual syndrome among experimental group II of adolescent girls before and after acupressure

❖ In experimental group II

- ◆ In pre test 57% of adolescent girls experienced sever level of premenstrual syndrome. .
- ◆ In post test most of them (81%) noticed mild level of premenstrual syndrome.
- ◆ In pre test marked the common premenstrual symptoms was breast tenderness and swelling (86%), abdominal bloating (90%), headache abdominal cramps (93%), irritability (93%), anxiety (88%), mood swing (81%), depression (82%), insomnia (82%) and stress (90%)
- ◆ Besides in post test intervention the symptoms sensed was breast tenderness and swelling (42%), abdominal bloating (45%), abdominal cramps (43%), irritability (41%), anxiety (43%), mood swing (38%), depression (30%), insomnia (37%) and stress (26%).

III. Findings related to determine the effectiveness of acupressure and reflexology on pre menstrual syndrome among adolescent girls in experimental group I and II.

- ◆ Mean difference was 40%

❖ **In experimental group II**

- ◆ Paired 't' test value was 23.46, ($P < 0.05$, significant)
- ◆ Pre test mean score was 160.61 ± 7.15 , which is 80%
- ◆ Post test mean score was 76.74 ± 5.2 , which is 38%,
- ◆ Mean difference was 42%

IV. Findings related to compare the effectiveness of acupressure and reflexology on premenstrual syndrome among experimental group I and experimental group II

- ❖ The unpaired 't' test value was 9.56, ($P < 0.05$, significant)
- ❖ Post test mean score was 82.48 ± 4.23 , which is 41% in experimental group I
- ❖ Post test mean score was 76.74 ± 5.2 , which is 38% in experimental group II
- ❖ Mean difference was 3%
- ❖ It is evident that reflexology was more effective than acupressure on reduce the premenstrual symptoms and improve the awareness regarding premenstrual syndrome among adolescent girls.

V. Findings related to the association between the post test scores pre menstrual syndrome among experimental group I and II of adolescent girls with their selected demographic variables

- ◆ Chi- square value reveals that there is no significant association between post test scores of experimental group I and II among adolescent girls when compared to age, occupation of the parents, religion, age at menarche, duration of menstrual cycle, days of menstrual flow, family history of premenstrual syndrome, and practice of home remedies ($P > 0.005$).
- ◆ In experimental group I association marked between posttest premenstrual syndrome scores and education of the parents ($\chi^2 = 10.487$) when compared to evidenced significance with ($p < 0.05$)
- ◆ In experimental group II association was analyzed between posttest premenstrual syndrome score and class ($\chi^2 = 11.161$) when compared to evidenced significance with ($p < 0.05$) (Table 4.6.2)

6.2 CONCLUSION

The conclusions were drawn on the basis of the findings of the study. The results were explained by using descriptive and inferential statistics.

The following conclusions were drawn on the basis of the findings of the study:

- ◆ Acupressure and reflexology is an intervention in reducing premenstrual syndrome as the pre test mean premenstrual syndrome score (161.98 ± 6.63 , which is 81%) and (160.61 ± 7.15 , which is 80%) was less than the post test mean premenstrual syndrome score (82.48 ± 4.23 , which is 41%) and (76.74 ± 5.2 , which is 38%) in experimental group I and II respectively. The calculated unpaired 't' value ($t = 21.91$ and $t = 23.46$) was higher than the table value ($t_{124} = 1.980$, $p < 0.05$).
- ◆ There was a significant reduction in post test premenstrual syndrome score of adolescent girls in experimental group I than the post test premenstrual syndrome score of experimental group II. The computed 't' value ($t = 9.56$) was greater than the table value ($t_{248} = 2.828$, $p < 0.05$).
- ◆ There is no significant association between post test premenstrual syndrome score with demographic variables of adolescent girls in experimental group I and II.
- ◆ There is significant association between post test premenstrual syndrome score with demographic variables of adolescent girls in experimental group I with education of parent and experimental group II with class (Standard).

6.3.1 Maternity Nursing

Maternity nurse can train the local volunteers, community health personnel, family members of adolescent girls in screening for the risk level related to harmful effect of premenstrual syndrome. She can:

- Provide menstrual problem education, simple home remedies plus alternative therapies (Acupressure and Reflexology), continued monitoring and referral to specialist for evaluation and treatment based on the risk level due to premenstrual syndrome
- Help the adolescent girls to identify the pros and cons of quitting premenstrual syndrome.
- Help the mother and teacher to strengthen the need and commitment to reduce premenstrual syndrome by addressing the related health and effect.
- Involve in reproductive health information campaigns and menstrual problem free activities and events at school and community level to change family attitude for menstrual problem of premenstrual syndrome.
- She should be aimed at providing individual intervention to help the adolescent girls to be aware of the potential risk at an early stage and prevent extensive problems.
- Identify those who are already dependent with premenstrual syndrome, render them the needed help to bring them back to optimum functioning without complications.
- The focus of attention should be to empower the community by participating and

6.3.2 Nursing Administration

- Nursing administrator can organize screening for premenstrual related problem in work place, medical college hospital, and community and school level.
- Educational program include life skill training and at recognizing harm and improving the coping ability at all educational institution, official establishment and work place.
- The nurse administrator can conduct in-service education programme for the health personnel in promotion of health among adolescent girls.
- Organize specific work place intervention to reduce premenstrual syndrome related school absenteeism and activities of daily living.
- Providing appropriate protocols, trained man power and supplies should be undertaken by the nurse administrator and mobilize and provide funding for menstrual health program

6.3.3 Nurse Educator

- Organize seminar, workshops, symposium, continuing nursing education program on the management of premenstrual syndrome, including the alternative/complimentary intervention in treatment of premenstrual syndrome.
- Select and organize the learning experience for students where handful of experience will be obtained in management of adolescent girls with premenstrual

nurses, health care professional to tackle the premenstrual syndrome related problem at various setting.

- Nursing education should prepare the nurses with the potential for imparting health information effectively to the students and help them out in choosing suitable methods for reducing premenstrual syndrome.
- A curriculum should be updated in relation to the changing society since it will help out the nursing students to upgrade their knowledge and skill according to that.
- Nursing curriculum should incorporate alternative and complementary therapies for premenstrual syndrome. So that students render skill and apply in the field of nursing service and will be able to take care of the adolescent girls.

6.3.4 Nursing Practice

- Acupressure and reflexology is an alternative therapy which is gaining popularity and is finding more substantial place in health care. Holistic nursing regards and treats the mind, body and spirit of the client.
- Nurses use holistic nursing interventions such as acupressure and reflexology. Such interventions affect the whole person and are cost effective, economical, non invasive non pharmacological compliments to medical care.
- Acupressure and Reflexology is one of the sources can be adopted in patient care, which through this study has been proved to reduce the premenstrual

- Strengthening research to identify future direction to monitor, evaluate the impact of programs, policies related to premenstrual syndrome.
- Implementation of evidence based approach in treatment premenstrual syndrome problem as an effective strategy.
- The study findings can be utilized for secondary analysis and meta analysis to study about premenstrual syndrome related harm.
- The nurse researcher should be aware about the existing health care system and the status of nursing profession. Thus it helps to improve their clinical knowledge, skill and attitude of the nurse. In this study, premenstrual syndrome management is highlighted by the use of acupressure and reflexology, thus it makes a pleasant as well as effective, non-pharmacological and cost effective intervention for premenstrual syndrome.

6.4 RECOMMENDATIONS

On the basis of the findings of the study, the following recommendations have been made for the further study:

1. A comparative study can be done to assess the awareness regarding premenstrual syndrome among adolescent girls between rural and urban community.
2. The present study can be conducted as a longitudinal and follow up research of acupressure and reflexology on level of premenstrual syndrome of adolescent girls in the rural communities.
4. A randomized control trail can be conducted to determine the effect of

7. Varied bio physiological parameters can be ruled and instituted with outcome variables for its objectivity
8. Nursing theory can be developed, constructed and tested on acupressure and reflexology applicable for the whole quantity of meta paradigm
9. Similar study can be replicated on large scale there by findings can be generalized for the target population
10. Qualitative approach can be initiated to generate hypothesis on acupressure and reflexology.

6.4 LIMITATIONS

1. The investigator had constraints in reaching the adolescent girls during the study period although it was tackled with the help of Magalir Worker (Local Worker).
2. Data collection time was re-altered by the investigator as per the feasibility of the sample.
3. Satisfaction of subject would have been measured.
4. The investigator had constraints in administering the intervention to the student because of class test.

REFERENCES

1. Christina John. A Study of Menstrual Problems in Adolescent Girls. Unpublished thesis. 2007
2. Shubha Dube, Kirti Sharma. Knowledge, Attitude and Practice Regarding Reproductive Health among Urban and Rural Girls: A Comparative Study. Kamla-Raj 2012 Ethno Med, 6(2): 85-94.
3. Verma PB, Pandya CM, Ramanuj VA, Singh MP. Menstrual Pattern of Adolescent School Girls of Bhavnagar (Gujarat). NJIRM 2011Jan – March Vol. 2(1).
4. Takeda T, Koga S, Yaegashi N. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in Japanese high school students. Arch Women's Ment Health 2010: 535 -7 13.
5. Karout N, Hawai SM, Altuwaijri S. Prevalence and pattern of menstrual disorders among Lebanese nursing students. Eastern Mediterranean Health Journal 2012; Vol. 18 No. 4.
6. Amita Singh, Dukhu Kiran, Harminder Singh, Bithika Nel, Prabhakar Singh, Pavan Tiwari. Prevalence and Severity of Dysmenorrhea: A Problem Related To Menstruation, Among First And Second Year Female Medical Students. Indian J Physiol Pharmacol 2008; 52 (4): 389–397.
7. Mona A.Abd EL-Hamid, Diaa Ahmed El Moghazy, Manal F.Moustafa, Ekbal A. Emam. Knowledge and Practice of Female Employee About Premenstrual Syndrome and its Effect on Daily Life Activities in ELMinia University. Life Sci J 2013; 10(1):231-243.
8. World Health Organization (WHO). International Classification of Diseases. 10th revision Geneva.2010.
9. Agnieszka Drosdzol, Ryszard Plinta. Journal of Obstetrics and Gynaecology Research. September 2011; Volume 37, Issue 9, pages 1216–1221
10. National Women's Health Information Center, 2012

13. Nations challenge to provide nutritional health and education. New Delhi. Indian Express. 2011 Feb 25.
14. Singh A, Kiran D, Singh H. Prevalence and severity of dysmenorrhea: A problem related to menstruation, among 1st and 2nd year female medical students. Indian J Physiol Pharmacol 2008; 52(4):389-397.
15. UNICEF Regional Office for South Asia. April 2010
16. Zohre Mahmoodi, et al. The prevalence and severity of premenstrual syndrome (PMS) and its' associated signs and symptoms among college students. Australian journal of basic and applied sciences. 2010; 4(8): 3005-3009.
17. W. Steven Pray, and Gabriel E. Pray. Alleviating Menstrual Discomfort: PMS and Dysmenorrhea, October 2011.
18. Lee Lk, Chen PC, Lee KK, Kaur J. Menstruation among adolescent girls in Malaysia: a cross-sectional school survey. Singapore Med J. 2006 Oct; 47(10):869-74.
19. Avril M Houston, Anisha Abraham, Zhihuan Huang, Lawrence J D' Angelo. Knowledge, Attitudes and Consequences of Menstrual Health in Urban Adolescent Females. August 2006 Volume 19, Issue 4, Pages 271–275
20. Desalegn Tegabu Zegeye, Berihun Megabiaw, Abay Mulu. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. BMC Womens Health. 2009; 9: 29.
21. Rafia Bano, Khairiyah Ahmad Al Mulyhan. Study on the Prevalence of Pre Menstrual Syndrome and Its Relationship with Age at Menarche, Anthropometric Measure and Anemia. (IJIRSE) International Journal of Innovative Research in Science & Engineering. May 2014; Volume 2 Issue 5: 2347-3207
22. Ho Ka Yee Carey. Relations between dietary soy intake and premenstrual syndrome in young Chinese women. The University of Hong Kong (Pokfulam, Hong Kong): 2012
23. Edyta J, Frackiewicz & Thomas M Shiovitz. Evaluation and Management of Premenstrual Syndrome and Premenstrual Dysphoric Disorder. Journal of the American Pharmaceutical Association 2001; 41(3):437-47

25. Preeti Garg, Prithpal S Matreja, Prem P Khosla, Lovepreet Kaur, Praveen Mohan. Correlation of Symptoms of Premenstrual Syndrome in Indian Set-Up. *American Journal of Health Research*. 2014; Vol. 2, No. 3, 102-105.
26. Yonkers KA, O'Brien PM, Eriksson E. Premenstrual syndrome. *Lancet*. Apr 5 2008; 371 (9619):1200-1210
27. Health System University of Michigan, 2013
28. Shaifali Pathak. To Study the Effect of Dietary Habits on Premenstrual Syndromes, Menstrual Disorders and Practices Related To Menstruation among College Going Girls. *International Journal of Healthcare Sciences*. March 2015; Vol. 2, Issue 2, pp: (8-17).
29. National Institutes of Health, 2010
30. Rupa Vani K, Veena KS, Subitha L, Hemanth Kumar VR, Bupathy. Menstrual Abnormalities in School Going Girls – Are They Related to Dietary and Exercise Pattern? *J Clin Diagn Res*. 2013 Nov; 7(11): 2537–2540.
31. Dinesh, S, Syamakumari, S.K. Prevalence of stress among school children in Kerala, 18th March 2011
32. [Nytimes.com](http://nytimes.com)
33. Bobak, Lowdermilk, Jensen. *Maternity Nursing*. Hardcover. Mosby. Fourth Edition; 1995
34. Manal Ahmad Al-Batanony, Sultan Fahad AL-Nohair. Prevalence of Premenstrual Syndrome and Its Impact on Quality of Life among University Medical Students, Al Qassim University, KSA. *Public Health Research*. 2014; Vol. 4 No. 1: 1-6.
35. Shadia A.T. Yassin. Herbal Remedy used by Rural Adolescent girls with Menstrual Disorders. *Journal of American Science* 2012; 8(1):467-473.
36. Lawrence C Hyginus U, Michael and Eric E. Pattern of premenstrual symptoms among pre-clinical medical students at the University of Nigeria. *Orient Journal of Medicine*. Jan – Jun 2014; Vol 26: 1-2.

39. Hussain A, Kumar A, Husain A. Academic Stress and Adjustment among High School Students. *J Indian Acad Appl Psychol*. 2008Apr; 34:70-73.
40. J. Senthil et al. Rhythm of menstruation among adolescent girls in Kumbakonam Taluk, Thanjavur district in Tamil Nadu. *Arch. Appl. Sci. Res*. 2014, 6 (2):31-36
41. Bodat S, Ghate MM, Majumdar JR. School Absenteeism during Menstruation among Rural Adolescent Girls in Pune. *Natl J Community Med*. 2013; 4(2): 212-216.
42. Proctor ML, Murphy PA. Herbal and dietary therapies for primary and secondary dysmenorrhoea. *Cochrane Database Syst Rev*. 2001; (3).
43. Sharma PM. Complimentary Therapies in Nursing 1997 Oct; 3(5):123-30.
44. Eun Jin Lee and Susan K Frazier. The Efficacy of Acupressure for Symptom Management: A Systematic Review. *Journal of Pain and Symptoms Management*. October 2011; Volume 42, Issue 4: 589–603
45. Angelica Hocek. Acupressure for Sleep and insomnia. *Journal: Cochrane Database of Systematic Reviews*. 2007 Jul 18;(3)
46. Robinson, N, Lorenc, A, Liao, X. The Evidence for Shiatsu: A systematic Review of Shiatsu and Acupressure. *BMC Complement Alt Med*, 2011; 11:88.
47. Licerstrong.Com
48. Ernst E. Is reflexology an effective intervention? A systematic review of randomized controlled trials. *Maturitas*. 2011 Feb; 68 (2):116-20.
49. Lee, Young-Mee. Effects of Aroma-foot-reflexology on Premenstrual Syndrome, Dysmenorrhea and Lower Abdominal Skin Temperature of Nursing Students, The Korean Academic Society of Adult Nursing. 2011; Vol 23.
50. Dharampal G. Dambhare, Sanjay V. Wagh, Jayesh Y. Dudhe. Age at Menarche and Menstrual Cycle Pattern among School Adolescent Girls in Central India. *Global Journal of Health Science*. January 2012 Vol. 4, No.1.
51. General and Census Commissioner DHS date 1991 -1999

54. The American Psychiatric Association
55. Rapkin AJ, Mikacich JA. Premenstrual syndrome and premenstrual dysphoric disorder in adolescents. *Curr Opin Obstet Gynecol.* 2008 Oct; 20(5):455-63.
56. Panay Nick. Management of premenstrual syndrome: evidence-based guidelines, *Obstetrics, Gynecology and Reproductive Medicine.* 2011; 21:8
57. Direkvand–Moghadam A, Sayehmiri K, Delpisheh A, Kaikhavandi Sattar. Epidemiology of Premenstrual Syndrome (PMS)-A Systematic Review and Meta-Analysis Study. *Journal of Clinical and Diagnostic Research.* 2014 Feb, Vol-8(2):106-109
58. Thu Myint, Ore-Giron Edessa, Sawhsarkapaw. Premenstrual Syndrome among Female University students in Thailand. *AU J.T* 2006; Jan 9(3):158-62.
59. Sharma P, Malhotra C, Taneja DK, Saha R. Problems related to menstruation amongst adolescent girls. *Indian J Pediatr.* 2008 Feb; 75 (2):125-9.
60. Sharma P, Malhotra C, Taneja DK, Saha R. Problems related to menstruation and their effect on daily routine of students of a medical college in Delhi, India. *Asia Pac J Public Health.* 2008; 20(3):234-41.
61. Nair MK, Chacko Ds, Ranjith Darwin M, Padma K, George B, PSR. Menstrual disorders and menstrual hygiene practices in higher secondary school girls. *Indian J Pediatr.* 2012 Jan; 79.
62. Deepali S, Deo, Ghattagri CH. Menstrual problems in adolescent school girls: A comparative study in urban and rural area. *Indian Journal of preventive and social medicine;* 2007.Jan-Jun. 38(1&2).64-68.
63. Anandha Lakshmi S. Priy M, Saraswathi I, Saravanan A, Ramamchandran C, Prevalence of Premenstrual Syndrome and Dysmenorrhoea among Female Medical Students and its Association with College Absenteeism. *Int J Biol Med Res.* 2011; 2(4): 1011 -1016
64. Pereira Vega A et al. Premenstrual asthma and symptoms related to premenstrual

Premenstrual Syndrome At The Faculty Of Pharmacy-Gaza Strip. *World Journal of Pharmacy and Pharmaceutical Sciences*. 2014; Volume 3, Issue 2, 981-1005.

