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**"Evaluating the Efficacy of Acupressure in Alleviating Pain Perception in
Adolescent Girls with Primary Dysmenorrhoea: A Study at Selected
Government Higher Secondary Schools in Chennai."**

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ABSTRACT:

This study investigates the efficacy of acupressure in mitigating pain perception among adolescent girls experiencing primary dysmenorrhea. Conducted at a chosen Government Higher Secondary School in Chennai, the research aims to contribute valuable insights into non-pharmacological interventions for managing menstrual pain in young girls. A quantitative research methodology will be utilized, employing a pre-post experimental design to evaluate the influence of acupressure on the perception of pain. The sample will consist of adolescent girls currently grappling with primary dysmenorrhea, drawn from the selected Government Higher Secondary School. The participants will be subjected to an organized acupressure intervention, and their pain perception will be measured before and after the application of acupressure techniques. The research will employ standard pain assessment tools to

collect data, ensuring the reliability and validity of the results. Through statistical analysis, the study aims to ascertain whether acupuncture significantly reduces pain perception in adolescent girls with primary dysmenorrhea. The findings of this research hold potential implications for improving the well-being of adolescent girls by offering a non-pharmacological approach to managing menstrual pain. Furthermore, the study may contribute to the growing body of evidence supporting the integration of alternative therapies, such as acupuncture, into conventional healthcare practices for the benefit of this specific demographic.

Keywords: acupuncture, non-pharmacological, menstrual pain, adolescent girls, dysmenorrhea

INTRODUCTION:

“Life is not merely to be alive, but to be well.”

- Marcus Valerius Martial

Adolescence represents the transitional phase from the innocence of childhood to the maturity of adulthood, encompassing the period from puberty to full adulthood. This stage is marked by significant physiological transformations, the emergence of sexual awareness, endeavors in identity formation, and a shift from concrete to abstract thinking.

Menarche, the initial menstrual period in girls, symbolizes the onset of womanhood and the process of growing up. This milestone can occur as early as around the age of 9 or as late as the age of 15. Menstruation can be defined as a periodic physiologic discharge of blood mucous and other cellular debris from the uterine mucosa.

Dysmenorrhea is the clinical term for menstrual cramps, referring to pain experienced during menstruation attributed to elevated prostaglandin levels in the menstrual fluid. The signs and symptoms are lower abdominal pain, backache, headache, body pain etc[1-7].

As outlined menstruation, despite being considered a regular physiological occurrence, can be one of the most discomforting experiences in a woman's life. The discomfort associated with menstruation is termed "Dysmenorrhea." Managing dysmenorrhea without medication is regarded as the healthiest and safest approach to

prevent potential complications in a woman's life. Reports indicate a significant shift in pain management choices for women experiencing dysmenorrhea over the last decade. Dysmenorrhea, commonly known as painful menstruation, stands out as one of the prevalent gynecological issues. The onset of dysmenorrhea typically occurs in adolescence, usually within four to five years after the first menstrual period. However, the frequency of painful periods tends to decrease as women age. Dysmenorrhea can manifest as either primary or secondary. Primary dysmenorrhea is characterized by painful menstrual cramps without any discernible pathology to explain them, encompassing any level of perceived cramping pain during menstruation. Among young women, primary dysmenorrhea is widely prevalent, estimated to affect 40-50%, with severe cases leading to work or school absenteeism in 15%. Surveys of adolescent girls reveal that over 90% report experiencing menstrual cramps.

On the other hand, secondary dysmenorrhea is associated with an underlying medical condition. The primary causes of secondary dysmenorrhea include endometriosis, ovarian cysts, pelvic congestion, and adenomyosis. Dysmenorrhoea results from contractions of the uterus. The uterus is an organ lined with muscle layers that contract and relaxes. During menses, the contractions are stronger and cause pain. These contractions are stimulated by pain-triggering hormones called prostaglandins. The level of prostaglandins increases just before the cycles start and then drops off with the onset of the menstrual flow. The variation on prostaglandin level is directly related to the duration of pain. In fact, the pain starts with menses, peaks during the first days, then subsides and disappears as the cycle progresses. The discomfort associated with dysmenorrhea is often described as cramping, typically centered in the lower abdomen above the pubic bone (suprapubic region), with some women experiencing intense pain in the back or thighs. This pain typically commences just before or coincides with the onset of menstrual bleeding, gradually diminishing over a span of one to three days. The intensity of pain varies, ranging from mild to incapacitating, and may occur intermittently. Additional symptoms accompanying cramps can include nausea, diarrhea, dizziness, fatigue, headache, or a flu-like sensation [8-15].

Menstrual cramps exhibit a spectrum from mild to severe. Mild cramps may be subtle, occasionally sensed as a light heaviness in the abdominal region. Conversely, severe menstrual cramps can be so intense that they hinder a woman's regular activities for

several days. Globally, the prevalence of dysmenorrhea varies widely, ranging from 15.8% to 89.5%. In India, the prevalence spans from 16.8% to 81%, with a specific prevalence in Karnataka reported at 87.87%. Menstrual cramps can be very painful and sometimes occur throughout a woman's period. Women may be used to popping pain relievers to treat menstrual cramps, but the overuse of over-the-counter pain relievers can cause additional medical problems. It is ideal to find a natural method to relieve menstrual cramps. The inclination towards alternative and complementary therapies is on the rise, representing a novel approach to healthcare. Alternative therapies are frequently regarded as comfort measures or non-pharmacologic techniques for pain control. In the context of dysmenorrhea, various widely adopted methods include the application of heat or cold, acupressure, acupuncture, and aromatherapy. Acupressure therapy is one of the most precious gifts to humankind from the creator himself. According to research these measures focused on enhancing comfort aim to reduce tension and alleviate pain during menstruation. In the United States, nurses are encouraged to adopt a holistic approach in their caregiving roles, including participation in acupuncture training programs. As a result, we strongly recommend mainstream nurses to explore bodywork techniques such as acupressure and shiatsu, integrating them into practice to enhance the impact of pain medication and promote comfort.

Natural and holistic treatments offer a milder and safer alternative to mitigate the pain and discomfort associated with menstrual cramps. Among all remedies, acupressure has been found helpful to alleviate dysmenorrhea or menstrual cramps. Acupressure at Spleen-6 or Sanyinjiao acupoint or SP6 point has also been found to be very helpful and it has analgesic effect to reduce dysmenorrhea [16-23].

NEED FOR THE STUDY

Dysmenorrhea stands as a primary cause of recurrent, short-term school absences among adolescent girls and is a prevalent issue in women of reproductive age. Approximately 10-45% of young women experiencing dysmenorrhea report either missing or reducing their time spent on work, school, or other activities due to the associated symptoms. Dysmenorrhea has the potential to impact over half of menstruating women, with its prevalence exhibiting considerable variability. Estimates suggest that around 25–50% of adult women and about 75% of adolescents

encounter pain during menstruation, and a subset of 5–20% reports experiencing severe pain that hinders them from engaging in their routine activities.

Pain during menstruation, known as dysmenorrhea, affects a significant percentage, ranging from 40% to 90%, of menstruating women and is identified as one of the most common causes. This condition is a prevalent reason for regular absenteeism among young women. Dysmenorrhea is categorized into two types: primary and secondary. Primary dysmenorrhea entails painful menstruation without any detectable organic disease and is more frequently observed in adolescent women. On the other hand, secondary dysmenorrhea involves painful menstruation often associated with pelvic pathology. The survey delves into the symptoms associated with dysmenorrhea, available management and treatment options, and discusses the implications for nursing practices. Symptoms present in the lower abdomen back or thighs, headache, diarrhea, constipation, nausea,

dizziness and fainting. Throughout the menstrual cycle, the uterus lining generates a hormone triggering contractions, which can be painful. In cases of severe cramps, individuals may either produce an elevated level of prostaglandins compared to normal or exhibit increased sensitivity to its effects.

A broad spectrum of non-pharmacologic and pharmacologic approach was used to relieve pain in dysmenorrhoea. Non-pharmacologic measures to reduce dysmenorrhoea had been used throughout the history. Despite of the reports, some of the methods that reduce pain increase woman's satisfaction [24-29].

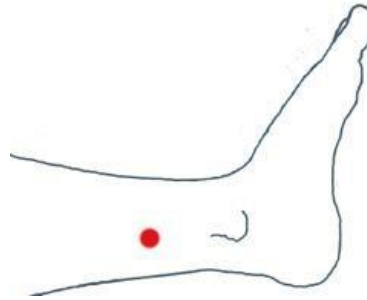
OBJECTIVES

- Evaluate the degree of menstrual pain in adolescent girls before intervention, distinguishing between the experimental and control groups.
- Examine the level of menstrual pain in adolescent girls after intervention, making a comparison between the experimental and control groups.
- Compare the pain scores during menstruation before and after intervention in both the experimental and control groups.
- Determine the efficacy of acupressure by analyzing the changes in menstrual pain intensity before and after intervention, specifically in the experimental group versus the control group.
- Investigate the correlation between pretest and posttest pain levels among adolescent girls in the experimental group concerning various demographic variables.

OPERATIONAL DEFINITIONS

- 1. Effectiveness:** This pertains to the effectiveness of applying acupressure at the Sanyinjiao acupoint in alleviating menstrual pain among adolescent girls.

Fig 1: Acupressure Point



2. **Acupressure:** Involves applying finger or hand pressure to the Sanyinjiao acupoint, situated on the inner side of the lower leg. It is positioned 3 proportional inches above the prominence of the medial malleolus, within a depression near the medial crest of the tibia. To utilize acupressure for alleviating menstrual pain, identify the most sensitive area and apply pressure, holding it for up to 10 minutes (Fig 1).
3. **Primary dysmenorrhea:** Describes the pain linked to menstruation in the absence of any underlying medical condition.
4. **Adolescent girls:** Denotes females aged 12 to 19 years who are currently undergoing dysmenorrhea.

ASSUMPTIONS

- The research operates under the assumption that dysmenorrhea is a prevalent issue among adolescent girls.
- The study posits that acupressure is effective in alleviating dysmenorrhea in adolescent girls.

HYPOTHESES

H₁: The use of acupressure is expected to decrease dysmenorrhea among adolescent girls.

H₂: A notable correlation is anticipated between the efficacy of acupressure and specific demographic factors.

DELIMITATION

- The scope of the research is confined to adolescent girls experiencing primary dysmenorrhea.
- The study is limited to a duration of four weeks.

REVIEW OF LITERATURE

Examining existing literature is a crucial phase in the research process. The primary aim of analyzing or reviewing available literature is to formulate research questions, ascertain the existing knowledge, and identify gaps in understanding a particular subject. The primary objective of the literature review is to establish a robust knowledge foundation for conducting research and engaging in various scholarly activities, both research-related and non-research-oriented. The review consists of two parts:

1. PART – A: REVIEW OF RELATED STUDIES

- *Section A:* Literature related to prevalence and its effects of dysmenorrhea on adolescent girls.
- *Section B:* Literature related to effect of acupuncture in reducing general pain.
- *Section C:* Literature related to acupuncture for menstrual pain management.

2 PART – B: CONCEPTUAL

FRAMEWORK

PART A: REVIEW OF LITERATURE

Section – A: Literature related to prevalence and its effects of dysmenorrhea on adolescent girls:

A study is conducted which was aimed to investigate prevalence of dysmenorrhea among adolescent girls (14-19 years) in Kadapa district and also to study the various symptoms and its impact on the quality of life, a total number of 183 adolescent girls were participating and it was shown that out of 183 adolescent girls 119 (65%) were dysmenorrhic and

68.4% and 61.2% were from urban and rural areas respectively and sickness absenteeism was found among 47.9% dysmenorrhic girls[30].

A study conducted to assess the frequency of dysmenorrhea among 706 female adolescents in Kerala, encompassing grades 9 through 12. The participants completed a 31-item questionnaire at a local urban high school, providing information on the presence, duration, severity, treatment, and impact of dysmenorrhea on academic performance, school attendance, sports, and social activities. The findings revealed that among those who had menstruated in the previous three months, 85% reported experiencing dysmenorrhea. Of this group, 38% acknowledged missing school due to dysmenorrhea in the preceding three months, with 33% reporting specific class absences. Dysmenorrhea adversely affected various activities, including class concentration (59%), sports participation (51%), class engagement (50%), socialization (46%), homework completion (35%), test-taking skills (36%), and grades (29%). The primary treatment sought for dysmenorrhea was exercise, with a prevalence of 15%. The study highlights the high prevalence of dysmenorrhea among adolescents and its association with school absenteeism and limitations in social, academic, and sports activities.

Researcher conducted a study in West Indies to determine the prevalence of dysmenorrhea on Hispanic female adolescents shows that 85% of them reported dysmenorrhea, 38% reported missing school due to dysmenorrhea, 33% reported missing individual classes. Activities affected included class concentration [59%], sports [51%], class participation [50%], socialization [46%], and homework [35%], test-taking skills [36%], and grades [29%]. Treatment taken for dysmenorrheal included rest [58%], medications [52%], heating pad [26%], tea [20%], exercise [15%] and herbs [7%]. The research findings suggest that adolescent girls experiencing dysmenorrhea face challenges related to school attendance, concentration, and various daily activities.

An exploratory study aiming to establish a correlation between the prevalence of dysmenorrhea and its associated symptoms among 970 adolescent girls aged 15-20 years in Pre-university colleges of Gwalior. The findings indicated that 79.67% of the participants experienced dysmenorrhea, with 37.96% reporting regular severity in dysmenorrheal episodes. The three most frequently reported symptoms over the three days were fatigue, depression, and an inability to concentrate on work, in that order [31-36].

A research study in India focusing on issues related to menstruation among adolescent girls. The study aimed to explore the types and frequency of problems associated with menstruation in this demographic and examine the impact of these problems on their daily routines. The study subjects, with more than a third (35.9%) falling within the age group of 13-15 years, followed by those aged 17-19 years and 15-17 years. The mean age of the participants was calculated to be 16.2 years. The most prevalent problem reported was dysmenorrhea, affecting 67.2% of the participants, and 63.1% exhibited symptoms of Pre-menstrual syndrome (PMS). Other related problems were present in 55.1% of the study subjects. The daily routines of 60% of the girls were adversely affected, leading to prolonged bed rest, missed social activities/commitments, disturbed sleep, and decreased appetite. Additionally, 17.24% had to miss a class, and 25% had to abstain from work. Mothers and friends emerged as the most common sources of information on the subject. A research study in Delhi focusing on dysmenorrhea in adolescent girls within a rural area, employing a community-based survey. The cross-sectional study aimed to ascertain the prevalence of dysmenorrhea in this demographic. The dysmenorrheic girls had a mean age of menarche reported at 12.8 years. Among the 96 girls in the adolescent age group, the prevalence of dysmenorrhea was notably high, reaching 70.8%. Dysmenorrhea demonstrated a significant correlation with the mean duration of menstrual flow, alongside a reportedly elevated use of sanitary pads.