67. Pherson ME, Korfine L. Menstruation across time: menarche, menstrual attitudes, experiences, and behaviors. *Women's Health Issues*. 2004; 14 (6), 193-200
68. Yi-Ching Yang C et al. Factors associated with premenstrual syndrome a survey of new female university students. *Journal of Medical Sciences* (2012) xx, 1e6
69. Denise Mann. Stress May Raise Risk of Premenstrual Syndrome. *WebMD Medical News*. 2014
70. Yamamoto K, Okazaki A, Sakamoto Y, Funatsu M. The relationship between premenstrual symptoms, menstrual pain, irregular menstrual cycles, and psychosocial stress among Japanese college students. *J Physiol Anthropol*. 2009; 28(3):129-36.
71. Audra L et al. Perceived Stress and Severity of Perimenstrual Symptoms: The BioCycle Study, *J Womens Health (Larchmt)*. 2010 May; 19(5): 959–967.
72. Patil S N, Wasnik V, Wadke R. Health Problems Amongst Adolescent Girls In Rural Areas Of Ratnagiri District Of Maharashtra India. *Journal of Clinical and Diagnostic Research*. 2009 October; Volume 3 (5): 1784 - 1790
73. Qiao M, Zhang H, Liu H, Luo S, Wang T, Zhang J, Ji L. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in a population-based sample in China. *Eur J Obstet Gynecol Reprod Biol*. 2012 May;162 (1):83-6.
74. Nour Mohammad Bakhshani, Mahnaz Nowroozi Mousavi, Golbahar Khodabandeh. Prevalence and severity of premenstrual symptoms among Iranian female university students. *J Pak Med Assoc*. 2009.
75. Bakhshani NM, Mousavi MN, Khodabandeh G. Prevalence and severity of premenstrual symptoms among Iranian female university students. *J Pak Med Assoc*. 2009 Apr;59(4):205-8.
76. Prayya, S., Chenta, M., Taneja, D.K., Renuka, S. (2008). Problems Related to menstruation among adolescent Girls. *Indian Journal of Pediatrics*, February Vol

78. Brahmhatt S et al. A prospective survey study on premenstrual syndrome in young and middle aged women with an emphasis on its management. *International Journal of Research in Medical Sciences*. 2013 May;1(2):69-72
79. Addis Tenkir, Nebreed Fisseha, Biniyam Ayele. Premenstrual syndrome: prevalence and effect on academic and social performances of students in Jimma University, Ethiopia. *Ethiop.J.Health Dev*. 2003; 17(3):181-188.
80. Pandey AK, Tripathi P, Goswami S, Pandey RD. Prevalence of psychological and physical symptoms of pre-menstrual syndrome in female students. *Arch PharmaPract*. 2013; Jul 10 ; 4:47-9.
81. Pamela Lou Hulstein. Premenstrual Symptoms and Academic Stress in Emerging Adulthood Women. Unpublished thesis 2009.
82. Desalegn Asmare, Gezahegn Nekatibeb, Zegeye Merhatibeb, Meseret Gizachew. Prevalence of Premenstrual Syndrome and Associated Factors among Debrebirhan Town, North Showa, Amhara Region, Ethiopia. *American Journal of Psychiatry and Neuroscience*. 2015; Vol. 3, No. 1, 8-14.
83. Fadia Hussein Ali. Assessment Of Adolescent Student's Knowledge Toward Premenstrual Syndrome In Nursing Secondary Schools At Al-Diwanyia Governorate. *Journal of Kufa for Nursing Science*. 2014; Vol. (4) No.(1)
84. Farida Habib, Aseel alayed, Haifa Al Humedi, Ibtahal Al Msalem. Impact of an Educational Session about Premenstrual Syndrome Management Using Complementary and Alternative Medicine on Young Adult females' knowledge and Practice. *Journal of Nursing and Health Science*. Mar – Apr 2014; Volume 3, Issue 2: PP 63-69
85. Das R, Nayak BS, Margaret B. Effectiveness of acupressure on achievement stress among high school students. *International journal of nursing education*. 2011; 3(1):78- 81.
86. Das R, Nayak BS, Margaret B. Acupressure and physical stress among high school students. *Holist Nurs Pract*. 2011 Mar-Apr; 25 (2):97-104.
87. Rekha. R. Effectiveness of acupressure on premenstrual symptoms among adolescent girls at Vidyakirana public school, Bangalore, Karnataka. *Rajiv*

89. Yeong Hie Kim, and Soo Hyun Cho. The Effect of Foot Reflexology on Premenstrual Syndrome and Dysmenorrhea in Female College Students. *Korean J Women Health Nurs*. 2013 Jun;8(2):212-221.
90. Somayeh Ansari, Homa Dastgheibshirazi, Fahimeh Sehati, Masoumeh Sayhi, Neda Davaridehkordi. The effect of sole reflexology (Reflex Zone Therapy) on the intensity of premenstrual syndrome: A single-blinded randomized controlled trial, Jundishapur. *Journal of Chronic Disease Care*. 2014; 3(1):32-40.
91. Lobiondo Wood, Judith Haber. *Nursing Research: Methods, Critical Appraisal and Utilization* 4th edition: Mosby company; German. 1994
92. Fawcett, J. *Contemporary nursing knowledge: Analysis and evaluation nursing models and theories*: 2nd edition. Philadelphia: F. A. Davis; 2005
93. Denise F. Polit, Cheryl Tatano Beck. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 9th edition. New Delhi: Hardcover; 2011
94. Joyce M. Black, Jane Hokanson Hawks. *Medical-Surgical Nursing: Clinical Management for Positive Outcomes*, 9th edition. New Delhi: Lippincott Williams & Wilkins; 2011
95. www.mayoclinic.org
96. Ibralic I, Sinanovic O & Memisevic H. Age at menarche and premenstrual syndrome in adolescent girls with intellectual disability in Bosnia and Herzegovina. 2010 Mar 6.
97. Delara M, Borzuei H, Montazeri A. Premenstrual disorders: prevalence and associated factors in a sample of Iranian adolescents. *Iran Red Crescent Med J*. 2013 Aug; 15(8):695-700.
98. Yang J, Joe SH, Lee MS, Kim SH, Jung IK. Survey of premenstrual symptom severity and impairment in Korean adolescents: premenstrual dysphoric disorder, subthreshold premenstrual dysphoric disorder and premenstrual syndrome. *Asia Pac Psychiatry*. 2014 Jun; 6(2):135-44.
99. Cheng SH et al. Perception of premenstrual syndrome and attitude of evaluation of work performance among incoming university female students. *Biomed J*. 2014 Sep 2

101. Bertone Johnson ER et al. Association of inflammation markers with menstrual symptom severity and premenstrual syndrome in young women. *Hum Reprod.* 2014 Sep; 29(9):1987-94.
102. Zegeye DT, Megabiaw B, Mulu A. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. *BMC Women's Health.* BMC Womens Health. 2009 Oct 5;9: 29.
103. Dambhare DG, Wagh SV, Dudhe JY. Age at menarche and menstrual cycle pattern among school adolescent girls in Central India. *Glob J Health Sci.* 2012 Jan 1;4(1):105-11.
104. Bahrami N, Soleimani MA, Chan YH, Ghojzadeh M, Mirmiran P. Menarche age in Iran: A meta-analysis. *Iran J Nurs Midwifery Res.* 2014 Sep; 19 (5):444-50.
105. Cubeddu A et al. Brain – derived neurotrophic factor plasma variation during the different phases of the menstrual cycle in women with premenstrual syndrome *Psychoneuroendocrinology.* 2011 May; 36 (4): 523 -30.
106. Skrzypulec-Plinta V, Drosdzol A, Nowosielski K, Plinta R. The complexity of premenstrual dysphoric disorder - risk factors in the population of Polish women. *Reprod Biol Endocrinol.* 2010 Nov 14; 8:141.
107. Tschudin S, Berteau PC, Zemp E. Prevalence and predictors of premenstrual syndrome and premenstrual dysphoric disorder in a population-based sample. *Arch Women's Ment Health.* 2010 Dec; 13(6):485-94.
108. Sara Jamali1, Fariba Karimi. Premenstrual syndrome among single and married women in the city of Eyvan-e-Gharb. *J Kermanshah UnivMed Sci.* 2015; 18(10): 593-598.
109. Mulugeta woldu, Hailemariam Segni, Abebe Gebremariam. Prevalence of premenstrual syndrome and associated functional disability among female students of Addis ketema preparatory school, Ethiopia. *Journal of Education Research and Behavioral Sciences.* 2014 September; Vol. 3(9): 304-311
110. Magdy Hassan Balaha, Mostafa Abd El Monem Amr, Mohammed Saleh Al Moghannum, Nouria Saab Al Muhaidab. The phenomenology of premenstrual syndrome in female medical students: a cross sectional study. *The Pan African*

112. Naeimi N. The Prevalence and Symptoms of Premenstrual Syndrome under Examination. *Journal of Biosciences and Medicines*. 2015; 3, 1-8.
113. Ju H, Jones M, Mishra GD. Premenstrual syndrome and dysmenorrhea: symptom trajectories over 13 years in young adults. *Maturitas*. 2014 Jun; 78(2):99-105.
114. Balaha MH, Amr MA, Saleh Ai Moghannum M, Saab AI Muhaidab N. The phenomenology of premenstrual syndrome in female medical students: a cross sectional study. *Pan Afr Med J*. 2010 Apr 23; 5:4.
115. Jin Chul Lee, et.al. A study on the menstruation of Korean adolescent girls in Seoul *Korean J Pediatr*. 2011 May; 54(5):201-206
116. Tamilselvi K. Premenstrual Syndrome of Adolescent Girls in Cuddalore District, Tamil Nadu, India. *International Journal of Social Science Tomorrow*. 2012; Vol. 1 No. 7.
117. Kamat SV, Nimbalkar AS, Nimbalkar SM. Premenstrual Syndrome in Adolescents of Anand - Cross-Sectional Study from India using Premenstrual Symptoms Screening Tool for Adolescents (Psst-A). *Arch Dis Child* 2012;97
118. Ramya S, Rupavani K, Bupathy. Effect of educational program on premenstrual syndrome in adolescent school girls. *Int J Reprod Contracept Obstet Gynecol*. 2014 Mar; 3(1):168-171.
119. Amany Edward Seedhom, Eman Sameh Mohammed, Eman Mohammed Mahfouz. Life Style Factors Associated with Premenstrual Syndrome among El-Minia University Students, Egypt, 2013; Volume (3) : 6
120. Drosdzol A, Nowosielski K, Skrzypulec V, Plinta R. Premenstrual disorders in Polish adolescent girls: prevalence and risk factors. *J Obstet Gynaecol Res*. 2011 Sep; 37(9):1216-21.
121. Sitwat Zehral, Mansoor A. Khan, Abid Azhar1, Masood A. Qureshi. Increased levels of plasma leptin in relation to etiology of premenstrual syndrome. *Pak. J. Biochem. Mol. Biol*. 2011; 44(4): 129-132
122. Swati, Manisha Jindal, Rupali Roy. Cross -Sectional Study of 'Abnormal Body Mass Index As A Risk Factor for Premenstrual Syndrome' In Adolescent Girls of

124. F. Shahpoorian, Z. Mahmoodi, F. Hosseini, F. Bastani, S. Parsay, [Premenstrual Syndrome \(PMS\) and the Related Symptoms among Students of Iran University of Medical Sciences \(IUMS\)](#). IJN 2006, 18 (44): 57 – 66.
125. Klatzkin PR, Bunevicius A, Forneris CA, Girdler S. Menstrual Mood disorders are associated with blunted sympathetic reactivity to stress. J Psychosom Res. 2014 Jan; 76(1):46-55.
126. Christodoulou C, Schneider S, Junghaenel DU, Broderick JE, Stone AA. Measuring daily fatigue using a brief scale adapted from the Patient – Reported Outcomes measurement Information System (PROMIS). Qual Life Res. 2014 May; 23(4):1245-53.
127. Hoyer J et al. Menstrual cycle phase modulates emotional conflict processing in women with and without premenstrual syndrome (PMS) – a pilot study. PLoS One. 2013 Apr 24; 8(4):e59780.
128. Nillni YI, Rohan KJ, Mahon JN, Pineles SI, Zvolensky MJ. The role of anxiety sensitivity in the experience of menstrual related symptoms reported via daily Psychiatry Res. 2013 Dec 15; 210(2):564-9.
129. Amjad A, Kumar R, Mazher SB. Socio-demographic factors and premenstrual syndrome among women attending a teaching hospital in Islamabad. Pakistan. J Pioneer Med Sci 2014; 4(4):159-162
130. Delara M, Ghofranipour F, Azadfallah P, Tavafian SS, Kazemnejad A, Montazeri A. Health related quality of life among adolescents with premenstrual disorders: a cross sectional study. Health Qual Life Outcomes. 2012 Jan 1;10:1.
131. Wang YH, Lin SQ, Chen R, Benita WM. Pattern of moderate-to-severe symptoms of premenstrual syndrome in a selected hospital in China. J Obstet Gynaecol Res. 2012 Jan; 38(1):302-9.
132. Forrester Knauss C, Zemp Stutz E, Weiss C, Tschudin S. The interrelation between premenstrual syndrome and major depression: Results from a population based sample. BMC Public Health. 2011 Oct 12; 11:795.
133. Wong LP. Attitudes toward menstruation, menstrual related symptoms and premenstrual syndrome among adolescent girls: A rural school based survey.