A study in Mansoura, Egypt, focusing on the epidemiology of dysmenorrhea among adolescent students. The study aimed to investigate the prevalence, determinants, impact, and treatment practices associated with dysmenorrhea. A total of 664 female students from secondary schools in both urban and rural areas were included, and data were collected through a self-administered questionnaire. The findings revealed that approximately 75% of the students experienced dysmenorrhea, categorized as mild (55.3%), moderate (30.0%), and severe (14.8%). Despite this, a majority did not seek medical advice, with 34.7% opting for self-treatment. Common associated symptoms included fatigue, headache, backache, and dizziness. While 47.4% of students with dysmenorrhea reported no limitations in their activities, this was significantly more prevalent among those with severe dysmenorrhea. The study identified older age, irregular or long menstrual cycles, and heavy bleeding as significant predictors of dysmenorrhea.

A study on primary dysmenorrhea in young women in Western Australia, aiming to explore the prevalence of dysmenorrhea among senior high school girls in Perth. The study also investigated the impact of dysmenorrhea on school, sporting, and social activities, along with the management strategies employed by students and their knowledge of available treatments. A total of 388 female students in Grades 11 and 12 from three metropolitan secondary schools participated in the study, completing an anonymous questionnaire administered during class time. The definition of dysmenorrhea used encompassed any type of pain or discomfort associated with menstrual periods, including cramps, nausea, and headaches. The findings indicated that 80% of the girls reported experiencing dysmenorrhea, and among those with dysmenorrhea, 53% reported limitations in their activities.

A comparative cross-sectional study on dysmenorrhea and its management among 101 girls in urban areas and 79 girls in rural areas in the district of Karimnagar, Andhra Pradesh. A pretest questionnaire was administered to 180 adolescent girls in both urban and rural settings. The findings revealed that the prevalence of dysmenorrhea was 54%, with 53% in girls in urban areas and 56% in girls in rural areas ($\chi^2(df) = 0.1, P = 0.05$). Sickness absenteeism ranged from 28% to 48%, with higher rates in urban areas, along with more pronounced socio-

economic and perceived quality of life losses among urban girls compared to rural girls. The study concluded that dysmenorrhea is common among adolescent girls, and absenteeism is more prevalent among those in urban areas.

A descriptive study to find the prevalence of dysmenorrhoea among high school girls in Masjed solayman khzestan, Iran. About 660 students participated in this study. Overall prevalence of dymenorrhoea was 84.2%. The intensity of dysmenorrhea was reported at 78.0%, with factors such as age at menarche ($p < 0.05$) and duration of menstrual flow ($p < 0.05$) being associated with dysmenorrhea. The findings revealed that 60% of the respondents experienced dysmenorrhea, impacting their daily activities. The study concluded that dysmenorrhea is highly prevalent among adolescents, and there exists a significant correlation between dysmenorrhea and current biological factors.

A cross-sectional study involving 1092 girls from 15 public secondary schools and three ethnic groups at the University of Malaya, Kuala Lumpur. The study aimed to determine the prevalence of dysmenorrhea, assess its impact, and examine the treatment behavior of adolescent girls. The findings revealed that overall, 74.5% of girls who had reached menarche experienced dysmenorrhea. Among these girls, 51.7% reported that it led to school absenteeism, and 12% indicated that it resulted in poor school performance. The results underscored the necessity for specific management strategies for menstrual pain among adolescent schoolgirls [37-40].

Section – B : Literature related to effect of acupressure in reducing general pain.

A controlled single-blind study in the UK to evaluate the analgesic effect of acupoint pressure on postoperative pain. Forty patients undergoing knee arthroscopy in a university-affiliated hospital's ambulatory surgery unit were randomly assigned to receive either active stimulation (AS) or placebo stimulation (PS) 30 minutes after awakening from anesthesia. In the AS group, 15 classical acupoints were stimulated on the side contralateral to surgery using firm pressure and a gliding movement across the acupoints. In the PS group, 15 non-acupoints received light pressure in the same areas as the acupoints in the AS group. Pain was assessed using a 100-mm visual analogue scale (VAS) before sensory stimulation, after 30 and 60 minutes, and after 24 hours. Heart rate, systolic arterial pressure, and skin temperature were recorded

before stimulation and after 30 and 60 minutes. Skin blood flow was assessed with laser Doppler before stimulation and after 1 and 30 minutes. Sixty minutes and 24 hours after AS, VAS pain scores were lower than in the placebo group ($p < 0.05$ and 0.0001 , respectively). The results suggested that pressure on acupoints can effectively reduce postoperative pain.

A randomized control study to investigate the impact of acupressure treatment on labor pain and the length of delivery time in Andhra Pradesh. Data were gathered through a structured questionnaire, a subjective labor pain scale, and measurement of delivery time. The experimental group ($n=29$) received SP6 acupressure, while the control group ($n=29$) received SP6 touch for the duration of each uterine contraction, starting 30 minutes after 3 cm dilatation of the cervical os. The results indicated a significant difference in subjective labor pain scores between the two groups ($p=0.042$). The total length of delivery time in the SP6 acupressure group was shorter than the SP6 touch group ($p=0.036$). These findings suggest that SP6 acupressure was effective in reducing labor pain and shortening the duration of delivery. Applying SP6 acupressure during labor could be considered as an effective nursing treatment.

A crossover single-blind experimental study to assess the effectiveness of acupressure in reducing pain during intramuscular injections at a hospital in Trichy. Out of 64 patients, 50 (78%) received penicillin injections, and 14 (22%) received penicillin G plus procaine injections. Each participant received an injection with acupressure applied to one buttock and an injection without acupressure to the other buttock. The perception of pain was measured using a visual analogue scale. The results revealed that the perceived pain intensity was, on average, 2.5 units lower in the acupressure group compared to ordinary injections.

A study in comparison of medications and acupressure on head ache with the sample size of 28 patients having chronic head ache in Karnataka. After the one month of treatment, the pain rating on visual analogue scale were significantly lower in acupressure group 3.2 vs. 55.7 in medication. The study results showed acupressure is more effective in reducing headache.

A study to assess the impact of acupressure administered during the active phase of labor on pain ratings among nulliparous women at JK Hospital, Karnataka. The results

indicated a reduction in labor pain in the acupressure group, particularly immediately after treatment. The study concluded that acupressure appears to alleviate pain during the active phase of labor for nulliparous women delivering in a setting where social support and epidural analgesia are not available. Additionally, it suggested that acupressure may be most effective during the initial phase of labor.

A randomised control trial in Taiwan on effectiveness of acupressure in reducing back pain. 129 patients were randomly selected with chronic low back pain and acupressure was given for one month. The data collection utilized the Visual Analog Scale (VAS). The findings demonstrated that the average total score following treatment was notably lower in the acupressure group in comparison to the physical therapy group. Acupressure resulted in an 89% reduction in disability compared to the effects of physical therapy.

A crossover single-blind experimental study to evaluate the effectiveness of acupressure in reducing pain during intramuscular injections. The study included patients prescribed penicillin for a minimum of two daily doses. Each participant received injections with acupressure applied to one buttock and injections without acupressure to the other buttock, with the conditions randomly allocated. Pain perception was measured using a visual analogue scale. Sixty-four patients were enrolled, with 50% being female and a mean age of 28 ± 9.9 years. Among them, 78% received penicillin 6.3.3, and 22% received penicillin G plus procaine. The mean score for perceived pain intensity during acupressure injections was 3 ± 2 , while the mean score for injections without acupressure was 5 ± 2 . The results indicated that the perceived pain intensity was on average 2.5 points lower in the acupressure group compared to ordinary injections ($P < 0.000$). The findings suggest that acupressure can effectively reduce the pain associated with intramuscular injections [41-43].

A study to assess the impact of acupressure during the active phase of labor on nulliparous women at a public hospital in India. A total of 212 women were randomly assigned to three groups: the acupressure group (received acupressure at spleen 6 on both legs during contractions), the touch group (received light touch at spleen 6 on both legs), and the standard care group. Labor pain was evaluated using a visual analog scale at baseline, immediately after treatment, and at 30, 60, and 120 minutes post-treatment. The findings indicated a reduction in labor pain in the acupressure

group, particularly immediately after treatment. The study suggests that acupressure is most effective during the initial phase of labor.

A study to assess the effect of acupressure on low back pain was conducted with sample size of 146 participants with chronic back pain in India. The participants were randomly allocated to either the acupressure group or the physical therapy group. Pain assessments were conducted before the intervention as a baseline and after the treatment using a pain questionnaire. The average pain score following a four-week treatment in the acupressure group (2.28, SD=2.62) was notably lower than that observed in the physical therapy group (5.05, SD=5.11), signifying a significant difference. The results suggested that acupressure is more effective [44-45].

Section – C : Literature related to acupressure for menstrual painmanagement.

A study which was aimed to investigate the effectiveness of acupressure on primary dysmenorrhea in Calcutta and the result showed that acupressure at Sanyinjiao or SP6 point has significantly reduced the symptoms of dysmenorrhea. It is non-invasive nursing intervention for the alleviation of primary dysmenorrhea. Not only did it serve as an intervention for nurses in managing patients with dysmenorrhea, but also showed that acupressure can be adopted as a self-help measure in relieving primary dysmenorrhea for adolescent girls.

A study to evaluate the effectiveness of Sanyinjiao acupoint on primary dysmenorrhea among adolescent girls in Kerala which was an experimental study and total 69 participants were participate among them 35 were in experimental group and 34 were in control group, and experimental group has received acupressure for 20 minutes about 3 months. Acupressure at Sanyinjiao point has reduced the pain and anxiety significantly during dysmenorrhea and 87% of experimental group said acupressure was helpful and 94% were satisfied with the acupressure in terms of pain relief and psychological support during dysmenorrhea.

A study to assess the efficacy of applying acupressure to the Sanyinjiao acupoint in alleviating pain and menstrual distress associated with dysmenorrhea in Kadapa district. Forty participants experiencing dysmenorrhea were randomly assigned to either the acupressure group or the control group. The acupressure group received a 20-minute session of SP6 acupressure, while the control group was instructed to rest without any intervention. The experimental group demonstrated a statistically significant reduction in pain scores [46-48].

A research study to assess the impact of acupressure on primary dysmenorrhoea among Iranian medical science students. The study employed a randomized controlled pre- and post-test design to examine the effects of applying SP6 acupressure on dysmenorrhoea. A total of 30 young female college students experiencing primary dysmenorrhoea were randomly divided into two groups: the intervention group, consisting of 15 participants, and the control group, comprising 15 members. The intervention involved applying acupressure, and the researchers utilized a visual analogue scale to measure pain and evaluate the intervention's effectiveness. The study concluded that acupressure on the SP6 meridian can serve as an effective and non-invasive nursing intervention for alleviating primary dysmenorrhoea, with its effects lasting up to 3 hours post-treatment.

An evaluative study in Australia to determine the effectiveness of acupressure in reducing dysmenorrhea. The research design employed a pre-experimental one-group pretest-posttest design, with a sample comprising 30 B.Sc nursing students aged between 18-21 years. Convenient sampling was used to select the participants. Numerical pain rating scales and self-administered rating scales were employed to assess discomfort during menstruation. Descriptive and inferential statistics were

utilized for data analysis. The results indicated that the mean posttest scores (35.33%) were lower than the mean pretest scores (53.67%), signifying a reduction in dysmenorrhea scores following acupressure. The paired 't' test ($t_{29}=6.26$, $P<0.05$) demonstrated a significant difference between dysmenorrhea scores before and after acupressure, indicating the effectiveness of acupressure in reducing dysmenorrhea.

A experimental study in Hong Kong to assess the effects of Sanyinjiao (SP6) acupressure in alleviating pain levels and menstrual distress associated with dysmenorrhea. The experimental group comprised 40 students experiencing dysmenorrhea, while the control group consisted of 21 students from a nursing school in Hong Kong. Data were collected using a Pain Visual Analogue Scale (PVAS), the Short-Form McGill Pain Questionnaire (SF-MPQ), and the Short-Form Menstrual Distress Questionnaire (SF-MDQ). The results demonstrated a statistically significant decrease in pain scores on the Pain Visual Analogue Scale ($p=0.003$) and Short-Form McGill Pain Questionnaire ($p=0.02$) immediately after 20 minutes of SP6 acupressure.

An experimental study in Iran to evaluate effect of acupressure on primary dysmenorrhoea in Iranian medical science students. The sample was 30 young college female students with primary dysmenorrhoea. The control group comprised 15 female students of Iranian medical science. The data was collected using visual analogue scale. The result showed significant difference in the scores of dysmenorrhoea between the two groups immediately after (3.50 ± 1.42 v/s 5.06 ± 1.4 , $p=0.004$) and also 3 hours after treatment (1.60 ± 1.98 v/s 4.80 ± 1.37 ,

p=0.000) and students within normal range of Body Mass Index and students with moderate flow of menstruation got reduced pain score.

A Researcher carried out a quasi-experimental study in Korea to examine the impact of acupressure on dysmenorrhea and variations in skin temperature among college students. The sample was 58 young college women studying at two universities at Korea with primary dysmenorrhoea. The data was collected using visual analogue scale. The result showed significant difference between two groups immediately after (F=18.50, p=0.000) and up to two hours (F=8.04, P=0.032) post treatment [49-50].

Ozgoli Giti and colleagues (2008) conducted an experimental study in Iran to investigate the impact of acupressure at the Sanyinjiao point on primary dysmenorrhea. Eighty-six students of Northern Khorasan University of Medical Sciences, Bojnoord, Iran were selected randomly. The data was analysed using SPSS. The result showed that the acupressure caused decline in the severity of dysmenorrhoea immediately after intervention more in study group (p<0.05) rather than the control group.

An experimental study to evaluate the effects of acupressure at the Sanyinjiao point on symptoms of primary dysmenorrhea among adolescent girls. The experimental group (n=35) received 20 minutes of acupressure at Sanyinjiao, while the control group (n=34) rested for 20 minutes without acupressure. Follow-up sessions were completed by 50 participants (30 experimental, 20 control). The study demonstrated that acupressure at the Sanyinjiao point reduced pain and anxiety during dysmenorrhea. The results suggest that acupressure at Sanyinjiao could be an effective, cost-free intervention for alleviating pain and anxiety associated with dysmenorrhea.

PART – B: CONCEPTUAL FRAMEWORK :

Conceptual framework for this study was developed on the basis of Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory. She proposed her theory in 1970 as a prescriptive theory of nursing. Prescriptive theory guides action toward a specific objective and comprises three essential components: central purpose, prescription, and realities. The nurse formulates a prescription aligned with a central purpose and executes it in consideration of the situational realities. The central purpose within this model signifies the nurse's desired achievement. It represents the overarching objective that a nurse aims for, surpassing the immediate goals of tasks and assignments, and distinctly guiding activities toward the well-being of the patient (Fig 2).

A. Prescription, in this context, pertains to the patient's care plan. It outlines the type of action required to fulfill the nurse's central purpose and provides the reasoning behind that particular course of action.

B. Realities encompass the tangible, physiological, emotional, and spiritual aspects inherent in a nursing scenario. Wiedenbach identifies five key realities: agent, recipient, goal, means, and framework, which collectively influence nursing actions within a given situation.

- Wiedenbach perceives nursing as an artistic pursuit centered on providing purposeful care with a defined objective.
- Wiedenbach's conceptualization of nursing practice aligns closely with the sequential stages of assessment, implementation, and evaluation within the nursing process.
- In her perspective, effective nursing practice requires a combination of factual and speculative knowledge, sound judgement, and honed skills.

Wiedenbach's nursing practice involves recognizing a patient's requirements for assistance, delivering the necessary aid, and confirming the fulfillment of the identified needs.

Wiedenbach perceives the patient as a unique individual shaped by distinct experiences, emphasizing the importance of comprehending the patient's perspective on their condition. The assessment of a patient's need for assistance involves considering the presence of a requirement, the patient's awareness of the need, obstacles hindering self-fulfillment, and the patient's inability to independently meet the identified need [51-53].

CENTRAL PURPOSE :

The primary objective of the research is to alleviate the menstrual pain experienced by adolescent girls during their menstrual periods.

PRESCRIPTION :

The researcher formulates a prescription to achieve the central purpose, aiming to diminish menstrual pain. In this process, the investigator opted for acupressure therapy, a method acknowledged for its safety and efficacy in reducing menstrual pain without significant adverse effects.

IDENTIFICATION :

This involves recognizing the necessity to alleviate pain perception in adolescent girls.

MINISTRATION :

It involves administering acupressure therapy to alleviate menstrual pain.

VALIDATION :

It involves assessing the success of acupressure therapy. If adolescent girls express satisfaction with reduced pain perception through acupressure therapy, it confirms a positive outcome, and the intervention is strengthened.

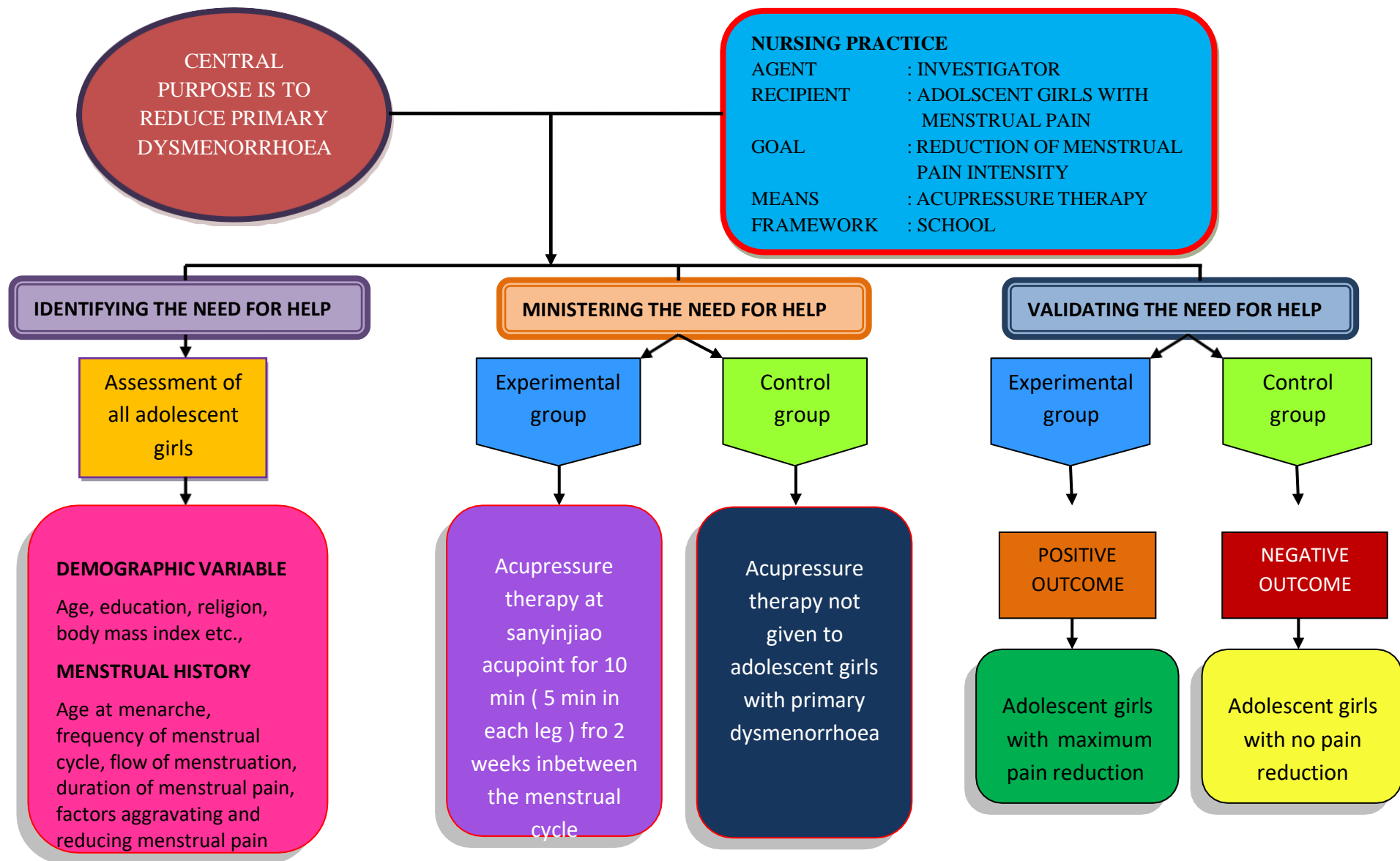


Fig 2: Conceptual framework based on Modified Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory

RESEARCH METHODOLOGY

Research methodology represents a structured approach to addressing a problem. In this research, it encompasses the different steps typically undertaken by the researcher to explore the research issue, together with the rationale for each step. The present study is aimed at assessing the effectiveness of acupressure on pain perception among adolescent girls with primary dysmenorrhea (Fig 3).

This article deals with description of methodology and different steps which are undertaken for collecting and organizing data for investigation. It comprises the design of the research, the approach taken, the study's environment, the population under examination, the sample and the technique employed for sampling, criteria for sampling, creation and elaboration of the research tool, ensuring content validity, assessing reliability, ethical considerations, conducting a pilot study, detailing the procedure for data collection, and outlining the process for data analysis.

RESEARCH APPROACH:

The selection of a research approach holds paramount importance in any research endeavor. The suitability of the chosen research approach is contingent upon the goals of the study in question. To fulfill the primary objectives of the research, a quantitative approach was opted for, specifically employed to evaluate the extent of pain encountered by adolescent girls during menstruation and the subsequent alleviation of pain through acupressure intervention.

RESEARCH DESIGN :

The comprehensive strategy devised to obtain solutions to research inquiries or to examine research questions is denoted as the research design. The essential question that research design is concerned with is how the study subjects will be brought into the research and how they will be employed within the research design. **Quasi-experimental design** was adopted for this study.

In this design the investigator measured the level of pain during menstruation in experimental group with acupressure therapy and in control group without acupressure therapy. Adapted numerical categorical pain scales were employed to evaluate the pain intensity within both groups, serving as subjective measures of pain (Table 1).

Table 1: Quasi-experimental design

Group	Pretest	Manipulation	Posttest
Experimental group	O ₁	X	O ₂
Control group	O ₁	-	O ₂

VARIABLES :

Variables are characteristics that vary among the subjects being studied. It is the focus of the study and reflects the empirical aspects of the concepts being studied, the investigator measures the variable.

i. Dependent variable :

The dependent variable constitutes the response, behavior, or outcome predicted or elucidated in research. Variations in the dependent variable are either directly caused by or attributed to changes in the independent variable. In this study, level of pain experienced by adolescent girls during menstruation is the dependent variable.

ii. Independent variable :

Independent variable is a variable which influences the dependent variables.

In this study, acupressure therapy is the dependent variable.

iii. Demographic variables :

This contains baseline information of adolescent girls: age, education, religion, type of family, dietary pattern and body mass index.

iv. Menstrual variables :

This contains the information relevant to menstrual cycle, its frequency, duration and the level of pain experiencing during menstruation.

SETTING OF THE STUDY:

The study was conducted in two different Schools as in Presidency Government Girls Higher Secondary School, Egmore for experimental group and in Government Girls Middle School, Egmore for control group and teaches about 900 girls and 600 girls respectively. Students coming under the inclusion criteria were selected for the study. The setting was chosen on the basis of the feasibility in terms of availability of the subjects who were adolescent girls with primary dysmenorrhoea at the time of study.

STUDY POPULATION :

Population is a group whose members possess specific attributes that researchers interested in studying. In this study the population includes all the adolescent girls with primary dysmenorrhoea in Presidency Government Girls Higher Secondary School, Egmore and in Government Girls Middle School, Egmore which fulfil the inclusion criteria.

SAMPLE:

Sample is a subset of population. Adolescent girls with primary dysmenorrhoea who fulfil the inclusion criteria were considered as sample.

SAMPLE SIZE:

The sample size of the study was **60 adolescent girls** with primary dysmenorrhoea (30 in experimental group and 30 in control group) who fulfil the inclusion criteria.

SAMPLING TECHNIQUE :

Sampling technique is an important step in research process. It is the process of selecting representative units or subsets of a population of the study research.

Non-Probability Convenient Sampling technique was used by the researcher to select the sample i.e. adolescent girls with primary dysmenorrhoea.

CRITERIA FOR SAMPLE SELECTION :

The Criteria for sample selection are mainly depicted under two headings, which includes the inclusion criteria and exclusion criteria.

a. Inclusion criteria:

- Adolescent girls who have attained menarche and having primary dysmenorrhoea.
- Adolescent girls aged between 12 and 18 years.
- Parents of the adolescent girls who are willing to participate in the study.

b. Exclusion criteria:

- Adolescent girls who attained delayed menarche.
- Adolescent girls who are having secondary dysmenorrhoea.
- Adolescent girls who are not able to understand either Tamil or English.

DEVELOPMENT AND DESCRIPTION OF THE TOOL :

After an extensive review of literature and discussing with the experts the modified numerical categorical pain scale was used to assess the level of dysmenorrhoea among adolescent girls. The tool consist of six sections

Section - A :

It is comprised of 5 items seeking information on demographic data of the adolescent girls like age, education, religion, dietary pattern and body mass index.

Section - B :

It is comprised of 10 items seeking information on menstrual data of the adolescent girls like age at menarche, type of menstrual cycle, duration of menstruation, flow of menstruation, duration of pain, factors aggravating and reducing dysmenorrhoea, last menstrual period etc..,

Section - C :

It consists of 5 point rating scale used to assess the symptoms of dysmenorrhoea includes physiological and psychological like lower abdominal pain, headache, backache, fatigue etc., and irritability, nervousness, difficulty in concentration, anger etc., respectively.

Section - D :

It comprises a modified numerical categorical pain scale utilized by adolescent girls to indicate the extent of pain felt during menstruation. This scale is structured with numbers ranging from zero (0) to ten (10), and based on the intensity of pain experienced, the adolescent girls are required to mark the scale using a marker.

- 0 - No pain
- 1-3 - Mild pain
- 4-6 - Moderate pain
- 7-9 - Severe pain
- 10 - Excruciating pain

Section - E :

Intervention :

In this study acupressure therapy at sanyinjiao acupoint referred to pressing the acupoint with thumb finger for 10 minutes (5 minutes in each leg)to reduce the level of dysmenorrhoea experienced by the adolescent girls.

The investigator administered acupressure for two weeks (twice in a week) in between the menstrual cycle for experimental group and not for control group. The level of dysmenorrhoea and its symptoms are assessed by the subjective pain assessment tool and rating scale respectively during menstruation by the adolescent girls in experimental group and the same procedure is adopted in control group without acupressure therapy.

Section - F :

It consists of 5 point rating scale with 15 items to assess the level of satisfaction of acupressure therapy on dysmenorrhoea.

ETHICAL CONSIDERATION :

Formal permission was obtained from the institutional ethical committee before the conduction of the study. No ethical issues aroused during the course of the study.

TESTING OF THE TOOL :

Content validity :

Validity refers to the degree to which an instrument measures what is suppose to measure. Content validity pertains to the extent to which the elements within a tool effectively capture the entirety of the content universe. To ensure content validity of the tools, the tools like demographic data, menstrual data, rating scale on assessment of symptoms of dysmenorrhoea and level of satisfaction of acupressure on dysmenorrhoea, modified numerical categorical scale were

submitted to five experts comprising of three Nurse Educators in the field of Obstetrical and Gynaecological Nursing, one medical expert and one statistician. The modifications and suggestions were incorporated in the tool.

Pilot study :

Pilot study is a small scale version or trial run done in preparation for a major study. The instrument was employed in a pilot study to assess its viability and practicality. Formal approval was obtained from the Chief Educational Officer for School Education for the pilot study and main study. The pilot study was conducted in the month of August 2013 for a period of two weeks in similar setting. The investigator selected 6 samples by using probability simple random sampling technique. The investigator personally collected the demographic data, menstrual data by the interview technique. Subjects in Presidency Government Girls Higher Secondary School were randomly assigned to experimental and in Government Girls Middle School were randomly assigned in control group. For the experimental group the investigator administered acupressure at sanyinjiao acupoint for 10 minutes (5 minutes in each leg) for two weeks (twice in a week). The level of pain experienced by the adolescent girls during menstruation marked in the modified numerical categorical pain scale. The same procedure is followed in control group without acupressure therapy.

Data collected were analysed and the results indicated that there was a significant reduction of level of dysmenorrhoea and its symptoms during menstruation. The preliminary study demonstrated that carrying out the primary research was both feasible and workable.

Reliability: Reliability of the research instrument is defined as the extent to which the instrument yields the same results on repeated measures. It is then concerned with consistency, accuracy, precision, stability, equivalence and homogeneity. Reliability of the pain scale was established by the Interrater or

Interobserver reliability technique, $r = 0.9$ hence the tool was found to be highly reliable to proceed with the data collection.

DATA COLLECTION PROCEDURE :

Phase – I : In this phase, after getting the permission from concerned authority, the investigator personally collected the demographic data and menstrual data by using interview technique. Symptoms of dysmenorrhoea is assessed by five point rating scale and level of pain by modified numerical categorical pain scale (subjective).