135. Lawrence C Hyginus U, Michael, Eric E. Pattern of premenstrual symptoms among pre-clinical medical students at the University of Nigeria. *Orient Journal of Medicine*. Jan – Jun 2014; Vol 26 [1-2]
136. Fadia Hussein Ali, Fatin Abdul Amir Al-Saffar. Assessment Of Adolescent Student's Knowledge Toward Premenstrual Syndrome In Nursing Secondary Schools At Al- Diwanyia Governorate. *Journal of Kufa for Nursing Science*. 2014; Vol. (4) No. (1)
137. Tatari F et al. Evaluation of the frequency of premenstrual dysphoric disorder and premenstrual syndrome in students of girls' high schools of Kermanshah-Iran. *The Journal of European Psychiatry Association*. 2011; Volume 26, Supplement 1, Page 1688
138. Fahime Maleki1, Abbas Pourshahbaz, Abbasali Asadi, Afsane Yoosefi, The Impact of Premenstrual Disorders on Health related Quality of Life (HRQOL). *Practice in clinical psychology*. August 2014, Volume 2, Number 3
139. Yoshimitsu A, Sriareporn P, Upalabut S, Khiaokham P, Matsuo H. Current State of College Women and Coping Behaviors against Peri-menstrual Symptoms and Educational Challenges in Thailand . *J Women's Health Care*. 2015; 4:218.
140. Tolossa FW, Bekele ML. Prevalence, impacts and medical managements of premenstrual syndrome among female students: cross-sectional study in College of Health Sciences, Mekelle University, Mekelle, northern Ethiopia. *BMC Women's Health*. 2014 Mar 29; 14:52.
141. Mona A. Abd EL-Hamid, Daaa Ahmed El Moghazy, Manal F.Moustafa, Ekbal A. Emam. Knowledge and Practice of Female Employee about Premenstrual Syndrome and its Effect on Daily Life Activities in ELMinia University. *Life Sci J* 2013; 10(1):231-243.
142. Nour Mohammad Bakhshani, Zahra Aghashahi, KobraLashkari Pour, Minooyaghmaei. Relationship between Symptoms of Premenstrual Syndrome (PMS) and Quality of Life (QOL) in the Adolescents. *Life Sci J* 2013; 10 (2s):265-268.
143. Muhammad Fidel Ganis Siregar. Stress Levels and Characteristics of Medical Faculty Students Undergoing Premenstrual Syndrome and its Association with

145. Mei-Chuan Wang, Mei-Chi Hsu, Li-Wei Chien, Chien-Huei Kao, Chi-Feng Liu. Effects of Auricular Acupressure on Menstrual Symptoms and Nitric Oxide for Women with Primary Dysmenorrhea. *The Journal of Alternative And Complementary Medicine*. 2009; Volume 15, Number 3: 235–242.
146. Huei-Mein Chen, Chung-Hey Chen. Effects of acupressure on menstrual distress in adolescent girls: a comparison between Hegu–Sanyinjiao Matched Points and Hegu, Zusanli single point. *Journal of Clinical Nursing*. April 2010; Volume 19, Issue 7 -8: 998–1007.
147. Kashefi F, Khajehei M, Ashraf AR, Jafari P. The efficacy of acupressure at the Sanyinjiao point in the improvement of women's general health. *J Altern Complement Med*. 2011 Dec; 17(12):1141-7.
148. Susanne Blodt, et al. Effectiveness of additional self-care acupressure for women with menstrual pain compared to usual care alone: using stakeholder engagement to design a pragmatic randomized trial and study protocol”. *Trials* 2013, 14:99
149. Terry Oleson, William S. Flocco. Randomized Controlled Study Of Premenstrual Symptoms Treated with Ear, Hand, and Foot Reflexology. *Journal of Obstetrics and Gynecology*, January 1993; 82:906-11.
150. Sareh Abdollahi Fard et al. The effect of foot reflexology on premenstrual Syndrome, *Archives Des Sciences*. Nov 2012; Vol 65 (140), No. 11: 1661-464.
151. Kim YH, Cho SH. The Effect of Foot Reflexology on Premenstrual Syndrome and Dysmenorrhea in Female College Students. *Korean J Women Health Nurs*. 2002 Jun;8 (2):212-221.
152. Somayeh Ansari et al. The effect of sole reflexology (Reflex Zone Therapy) on the intensity of premenstrual. *Jundishapur Journal of Chronic Disease Care*, 2014; 3(1):32-40
153. Jissy Jacob. Effectiveness Of Reflexology On Premenstrual Syndrome Among Students In Selected Nursing Colleges, Mangalore 2013: Unpublished thesis
154. Sareh Abdollahi Fard , Mahrokh Dolatian , Reza Heshmat , Hamid Alavi Majd . Effect of foot reflexology on physical and psychological symptoms of premenstrual syndrome. *Pajoohandeh Journal*. 2013; 18 (1):8-15.

157. Dharampal G. Dambhare. Age at Menarche and Menstrual Cycle Pattern among School Adolescent Girls in Central India, *Global Journal of Health Science*. January 2012; Vol. 4, No. 1.
158. Karthiga V, Abhijit V Boratne, Shib Sekhar Datta, Suba Joice, Sherin Billy Abraham, Anil J Purty. Menstrual problems and pattern of consultation among adolescent school girls in Pondicherry, *Indian Journal Of Medical Specialities* 2011; 2(2) :92-95
159. Dasgupta A, Ssarkar M. Menstrual Hygiene: How Hygienic is the Adolescent Girl? *Indian Journal of Community Medicine*. 2008; 33(2): 77-80
160. Petta C, Osis MJD, de P'adua K, Bahamondes L, Makuch M. Premenstrual syndrome as reported by Brazilian women. *Int J Gynaecol Obstet*. 2010; 108:40–3.
161. Myint Thu, Edessa Ore-Giron Diaz, Sawhsarkapaw. Premenstrual Syndrome among Female University Students in Thailand. *AU J.T* 2006; 9: 158-62
162. Dennerstein L, Lehert P, Backstrom TC, Heinemann K. Premenstrual symptoms - severity, duration and typology: an international cross-sectional study. *Menopause International* September 2009;15:3 120-126
163. www.emedicinehealth.com
164. www.webmd.com/women/guide/premenstrual_syndrome
165. D.S. Deo, C.H. Ghattargi Perceptions and Practices Regarding Menstruation: A Comparative Study in Urban and Rural Adolescent Girls. *Indian Journal of Community Medicine*. 2005; Vol. 30, No. 1
166. Ade, Anju, Patil, Ramesh. Menstrual Hygiene and Practices of Rural Adolescent Girls of Raichur. *International Journal of Biological & Medical Research*; 2013, Vol. 4 Issue 2, p3014
167. Banerjee I, Chakraborty S, Bhattacharyya NG, Bandyopadhyay S, Saiyed HN, Mukherjee D. A cohort study of correlation between body mass index and age at menarche in healthy Bengali girls. *J Indian Med Assoc*. 2007; 105:75-8.
168. Harsha Solanki, Vibha Gosalia, Harshad Patel, Falguni Vora, M.P.Singh. A Study of Menstrual Problems & Practices among Girls of Mahila College. *National*

170. WaterAid in Nepal (2009a) Is Menstrual Hygiene And Management An Issue For Adolescent Girls? A Comparative Study of Four Schools In Different Settings Of Nepal,
171. Rajni Dhingra, Anil Kumar, Manpreet Kour. Knowledge and Practices Related to Menstruation among Tribal (Gujjar) Adolescent Girls. *Ethno-Med.* 2009; 3(1): 43-48.
172. Ray S, Mishra SK, Roy Ag, Das BM. Menstrual characteristics: a study of the adolescents of rural and urban West Bengal, India. *Ann Hum Biol.* 2010 Sep-Oct; 37(5):668-81.
173. Chao Hsing Yeh et.al, A Randomized Clinical Trial of Auricular Point Acupressure for Chronic Low Back Pain: A Feasibility Study. *Evidence-Based Complementary and Alternative Medicine.* 2013.
174. McFadden KL, Healy KM, Hoversten KP, Ito TA, Hernandez TD. Efficacy of acupressure for non-pharmacological stress reduction in college students. *Complement Ther Med.* 2012 Aug; 20(4):175-82.
175. Issa BA, Yussuf AD, Olatinwo AW, Iqhodalo M. Premenstrual dysphoric disorder among medical students of a Nigerian university. *Ann Afr med.* 2010 Jul-Sep; 9(3):118-22.
176. Nisar N, Zehar N, Haider G, Munir AA, Sohoo NA. Frequency, intensity and impact of premenstrual syndrome in medical students. *J Coll Physicians Surg Pak.* 2008 Aug; 18(8):481-4.
177. Hye-Sook Jang, Myeong Soo Lee. Effects of *Qi* Therapy (External Qigong) on Premenstrual Syndrome: A Randomized Placebo-Controlled Study. *The Journal of Alternative and Complementary Medicine.* June 2004, 10(3): 456-462.
178. Hsieh LL, Kuo CH, yen MF, Chen TH. A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy. *Prev Med.* 2004 Jul; 39(1):168-76.

ANNEXURE I

ETHICAL CLEARANCE CERTIFICATE



Dhanvantri College Of Nursing Ganapathypuram

No. 1, Ranganoor Road, (Muniyappan Kovil) Pallakkapalayam (post)
Thiruchengode (Taluk), Namakkal District.
Tel : 93601 78201, 93601 78202, 93601 78203, 93601 78204
E-mail : dhanvantriinstitutions@gmail.com



Ethical Committee Clearance Certificate

We, the Undersigned Chairman/Members of the Ethical Committee, functioning in Dhanvantri College of Nursing, Pallakkapalayam have studied the proposed research Subject/Project of "A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF ACUPRESSURE Vs REFLEXOLOGY ON PRE MENSTRUAL SYNDROME AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS AT ERODE, TAMIL NADU a candidate Ms. P. PADMAVATHI applying for thesis submission and hereby give the certificate of clearance of approval by this Ethical Committee.

Station : Pallakkapalayam

Signature of the Chairman/
Members of the Ethical Committee

Prof. Dr. N. Ganapathy

Mrs. T. Jayadeepa

Date : 01/06/2015

Name of the Institution: Dhanvantri College of Nursing

Seal :



ANNEXURE II

LETTER SEEKING PERMISSION TO CONDUCT STUDY

From

Ms. P. PADMAVATHI, M.Sc Nursing
Associate Professor
Dhanvantri College of nursing,
Ganapathypuram, No: 1 Renganoor Road,
Pallakkapalayam, (PO), Namakkal (DT).

To

THE CHIEF EDUCATIONAL OFFICER
Old Railway Station Road,
Erode - 600 00 2

Respected Sir/Madam,

Sub : Permission to conduct research study - Regarding

I, Mr.P.Padmavathi, M.Sc (Obstetrics and Gynecological Nursing) working as a Associate Professor in Dhanvantri College of Nursing, Pallakkapalayam as a partial fulfillment of Doctorate in Philosophy (Nursing). I am going to conduct a research and submit the dissertation work to the Tamil Nadu Dr M.G.R Medical University, Chennai.

The statement of the problem chosen for my study is "**A Comparative Study To Assess The Effectiveness Of Acupressure Vs Reflexology On Pre Menstrual Syndrome Among Adolescent Girls In Selected Schools At Erode, Tamil Nadu**".

So that I need your permission to conduct the study in the following schools and the Period from 2012 to 2014

Kindly do the needful.

- 1. Municipal Girls Higher Secondary School,**
Kaveri Road
Karungalpalayam, Erode - 638003
- 2. GTS Government Girls Higher School**
Kongu Stationaries World,
81C.S.I.H.S Complex Brough Road, P.S Park,
Erode-638001

Thanking you,

Yours Faithfully,

(P. Padmavathi)

ANNEXURE III

LETTER GRANTING PERMISSION TO CONDUCT STUDY

ஈரோடு மாவட்ட முதன்மைக் கல்வி அலுவலரின் செயல்முறைகள்
ஓ.மு.எண்.7676/ஆ4/2012 நாள் 07-2012

பொருள் அனுமதி- அக்குப்ரஷர் மூலம் பருவவயது மாணவிகளுக்கு ஏற்படும் உடல் உபாதைகள் சரி செய்வது சார்பான ஆராய்ச்சி - இரு பள்ளிகளில் நடத்த அனுமதி சார்பாக.
பார்வை பி.பத்மாவதி, எம்.எஸ்ஸி நர்சிங் இணைப்பேராசிரியர் தன்வந்திரி கல்லூரி பல்லக்காபாளையம் நாமக்கல் மாவட்டம்.

மேற்காணும் பார்வைக் கடிதத்தின்படி அக்குப்ரஷர் மூலம் பருவ வயது மாணவிகளுக்கு ஏற்படும் உடல் உபாதைகளை சரிசெய்வது சார்பாக செவிலியர் கல்லூரி, பல்லக்காபாளையம் நடத்தும் ஆராய்ச்சிக்கு கீழ்க்கண்ட நிபந்தனைகளின் பேரில் கீழ்க்கண்ட பள்ளிகளில் நடத்த அனுமதி அளிக்கப்படுகிறது.

நிபந்தனைகள்

1. மாணவியின் உடல்/மனநலத்திற்கு எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது
2. எவ்வித புகாருக்கும் இடமளிக்கக் கூடாது
3. 2012-14ம் கல்வி ஆண்டிற்கு மட்டும் அனுமதி அளிக்கப்படுகிறது.
4. ஆய்வறிக்கையை மருத்துவக் கல்வி நோக்கத்திற்கு மட்டும் பயன்படுத்த வேண்டும்

பள்ளியின் பெயர்

1. நகரவைமகளிர் மேல்நிலைப்பள்ளி, கருங்கல்பாளையம், ஈரோடு.
2. அரசு மகளிர் மேல்நிலைப்பள்ளி, ஈரோடு

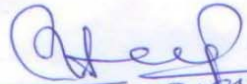
பெறுநர்.

பி.பத்மாவதி, எம்.எஸ்ஸி நர்சிங் இணைப் பேராசிரியர், தன்வந்திரி கல்லூரி (நர்சிங்) கணபதிபுரம், எண்.1, ரெங்கனூர் ரோடு முனியப்பன் கோவில், பல்லக்காபாளையம்(அஞ்சல்), சங்ககிரி மேற்கு, நாமக்கல் மாவட்டம்.

நகல்.

1. தலைமைஆசிரியர், நகரவை மகளிர் மேல்நிலைப்பள்ளி, கருங்கல்பாளையம் ஈரோடு.
2. அரசு மகளிர் மேல்நிலைப்பள்ளி, ஈரோடு.

அ.லீ.1/8/12


030812
முதன்மைக் கல்வி அலுவலர்,
ஈரோடு.

11/8/12

ANNEXURE IV

CERTIFICATE FOR ACUPRESSURE AND REFLEXOLOGY

INDRAJITH YOGA AND NATURE CURE HEALTH CARE CENTRE & INDRAJITH NATURE CURE HOSPITAL

238/4 KBR Tower (Near Dr.Pari Complex), Karungapalayam, Erode - 638 003, Tamil Nadu
Contact: +91 94432 30547, 93459 66869, Email: indrajitherd@gmail.com

Certificate

This is to certify that Mr/Mrs/Miss **P. PADMAVATHY**
D/o. **S. PERUMAL** Address **Dhanvantri College of Nursing, Ganapathipuram,**
No. 1, Ranganoor Road, Pallakkapalayam, Namakkal (Dt) - 637303 he / she
has / had studied three month ~~yoga therapy~~ course in **REFLEXOLOGY & ACUPRESSURE**
(**JANUARY - MARCH**)

[Signature]
COURSE DIRECTOR

[Signature]
CO-ORDINATOR

Dr.S.BALASUBRAMANIAM, MA., PGDYN., M.Sc., (Govt.Regd. Medical Practitioner)
Dr.S.ARUMUGAM, MA., PGDYN., M.Sc., (Govt.Regd. Medical Practitioner)



ANNEXURE V

RELATED RESEARCH WORK EXECUTED

Asian J. Nursing Edu. and Research 3(1): Jan.-March 2013



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RESEARCH ARTICLE

A Correlation study on Perceived Stress and Premenstrual Symptoms among Adolescent girls in Selected School at Pallakkapalayam, Namakkal (Dt).

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Associate Professor, Dhanvantri College of Nursing, Ganapathyapuram, Muniyappan Kovil, Pallakkapalayam, Namakkal District – 637 303

Research Guide and Associate Professor, Melmaruvathur Adhiparasakthi Institute of Medical Sciences (MAPIMS), Melmaruvathur

Principal, Adhiparasakthi Collège of Nursing, Melmaruvathur

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ABSTRACT

Background: Pre-menstrual syndrome (PMS) is recurrent variable cluster of troublesome physical and emotional symptoms that develop 7–14 days before the onset of menstruation and subsides when menstruation occurs. Premenstrual syndrome is a psychophysiological stress induced disorder. Stress disturbs the balance of sympathetic and parasympathetic nervous system. Changes in heart rate and blood pressure are the most important physiological response following stress.

Objectives: To correlate the perceived stress and premenstrual symptoms among adolescent girls.

Design: A correlational survey was adopted for the study

Setting: Government Higher secondary school, Pallakkapalayam, Namakkal District.

Participants: 60 adolescent girls fulfilling the inclusion criteria were selected by simple random sampling technique.

Methods: All participants were given a questionnaire to complete; questions were related to Baseline Proforma of adolescent girls, rating scale on the common premenstrual symptoms and perceived stress scale, participants were given 20 minutes to complete the questionnaire.

Results: The findings revealed that, there was significant correlation between perceived stress and premenstrual symptoms ($P < 0.05$). There was no significant association between the premenstrual symptoms and perceived stress with their demographic variables like age, age at menarche, duration of cycle, type of flow, family history of PMS, academic performance, school absenteeism, source of information and use of home remedies.

Conclusion: There was significant correlation between perceived stress and premenstrual symptoms. As the perceived stress increases the premenstrual symptoms among adolescent girls also increased.