Phase – II : In this phase, the investigator administered acupressure therapy at sanyinjaio acupoint to subjects in experimental group for two weeks (twice in a week) in between the menstrual cycle.

Phase – III : In this phase, the investigator assessed the level of pain during menstruation by using modified numerical categorical pain scale (subjective) and the same procedure is done for control group without acupressure therapy.

Processing data : Data collected was processed every day. Missed out data was identified and immediately next day it was rectified.

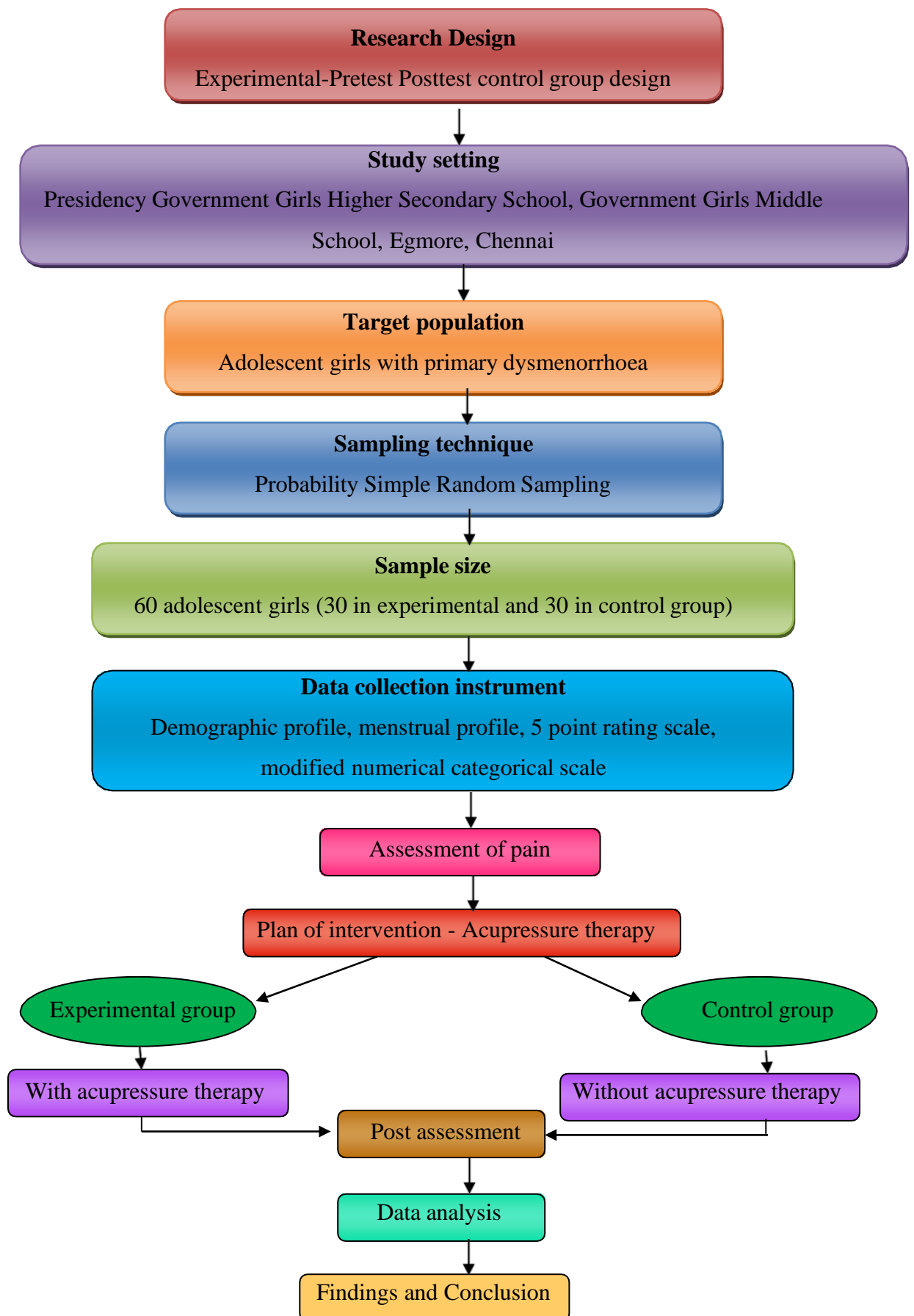
PLAN FOR DATA ANALYSIS :

The data obtained was analysed based on the objectives of the study using descriptive and inferential statistics.

Descriptive statistics: frequency, percentage, mean, median, mode, standard deviation will be used to describe the data.

Inferential Statistics: 't' test to find out effectiveness of acupressure in reduction of intensity of dysmenorrhoea among adolescent girls. 'Chi' square test to determine the association between the effectiveness of acupressure and selected demographic variables.

Fig3 SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY



DATA ANALYSIS AND INTERPRETATION

The data collected from adolescent girls with primary dysmenorrhea with structured interview schedule were organized, analyzed and interpreted by using descriptive and inferential statistics.

The data has been organized and analyzed in five sections

The data collected was edited, tabulated and interpreted and findings obtained were presented in the form of tables and diagrams representing the following headings.

Section – I : Distribution of demographic variables of experimental and control group.

Section – II : Distribution of menstrual variables of experimental and control group.

Section – III : Distribution of statistical value of pain and severity of symptoms before application of acupressure for adolescent girls with primary dysmenorrhoea belonging to experimental and control group.

Section – IV : Distribution of statistical value of pain and severity of symptoms after application of acupressure for adolescent girls with primary dysmenorrhoea belonging to experimental and control group.

Section – V : Comparison of statistical value of effectiveness of acupressure in reducing pain and severity of symptoms among adolescent girls with primary dysmenorrhea between experimental and control group.

Section – VI : Association of demographic variables with post test score of dysmenorrhoea and pain among adolescent girls with primary dysmenorrhoea belonging to experimental group and in control group.

SECTION – I: Distribution of demographic variables of experimental and control group

Table 2- Distribution of Demographic variables of experimental group and control group

(n = 60)

Demographic variables		Group			
		Experimental		Control	
		n	%	N	%
Age	12 years	2	6.7%	3	10.0%
	13 years	14	46.7%	12	40.0%
	14 years	9	30.0%	13	43.3%
	15 years	5	16.7%	2	6.7%
Education	7th Std	2	6.7%	6	20.0%
	8th Std	9	30.0%	9	30.0%
	9th Std	12	40.0%	11	36.7%
	10th Std	7	23.3%	4	13.3%
Religion	Hindu	27	90.0%	27	90.0%
	Christian	3	10.0%	3	10.0%
Dietary pattern	Vegetarian	2	6.7%	2	6.7%
	Non-vegetarian	28	93.3%	28	93.3%
Body Mass Index	Under weight	24	80.0%	25	83.3%
	Normal	5	16.7%	4	13.3%
	Over weight	1	3.3%	1	3.3%

Table 2 reveals distribution of demographic variables of the adolescent girls with primary dysmenorrhea belonging to experimental group and control group. In experimental group, regarding the age of the adolescent girls with primary dysmenorrhea in which majority 14 (46.7%) were in the age group of 13 years. In control group regarding the age of the adolescent girls with primary dysmenorrhea, majority 13 (43.3%) were in the age group of 14 years.

In experimental group, regarding education, 12 (40.0%) belongs to ninth standard and in control group, regarding education, 11 (36.7%) belongs to ninth standard. Majority 27 (90.0%) of the adolescent girls with primary dysmenorrhea were Hindu both in experimental and in control group. Majority 28 (93.3%) of the adolescent girls with primary dysmenorrhea were non-vegetarian both in experimental and in control group. In experimental group, regarding the Body Mass Index (BMI) 24 (80.0%) belongs to underweight and in control group regarding the Body Mass Index 25 (83.3%) belongs to underweight (Fig 4-8).

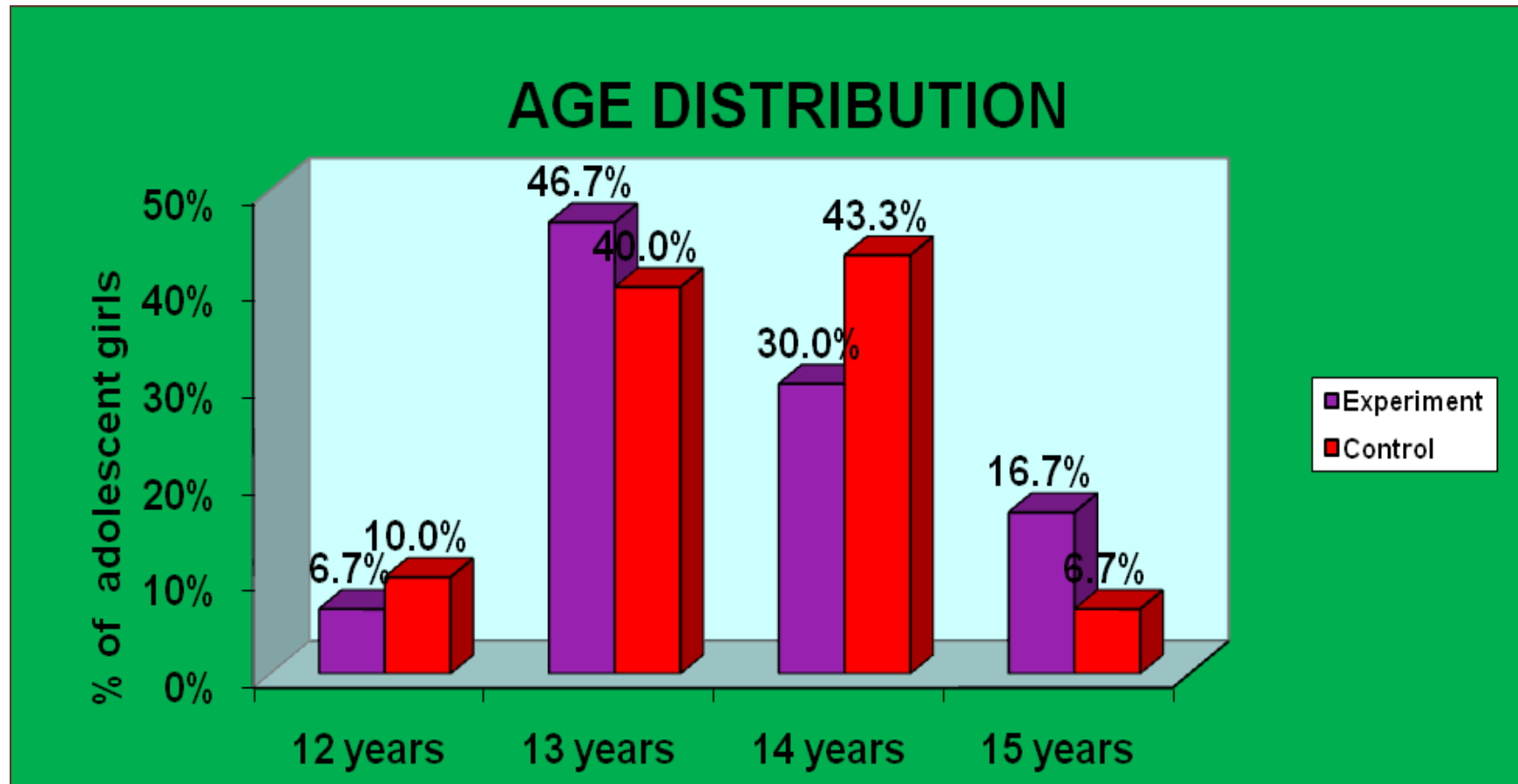


Figure 4: *Graphical representation of adolescent girls according to age in experimental group and control group*

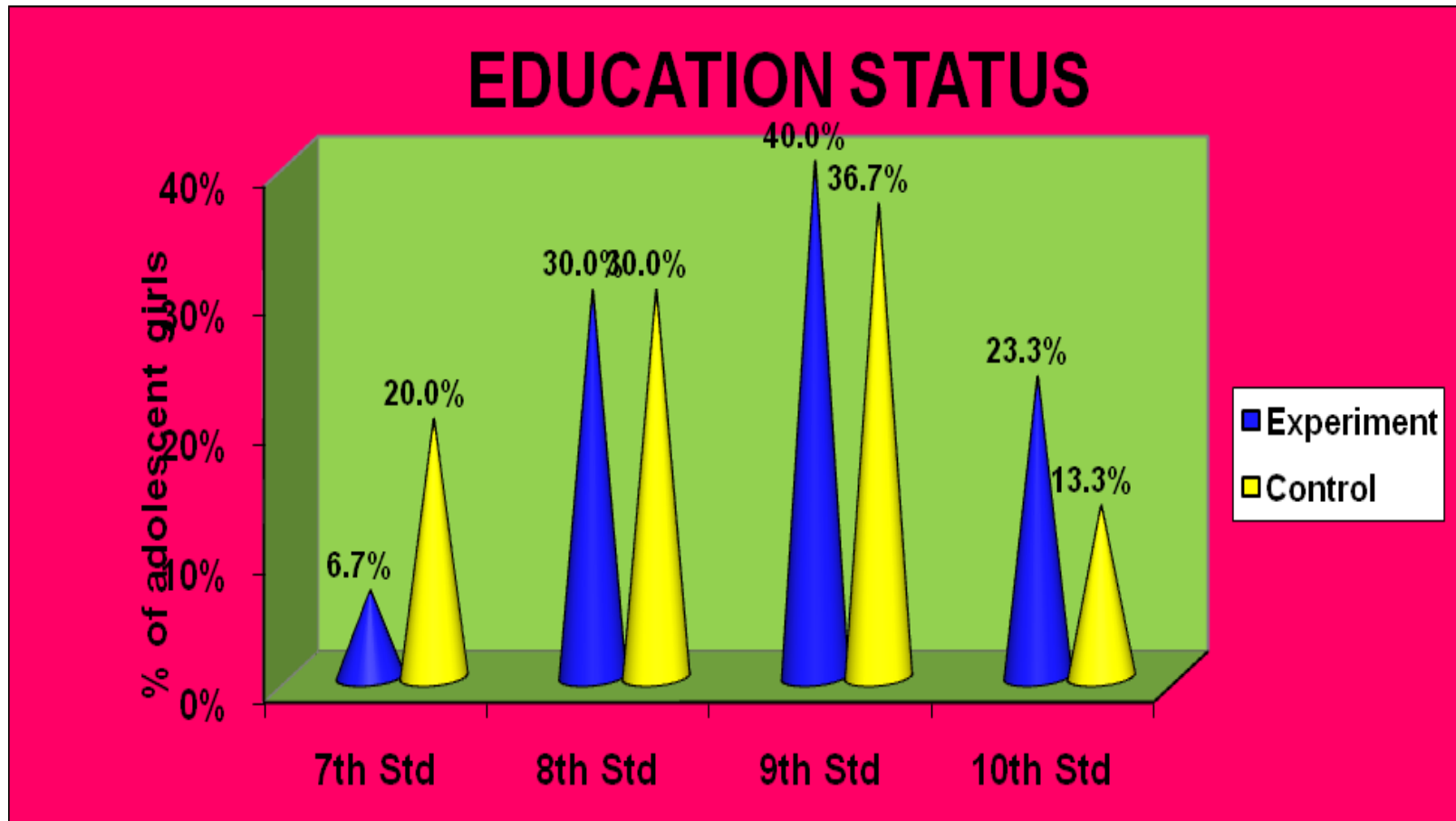


Figure 5: Graphical representation of adolescent girls according to educational status in experimental group and control group