KEY WORDS: Perceived stress, adolescents, Premenstrual syndrome

INTRODUCTION:

Adolescent girls constitute one fifth of the female population in the world. Generally this group is considered healthy and has not been given adequate attention in health programmes.

The reason is age specific mortality is comparatively low in this age group as compared to others. In countries like India, adolescent girls face serious health problem due to socio-economic, environmental conditions and gender discrimination. These factors make them more vulnerable to health risks.

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Globally adolescents account for 1/5th of the population that is more than 1 billion. 4 out of 5 adolescents live in developing countries. According to Population Bureau in 1996, 30% of the total population was that of adolescents (284.02 million). Due to gradual decrease in the growth rate of the overall population, there is little increase in the number of adolescents in population projections till the year 2016 (Population projection 1996-2016) census of India.

The first menstrual period is called menarche. It usually starts between the ages 11 and 14. But it can happen as early as age 9 or as late as 15. Menarche is the sign of growing up. In the days before the periods start, the adolescent may feel tense or emotional, gain water weight and feel bloated, pain in the abdomen, back or legs that lasts few hours or more.

Premenstrual syndrome (PMS) is a common disorder of young and middle aged women characterized by cyclic occurrence in the luteal phase of the menstrual cycle of a combination of distressing physical, psychological and behavioral changes of sufficient severity to result in deterioration of interpersonal relationships and/or interference with normal activities, which remit upon onset or immediately after menstruation.

Prevalence of premenstrual symptoms sufficient to impair daily life and relationships are estimated to affect upto 40% of women of reproductive age with severe impairment occurring approximately three percent.

PMS is related to high suicide and accident rates, employment and school absentee rates, poor academic performance and acute psychiatric problems.

Pre-menstrual syndrome (PMS) is recurrent variable cluster of troublesome physical and emotional symptoms that develop 7–14 days before the onset of menstruation and subsides when menstruation occurs. The PMS consists of low backache, fatigue, breast heaviness, abdominal bloating, increased weight, headache, irritability, skin disorders, aggressiveness, depression, gastrointestinal symptoms and loss of appetite.

Premenstrual syndrome (PMS) is a set of physical, emotional, and behavioral symptoms that occur a week before menstruation in most cycles. The physical symptoms are: breast tenderness or swelling; weight gain due to fluid retention; abdominal bloating; fatigue; dizziness; nausea and vomiting; acne or worsening of an existing skin disorders; muscle aches; pelvic heaviness; appetite change; constipation; headache and backache. The emotional symptoms are: insomnia; sadness; irritability; tension; anxiety; restlessness; loneliness and food cravings. There are also behavioral symptoms such as: difficulty concentrating; forgetfulness and social avoidance.

Premenstrual syndrome is a psychophysiological stress induced disorder. Stress disturbs the balance of sympathetic and parasympathetic nervous system. Changes in heart rate and blood pressure are the most important physiological response following stress.

Women who had high stress before both cycles were 25 times more likely to experience physical and psychological PMS symptoms than those who reported low stress before both cycles.

Premenstrual symptoms have been associated with perceived stress, whereby perceived stress was the strongest predictor of Premenstrual Syndrome and had a significant positive correlation to all premenstrual symptom groups. Perceived stress in the college/university setting may take the form of academic stress. Negative health outcomes, including depression and physical illness have been associated with academic stress. In addition women may display greater behavioral and physiological reactions to academic stressors.

The stress that had an academic impact was identified by student respondents (n=20,507) as the leading impediment to academic performance for college students. The category stress (32.9%) out ranked other impediments to learning such as, sleep difficulties (25.4%), cold/flu/sore throat (24.8%), concern for friend or family (18.1%) and depression/anxiety disorders (15.5%) . 8.8 million women aged 18-23 years old (NCES, 2003) attending undergraduate colleges, 8- 10% will experience multiple premenstrual symptoms to a severe degree while 25-40% of women overall report mild to moderate perimenstrual symptoms. In addition it has been well established that approximately 60% of premenstrual syndrome occurs in women aged 15-30, lessening thereafter.

Increased blood pressure due to premenstrual stress is due to increase in peripheral resistance and mediated by adrenocortical stimulation causing precapillary resistance. This could be due to increasing sympathetic activity or elevation of circulating catecholamine while other active hormone like rennin angiotensin aldosterone system also contribute. Rise in blood pressure due to stress leads to increased epinephrine secretion. Rise in blood pressure is important sympatho-adrenal response to physiological stressful experience caused by premenstrual stress.

Duester et al (1999) found that in a large population based sample, 874 women age 18-44; perceived stress (Cohen Perceives Stress Scale) was the strongest predictor of PMS after controlling for a variety of biological, social and behavioral factors.

Many women experience various premenstrual physical, emotional or behavioral changes, which at times reach such levels of severity that may have substantial social impact upon the woman herself, her associates and her work. So a correlation study to assess the perceived stress and premenstrual symptoms among adolescent girls in selected schools.

STATEMENT OF THE PROBLEM:

A correlation study on perceived stress and premenstrual symptoms among adolescent girls in selected school at Pallakkapalayam, Namakkal (Dt).

OBJECTIVES:

1. To correlate the perceived stress and premenstrual symptoms among adolescent girls
2. To find out the association between perceived stress and their demographic variables among adolescent girls.
3. To find out the association between premenstrual symptoms and their demographic variables among adolescent girls.

ASSUMPTION:

The study assume that,

- Premenstrual symptoms are common among adolescent girls.
- Premenstrual syndrome is a major cause of less academic performance and school absenteeism among students who suffer from the same.

DELIMITATIONS:

The study is limited to,

1. A study setting selected was Government schools in Namakkal District.
2. Adolescent girls who were present at the time of data collection.
3. Adolescent girls who were willingly participated in the study.

MATERIALS AND METHODS:

Research approach:

Research that explores the interrelationships among variables of interest without intervention on the part of the researcher is a correlation study. In the present study, the investigator intended to correlate the perceives stress and premenstrual symptoms

Research design:

The research design selected for the present study was descriptive design. The present study attempts to correlate the study perceived stress and premenstrual symptoms among adolescent girls. Therefore a correlational survey was found to be an appropriate research design.

Variables:

Dependent variable: Perceived stress and premenstrual symptoms

Associate variable: Selected background factors

Research setting:

The study was conducted in Government Higher secondary school, Pallakkapalayam, Namakkal District.

Population:

The population for the present study was all the adolescent girls between the age group of 14 – 18 years in selected school, Pallakkapalayam, Namakkal District.

Sample:

The sample consisted of 60 adolescent girls of Government Higher secondary school, Pallakkapalayam, Namakkal District.

Sampling technique:

Simple random sampling technique was used to select the sample for the study.

Development of tool:

A baseline Proforma, rating scale on common premenstrual symptoms and perceived stress was prepared with the help of review of literature, personal experience and discussion with experts.

Description of the tool:

Section A: Baseline Proforma of the samples

Section B: Rating scale on common premenstrual symptoms

Section C : Perceived stress scale

Tools are prepared in English.

Section A: Baseline Proforma: It contained items for obtaining information regarding age, age at menarche, duration of cycle, type of flow, family history of PMS, academic performance, school absenteeism, source of information and use of home remedies

Section B: Rating scale on common premenstrual symptoms: It consisted of 32 items in 3 different areas.

They were 16 physical symptoms, 6 psychological symptoms and 10 behavioural symptoms. The subjects had to tick mark in the relevant column based on the No symptoms, Mild, Moderate and Severe symptoms. The maximum score was 128 and the minimum score was 32. The more severe the symptoms, the higher the score.

Section C: The *Perceived Stress Scale* (PSS) is the most widely used psychological instrument for measuring the perception of stress. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. This section seeks the information regarding the perceived stress on 4 point scale. It consisted of 10 items

0 = Never

1 = Almost Never

2 = Sometimes

3 = Fairly Often

4 = Very Often

Scoring:

PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 and 4 = 0) to the four positively stated items (items 4, 5, 7, and 8) and then summing across all

scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

Data collection procedure:

The data on perceived stress and common premenstrual syndrome were collected from Government Higher secondary school adolescent girls. The data were collected for 4 weeks in the month of 5th September to October 2012. Permission was sought and obtained from school headmaster. The adolescent girls were selected using simple random sampling method among those who fulfilled the sample selection. Informed consent was obtained from the adolescent girls. The questionnaires were administered to the adolescent girls regarding perceived stress and common premenstrual symptoms separately. Confidentiality of the information shared was assured. The adolescent girls were cooperative. On an average, it took 30 minutes to complete one sample.

Plan for data analysis:

The data were analysed by using both descriptive and inferential statistics

- Baseline proforma of the samples were described by frequency and percentage distribution
- Correlation of perceived stress and premenstrual symptoms among adolescent girls were analyzed by using mean, standard deviation and ‘r’ value
- The association between perceived stress and their demographic variables among adolescent girls were analyzed by using linear regression
- The association between premenstrual symptoms and their demographic variables among adolescent girls were analyzed by using linear regression

RESULTS:

Section A: Most (62%) of the adolescents girls were in the age group of 15 -16 years. However 82 % of the adolescents girls attained menarche at the age of above 13years, 75% of adolescents girls were in > 28 days cycle, Most (72%) of adolescents girls were 5-7 days flow, 67 % of them had family history of premenstrual syndrome, 53 % of adolescents girls had low academic performance 49% of adolescents girls were school absenteeism, 52% of them had source of information from peers and 63% of the taking self treatment.

Section B: The findings revealed that the correlation between perceived stress and premenstrual symptoms among adolescent girls.

Mean, SD and “r” value regarding perceived stress and premenstrual symptoms

Adolescent girls	Max. Scores	Mean	SD	‘r’ value
Perceived stress	40	21.53	4.61	0.56
Premenstrual symptoms	128	47.65	6.75	

The obtained co – efficient of correlation $r = 0.56$ was positive. There was significant correlation between

perceived stress and premenstrual symptoms ($P < 0.05$). Therefore null hypothesis was rejected.

Section C:

The findings shows “t” value regarding perceived stress and selected background factors of adolescent girls such as age at menarche $t = 1.25(p=0.22)$, duration of cycle $t = 0.141(p=0.89)$, type of flow $t = 0.62 (p= 0.54)$, family history of PMS $t = 1.09(p=0.28)$, academic performance $t = 1.14(p=0.26)$, school absenteeism $t = 0.49 (p=0.63)$, and use of home remedies $t = 0.045 (p=0.96)$.

Section D:

The findings shows “t” value regarding premenstrual symptoms and selected background factors of adolescent girls such as age at menarche $t = 1.46(p=0.15)$, duration of cycle $t = 0.13 (p=0.89)$, type of flow $t = 0.79 (p= 0.43)$, family history of PMS $t = 1.11(p=0.27)$, academic performance $t = 0.21(p=0.84)$, school absenteeism $t = 0.16 (p=0.87)$, and use of home remedies $t = 0.77 (p=0.44)$.

CONCLUSION:

- ★ There was significant correlation between perceived stress and premenstrual symptoms. As the perceived stress increases the premenstrual symptoms among adolescent girls also increased.
- ★ There was no significant association ($P > 0.05$) between the perceived stress and selected demographic variables.
- ★ There was no significant association ($P > 0.05$) between the premenstrual symptoms and selected demographic variables.

RECOMMENDATIONS:

1. A study can be conducted with large samples to generalize the findings.
2. A comparative study can be done between urban and rural adolescent girls.
3. A comparative study can be done between married and unmarried women.

REFERENCES:

1. Parker M A, et. al. “The menstrual disorder of teenagers: determining typical menstrual patterns and menstrual disturbance in a large population based study of Australian teenagers, BJOG; 2010 Jan; 117(2):p185-92
2. Anil.k agarawal and Anju Agarwal. A study of dysmenorrhea during menstruation in adolescent girls. Indian journal community medicine.2010 January. 35(1).159-164.
3. Braverman PK. Premenstrual syndrome and premenstrual dysphoric disorder. J Pediatric Adolescent Gynecol. 2007 ; 20(1):3-12
4. Anandha Lakshmi et. al., Prevalence of Premenstrual Syndrome and Dysmenorrhoea among Female Medical Students and its Association with College Absenteeism. Int J Biol Med Res. 2011; 2(4): 1011 - 1016
5. Mahin Delara.et.al., Health related quality of life among adolescents with premenstrual disorders: a cross sectional study. *Health and Quality of Life Outcomes* 2012, 10:1 doi:10.1186/1477-7525-10-1
6. M.V. Rode, P. Kamble, M.S. Phatak, P. Jadhao and P. Tayde Effect of premenstrual stress on autonomic function. Annals of Neurosciences, Volume 17, Number 3, July 2010.

A correlation study on premenstrual symptoms among adolescents girls

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Abstract

Pre-menstrual syndrome (PMS) is recurrent variable cluster of troublesome physical and emotional symptoms that develop 7–14 days before the onset of menstruation and subsides when menstruation occurs. To correlate the perceived stress and premenstrual symptoms among adolescent girls. A correlational survey was adopted for the study. Setting: Seventh Day Adventists School, Erode. 40 adolescent girls fulfilling the inclusion criteria were selected by simple random sampling technique. All participants were given a questionnaire to complete; questions were related to Baseline Proforma of adolescent girls and rating scale premenstrual symptoms, participants were given 20 minutes to complete the questionnaire. The findings revealed that there was significant correlation between physical ($r' = 0.50$), psychological ($r' = 0.67$) and behavioural ($r' = 0.68$) premenstrual symptoms ($P < 0.05$). There was no significant association between the premenstrual symptoms and perceived stress with their demographic variables like age, age at menarche, duration of cycle, type of flow, family history of PMS, and measures used to relieve the symptoms. PMS is highly prevalent among female students. Premenstrual syndrome is a common problem in young girls which adversely affects their educational performance and emotional well-being. Strategies should be adopted for detection and management of PMS in young girls

Key Words: Correlation, Adolescents girls, Premenstrual symptoms

INTRODUCTION

Health is Wealth goes the saying. Health is an essential factor for a happy contented life. Based on the Alma – Ata's declaration, much emphasis is being placed on health promotion and preventive health care. Encouraging people to adopt healthy life styles and appropriate coping a strategy is the key aim in health promotion.

Adolescent girls constitute one fifth of the female population in the world. Generally this group is considered healthy and has not been given adequate attention in health programmes. The reason is age specific mortality is comparatively low in this age group as compared to others. In countries like India, adolescent girls face serious health problem due to socio-economic, environmental conditions and gender discrimination. These factors make them more vulnerable to health risks.

Menstruation is a landmark in every woman's life. It is a major physical event that transmits the female from girlhood to womanhood. Its onset may occur as early as 9 years or as late as 17 years, but age 12 is the average. Menstrual cycles are not always regular or stable; they may be disturbed by many disorders which commonly occur at the extremes of reproductive age. The causes of menstrual disorders can be triggered by a number of different factors, such as hormone imbalances, genetic factors, blood clotting disorders, and pelvic diseases.

One of the major physiological changes that take place in adolescent girls is the onset of menarche, which is often associated with problems of irregular menstruation, excessive bleeding, and dysmenorrhea. Of these, dysmenorrhea is one of the common problems experienced by many adolescent girls.

Globally adolescents account for 1/5th of the population that is more than 1 billion. 4 out of 5 adolescents live in

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developing countries. According to Population Bureau in 1996, 30% of the total population was that of adolescents (284.02 million). Due to gradual decrease in the growth rate of the overall population, there is little increase in the number of adolescents in population projections till the year 2016 (Population projection 1996-2016) census of India.

The first menstrual period is called menarche. It usually starts between the ages 11 and 14. But it can happen as early as age 9 or as late as 15. Menarche is the sign of growing up. In the days before the periods start, the adolescent may feel tense or emotional, gain water weight and feel bloated, pain in the abdomen, back or legs that lasts few hours or more.

Premenstrual syndrome (PMS) is a common disorder of young and middle aged women characterized by cyclic occurrence in the luteal phase of the menstrual cycle of a combination of distressing physical, psychological and behavioral changes of sufficient severity to result in deterioration of interpersonal relationships and/or interference with normal activities, which remit upon onset or immediately after menstruation.

Pre-menstrual syndrome (PMS) is recurrent variable cluster of troublesome physical and emotional symptoms that develop 7–14 days before the onset of menstruation and subsides when menstruation occurs. The PMS consists of low backache, fatigue, breast heaviness, abdominal bloating, increased weight, headache, irritability, skin disorders, aggressiveness, depression, gastrointestinal symptoms and loss of appetite.