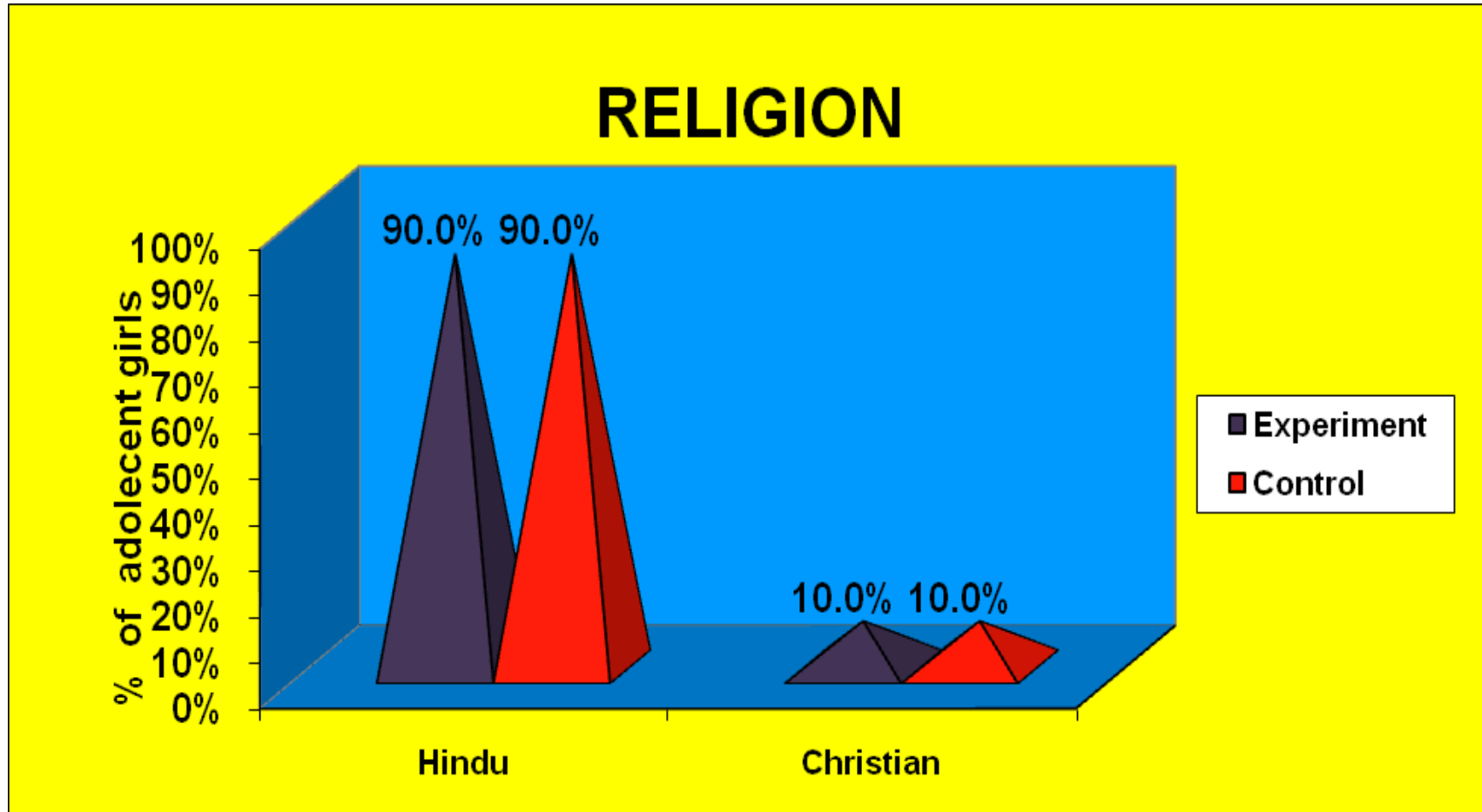


Figure 6: Graphical representation of adolescent girls according to religion in experimental group and control group

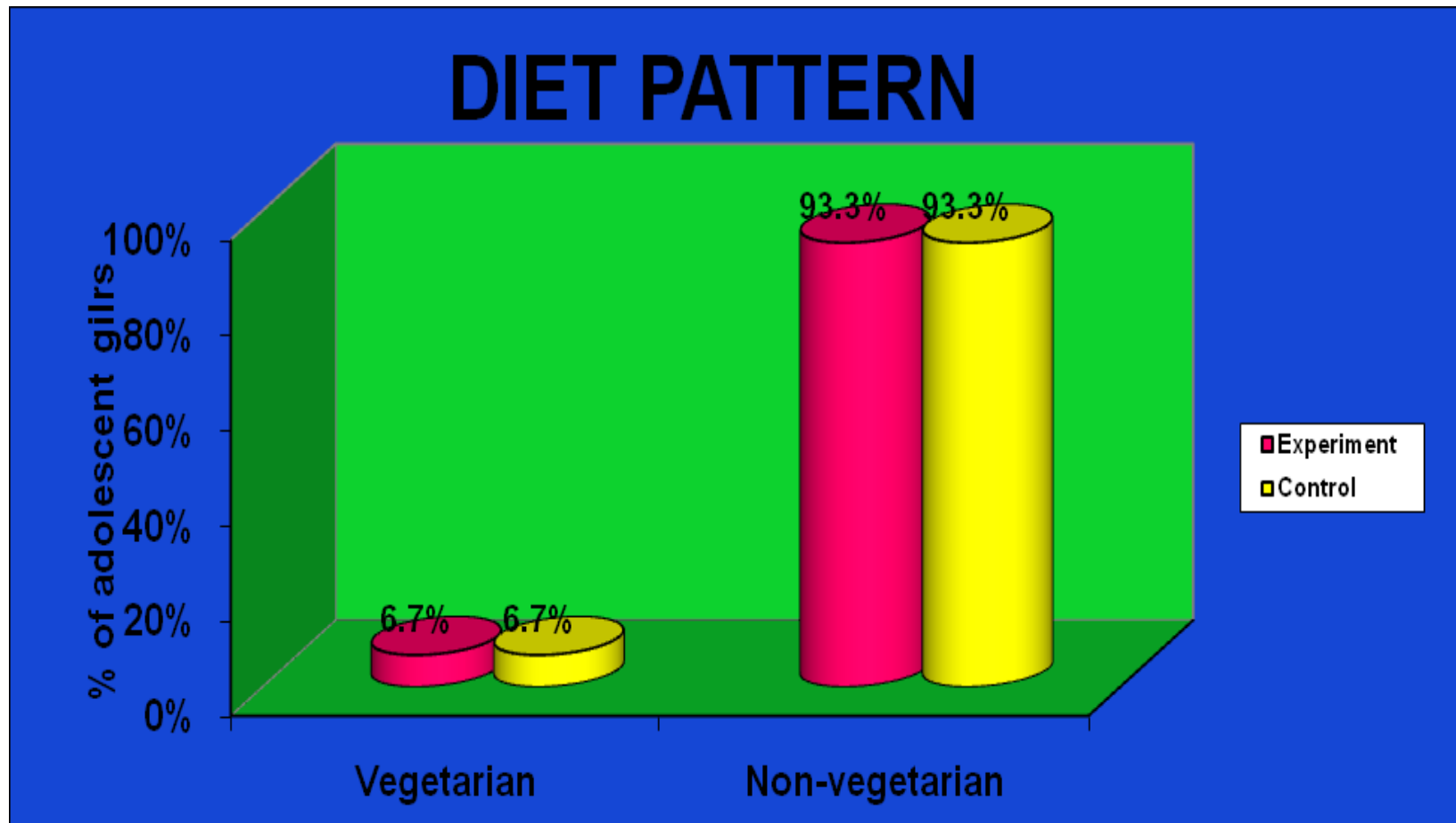


Figure 7: Graphical representation of adolescent girls according to diet pattern in experimental group and control group

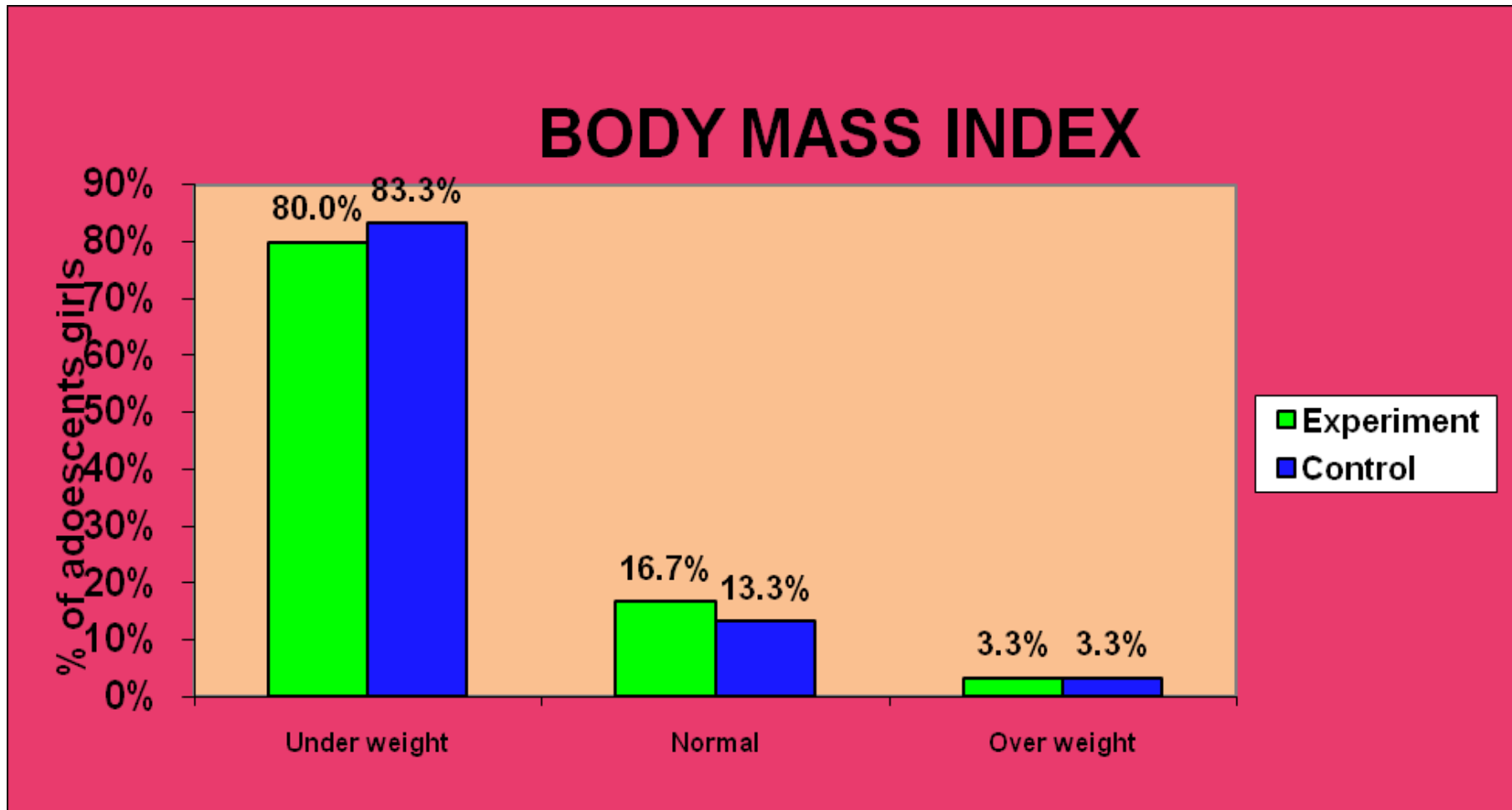


Figure 8: Graphical representation of adolescent girls according to Body Mass Index in experimental group and control group

SECTION – II: Distribution of menstrual variables of experimental and control group

Table 3: Distribution of Menstrual variables of experimental group and control group

(n = 60)

Menstrual Variables		Group			
		Experimental		Control	
		n	%	N	%
Age at menarche	< 12 years	9	30.0%	11	36.7%
	12 years	14	46.7%	16	53.3%
	13 years	7	23.3%	3	10.0%
Menstrual cycle	< 28 days	2	6.7%	6	20.0%
	28 -30 days	19	63.3%	19	63.3%
	30 -32 days	9	30.0%	5	16.7%
Duration of menstrual bleeding	< 3days	2	6.7%	3	10.0%
	3 - 5 days	28	93.3%	27	90.0%
Duration of menstrual pain	< 8 hours	3	10.0%	9	30.0%
	8 - 16 hours	9	30.0%	11	36.7%
	16 - 24 hours	10	33.3%	6	20.0%
	>24 hours	8	26.7%	4	13.3%
Flow of menstruation	Mild	4	13.3%	5	16.7%
	Moderate	26	86.7%	25	83.3%
Family H/O dysmenorrhoea	Present	3	10.0%	3	10.0%
	Absent	27	90.0%	27	90.0%
Factors aggravating menstrual pain	Heavy work	15	50.0%	13	43.3%
	Stress	12	40.0%	14	46.7%
	Spicy food	3	10.0%	3	10.0%
Factors reducing menstrual pain	Rest	30	100.0%	30	100.0%
Interference of study due to menstrual pain	Does not get affected	4	13.3%	3	10.0%
	Lack of concentration	8	26.7%	6	20.0%
	Unable to study	4	13.3%	12	40.0%
	Absenteeism from classes	14	46.7%	9	30.0%

Table 3 reveals distribution of menstrual variables of the adolescent girls with primary dysmenorrhea belonging to experimental group and control group.

In experimental group, regarding the age at menarche of the adolescent girls in which majority 14 (46.7%) were in the age group of 12 years. In control group regarding the age at menarche of the adolescent girls, majority 16 (53.3%) were in the age group of 12 years. Majority 19 (63.3%) of the adolescent girls with primary dysmenorrhea were having 28-30 days of menstrual cycle in experimental and in control group. In experimental group, regarding duration of menstrual bleeding, 28(93.3%) belongs to 3 to 5 days cycle and in control group, 27 (90.0%) belongs to 3 to 5 days cycle. In experimental group, regarding the duration of menstrual pain, 10(33.3%) were experiencing 16-24 hours and in control group, 11 (36.7%) were experiencing 8-16 hours of pain. Majority 27 (90.0%) of the adolescent girls with primary dysmenorrhea were not having family history of dysmenorrhea in experimental and in control group.

In experimental group, regarding the factors aggravating pain, 15 (50.0%) of them were experiencing increase in menstrual pain with heavy work and in control group, 14 (46.7%) were experiencing increase in menstrual pain with stress. Majority 30 (100.0%) of the adolescent girls with primary dysmenorrhea were experiencing reduction in dysmenorrhea during rest in experimental and in control group. In experimental group, regarding the interference of study due to menstrual pain, 14 (46.7%) were with absenteeism from classes in control group, 12 (40.0%) were in unable to study (**Fig 9-11**).

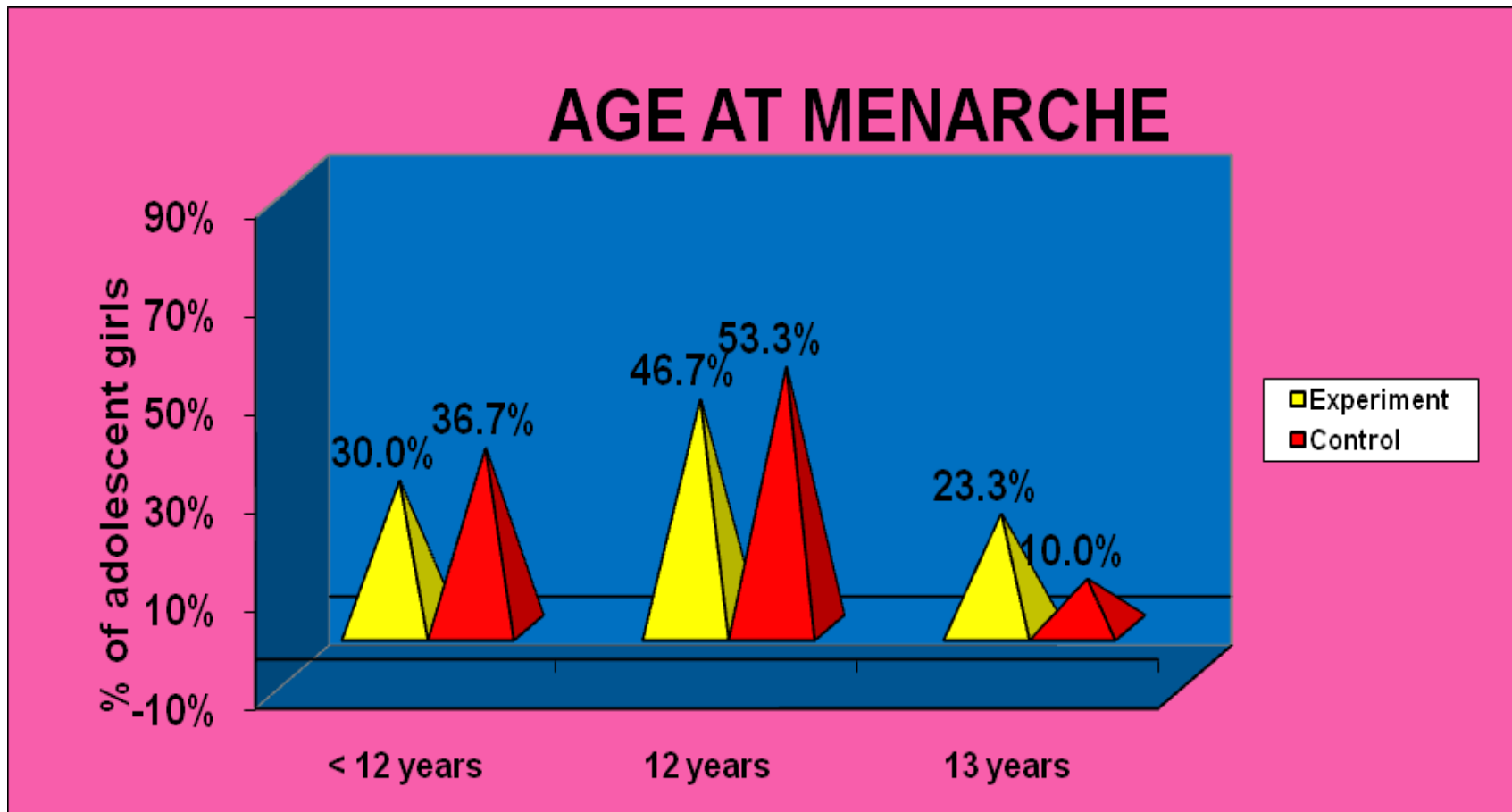


Figure 9 Graphical representation of adolescent girls according to age at menarche in experimental group and control group

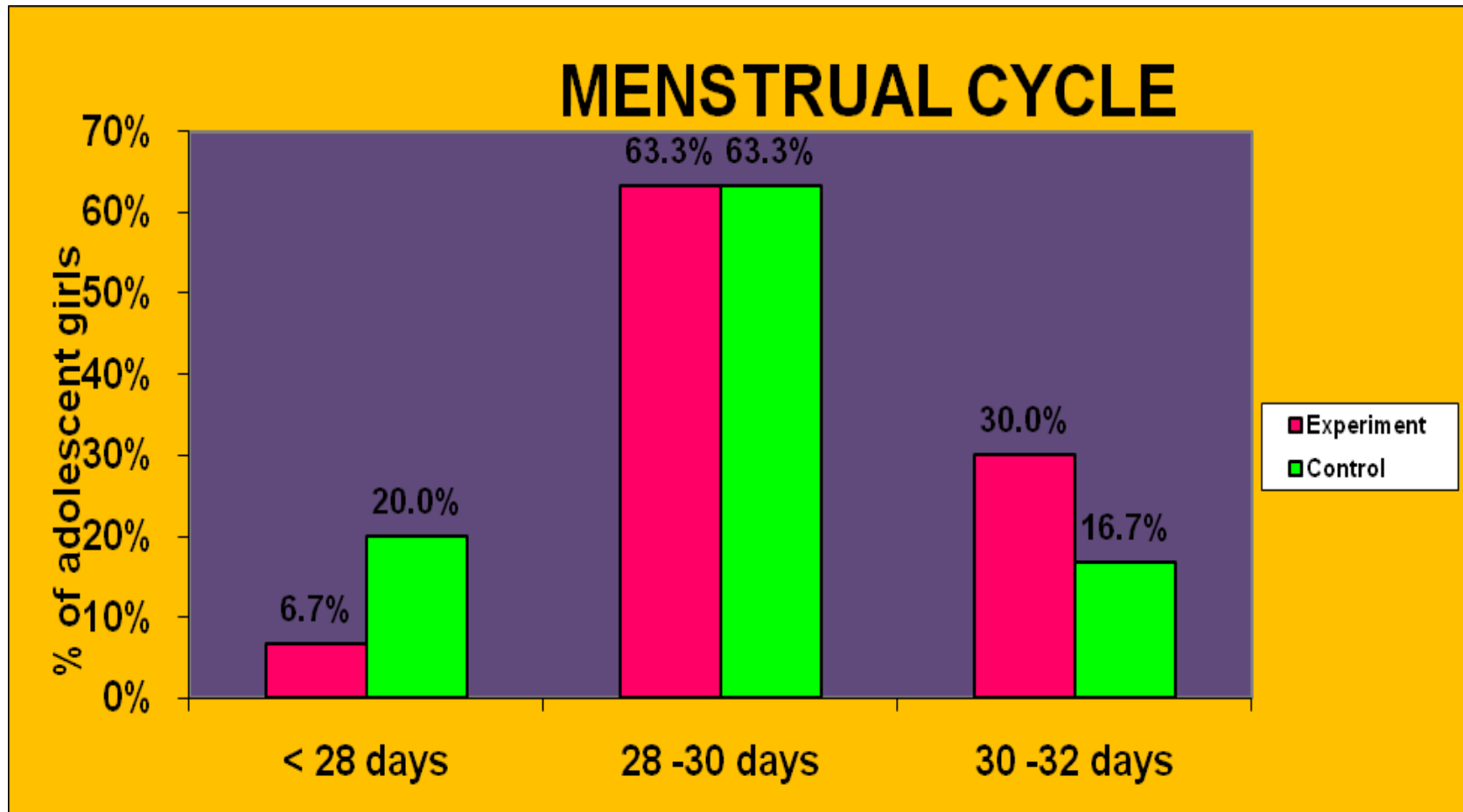


Figure 10 Graphical representation of adolescent girls according to frequency of menstrual cycle in experimental group and control group

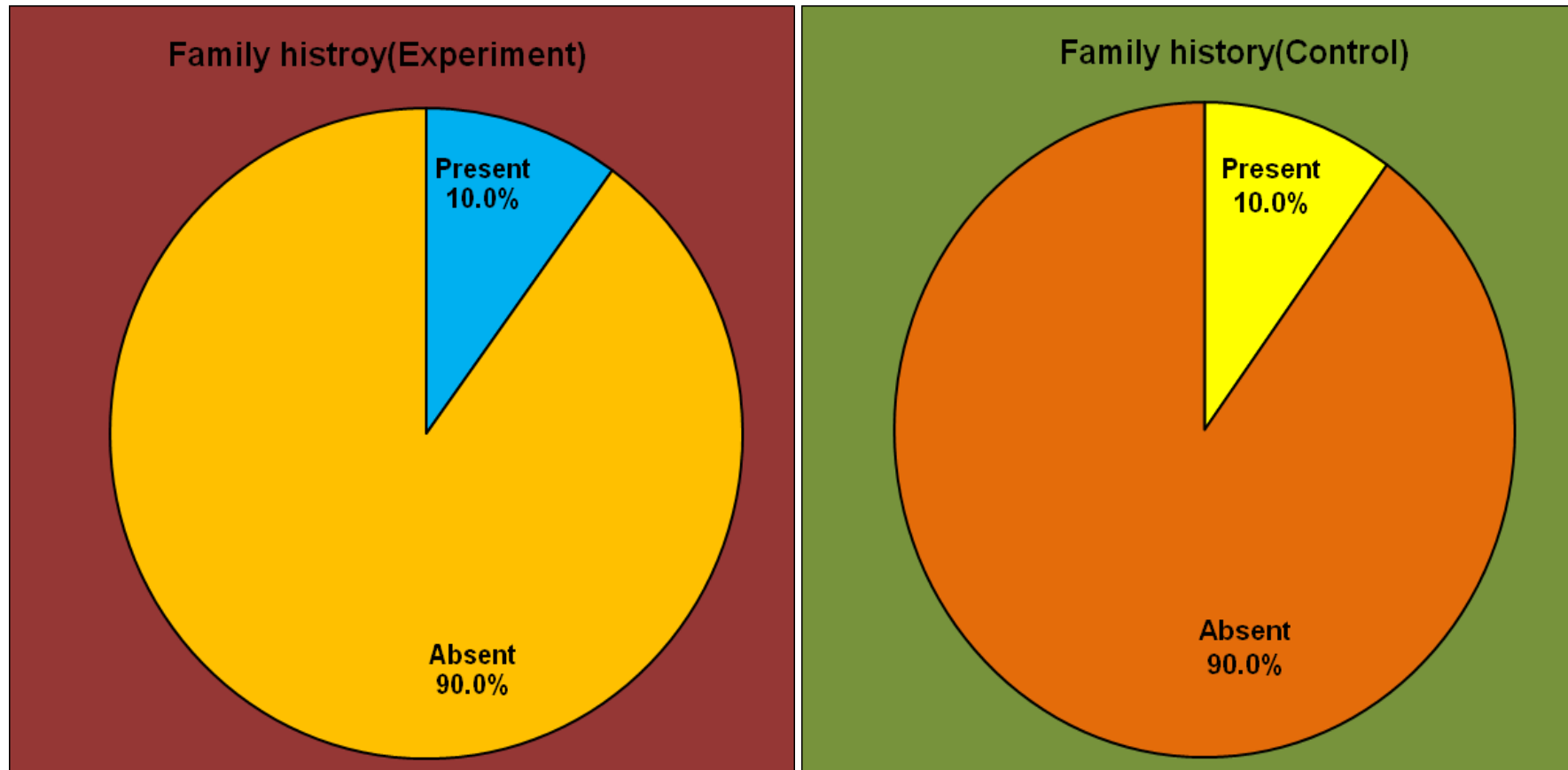


Figure 11 Pie diagram of adolescent girls according to family history of dysmenorrhea in experimental group and control group

SECTION – III: Distribution of statistical value of pain and severity of symptoms before application of acupressure for adolescent girls with primary dysmenorrhoea belonging to experimental and control group

Table 4: Distribution of pretest level of pain score of experimental group and control group

Level of pain	Experimental		Control	
	n	%	N	%
No pain	0	0.0%	0	0.0%
Mild pain	0	0.0%	0	0.0%
Moderate pain	10	33.3%	9	30.0%
Severe pain	20	66.7%	21	70.0%
Excruciating pain	0	0.0%	0	0.0%
Total	30	100.0%	30	100.0%

Table 4 shows assess the intensity of pain during menstruation among the experimental and control group of adolescent girls before intervention.

In experimental group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

In control group, 30.0% of the girls are having moderate pain, 70.0% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

Table 5: Distribution of pretest level of severity of symptoms of experimental group and control group

Level of severity symptoms	Experimental		Control	
	N	%	N	%
No	0	0.0%	0	0.0%
Mild	4	13.3%	4	13.3%
Moderate	26	86.7%	26	86.7%
Severe	0	0.0%	0	0.0%
Total	30	100.0%	30	100.0%

Table 5 shows assess the level of severity of symptoms during menstruation among the experimental and control group of adolescent girls before intervention.

In experimental group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms.

In control group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms.

SECTION – IV: Distribution of posttest level of pain score for adolescent girls with primary dysmenorrhoea belonging to experimental and control group

Table 6 Distribution of posttest level of pain score of experimental group and control group

Level of pain	Experimental		Control	
	n	%	N	%
No pain	0	0.0%	0	0.0%
Mild pain	22	73.3%	0	0.0%
Moderate pain	8	26.7%	10	33.3%
Severe pain	0	0.0%	20	66.7%
Excruciating pain	0	0.0%	0	0.0%
Total	30	100.0%	30	100.0%

Table 6 Assess the posttest level of pain during menstruation among the experimental and control group of adolescent girls after intervention.

In experimental group, 73.3% of the girls are having mild pain, 26.7% are having moderate pain and none of them are having No pain/severe pain / Excruciating pain.