Premenstrual syndrome (PMS) is a set of physical, emotional, and behavioral symptoms that occur a week before menstruation in most cycles. The physical symptoms are: breast tenderness or swelling; weight gain due to fluid retention; abdominal bloating; fatigue; dizziness; nausea and vomiting; acne or worsening of an existing skin disorders; muscle aches; pelvic heaviness; appetite change; constipation; headache and backache. The emotional symptoms are: insomnia; sadness; irritability; tension; anxiety; restlessness; loneliness and food cravings. There are also behavioral symptoms such as: difficulty concentrating; forgetfulness and social avoidance.

PMS is thus prevalent in women of all ages causing substantial morbidity with obvious detriment to interpersonal relationships, social interactions, lifestyle, work performance, emotional well-being and overall health-related quality of life.

This disorder is particularly common in the younger age groups and therefore represents a significant public health problem in young girls. Premenstrual syndrome is a common condition in women and includes a range of emotional,

psychological, and physical symptoms triggered by the menstrual cycle and it can have different effects on quality of life. The aim of this study was to examine the relationship between Premenstrual Symptoms and quality of life among adolescents of Iranian high school students.

The findings of current study showed a significant negative correlation between premenstrual symptoms and quality of life. We, also, found significant negative correlation between psychological Premenstrual Symptoms ($r = -0.032$) and physical symptoms ($r = -0.0001$) with quality of life among adolescents. Because there was negative correlation between a premenstrual symptoms and quality of life among adolescents, we suggest systematic and well designed programs for prevention and treatment of PMS.

Many adolescent girls experience various premenstrual physical, emotional or behavioral changes, which at times reach such levels of severity that may have substantial social impact upon herself, her associates and her work. So a descriptive study was undertaken to correlation study on premenstrual symptoms among adolescent girls of selected schools at Erode.

STATEMENT OF THE PROBLEM

Correlation study on premenstrual symptoms among adolescent girls in selected school at Erode

OBJECTIVES

1. To correlate the physical and psychological premenstrual symptoms among adolescent girls
2. To correlate the physical and behavioural premenstrual symptoms among adolescent girls
3. To correlate the psychological and behavioural premenstrual symptoms among adolescent girls
4. To find out the association between physical premenstrual symptoms among adolescent girls with their selected demographic variables.
5. To find out the association between psychological premenstrual symptoms among adolescent girls with their selected demographic variables.
6. To find out the association between behavioural premenstrual symptoms among adolescent girls with their selected demographic variables.

OPERATIONAL DEFINITION

Premenstrual symptoms

Premenstrual symptoms are includes physical, psychological and behavioral symptoms of adolescent girls, which is measured by premenstrual symptoms scale. (PMSS)

ASSUMPTION

The study assume that,

Premenstrual symptoms are common among adolescent girls.

Premenstrual symptoms are a major cause of less academic performance and school absenteeism among students who suffer from the same.

HYPOTHESIS

- H1: To correlate the physical and psychological premenstrual symptoms among adolescent girls
- H2: To correlate the physical and behavioural premenstrual symptoms among adolescent girls
- H3: To correlate the psychological and behavioural premenstrual symptoms among adolescent girls
- H4: To find out the association between physical premenstrual symptoms among adolescent girls with their selected demographic variables
- H5: To find out the association between psychological premenstrual symptoms among adolescent girls with their selected demographic variables
- H6: To find out the association between behavioural premenstrual symptoms among adolescent girls with their selected demographic variables

DELIMITATIONS

The study is limited to,

1. Correlate the premenstrual symptoms
2. Adolescent girls
3. Selected schools, Erode.

MATERIALS AND METHODS

Research approach

Research that explores the interrelationships among variables of interest without intervention on the part of the researcher is a correlation study. In the present study, the investigator intended to correlate the physical, psychological and behavioural premenstrual symptoms

Research design

A cross sectional correlation research design was used

Research setting

The study was conducted in Seventh Day Adventists School, Erode.

Population

The population for the present study was all the adolescent girls between the age group of 14 – 18 years in selected school, Erode.

Sample

The sample consisted of 40 adolescent girls of Seventh Day Adventists School, Erode.

Sampling technique

Simple random sampling technique was used to select the sample for the study.

Development of tool

A baseline Proforma and checklist on the common premenstrual symptoms was prepared with the help of review of literature, personal experience and discussion with experts.

Description of the tool

Section A: Baseline Proforma of the samples

Section B: Checklist on the common premenstrual symptoms

Tools are prepared in English.

Section A: Baseline Proforma

It contained items for obtaining information regarding age, age at menarche, duration of cycle, type of flow, family history of PMS, school absenteeism and measures used to relieve symptoms

Section B: Checklist on the common premenstrual symptoms

It consisted of 40 items in 3 different areas. They were 16 physical symptoms, 12 psychological symptoms and 12 behavioural symptoms. The subjects had to tick mark in the relevant column. The scale's lowest score is 40 and highest score is 200. If the scale's total score reached 80 points or above, this indicates the occurrence of PMS. Increases in the scores indicate an increase in PMS severity.

Scoring Procedure

Based on the percentage of scores the levels of premenstrual symptoms were graded in four categories. They are "No symptoms", "Mild", "Moderate" "severe" and very severe symptoms. **Plan for data analysis**

Four categories

Level of symptoms	Actual Scores	Percentage of Scores
No symptoms	1- 40	< 20
Mild symptoms - only slightly apparent	41 – 80	21 -40
Moderate symptoms - aware of symptom, but it doesn't affect daily activity at all	81 – 120	41 -60
Severe - continuously bothered by symptoms	121 - 160	61 -80
very severe - symptom is overwhelming and/or interferes with daily activity	161 -200	> 80

The data were analysed by using both descriptive and inferential statistics

•Baseline proforma of the samples were described by frequency and percentage distribution

•Mean, standard deviation and r' value was used to correlate premenstrual symptoms among adolescents.

•Chi square test was used to find out the relationship between selected variables of adolescents with their correlate premenstrual symptoms among adolescents

RESULTS

Section A: Distribution of adolescent girls according to their age group shows that the highest percentage (60%) of adolescent girls were in the age group of 15- 16 years. Similar percentage (45%) of them were 13-16 years of age at menarche and 28 days duration of menstrual cycle. Highest percentage (60%) of adolescent girls having 3-5 days menstrual flow. 75% of them not having family history of PMS and 45% of adolescent girls are using home remedies and others are using alternative measures.

Section B: Correlate the physical, psychological and behavioural premenstrual symptoms among adolescent girls

The findings revealed that the Mean, SD and "r" value regarding premenstrual symptoms.

co-efficient of correlation

Premenstrual symptoms	Max. Scores	Mean	SD	'r' value	Level of significant
Physical and Psychological	80	67	1.97	0.50	P < 0.05 significant
Physical and Behavioural	60	49	2.24	0.67	P < 0.05 significant
Psychological and Behavioural	60	49.2	3.50	0.68	P < 0.05 significant

Section D: There was a no significant association between the physical, psychological and behavioural PMS scores and variables like age at menarche, duration of cycle, type of flow, family history of PMS, and measures used to relieve symptoms.

CONCLUSION

•There was significant correlation between physical, psychological and behavioural premenstrual symptoms. As the physical symptoms increases the psychological and behavioural premenstrual symptoms among adolescent girls also increased.

•There was no significant association ($P > 0.05$) between the physical symptoms and selected demographic variables.

•There was no significant association ($P > 0.05$) between the psychological symptoms and selected demographic variables.

•There was no significant association ($P > 0.05$) between the behavioural symptoms and selected demographic variables.

RECOMMENDATIONS

1.A study can be conducted with large samples to generalize the findings.

2.A comparative study can be done between urban and rural adolescent girls.

3.A comparative study can be done between married and unmarried women.

4.SIM can be developed based on the learning needs of the adolescent girls regarding PMS and its self care management.

5.Intervention study can be conducted to know the effect of various treatment methods in reducing PMS.

REFERENCES

1. Parker M A, etal. "The menstrual disorder of teenagers: determining typical menstrual patterns and menstrual

disturbance in a large population based study of Australian teenagers, BJOG; 2010Jan; 117(2):p185-92

2. Anil.k agarawal and Anju Agarwal. A study of dysmenorrhea during menstruation in adolescent girls. Indian journal community medicine. 2010 january. 35(1). 159-164.
3. Anandha Lakshmi et. al., Prevalence of Premenstrual Syndrome and Dysmenorrhoea among Female Medical Students and its Association with College Absenteeism. Int J Biol Med Res. 2011; 2(4): 1011 -1016
4. Mahin Delara.et.al., Health related quality of life among adolescents with premenstrual disorders: a cross sectional study. Health and Quality of Life Outcomes 2012, 10:1
doi:10.1186/1477-7525-10-1
5. Naushaba Rizwan, International Journal of Medicine and Medical Sciences Vol. 3 (3), pp.383-385, March, 2013.
6. Nisar Ahmed Sohoo, Frequency, Intensity and Impact of Premenstrual Syndrome in Medical Students Journal of the College of Physicians and Surgeons Pakistan 2008, Vol. 18 (8): 481-484.
7. Minooyaghmaei, Relationship between Symptoms of Premenstrual Syndrome (PMS) and Quality of Life (QOL) in the Adolescents. Life Science Journal 2013; 10 (2s).



Original Research Article

Premenstrual Symptoms and Academic Performance among Adolescent Girls

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ABSTRACT

Background: Premenstrual syndrome is a psychophysiological stress induced disorder. Stress disturbs the balance of sympathetic and parasympathetic nervous system. Changes in heart rate and blood pressure are the most important physiological response following stress.

Objectives: To correlate the premenstrual symptoms and academic performance among adolescent girls.

Design: A correlational survey was adopted for the study Setting: Higher secondary school, Namakkal District. Participants: 60 adolescent girls fulfilling the inclusion criteria were selected by simple random sampling technique.

Methods: All participants were given a questionnaire to complete; questions were related to Baseline Proforma of adolescent girls, rating scale on the common premenstrual symptoms, Student life stress Inventory, Academic Demand Distress were given 40 minutes to complete the questionnaire.

Results: The findings revealed that, there was significantly higher numbers of symptoms perceived 8.46 ± 2.9 follicular and 7.14 ± 2.8 , luteal, $p = .001$ and higher distress (1.25 ± 0.41 follicular and 1.52 ± 0.31 luteal, $p = .003$) in the follicular phase than in the luteal phase. The academic demand component of academic stress measured daily frequency and distress associated with assignments, papers, projects/presentation and time studying. Within the follicular phase number of assignments due was significantly correlated to symptom perception and distress (.41, .31, respectively) and the number of projects/presentations due was correlated to symptom distress (.29) at $p < .05$. There were significant correlations between follicular phase symptom perception and distress, and luteal phase symptom distress with academic demand distress. Conclusion: There was significant correlation between premenstrual symptoms and academic performance.

Key Words: Academic performance, Academic Distress, adolescents, Premenstrual syndrome

INTRODUCTION

Menstruation is typically a universal event during a woman's reproductive life, and up to 90% report perceiving one or more symptoms during the days before

menstruation. More than 200 premenstrual symptoms have been identified over the last 50 years, which encompass three main factors: negative mood, pain and discomfort, and bloating. Nearly all components of

normal functioning for women can be affected by the changes related to phase of the menstrual cycle in either a negative or a positive way. Prevalence ranges from reports that suggest 5-20% have moderate to severe clinically relevant premenstrual complaints and up to 75% of all women of fertile age may experience symptoms of premenstrual syndrome. Premenstrual symptoms associated with premenstrual syndrome (PMS) may impair the overall physical health of a woman as well as interpersonal relationships, daily routine, and work productivity, (O'Brian, & Eriksson, 2008).

Premenstrual Syndrome (PMS) is a set of physical, emotional and behavioural symptom that start during the week preceding menstruation and are alleviated when the menstrual flow begins. The symptoms present a cyclic and recurrent character with variable in quality and intensity, (Gregory J. Boyle., 1997).

Symptoms experienced by women premenstrually vary, but most experience some symptoms that signal menstruation is approaching. Stress, particularly chronic stress, is known to negatively affect both prevalence and severity of premenstrual symptoms. A functional definition of stress is the number of stressors endorsed. Chronic stressors have been implicated in the development of certain somatic illnesses and for women the dimension of chronicity has been shown to account for a significant amount of variation in psychological and physical well-being. However, the role of academic stress as a possible chronic stressor for students is not well understood. Academic stress involves multiple stressors particular to students such as academic, financial, time, health related and self-imposed types of stressors, (Lazarus, 1994).

The most common physical symptoms are headaches, breast tenderness, swelling, abdominal bloating, heaviness,

low energy, tired and weak, back and muscle pain, sleep more, stay in bed increased / decreased appetite, and crave food), and emotional symptoms are (depressed mood, sad, lonely, anxious, nervous, mood swings, trouble with relationships, irritable, angry, impatient, difficulty concentrating, feel out of control, cannot cope, less productive in job or home and avoid social activity. These symptoms sufficient to impair daily activities, A woman's experience of premenstrual symptoms has been found to reduce work efficiency, increase absenteeism, and negatively impact on family, (Mona A.Abd, et.al., 2013)

Premenstrual symptoms have been associated with perceived stress, whereby perceived stress was the strongest predictor of Premenstrual Syndrome and had a significant positive correlation to all premenstrual symptom groups. Perceived stress in the college/university setting may take the form of academic stress. Negative health outcomes, including depression and physical illness have been associated with academic stress. In addition women may display greater behavioral and physiological reactions to academic stressors, (MacGeorge, Samter, & Gillihan, 2005).

Academic stress viewed as a chronic stress due to the nature of academic demands; was associated with negative health outcomes of depression and physical illness. It is therefore conceived that academic stress experienced by female college students may be implicated as negatively affecting the premenstrual symptom experience.

PMS is related to high suicide and accident rates, employment and school absentee rates, poor academic performance and acute psychiatric problems. PM symptoms are more common and more severe among high-level educated women than non - educated women with a possible

association of stress with PMS, (Addis Tenkir, Nebreed Fisseha, Biniyam Ayele, 2002).

Determine the prevalence of PMS and its effect on the academic and social performances of students of Jimma University (JU). The study reported that, the age of participants ranged from 17 to 38 years, with mean & median age of 20.3 & 20years, respectively. Almost all (99.6%) had at least one premenstrual (PM) symptom in many of the menstrual cycles in the last 12 months. The prevalence of PMS or premenstrual dysphoric disorder (according to DSM-IV) was 27%. About 14% of the study participants frequently missed classes and 15% missed examinations or scored a lower grade at least once because of PM symptoms. Both were significantly associated with severity of symptoms ($p < 0.005$). More first year students were affected by PMS than students of other class-years ($p < 0.05$). It concluded that a high prevalence and negative impact of PMS on students of Jimma University. Therefore, health education, appropriate medical treatment and counseling services, as part and parcel of the overall health service, should be availed and provided to affected women, (Addis Tenkir, Nebreed Fisseha, Biniyam Ayele, 2002).

Menstrual cycle moods and symptoms may well play a discernible role in the academic performance of some post-pubescent adolescent female students. The study reported that, at the premenstrual, menstrual, and intermenstrual phases, moods and symptoms significantly predicted grades in 14 per cent, 7 per cent, and 13 per cent of instances, respectively. Although most significant relationships were negative, scores on the MDQ Arousal scale for the intermenstrual phase positively predicted grades in English Literature, (general) Mathematics, Art and Craft, History, Mathematics 1, and Study of Society.

Evidently, menstrual cycle variables play a small, but discernible role on academic learning outcomes, contributing both positively and negatively to performance. Future, prospective studies are now needed to provide a more definitive account of menstrual cycle influences on academic performance, (Mona A.Abd,et.al., 2013)

Many adolescent girls experience various premenstrual physical, emotional or behavioral changes, which at times reach such levels of severity that may have substantial social impact upon herself, her associates, her work and academic performance. So correlational study was done to assess the premenstrual symptoms and academic performance among adolescent girls.

Statement of the Problem

A correlation study on premenstrual symptoms and academic performance among adolescent girls in selected school, Namakkal (Dt).

Objectives

1. To correlate the premenstrual symptoms and academic performance among adolescent girls
2. To find out the association between premenstrual symptoms and their demographic variables among adolescent girls.
3. To find out the association between academic performance and their demographic variables among adolescent girls.

Assumption

The study assume that,

- Premenstrual symptoms are common among adolescent girls.
- Premenstrual syndrome is a major cause of less academic performance and school absenteeism among students who suffer from the same.

Delimitations

The study is limited to,

1. A study setting selected was school in Namakkal District.
2. Adolescent girls who were present at the time of data collection.
3. Adolescent girls who were willingly participated in the study.

MATERIALS AND METHODS

Research approach: Research that explores the interrelationships among variables of interest without intervention on the part of the researcher is a correlation study. In the present study, the investigator intended to correlate the premenstrual symptoms and academic performance

Research design: The research design selected for the present study was correlational descriptive design. The present study attempts to correlate the premenstrual symptoms and academic performance among adolescent girls. Therefore a correlational survey was found to be an appropriate research design.