In control group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

Table 7: Distribution of posttest level of severity of symptoms of experimental group and control group

Level of severity symptoms	Experimental		Control	
	n	%	N	%
No	0	0.0%	0	0.0%
Mild	23	76.7%	4	13.3%
Moderate	7	23.3%	26	86.7%
Severe	0	0.0%	0	0.0%
Total	30	100.0%	30	100.0%

Table 7 shows Assess the posttest level of during menstruation among the experimental and control group of adolescent girls after intervention (Fig 12 and 13).

In experimental group, 76.7% of the girls are having mild pain, 23.3% are having moderate pain and none of them are having No / severe symptoms.

In control group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms.

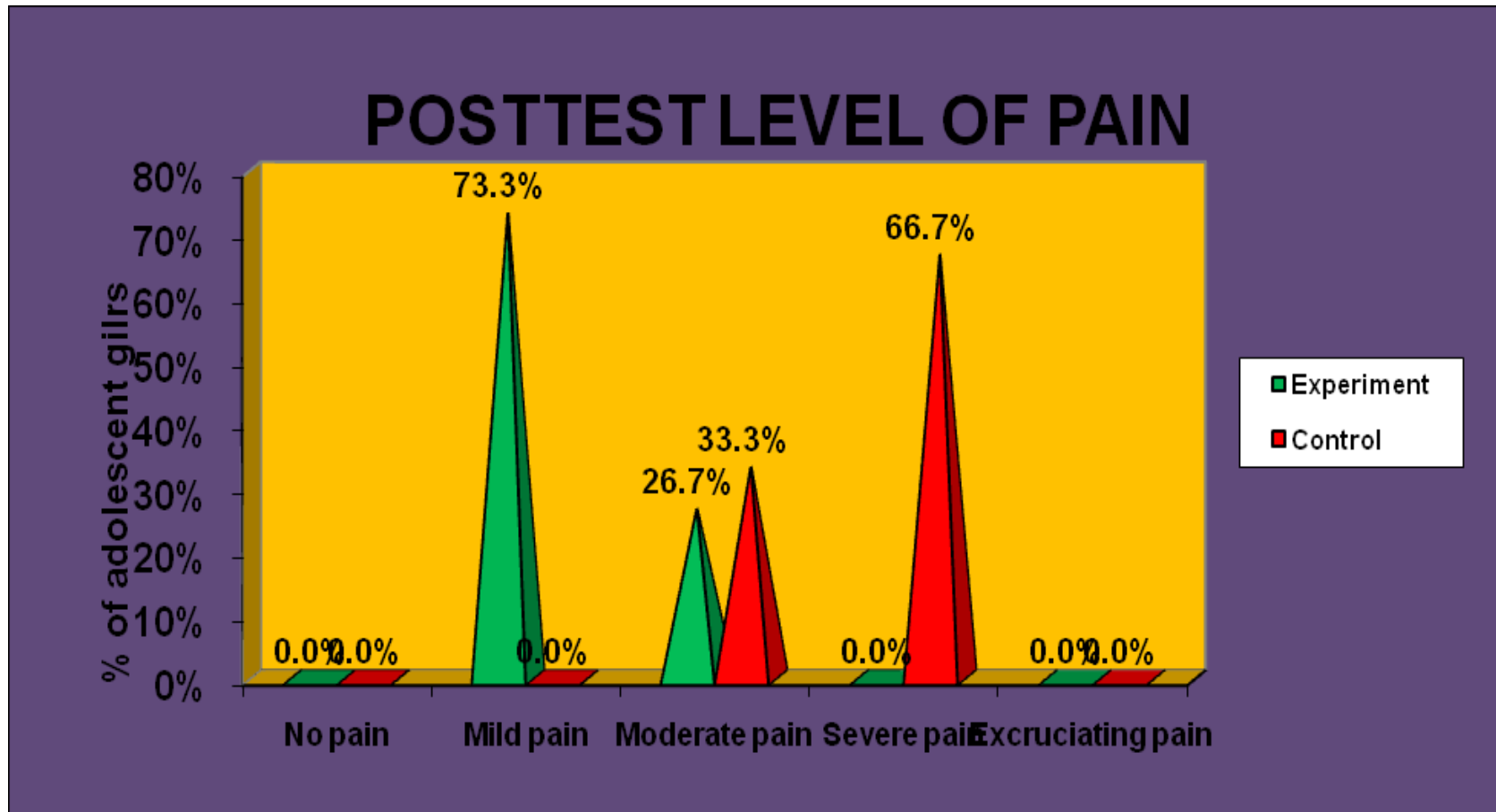


Figure 12 Graphical representation of adolescent girls according to posttest level of pain on menstruation in experimental group and control group

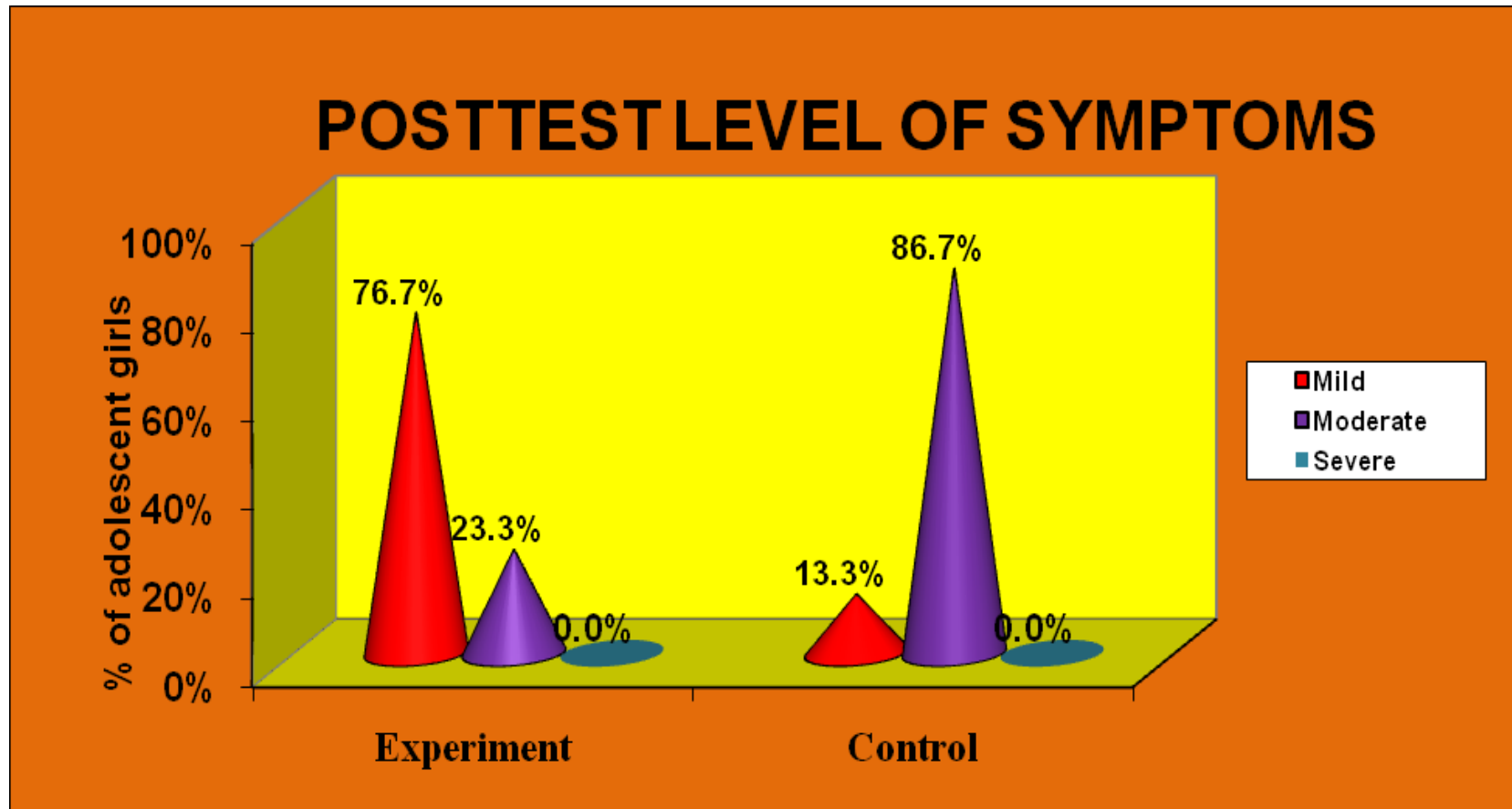


Figure 13 Graphical representation of adolescent girls according to posttest level of severity of symptoms on menstruation in experimental group and control group

**SECTION – V: Comparison of statistical value
of effectiveness of acupressure in reducing pain and severity of
symptoms among adolescent girls with primary dysmenorrhea
between experimental and control group**

**Table 8: Comparison of pretest and posttest score of pain during
menstruation using student's independent t-test among experimental
group and control group**

	No. of girls	Experimental		Control		Student's Independent t-test
		Mean	SD	Mean	SD	
Pretest	30	7.30	1.26	7.47	1.17	t=0.53P=0.59
Posttest	30	2.57	1.14	7.23	1.19	t=15.51P=0.001***

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 8 compares the intensity of pain during menstruation before and after intervention among experimental group and control group.

During the pretest, the experimental group girls reported a pain score of 7.30, while the control group exhibited a pain score of 7.47. The marginal difference of 0.17 is considered minor and lacks statistical significance.

In the posttest phase, individuals in the experimental group recorded a score of 2.57, while those in the control group had a score of 7.23. This results in a substantial difference of 4.67, which is considered statistically significant. The statistical significance was determined through the use of the Student's independent t-test.

Table 9: Comparison of pretest and posttest score of pain during menstruation using student's paired t-test among experimental group and control group

	No. of girls	PRETEST		POSTTEST		Student's paired t-test
		Mean	SD	Mean	SD	
Experimental	30	7.30	1.26	2.57	1.17	t=23.99P=0.001***
Control	30	7.47	1.14	7.23	1.19	t=1.83P=0.07

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 9 compares the intensity of pain during menstruation before and after intervention among experimental group and control group. *Statistical significance was calculated using student's paired t-test.*

Table 10 Comparison of pretest and posttest score of severity of symptoms during menstruation using student's independent t-test among experimental group and control group

	No. of girls	Experimental		Control		Student's Independent t-test
		Mean	SD	Mean	SD	
Pretest	30	36.40	4.69	37.17	4.50	t=0.53P=0.59
Posttest	30	23.50	5.25	36.47	4.43	t=15.51P=0.001***

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 10 compares the severity of symptoms during menstruation before and after intervention among experimental group and control group..

In pretest , experimental group girls are having 36.40 score and control group are having 37.17 score, so the difference is 0.77 , this difference is small and it is not statistically significant difference.

In posttest , experimental group people are having 23.50 score and control group are having 36.47 score in posttest, so the difference is 12.97 , this difference is large and it is statistically significant difference. *Statistical significance was calculated using student's independent t-test.*

Table 11: Comparison of pretest and posttest score of severity of symptoms during menstruation using student's paired t-test among experimental group and control group

	No. of girls	PRETEST		POSTTEST		Student's paired t-test
		Mean	SD	Mean	SD	
Experimental	30	36.40	4.69	23.50	5.25	t=9.71P=0.001***
Control	30	37.17	4.50	36.47	4.43	t=1.77P=0.08

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 11 compares the severity of symptoms during menstruation before and after intervention among experimental group and control group. *Statistical significance was calculated using student's paired t-test (Fig 14).*

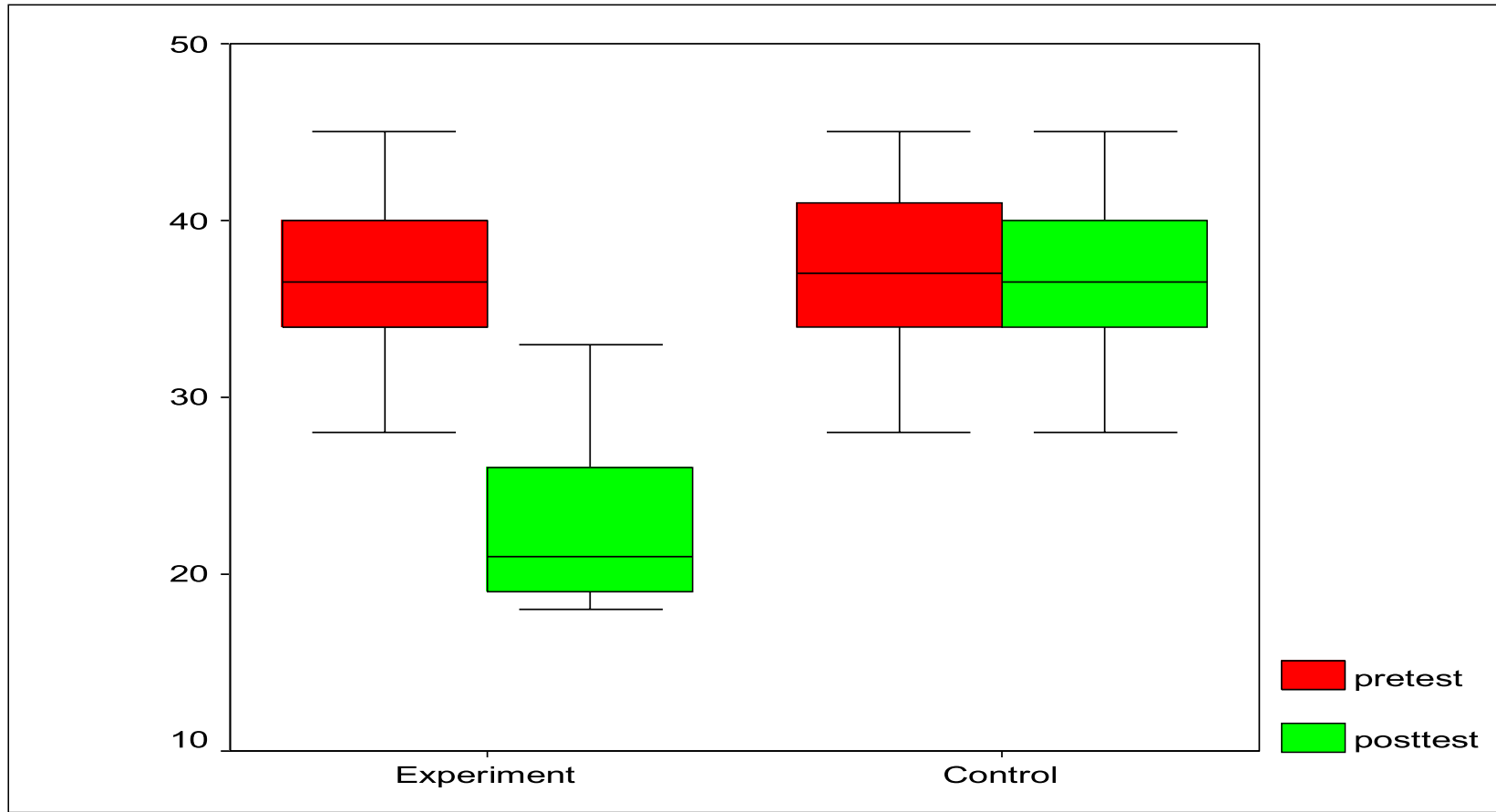


Fig 14 Comparison of pretest and posttest severity of symptoms score between experimental group and control group

Table 12: Comparison of pretest and posttest level of pain during menstruation using Chi square test among experimental group and control Group

	Level of Pain	Experimental		Control		Chi square test
		n	%	N	%	
Pretest	No pain	0	0.0%	0	0.0%	$\chi^2=0.08$ P=0.78 DF=1 Not significant
	Mild pain	0	0.0%	0	0.0%	
	Moderate pain	10	33.3%	9	30.0%	
	Severe pain	20	66.7%	21	70.0%	
	Excruciating pain	0	0.0%	0	0.0%	
Posttest	No pain	0	0.0%	0	0.0%	$\chi^2=42.22$ P=0.001*** DF=2 Significant
	Mild pain	22	73.3%	0	0.0%	
	Moderate pain	8	26.7%	10	33.3%	
	Severe pain	0	0.0%	20	66.7%	
	Excruciating pain	0	0.0%	0	0.0%	

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 12 compares the pretest and posttest level of pain during menstruation among the experimental and control group of adolescent girls .