Variables:

Dependent variable - premenstrual symptoms and academic performance

Associate variable - Selected background factors

Research setting: The study was conducted in Higher Secondary school, Namakkal District.

Population: The population for the present study was all the adolescent girls between the age group of 14 – 18 years in selected school, Namakkal District.

Sample: The sample consisted of 60 adolescent girls of higher secondary school, Namakkal District.

Sampling technique: Simple random sampling technique was used to select the sample for the study.

Development of tool: A baseline Proforma, rating scale on common premenstrual symptoms, Students life Stress Inventory (SSI) and academic demand was prepared

with the help of review of literature, personal experience and discussion with experts.

Description of the tool

Section A: Baseline Proforma of the samples

Section B: Rating scale on common premenstrual symptoms (Scores range 45 – 180)

Section C: Students life Stress Inventory (SSI) (Scores range 51 – 255)

Section D: Academic stress and Academic demand - It consisted of number of assignments due, number of papers due, number of projects/presentations due daily on a scale of 0-10 (0=no distress and 10-extreme or the most distress). A daily distress score (range 0 to 30). To account for time spent studying, each day participants recorded hours and minutes spent as well the distress caused by studying on a scale of 0-10 (0=no distress and 10-extreme or the most distress).

Tools are prepared in English and translated in Tamil

Section A: Baseline Proforma

It contained items for obtaining information regarding age, age at menarche, duration of cycle, type of flow, family history of PMS, school absenteeism, source of information and use of home remedies

Section B: Rating scale on common premenstrual symptoms

It consisted of 45 items in different areas. The subjects had to tick mark in the relevant column based on the No symptoms, Mild, Moderate and Extreme symptoms. The maximum score was 180 and the minimum score was 45. The more severe the symptoms are higher the score.

Section C: Academic stress - Students life Stress Inventory (SSI). This inventory contains statement dealing with to assess the students' perceived academic stress and reactions to stress. There are 51 items arranged on a Likert response format

(1=never true to 5=always true) that assessed five categories of academic stressors (frustrations, conflicts, pressures, changes, and self-imposed), and four categories describing reactions to stressors (physiological, emotional, behavioral, and cognitive). Read it carefully and respond to each statement as it has related or is relating to you as a student. A higher score was indicative of greater stress and reactions to stress.

- 0 = Never
- 1 = Seldom
- 2 = Occasionally
- 3 = Often
- 4 = Most of the time

Scoring: Students life Stress Inventory (SSI) consisted of 51 items, out of which 23 Stressor items (frustrations, conflicts, pressures changes and self-imposed) with a range from 23 -115 and 28 items in the Reactions to Stressors category (physiological, emotional, behavioral and cognitive appraisal) with a range from 28-140. The Total Stress score from both categories range from 51-255.

Section D: Academic stress and Academic demand - It consisted of number of assignments due, number of papers due, number of projects/presentations due daily on a scale of 0-10 (0=no distress and 10-extreme or the most distress). A daily distress score (range 0 to 30). To account for time spent studying, each day participants recorded hours and minutes spent as well the distress caused by studying on a scale of 0-10 (0=no distress and 10-extreme or the most distress).

Data collection procedure

The data on The Students life Stress Inventory (SSI), Common premenstrual symptoms and Academic stress and Academic demand were collected from Higher secondary school adolescent girls.

The data were collected for 8 weeks in the month of June to July 2013. Permission was sought and obtained from school headmaster. The adolescent girls were selected using simple random sampling method among those who fulfilled the sample selection. Informed consent was obtained from the adolescent girls. The questionnaires were administered to the adolescent girls regarding The Students life Stress Inventory (SSI), common premenstrual symptoms and Academic stress and Academic demand. Confidentiality of the information shared was assured. The adolescent girls were cooperative. On an average, it took 40 minutes to complete one sample.

Plan for data analysis

The data were analysed by using both descriptive and inferential statistics

- Baseline proforma of the samples were described by frequency and percentage distribution
- Correlation of premenstrual symptoms and academic performance among adolescent girls were analyzed by using mean, standard deviation and 'r' value
- The association between premenstrual symptoms and their demographic variables among adolescent girls were analyzed by using linear regression
- The association between academic performance and their demographic variables among adolescent girls were analyzed by using linear regression.

RESULTS

Section A: Most (62%) of the adolescents girls were in the age group of 15 -16 years. However 82 % of the adolescents girls attained menarche at the age of above 13years, 75% of adolescents girls were in >

28 days cycle, Most (72%) of adolescents girls were 5-7 days flow, 67 % of them had family history of premenstrual syndrome, 53 % of adolescents girls had low academic performance 49% of adolescents girls were school absenteeism, 52% of them had source of information from peers and 63% of the taking self treatment.

Section B: The findings revealed that the correlation between premenstrual symptoms and academic performance among adolescent girls.

1. Symptom Perception, Severity and Distress

2. Mean, SD and Correlations between Overall Perceived Stress to Stressors, Reactions to Stressors and Total Stress Score

Table 1.

Adolescent girls	Max. Scores	Mean	SD	'r' value
Stressors	115	53.5	4.61	0.56
Reactions to stressors	140	78.6	6.75	0.35
Total stress score	255	121.43	7.12	0.47

Significant (P < 0.05).

Significant correlations were noted between the Overall Perceived Stress and the Stressors category as well as the Total Stress Score. Not surprisingly there was no significant correlation between Overall Perceived Stress rating and the Reactions to Stressors.

3. Academic Demands by Follicular Phase, Luteal Phase and Distress Level

Table 2

Academic Demands	Follicular Phase		Distress Level		Luteal Phase		Distress Level	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Assignments	1.43	0.43	1.24	0.72	0.98	0.58	1.24	0.62
Papers	0.38	0.78	0.83	1.92	1.21	0.24	0.92	1.24
Projects/presentations	0.47	0.64	1.19	1.14	1.31	0.34	0.84	1.26
Time studying	122.3	98.42	1.43	1.72	109.33	79.62	1.74	1.14

4. Correlations between Follicular Phase and Luteal Phase Symptom Perception, Severity and Distress with Academic Demand

Table 3 : Academic Demand.

Phase (Minutes)	Assignment	Papers	Projects/Presentations	Time Studying
Follicular Phase				
Perception	0.41*	0.21	0.07	0.05
Severity	0.06	-0.19	-0.19	0.16
Distress	0.31**	0.12	0.29*	0.18
Luteal Phase				
Perception	0.07	0.03	-0.11	0.01
Severity	-0.02	-0.01	-0.08	0.12
Distress	0.29	0.05	0.01	0.14

In follicular phase, number of assignments due was significantly correlated to symptom perception and distress (0.41 and 0.31 respectively) and the number of projects/presentations due was correlated to symptoms distress (0.29). There were no statistically significant correlations between academic demand and luteal phase symptom perception, severity, or distress.

5. Correlations between Follicular Phase and Luteal Phase Symptom Perception, Severity and Distress with Academic Demand Distress

Table 4 : Academic Demand Distress.

Phase (Minutes)	Assignment	Papers	Projects/Presentations	Time Studying
Follicular Phase				
Perception	0.39**	0.28*	0.25*	0.22*
Severity	0.06	-0.07	-0.12	0.11
Distress	0.63**	0.52**	0.54*	0.39**
Luteal Phase				
Perception	0.27	0.16	-0.07	0.21
Severity	-0.04	-0.07	-0.02	0.08
Distress	0.46**	0.42**	0.34*	0.54**

*Correlation is significant at the 0.05 level, 1-tailed

**Correlation is significant at the 0.01 level, 1-tailed.

Section C: The findings shows that there is no significant relationship between premenstrual symptoms and background factors of adolescent girls such as age at menarche, duration of cycle, type of flow, family history of PMS , school absenteeism and use of home remedies.

Section D: The findings shows that there is no significant relationship between academic performance and background factors of adolescent girls such as age at menarche, type of flow, family history of PMS and use of home remedies. But significant relationship between premenstrual symptoms and background factors of adolescent girls such as duration of cycle, age and school absenteeism.

DISCUSSION

- There was significant correlation between premenstrual symptoms and academic performance. Within the follicular phase number of assignments due was significantly correlated to symptom perception and distress (.31, .37, respectively) and the number of projects/presentations due was correlated to symptom distress (.25)

at $p < .05$. There were significant correlations between follicular phase symptom perception and distress, and luteal phase symptom distress with academic demand distress for assignments, papers, projects/presentations and time studying, indicating a relationship between distress components of symptom experience and some components of academic stress. (Pamela Lou Hulstein, 2009)

- There was no significant association ($P > 0.05$) between the premenstrual symptoms and selected demographic variables.
- There was no significant association ($P > 0.05$) between the academic performance and selected demographic variables.

CONCLUSION

Menstrual health is fundamental to adolescent reproductive health. Changes in the normal menstrual patterns of adolescent in reproductive age group may affect the physical and psychological well being. There were significant correlations between follicular phase symptom perception and

distress, and luteal phase symptom distress with academic demand distress for assignments, papers, projects/presentations and time studying, indicating a relationship between distress components of symptom experience and some components of academic stress. The present study has established poor premenstrual symptoms and academic stress to be often associated with common menstrual problems among adolescent girls

Recommendations

1. A study can be conducted with large samples to generalize the findings.
2. A comparative study can be done between urban and rural adolescent girls.
3. A comparative study can be done between educated and housewif

REFERENCES

- Gregory J. Boyle. "Effects of menstrual cycle moods and symptoms on academic performance: A study of senior secondary school students" *British journal of educational psychology* 67.1 1997: 37-49.

- Addis Tenkir, Nebreed Fisseha, Biniyam Ayele, Premenstrual syndrom: prevalence and effect on academic and social performances of students in Jimma University, Ethiopia, *Ethiop.J.Health Dev.* 2002 : 17(3):181-188.
- Mona A.Abd EL-Hamid;Diaa Ahmed El Moghazy; Manal F.Moustafa and. Ekbal A. Emam. Knowledge and Practice of Female Employee About Premenstrual Syndrome and its Effect on Daily Life Activities in ELMinia University. *Life Sci J* 2013;10(1):231-243
- Lazarus, R., S., & Folkman, S. (1994). *Stress, appraising and coping* New York, NY: Springer.
- MacGeorge, E. L., Samter, W., & Gillihan, S. J. (2005). Academic stress, supportive communication, and health. *Communication Education*, 54(4), 365-372.
- O'Brian, & Eriksson, et.al., 2008 Common Menstrual Problems among Slum Adolescent Girls of Western Maharashtra, India, JKIMSU, Vol. 2, No. 1, Jan-June 2013.

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Effect of Acupressure Vs Reflexology on Pre-Menstrual Syndrome among Adolescent Girls - A Pilot Study

P Padmavathi

Abstract

Pre-menstrual syndrome is the most common of gynaecologic complaints. It affects half of all female adolescents today and represents the leading cause of college/school absenteeism among that population. It was sought to assess the effectiveness of acupressure Vs reflexology on premenstrual syndrome among adolescents. Two-group pre-test and post-test true experimental design was adopted for the study. Forty adolescent girls from Government Girls Secondary School, Erode with pre-menstrual syndrome fulfilling the inclusion criteria were selected by simple random sampling. A pre-test was conducted by using premenstrual symptoms assessment scale. Immediately after pre-test acupressure Vs reflexology was given once a week for 6 weeks and again post-test was conducted to assess the effectiveness of treatment. Collected data was analysed by using descriptive and inferential statistics. In post-test, the mean score of the experimental group I sample was 97.3 (SD= 2.5) and the group II mean score was 70.8 (SD = 10.71) with paired 't' value of 19.2 and 31.9. This showed that the reflexology was more effective than acupressure in enhancing the practice of the sample regarding pre-menstrual syndrome. Statistically no significant association was found between the post-test scores of the sample with their demographic variables. The findings imply the need for educating adolescent girls on effective management of pre-menstrual syndrome.

Pre-menstrual syndrome (PMS) is a set of physical, emotional and behavioural symptoms that start during the week preceding menstruation and are alleviated when the menstrual flow begins. The symptoms present a cyclic and recurrent character with variability in quality and intensity (Silva et al 2006).

Its prevalence ranges from 5-20 percent from moderate to severe clinically relevant premenstrual complaints and up to 75 percent of all women of fertile age may experience symptoms of premenstrual syndrome (Eriksson, 2008). This disorder is particularly common in the younger age groups and therefore represents a significant public health problem in young girls. The most common physical symptoms are headaches, breast tenderness, swelling, abdominal bloating, heaviness, low energy, tired and weak, back and muscle pain, more sleep or stay in bed, increased / decreased appetite, and food craving. Emotional symptoms are: depressed mood, sadness, loneliness, anxiety, nervousness, mood swings, trouble with relationships, irritability, anger, impatience, difficulty concentrating, feeling out of control, cannot cope, less productive in job or home and avoiding social activity (Mitchell et al, 2005).

Individual pre-menstrual symptoms were experi-

enced by 65.7 percent of the population. The most common somatic symptom was fatigue (29.9%) and affective symptom was feeling sad/hopeless (29.6%). Prevalence of PMS was 8.75 percent (95% CI: 6.43-11.07). Multivariate analysis revealed the presence of chronic physical illness ($p=0.001$); dysmenorrhea ($p<0.0001$), and regular menstrual cycles ($p=0.006$) as correlates of PMS. Presence of PMS significantly disturbed in-school activities, relationships and daily routines ($p<0.005$) indicating a high negative influence on adolescents' daily life. Only 9.7 percent sought help from allopathic medical practitioners for their pre-menstrual symptoms and a majority did not perceive it as a condition to report. Pre-menstrual syndrome is a common condition among adolescent school girls with a high negative influence on their daily life.

Abraham (2006) listed many remedies for PMS such as chiropractic, acupuncture, homoeopathy, yoga and meditation therapy which reduce negative emotions through cognitive restructuring and enhanced problem solving skills.

Objectives

This study aimed to: (i) assess the pre-menstrual syndrome among (a) experimental group I of adolescent girls before and after acupressure, and (b) experimental group II of adolescent girls before and after reflexology; (ii) compare the effectiveness of acupressure Vs reflexology on pre-menstrual syndrome among adolescent girls on both the groups; and (iii) find out the

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association between post-test scores of pre-menstrual syndrome among experimental group I and II of adolescent girls with their selected demographic variables.

Hypotheses

H₁: There will be a significant level of pre-menstrual syndrome among experimental group I and II of adolescent girls before and after acupressure Vs reflexology.

H₂: There will be a significant effectiveness of acupressure Vs reflexology on pre-menstrual syndrome among adolescent girls in experimental group I than experimental group II.

H₃: There will be a significant association between post test scores of pre-menstrual syndrome among experimental group I and II of adolescent girls with their selected demographic variables.

Review of Literature

Related to pre-menstrual syndrome: Karout et al (2012) stated that menstrual disorders frequently affect the quality of life of adolescents and young women and can be indicators of serious underlying problems. They found that the most common menstrual disorders were irregular frequency of menstruation (80.7%), pre-menstrual syndrome (54.0%), irregular duration of menstruation (43.8%), dysmenorrhoea (38.1%), polymenorrhoea (37.5%) and oligomenorrhoea (19.3%). Dysmenorrhoea and pre-menstrual symptoms were serious enough to affect daily activities.

According to Tamilselvi (2012) the pre-menstrual syndrome is more common among adolescent girls, but the degree of pre-menstrual syndrome may vary. About 55.3 percent suffered from pre-menstrual syndrome. The major syndromes include white discharge and pains of various natures. Incidences of pre-menstrual syndromes are comparatively high in urban areas. The incidence of pre-menstrual syndrome is more common among adolescents that too among urban adolescent girls.

El-Hamid et al (2013) found that pre-menstrual syndrome is a common health problem affecting females and because of its cyclic occurrence it is postulated to have different effects on quality of life. Their study revealed that the mean age \pm SD of the studied sample was 31.7 ± 9 years, 84.96 percent of the studied samples were at normal age of menarche, 61.95 percent of the females obtained information about PMS from mothers, 63.72 percent of the studied samples had an effect on work. The most common reported physical symptom of PMS (79.64%) was backache while the most common reported psychiatric symptom (76.99%) was worry. The measures practiced by the studied sample to overcome symptoms of PMS were warm drinks, warm bathing, sports and activities, com-

fortable and rest period and medications. PMS had an effect on work and daily life activities of female.

Related to acupressure on premenstrual syndrome: Rekha (2012) in her study on effect of acupressure on pre-menstrual symptoms among adolescent girls at Vidyakirana Public School, Bangalore showed that the pre- and post-test values of mean percentage and standard deviation are $m_1=50.02$ $m_2=36.5$ and $SD=5.32, 8.2$ respectively. The df is 49, and the obtained 't' value (22.14) was highly significant at $p<0.001$ level. The author concluded that the acupressure was effective in reducing pre-menstrual symptoms among adolescent girls.

Related to reflexology on premenstrual syndrome: In their randomised controlled study of pre-menstrual symptoms treated with ear, hand and foot reflexology, Oeson Flocco (2012) revealed that analysis of variance for repeated measures demonstrated a significantly greater decrease in pre-menstrual symptoms for the women given true reflexology treatment than for the women in the placebo group. These clinical findings support the use of ear, hand, and foot reflexology for the treatment of PMS.

Methodology

An evaluative research approach using true experimental design 2 group pre- and post-test design) was adopted. Adolescent girls with premenstrual syndrome studying at Government Higher Secondary Schools, Erode, were covered. Simple random sampling was used. There were 40 samples, 20 each in experimental group I and group II.

Variables: Independent variable was acupressure Vs reflexology. Dependent variable was pre-menstrual syndrome among adolescent girls.

Tools used contained two sections: Section A: Demographic variables, and Section B: Premenstrual Syndrome Scale (PMSS). Based on the percentage of scores the levels of pre-menstrual syndrome were graded in four categories: "No symptoms", "Mild", "Moderate" "Severe" and "Very Severe" symptoms (Table 1).

Data collection procedure

Pre-test was conducted by using Premenstrual Syndrome Scale to assess the level of premenstrual symptoms. Implementing the acupressure in experimental group I and reflexology in experimental group II for the duration of 20 minutes once in a week for 6 weeks (7-10 days before the menstrual cycle acupressure for experimental group I and reflexology for experimental group II was implemented).

Post-test was conducted with same pre-test tool after 6 weeks.

Validity and Reliability: The content validity of the demographic variables and Pre-menstrual Syndrome Scale was validated in consultation with guide and experts. The tool was modified according to the suggestions and recommendations of the experts. Inter-rater reliability (Cronbach's Alpha) was used to find out the reliability of the Premenstrual Syndrome Scale ($r^1 = 0.97$).

Plan for data analysis: Descriptive Statistics - Percentage, Mean and Standard Deviation; Inferential Statistics : 't' test and Chi-square test

Results and Discussion

Section A: Percentage distribution of adolescent girls according to their demographic variables

Experimental group I and II shows that: (a) Highest percentage (60% and 50%) of adolescent girls were in the age group of 15-16 years (b) 40 percent and 45 percent of them were in 10th and 9th standard (c) Similar percentage (30% and 35%) of the parents were educated up to primary and secondary education (d) 65 percent and 80 percent of the parents were non-professionals (e) 45 percent and 50 percent percentage of the adolescent girls were Hindu (f) Similar percentage (45% and 50%) of them were 13-16 years of age at menarche and 24 & 28 days duration of menstrual cycle

Table 1: Scoring procedure & findings

Level of symptoms	Actual scores	Percentage of scores
No symptoms	1- 40	< 20
Mild symptoms - only slightly apparent	41 - 80	21 - 40
Moderate symptoms - aware of symptom, but it doesn't affect daily activity at all	81 - 120	41 - 60
Severe - continuously bothered by symptoms	121 - 160	61 - 80
Very severe - symptom is overwhelming and / or interferes with daily activity	161 - 200	> 80

Table 2: Frequency and percentage distribution of post-test scores of pre-menstrual syndrome among adolescent girls in experimental Group I & II (N1= 20, N2 = 20)

Level of Pre-menstrual syndrome	Post-test score			
	Experimental group I		Experimental group II	
	Frequency (N ₁)	Percentage (%)	Frequency (N ₂)	Percentage (%)
No symptoms	-	-	-	-
Mild	3	15	15	75
Moderate	17	85	5	25
Severe	-	-	-	-
Very severe	-	-	-	-

(g) Highest percentage (60% and 50%) of adolescent girls were having 3-5 days menstrual flow (h) 75 percent and 90 percent of them were not having family history of PMS (i) 65 percent and 70 percent of adolescent girls were using home remedies (j) Similar percentage (45% and 45%) of them every cycle observing the premenstrual problems.

Section B: Percentage distribution of adolescent girls as per their demographic variables.

The result of post-test scores showed (Table 2) that in experimental group I, most (85%) had moderate syndrome whereas in experimental group II most (75%) had mild syndrome. It shows reflexology is more effective than acupressure.

The paired 't' test score for overall was 19.2 in experimental group I whereas in experimental group II score was 31.9, when compared to table value (2.093) it was high (Table 3). It seems that reflexology is more effective than acupressure among adolescents girls with pre-menstrual syndrome.

The unpaired 't' test total score was 13.4, when compared to table value (2.02) it was high. It depicts that reflexology is more effective than acupressure among adolescents' girls with pre-menstrual syndrome.

Conclusion

Post-test score in experimental group I and II depicts that in experimental group I most (85%) of them were having moderate symptoms whereas in experimental group II most (75%) had mild symptoms. It seems that reflexology was more effective than acupressure among adolescent girls with pre-menstrual syndrome. The overall mean percentage in experimental group I was 49 percent whereas in experimental group II it was 35 percent revealing the difference of 14 percent. The paired 't' test value in experimental group I was 19.2 whereas in experimental group II it was 31.9. Oleson, Flocco (2012) demonstrated a significantly greater decrease in pre-menstrual symptoms for the women given true reflexology treatment than for the women in the placebo group.

In our study, highly significant association was found between post-test scores of pre-menstrual syndrome among both the groups, while no significant association was found between post-test and their demographic variables of both the groups among adolescent girls.

Implications

The findings of the study have implications in Nursing service, Nursing administration and Nursing research.

Nursing service: Acupressure and reflexology can be used by the Nursing professionals who are working in hospital and clinical settings.

Table 2: Area wise comparison of mean, SD, and mean percentage of experimental group I and II post-test pre-menstrual syndrome scores (N1 = 20, N2 = 20)

S. No	Pre-menstrual symptoms	Max. scores	Post-test score						Difference in mean (%)
			Experimental group I			Experimental group II			
			Mean	SD	Mean (%)	Mean	SD	Mean (%)	
1.	Physiological	80	38.9	1.81	47	29.4	4.09	37	10
2.	Psychological	60	29.4	1.05	49	21.3	3.50	36	13
3.	Behavioural	60	28.9	1.82	48	21	3.36	35	13
Total		200	97.3	2.5	49	70.8	10.71	35	14

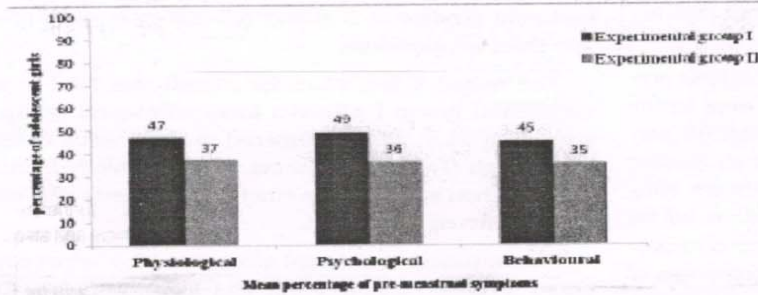


Fig 1: Post-test scores of pre-menstrual symptoms among experimental group I & II of adolescent girls

Table 3: Significance of Pre- and Post-test scores of Experimental Group I & II

Sl. No.	Premenstrual symptoms	Paired 't' value		Level of Significance
		Experimental group I	Experimental group II	
1	Physiological	18.8	30.6	p< 0.05 Significant
2	Psychological	13.4	29.9	p< 0.05 Significant
3	Behavioural	12.2	21.9	p< 0.05 Significant
Total		19.2	31.9	p< 0.05 Significant

df – 19 (n-1) Table value = 2.093 (p<0.05 Significant)

Table 4: 't' values of physiological, psychological and behavioural symptoms

S. No	Areas	Unpaired 't' value	Level of significance
1.	Physiological	10.98	p<0.05 Significant
2.	Psychological	11.71	p<0.05 Significant
3.	Behavioural	10.26	p<0.05 Significant
Total		13.4	p<0.05 Significant

df=38 Table value=2.02; significant at p<0.05

Nursing Education: Nurse educator should (a) educate the students and adolescent girls regarding significance of acupressure and reflexology in premenstrual syndrome; (b) encourage the Nursing personnel to practice the acupressure and reflexology on premenstrual syndrome in their clinical and community settings.

Nursing Administration: Nurse administrator can support the researcher to conduct the research on various reproductive health problems faced by the adolescent girls.

Nursing Research: The study may be issued for further reference. Further large scale study can be done in different settings.

Recommendation

A similar study can be undertaken (a) with a large sample size for wider generalisation, (b) among nursing personnel working in different wards.

A comparative study can be conducted among urban and rural adolescent girls; married and unmarried women.

References

1. Silva CM, Gigante DP, Carret ML, Fassa AG. Population study of premenstrual syndrome. *Rev Saude Publica* 2006; 40: 47-56
2. Johnson SR. The epidemiology and social impact of premenstrual symptoms. *Clin Obstet Gynecol* 2007; 30: 367-76
3. World Health Organization (WHO). International statistical classification of disease and health related problems. 10th revision (ICD-10). Geneva: WHO; 1992
4. Nusrat Nisar, Nisar Ahmed Soho. Frequency, intensity and impact of premenstrual syndrome in medical students. *Journal of College of Physicians and Surgeons Pakistan* 2008, Vol. 18 (8): 481-84
5. Mona A Abd El-Hamid, Diaa Ahmed El Moghazy, Manal F Moustafa, Ekbal A Emam. Knowledge and practice of female employee about premenstrual syndrome and its effect on daily life activities in EL-Minia University. *Life Science Journal* 2013; 10(1)
6. Mitchell E, Woods N, Lentz M. Recognizing PMS when you see it: Criteria for PMS sample selection. In D. Taylor & F. Woods (Ed), *Menstruation, Health and Illness*, 2005 (pp 89-118). New York: Hemisphere
7. Oleson T, Flocco W. Randomized controlled study of premenstrual symptoms treated with ear, hand, and foot reflexology. *Obstet Gynecol.* 1993; 82(6): 906. Last Revised in 2012
8. Mira M, McNeil D, Fraser IS, Vizzard J, Abraham S. New approaches in the treatment of premenstrual syndrome. *Obstet & Gynecol*; 2006; 68: 395-98
9. Chandraratne NK, Gunawardena NS. Premenstrual syndrome: The experience from a sample of Sri Lankan adolescents. *J Pediatr Adolesc Gynecol* 2011 Oct; 24(5): 304-10 doi: 10.1016/j.jpag.2011.05.010
10. Karout N, Hawaii SM, Altuwajiri S. Prevalence and pattern of menstrual disorders among Lebanese nursing students. *Eastern Mediterranean Health Journal*, 2012; Vol. 18 No. 4
11. Tamilselvi K. Premenstrual syndrome of adolescent girls in Cuddalore District, Tamil Nadu, India. *International Journal of Social Science Tomorrow* 2012. Vol. 1 No. 7

ANNEXURE VI

CONTENT VALIDITY EXPERTS

1. **Dr. C. SUSILA ., Ph. D** (Maternity Nursing)
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Billroth College of Nursing, Chennai.
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PRINCIPAL
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Thriuvannamalai District
3. **Dr. MENAKA., Ph. D**
PRINCIPAL
Dr. Mohan Kumaramangalam College of Nursing, Salem
4. **Prof. M.VIMALA., Ph. D (N)**
PRINCIPAL
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9. **Prof. ASHOK., M.Sc**
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ANNEXURE VII

ENGLISH AND TAMIL EDITING CERTIFICATES

I hereby certify that I have validated the tool of Ms. PADMAVATHI P, M.Sc Nursing, Principal, Ph.D student of Maternity Nursing studying in Adhiparasakthi College of Nursing, Melmaruvathur who is undertaking the dissertation work on **"A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF ACUPRESSURE Vs REFLEXOLOGY ON PREMENSTRUAL SYNDROME AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS AT ERODE, TAMILNADU"**.

Place: *PALLAKKAPALAYAM*

Signature of the Expert

C.V. Ranimaragathavalli

Date: *11.12.12.*

Name and Designation

C.V. Ranimaragathavalli
BT. ASST (TAMIL)

அரசினர் மேல்நிலைப்பள்ளி
பல்லக்காபாளையம் - 637 303
நாமக்கல் மாவட்டம்

Place: PALLIPALAYAM.

Signature of the Expert
11/12/12

Date: 11.12.12.

G. NAGAJOTHI B.Litt., M.Ed.,
(TAMIL)
Name and Designation
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ஊராட்சி ஒன்றிய நடுநிலைப்பள்ளி
அலமேடு, பள்ளிபாளையம்
நாமக்கல் மாவட்டம்.
பின் : 638 008.

TO WHOMSOEVER IT MAY CONCERN

This is to certify that I have gone through the dissertation titled
**“A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF
ACUPRESSURE Vs REFLEXOLOGY ON PRE MENSTRUAL SYNDROME
AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS AT ERODE,
TAMIL NADU”**. By P. PADMAVATHI. I have corrected the dissertation from the point
of view of typographical, punctuations and grammatical errors

Place: PALLAKKAPALAYAM

Signature of the Expert

Prof. S. SRIRAM

Professor

Name and Designation

PROF. S. SRIRAM

PROFESSOR

DEPARTMENT OF ENGLISH

Date: 5.05.2015



ANNEXURE VIII

CONSENT FORM

I _____ D/o. / S/o. _____

agree to take part in the research study, conducted by, PhD Scholar, Department of Research in Adiparasakthi College of Nursing, entitled **A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF ACUPRESSURE Vs REFLEXOLOGY ON PRE MENSTRUAL SYNDROME AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS AT ERODE, TAMIL NADU**. I acknowledge that the research study has been explained to me and I understand that agreeing to participate in the research means that I am willing to:

- Provide information which is only the truth and to the best of my knowledge.
- Allow the research to have access to the medical records, pertaining to the purpose of the study.

- b. 10th standard ()
- c. 11th standard ()
- d. 12th standard ()
- 3. Education of parents**
- a. No formal education ()
- b. Primary education ()
- c. Secondary education ()
- d. Higher secondary education ()
- e. Graduate and above ()
- 4. Occupation of parents**
- a. Health professional worker ()
- b. Non Health professional worker ()

- 5. Religion**
- a. Hindu ()
- b. Muslim ()
- c. Christians ()
- d. Others ()
- 6. Age at menarche**
- a. Less than 13 Year ()
- b. 13 – 16 Years ()
- c. More than 16 Years ()
- 7. Duration of menstrual cycle**
- a. 20 days cycle ()
- b. 24 days cycle ()
- c. 28 days cycle ()
- d. More than 28 days cycle ()
- e. Irregular cycle ()
- 8. Days of menstrual flow**
- a. Less than 3 days ()
- b. 3 – 5 days ()
- c. 6 - 8 days ()
- d. More than 8 days ()

- 9. Family history of premenstrual syndrome**
- a. Yes ()
- b. No ()
- 10. Practice of home remedies**
- a. Yes ()
- b. No ()
- 11. How frequently you observe these premenstrual problems?**
- a. Every cycle ()
- b. Alternate cycle ()
- c. Sometimes

12. Source of information

- a. Mother ()
- b. Peers ()
- c. Health care provider ()
- d. Media ()

SECTION B : PREMENSTRUAL SYNDROME SCALE (PMSS)

Each of the symptoms below, circle the number that most closely describes the intensity of your premenstrual symptoms during your last cycle. These are symptoms that would occur during the premenstrual phase of your cycle. This phase begins about seven days prior to menstrual bleeding (or seven days before your period) and ends about the time bleeding starts. Rate each item on this list on a scale from 1 (not present or no change from usual) to 5 (extreme change, perhaps noticeable even to casual acquaintances).

S.N	Premenstrual syndrome scale (PMSS)	SCORES				
		Never (1)	Rarely (2)	Some times (3)	Very often (4)	Always (5)
I	Physiological symptoms					
1	Breast tenderness and swelling					
2	Abdominal bloating					
3	weight gain					
4	Headache					
5	Dizziness/fainting.					
6	Fatigue					
7	Palpitations					
8	Pelvic discomfort and pain					
9	Abdominal cramps					
10	Change in bowel habits					
11	Increased appetite					
12	Generalized aches and pains					
13	Food cravings (Sugar/ Salt)					
14	Skin changes, rashes, pimples					
15	Nausea/vomiting					
16	Muscle and Joint pain					
II	Psychological symptoms					
17	Irritability					
18	Anxiety					
19	Tension					
20	Mood swings					
21	Loss of concentration					
22	Depression					
23	Forgetfulness					
24	Easy crying/ Crying spells					

25	Sleep changes (Insomnia/ hypersomnia)					
26	Confusion					
27	Aggression					
28	Hopelessness					
III	Behavioural symptoms					
29	Social withdrawal					
30	Restlessness					
31	Lack of self control					
32	Feeling guilty					
33	Clumsiness					
34	Lack of interest in usual activities					
35	Poor judgment					
36	Impaired work performance					
37	Obsessional thoughts					
38	Compulsive behavior					
39	Irrational thoughts					
40	Being over sensitive					

Interpretation:

The premenstrual syndrome scale comprised 40 questions with three sub-scales (Physiological, Psychological and Behavioural symptoms). This 5-point Likert-type scale consisting of 40 items. The measurements on the scale are set according to the following scoring system: the response Never was scored as “1”, rarely as “2”, sometimes as “3”, very often as “4” and always as “5” points. In addition, the total score obtained from the sub-scales established the “PMSS total score.” The scale’s lowest score is 40 and highest score is 200. If the scale’s total score reached 80 points or above, this indicates the occurrence of PMS. Increases in the scores indicate an increase in PMS severity.

Scoring Procedure

Based on the percentage of scores the levels of premenstrual symptoms were graded in four categories. They are “No symptoms”, “Mild”, “Moderate” “severe” and very severe symptoms.

<i>Level of symptoms</i>	<i>Actual Scores</i>	<i>Percentage of Scores</i>
No symptoms	1- 40	< 20

Mild symptoms	- only slightly apparent	41 - 80	21 -40
Moderate symptoms	- aware of symptom, but it doesn't affect daily activity at all	81 – 120	41 60
Severe	- continuously bothered by symptoms	121 - 160	61 -80
very severe	- symptom is overwhelming and /or interferes with daily activity	161 -200	> 80

– İ ÇNY aöA'' ¼ö¾ çç' Ä ÄüEÄ | A;D ÄÄÄr ,ü

Äjç' ° ±ñ :

¾'' ¼öÄj , Äj¾Ä¼jö « '' ¼ö¾ §¾¾ç (çjü):

1. ÄÄD (– ñ Eø)
 - a) 13 -14 ÄÄD
 - b) 15 -16 ÄÄD
 - c) 17 ÄÄD ÄüÜö « ¾üİ §Äø
2. Äl öð
 - i. 9 ö Äl öð
 - ii. 10 ö Äl öð
 - iii. 11 ö Äl öð
 - iv. 12 ö Äl öð
3. |ÄüEj|N ,øÄø¼|¾ç
 - a) ÄEİ ,j¾Ä¾,ü
 - b) – ÄöÄ ,øÄç
 - c) çl çç' Äj ,øÄç
 - d) – Ä¾çç' Ä ,øÄç
 - e) Äø¼öÄEöð ÄüÜö « ¾üİ §Äø
4. |ÄüEj|N §Ä'' ÄO'' E
 - a) – ¼øçÄö °j:ö¾ §Ä'' Ä
 - b) – ¼øçÄö °jÄj¾ §Ä'' Ä
5. Ä¾ö
 - a) böD
 - b) ÖSÄö
 - c) ççS¾Ä¾
 - d) ÄüEÄ¾,ü
6. aöA'' ¼ö¾ ÄÄD

Á;¼Á¼;ö Óý « Èð Èç, Ç ñ ¼ÈÖö « ÇÁñ

„SÆ í, í î ðÀðí ùÇ Á;¼Á¼;ö Óý « Èð Èç, Çø, - í, Ùíí „ ¼° Á;¼Á¼;ö íÆü°Áý SÁ;Ð ²üÀð¼ « Èð Èç, Ç í;Öð¼Á;É „ ð¼ð¼ø í Èð „ ×ð. í ù; Á;Ö « Èð Èç, Ùíí ö Á¼öÁñ „ ù 1 Ó¼ø 5 Á Á Á ÁÁÜí „ ðÀðí ùÇÐ. Á;¼Á¼;ö Óý « Èð Èç, ù Á;¼Á¼;ö „ Äð¼üí 7 ç;ð, Ùíí Óý í;¼;¼í ç, Á;¼Á¼;ö Ó¼ø ç;ü ÓÈÁ ÁÖö.

Sl. No.	Á;¼Á¼;ö Óý « Èð Èç, Ç ñ ¼ÈÖö « ÇÁñ	þø Á	±ð; Á; Ø¼; ÁÐ	°Á °Áö	±¼; ÁÐ Ö Ö È	±ð; Á; ØÐö
	¼ø ÙüÈø ²üÁí ö « Èð Èç, ù					
	Á;=Á „ ÁÁç ÁüÜö Á;=Á „ Áñ „ ö « „ ¼¼ø					
	ÁÁÜ - öÁÁ; „ þÖð¼ø					
	±¼¼ « ¼ç; íö¼ø					
	¼ ÁÁÁç					
	ÁÁí „ ö					
	S°; ÷ ×					
	Á¼Á¼öð					
	þí öð ÁÁç					
	ÁÁÜ þØðÐ ÁçÈð¼Ð SÁ;ø þÖð¼ø					
10.	ÁÁö „ ÈöÁ¼ø Á;üÈö ²üÁí ¼ø					
11.	« ¼ç; Á; „ Á°ç ±í ö¼ø					
12.	- ¼ø ÖØÁÐö ÁÁö¼ø					
13.	- ½ Á « ¼ç; ö ÁÖöð¼ø í È					
	öÁ; „ þÉöð, - Á:öð, ðÇöð					
14.	S¼; Áç Á;üÈí „ ù « ¼; ÁÐ					
	S¼;ø „ ÁÈöð, ÁÖí „ ù ²üÁí ¼ø					
15.	Á;ö¼ç / Á;ö¼ç ÁÖÁÐ SÁ;ø					
	- ½ ÷ ×					
16.	¼ ° (A) ã ðí ÁÁç					
	ÁÈ;¼;Á; ²üÁí ö « Èð Èç, ù					
17.	±íçí °ø « „ ¼¼ø					
18.	Á¼ö¼ö					
19.	ÁÈ þÜí „ ö					
20.	ÁÈö Ö ç ÁÁç þøÁ;¼ öð¼ø					
21.	„ ÁÈö í È¼ø					

22.	AE S°j≠x					
23.	» jA AE¾c					
24.	±C¾c « Ø ÅÖ¾c					
25.	à i ð¾c A jüEi ü (à i A y A / « ¾c S; Åö à i l ¾c)					
26.	AE l ÅöAö					
27.	S jAA ¼¾c					
28.	jöAç Ay A ÅEi ÅEi ð¾c züA l ö A jU¾c ü					
29.	°ä ð¾c S°A jAø pÖð¾c, Å j j¾c Öö SÅ° jAø pÖð¾c					
30.	µöAy A					
31.	l A ö l öA j l p y A					
32.	AE A l °c					
33.	« ÖAUö0					
34.	¾cE ° j c A ½ c, Ç c - ÷ Å ö l E¾c					
35.	¾cÅE j E ÖE x, Ç ± l ð¾c					
36.	¾cEy l E¾c (SÅ A l °ö0ö SÅ j D ¾cEy l EöD j ½ öA l ¾c)					
37.	SÅ ±ñ ½ l Ç ¾cÖöA ¾cÖöA SÅ j °ö¾c					
38.	ÅÖ l ö ¼ j AA j ÅEi ÅEi l Ç Å j Ø¾c					
39.	Al ð¾cEç x l l A j E j E ±ñ ½ l ü («) S¾c ÅÅö Å j ¾c ±ñ ½ l ü					
40.	« ¾c A j ½ ÷ l °A ö öA l ¾c.					

ANNERURE X

INTERVENTION TOOL – ENGLISH

GUIDELINES FOR ACUPRESSURE AND REFLEXOLOGY

ACUPRESSURE (EXPERIMENTAL GROUP I)

Definition of Acupressure

Acupressure is an ancient Chinese technique based on the principles of acupuncture, and involves the use of finger pressure (without the needles) on specific points along the body.

Acupressure is a way of accessing and releasing blocked or congested energy centers in the body. Chinese cultures believe the points to be junctures of meridian pathways that carry energy called chi. Western scientists have also mapped out and proven the existence of these points using electrical devices.

Acupressure massage therapy stimulates and activates the body's own energies to help fight illness and restore harmony. Some of the acupressure points are significant as they relate to a specific part of the body while others are more general in their effect.

Principles of acupressure work

- ◆ Acupressure massage therapy stimulates and activates the body's own energies to help fight illness and restore harmony. Some of the acupressure points are significant as they relate to a specific part of the body while others are more general in their effect.
- ◆ IT has been accepted as a safe, effective and painless technique to help individuals with various ailments.
- ◆ It is claimed that having acupressure once a week, decreases the chance of developing many illnesses.

For example

1. Energy flow in the body promotes wellness and opens new awareness.
2. Touch and the flow of love from the heart are healing and strengthening.
3. Every person carries their own healing and wisdom within.
4. The purpose of Acupressure is to empower that inherent wisdom.

Acupressure benefits for premenstrual syndrome

Acupressure is similar to reflexology because its basic principle also involves the application of pressure on certain points of the body to effect a therapeutic response in a distant part of the body.

However, the points needed to be stimulated in acupressure are acupuncture points and they are situated on the meridian lines through which qi (or “energy”) flows

- Relieving pain
- Balancing the body
- Maintaining good health.
- Acupressure's healing touch reduces tension
- Increases blood and fluid circulation, and enables the body to relax deeply.
- By relieving stress, acupressure therapy strengthens resistance to disease and promotes wellness.
- Acupressure can help alleviate ailments such as tension, stress, aches and pains, arthritis or menstrual cramps.
- Acupressure can also be used for general preventative health care.

Preparation before procedure

- Explain the procedure to the adolescent girls.
- Procedure to be conducted at least an hour after meal
- Adolescent girls take 5 to 10 minutes rest before the procedure.
- Explain the adolescent girls to do deep breathing exercises for three minutes.
- Make the person to lie in supine position / sit comfortably.

Preparations for the investigator


- Cut short the nails.
- Hand washing should be done.
- Remove the jewellerys.

Duration of treatment session: 20 MINUTES

Frequency of treatment: ONCE IN A WEEK FOR 8 WEEKS

Steps of acupressure

Acupressure Points and Location	Technique / Procedure
----------------------------------------	------------------------------

 <p>1. Sanyinjiao point (San Yin Jiao (S_P6)) This is located on the inside of leg, just above ankle. To find this point, (1) locate the highest peak of the ankle (2) four finger widths up leg, apply deep pressure slightly behind the bone (tibia)</p> <p>2. Grandfather Grandson (S_P4) This point is located in the upper arch of the foot, one thumb width from the ball of the foot. Apply deep pressure slightly behind the bone.</p>	<ol style="list-style-type: none"> 1. The adolescent girls was made to lie down/ sit comfortably 2. The investigator was given acupressure to the alternate legs at the Sanyinjiao point (San Yin Jiao (S_P6) and Grandfather Grandson (S_P4) acupoints. For each pressure cycle on each side S_P6 and S_P4 was pressed with a thumb for 6 seconds and released for 2 seconds without pressure. This was continued for 5 minutes on each point on each leg, to bring the total duration of 20 minutes. 3. Treatment duration 20 minutes (10 minutes each leg) once in a week for 8 weeks
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After care

1. A cup of hot herbal tea would be good after an acupressure session along with a period of deep relaxation.
2. Keep your body warm

REFLEXOLOGY (EXPERIMENTAL GROUP II)

Introduction

Reflexology is the practice of stimulating the hands and feet as a form of therapy

Reflexology is a non medicinal form of treatment in which specific spots on the surface of the body usually the soles or the palms, are methodically pressed with a view to suitably influencing the internal organs of the body.

Reflexology can be defined as a science of stimulating points (usually on the soles or the palms) which have a correspondence or a link with internal organs of the body.

Principles of reflexology work

The underlying theory behind reflexology is that there are "reflex" areas on the feet and hands that correspond to specific organs, glands, and other parts of the body.

For example:

- the tips of the toes reflect the head
- the heart and chest are around the ball of the foot
- the liver, pancreas and kidney are in the arch of the foot
- low back and intestines are towards the heel

Reflexology benefits for premenstrual syndrome

Reflexology technique is based on the principle that there is a link between various points on the feet and hands with other parts of the body. Therefore, reflexology therapists will put pressure on certain areas that aim to stimulate the parasympathetic nerves so the body heal itself.

For example, giving pressure to the area around the foot and the heel is believed to affect the endocrine and reproductive systems so that the symptom of premenstrual syndrome is reduced.

Preparation before procedure

- Explain the procedure to the adolescent girls.
- Procedure to be conducted two hours after meal.
- Adolescent girls take 5 to 10 minutes rest before the procedure.

- Explain the adolescent girls to do deep breathing exercises for three minutes.
- Remove all the jewellerys.
- Instruct the adolescent girls to wash the foot.
- Make the person to lie in supine position.

Preparations for the investigator

- Cut short the nails.
- Hand washing should be done.
- Remove the jewellerys.

Duration of treatment session: 20 MINUTES

Frequency of treatment: ONCE IN A WEEK FOR 8 WEEKS

Steps of hand reflexology

S.N o	Steps (Technique/ procedure)	Figure
I	<p>Step I : Relaxation Exercises</p> <p>◆ Massage the foot all over slowly but firmly to loosen it up, beginning at the toes moving down towards the heel.</p>	

	<ul style="list-style-type: none"> ◆ Using both hands, hold on to the spine area with the palm of the hands- fingers on top of the foot and thumbs on bottom of the foot. ◆ Slowly and gently twist/ wring the hands away from each other in order to gently twist the spine area on the foot. This is a relaxation exercise. ◆ This technique is applied the entire foot 1 minute for each foot 	
<p>II</p>	<p>Step II Thumb Walking</p> <p>This is the most used technique for doing foot reflexology</p> <p>It is easy, can be done for long periods of time without straining your hand and is extremely effective on the feet</p> <p>Thumb walks forward by itself simply by you bending and unbending the thumb.</p> <p>Step 1. Part of the Thumb to use</p> <ul style="list-style-type: none"> ◆ Hands palm together in front of your face and look at the tops of your thumbs ◆ Roll thumbs together at the top slightly so the nails are just touching ◆ Feel the part of thumbs where they are touching each other just on the inside at the top 	<p>Thumb Walking up & down the spine area</p> <p>Spine runs up the inside of both feet</p> <p>thumb walk up ↑</p> <p>Reflexology Foot Chart spine area - thumb walking cross-ways</p> <p>spine</p> <p>thumb walk across the spine for the length of the spine area, then across the other way for the length of the spine area</p>

- ◆ This is the part of the thumb to use when thumb walking, the inside edge of the very top of thumbs, (edge meaning that it is furthest away from the fingers of the same hand when the hand is put flat on a table)

Step 2. Thumb Walking Technique


- ◆ Hold a pen with one hand
- ◆ With the other hand, put thumb on the pen touching it with the part of the thumb described in the first step
- ◆ Bend your thumb
- ◆ Without moving anything else, simply straighten thumb making sure that it stays in contact with the pen

Investigator notice two things

- ◆ Thumb crept slightly forward
- ◆ Able to apply a little bit of pressure with the part of thumb that is touching the pen
- ◆ Repeat; Bend, unbend, bend, unbend
- ◆ Apply pressure at the unbend and creep forward in the bend.
- ◆ Practice this technique slowly and faster

This technique is applied entire foot for 2 minutes in each foot.



	<p>Thumb walking allows to apply stimulating pressure to every single part of the foot, giving a thorough and relaxing treatment</p>	
<p>III</p>	<p>Step III : Stimulate the meridian points</p> <p>Support the toe and use one finger to apply pressure on the meridian point in a circular motion - clockwise, then anti-clockwise. The investigator stimulate the following meridian points</p> <ol style="list-style-type: none"> 1. Ovary 2. Uterus 3. Pituitary gland and endocrine system 4. Solar plexus 5. Adrenal gland 6. Kidney 7. Sympathetic nervous system <p>(1 minute for each point, 7 minutes/foot). Total duration of treatment was 10 minutes/foot (total treatment duration 20 minutes once a week for 8 weeks)</p>	<p style="text-align: center;">Appropriate Foot Reflex Points</p> 

ANNEXURE XI

PHOTOS



Photograph elicits administration of acupressure Sp⁴



Photograph elicits administration of acupressure Sp⁶



Photograph represents the administration of thumb walking in reflexology



Photograph represents the administration of stimulation of meridian points in reflexology

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**A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS
OF ACUPRESSURE Vs REFLEXOLOGY ON PRE MENSTRUAL
SYNDROME AMONG ADOLESCENT GIRLS
IN SELECTED SCHOOLS AT ERODE,
TAMIL NADU**

By

Ms. PADMAVATHI P



49
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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY,
CHENNAI**

In fulfillment of the requirement for the degree of
DOCTOR OF PHILOSOPHY IN NURSING

JUNE 2015

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