In pretest, experimental group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/. Mild pain / Excruciating pain and in control group, 30.0% of the girls are having moderate pain, 70.0% are having severe pain and none of them are having No pain/. Mild pain / Excruciating pain

In posttest, experimental group, 73.3% of the girls are having mild pain, 26.7% are having moderate pain and none of them are having No pain/severe pain / Excruciating pain and in control group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

This difference is large and it is statistically significant difference..
Statistical significance was calculated using chi square test.

Table 13: Comparison of pretest and posttest level of symptoms during menstruation using Chi square test among experimental group and control group

	Level of Symptoms	Experimental		Control		Chi square test
		n	%	N	%	
Pretest	No	0	0.0%	0	0.0%	$\chi^2=0.00$ P=1.00 DF=1 Not significant
	Mild	4	13.3%	4	13.3%	
	Moderate	26	86.7%	26	86.7%	
	Severe	0	0.0%	0	0.0%	
Posttest	No	0	0.0%	0	0.0%	$\chi^2=24.31$ P=0.001*** DF=1 Significant
	Mild	23	76.7%	4	13.3%	
	Moderate	7	23.3%	26	86.7%	
	Severe	0	0.0%	0	0.0%	

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 13 compares the pretest and posttest level of symptoms during menstruation among the experimental and control group of adolescent girls .

In pretest, experimental group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms and in control group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms.

In the posttest phase, within the experimental group, 76.7% of the girls reported experiencing mild pain, 23.3% reported moderate pain, and none of them reported having no or severe symptoms. In contrast, in the control group, 13.3% of the girls reported mild symptoms, 86.7% reported moderate symptoms, and none of them reported having no or severe symptoms. The observed dissimilarity is substantial, and it holds statistical significance. The determination of statistical significance was carried out through the application of the chi-square test.

Table 14 Distribution of effectiveness of acupressure on pain score between experimental and control group

		Max score	Mean score	Mean difference with 95% Confidence interval	Percentage difference with 95% Confidence interval
Experimental	Pretest	10	7.30	4.73 (4.33-5.14)	47.3% (43.3%-51.4%)
	Posttest	10	2.57		
Control	Pretest	10	7.47	0.23 (0.05—0.42)	2.3% (0. 5%-4.2%)
	Posttest	10	7.23		

Table 14 shows the effectiveness of acupressure on overall pain score between experimental and control group.

On an average, experimental girls are reduced 47.3% of pain score whereas in control group are reduced 2.3%. The variation between pretest and posttest scores was examined by utilizing proportions with a 95% confidence interval (CI) and calculating the mean difference alongside a 95% CI. **This difference shows the effectiveness of acupressure.**

Table 15: Distribution of effectiveness of acupressure on severity of symptoms during menstruation between experimental and control group

		Max score	Mean score	Mean difference with 95% Confidence interval	Percentage difference with 95% Confidence interval
Experimental	Pretest	75	36.40	12.90(10.19-15.61)	17.2%(13.6%-20.8%)
	Posttest	75	23.50		
Control	Pretest	75	37.17	0.70(0.16—1.24)	0.9%(0. 21%-1.7%)
	Posttest	75	36.47		

Table 15 shows the effectiveness of acupressure on overall symptoms score between experimental and control group.

On an average, experiment girls are reduced 17.2% of symptoms score whereas in control group are reduced 0.9%. Differences between pretest and posttest score was analyzed using proportion with 95% CI and mean difference with 95% CI. **This difference shows the effectiveness of acupressure.**

SECTION – VI: Association of demographic variables with post test score of dysmenorrhoea and pain among adolescent girls with primary dysmenorrhoea belonging to experimental group and in control group

Table 16: Association between level of pain reduction score and demographic variables (Experimental group)

Demographic variables		Level of pain reduction				Total	Chi square test
		Below average(<4.7)		Above average(>4.7)			
		N	%	n	%		
Age	12 years	2	100.0%	0	50.0%	2	$\chi^2=9.15$ $p=0.03^*$
	13 years	10	71.4%	4	28.6%	14	
	14 years	2	22.2%	7	77.8%	9	
	15 years	1	20.0%	4	80.0%	5	
Education	7th Std	2	100.0%	0	0.0%	2	$\chi^2=8.60$ $p=0.03^*$
	8th Std	7	77.8%	2	22.2%	9	
	9th Std	5	41.6%	7	58.4%	12	
	10th Std	1	14.2%	6	85.8%	7	
Religion	Hindu	12	44.4%	15	55.6%	27	$\chi^2=3.33p=0.07$
	Christian	3	100.0%			3	
Dietary pattern	Vegetarian	1	50.0%	1	50.0%	2	$\chi^2=0.00$ $p=1.00$
	Non-vegetarian	14	50.0%	14	50.0%	28	
Body Mass Index	Under weight	11	45.8%	13	54.2%	24	$\chi^2=1.36$ $p=0.51$
	Normal	3	60.0%	2	40.0%	5	
	Over weight	1	100.0%			1	

Pain reduction = pretest score- posttest score

Table 16 shows the association between level of pain reduction and their demographic variables. Elders and more educated girls got their pain reduced. Statistical significance was calculated using chi square test.

Table 17 Association between level of pain reduction score and menstrual history (Experimental group)

Menstrual history		Level of pain reduction				Level of pain reduction	Chi square test
		Below average(<4.7)		Above average(>4.7)			
		N	%	n	%		
Age at menarche	< 12 years	4	44.4%	5	55.6%	9	$\chi^2=0.25$ p=0.88
	12 years	7	50.0%	7	50.0%	14	
	13 years	4	57.1%	3	42.9%	7	
Menstrual cycle	< 28 days	1	50.0%	1	50.0%	2	$\chi^2=8.02$ p=0.01**
	28 -30 days	6	31.5%	13	68.5%	19	
	30 -32 days	8	88.9%	1	11.1%	9	
Duration of menstrual bleeding	< 3 days	-	-	2	100.0%	2	$\chi^2=2.14$ p=0.14
	3 - 5 days	15	53.6%	13	46.4%	28	
Duration of menstrual pain	< 8 hours	4	40.0%	6	60.0%	10	$\chi^2=1.36$ p=0.71
	8 - 16 hours	4	44.4%	5	55.6%	9	
	16 - 24 hours	2	66.7%	1	33.3%	3	
	>24 hours	5	62.5%	3	37.5%	8	
Flow of menstruation	Mild	2	50.0%	2	50.0%	4	$\chi^2=0.00$ p=1.00
	Moderate	13	50.0%	13	50.0%	26	
Family H/O dysmenorrheal	Present	1	33.3%	2	66.7%	3	$\chi^2=0.36$ p=0.54
	Absent	14	51.9%	13	48.1%	27	
Factors aggravating menstrual pain	Heavy work	6	40.0%	9	60.0%	15	$\chi^2=1.26$ p=0.53
	Stress	7	58.3%	5	41.7%	12	
	Spicy food	2	66.7%	1	33.3%	3	
Factors reducing menstrual pain	Rest	15	50.0%	15	50.0%	30	$\chi^2=0.00$ p=1.00
Interference of study due to menstrual pain	Does not get affected	4	100.0%	-	-	4	$\chi^2=5.14$ p=0.16
	Lack of concentration	4	50.0%	4	50.0%	8	
	Unable to study	2	50.0%	2	50.0%	4	
	Absenteesism from classes	5	35.7%	9	64.3%	14	

Pain reduction = pretest score- posttest score

Table 17 shows the association between level of pain reduction and their menstrual history. 28-30 days menstrual cycle girls got their pain reduced. Statistical significance was calculated using chi square test

Table 18 Association between level of symptom reduction score and demographic variables (Experimental group)

Demographic variables		Level of symptom reduction				Total	Chi square test
		Below average(<12.9)		Above average(>12.9)			
		N	%	n	%		
Age	12 years	1	50.0%	1	50.0%	2	$\chi^2=0.59$ $p=0.89$
	13 years	8	57.1%	6	42.9%		
	14 years	4	44.4%	5	55.5%		
	15 years	2	40.0%	3	60.0%		
Education	7th Std	2	100.0%	0	0.0%	2	$\chi^2=9.42$ $p=0.02^*$
	8th Std	5	55.5%	4	44.6%		
	9th Std	7	58.3%	5	41.7%		
	10th Std	0	0.0%	7	100.0%		
Religion	Hindu	13	48.1%	14	51.9%	27	$\chi^2=3.37$ $p=0.54$
	Christian	2	66.7%	1	33.3%		
Dietary pattern	Vegetarian	1	50.0%	1	50.0%	2	$\chi^2=0.00$ $p=1.00$
	Non-vegetarian	14	50.0%	14	50.0%		
Body Mass Index	Under weight	14	58.3%	10	41.7%	24	$\chi^2=6.67$ $p=0.05^*$
	Normal	0	0.0%	5	100.0%		
	Over weight	1	100.0%	0	0.0%		

Symptom reduction = pretest score- posttest score

Table 18 shows the association between level of symptom reduction and their demographic variables. Elders and more educated girls got their symptoms reduced. Statistical significance was calculated using chi square test

Table 19 Association between level of symptom reduction score and menstrual history (Experimental group)

Menstrual history		Level of symptom reduction				Level of symptom reduction	Chi square test
		Below average(<12.9)		Above average(>12.9)			
		N	%	n	%		
Age at menarche	< 12 years	3	33.3%	6	66.7%	9	$\chi^2=2.28$ p=0.31
	12 years	9	64.3%	5	35.7%	14	
	13 years	3	42.9%	4	57.1%	4.187	
Menstrual cycle	< 28 days	2	100.0%	0	0.0%	2	$\chi^2=7.60$ p=0.02*
	28 -30 days	6	31.5%	13	68.5%	19	
	30 -32 days	7	77.7%	2	22.3%	9	
Duration of menstrual bleeding	< days	2	100.0%	0	0.0%	2	$\chi^2=2.14$ p=0.14
	3 - 5 days	13	46.4%	15	53.6%	28	
Duration of menstrual symptom	< 8 hours	4	40.0%	6	60.0%	10	$\chi^2=1.73$ p=0.63
	8 - 16 hours	6	66.7%	3	33.3%	9	
	16 - 24 hours	1	33.3%	2	66.7%	3	
	>24 hours	4	50.0%	4	50.0%	8	
Flow of menstruation	Mild	2	50.0%	2	50.0%	4	$\chi^2=0.00$ p=1.00
	Moderate	13	50.0%	13	50.0%	26	
Family H/O dysmenorrheal	Present			3	100.0%	3	$\chi^2=3.33$ p=0.06
	Absent	15	55.6%	12	44.4%	27	
Factors aggravating menstrual symptom	Heavy work	8	53.3%	7	46.7%	15	$\chi^2=0.40$ p=0.82
	Stress	6	50.0%	6	50.0%	12	
	Spicy food	1	33.3%	2	66.7%	3	
Factors reducing menstrual symptom	Rest	15	50.0%	15	50.0%	30	$\chi^2=0.00$ p=1.00
Interference of study due to menstrual symptom	Does not get affected	1	25.0%	3	75.0%	4	$\chi^2=6.64$ p=0.08
	Lack of concentration	7	87.5%	1	12.5%	8	
	Unable to study	2	50.0%	2	50.0%	4	
	Absenteeism from classes	5	35.7%	9	64.3%	14	

Symptom reduction = pretest score- posttest score

Table 19 shows the association between level of symptom reduction and their menstrual history. 28-30 days menstrual cycle girls got their symptoms reduced. Statistical significance was calculated using chi square test

Table 20: Level of satisfaction of acupressure upon dysmenorrhoea (Experimental group)

	Highly dissatisfied		Moderately dissatisfied		Satisfied		Moderately satisfied		Highly satisfied	
	N	%	n	%	n	%	n	%	n	%
1	0	0.0%	0	0.0%	4	13.3%	15	50.0%	11	36.7%
2	0	0.0%	1	3.3%	5	16.7%	19	63.3%	5	16.7%
3	0	0.0%	0	0.0%	4	13.3%	19	63.3%	7	23.3%
4	0	0.0%	0	0.0%	6	20.0%	21	70.0%	3	10.0%
5	0	0.0%	0	0.0%	2	6.7%	17	56.7%	11	36.7%
6	0	0.0%	0	0.0%			30	100.0%		
7	0	0.0%	0	0.0%			12	40.0%	18	60.0%
8	0	0.0%	0	0.0%	4	13.3%	15	50.0%	11	36.7%
9	0	0.0%	0	0.0%	1	3.3%	19	63.3%	10	33.3%
10	0	0.0%	0	0.0%	4	13.3%	15	50.0%	11	36.7%
11	0	0.0%	0	0.0%			23	76.7%	7	23.3%
12	0	0.0%	0	0.0%	3	10.0%	24	80.0%	3	10.0%
13	0	0.0%	0	0.0%	5	16.7%	21	70.0%	4	13.3%
14	0	0.0%	0	0.0%	3	10.0%	16	53.3%	11	36.7%
15	0	0.0%	0	0.0%	6	20.0%	22	73.3%	2	6.7%

Table 20 shows the satisfaction level of acupressure on experimental group. On an average, 25.34% of students with primary dysmenorrhea among experimental group were highly satisfied with the acupressure therapy, 63.99% of students were moderately satisfied with the acupressure and 10.44% of students among experimental group were satisfied with the acupressure therapy (Fig 15-20).

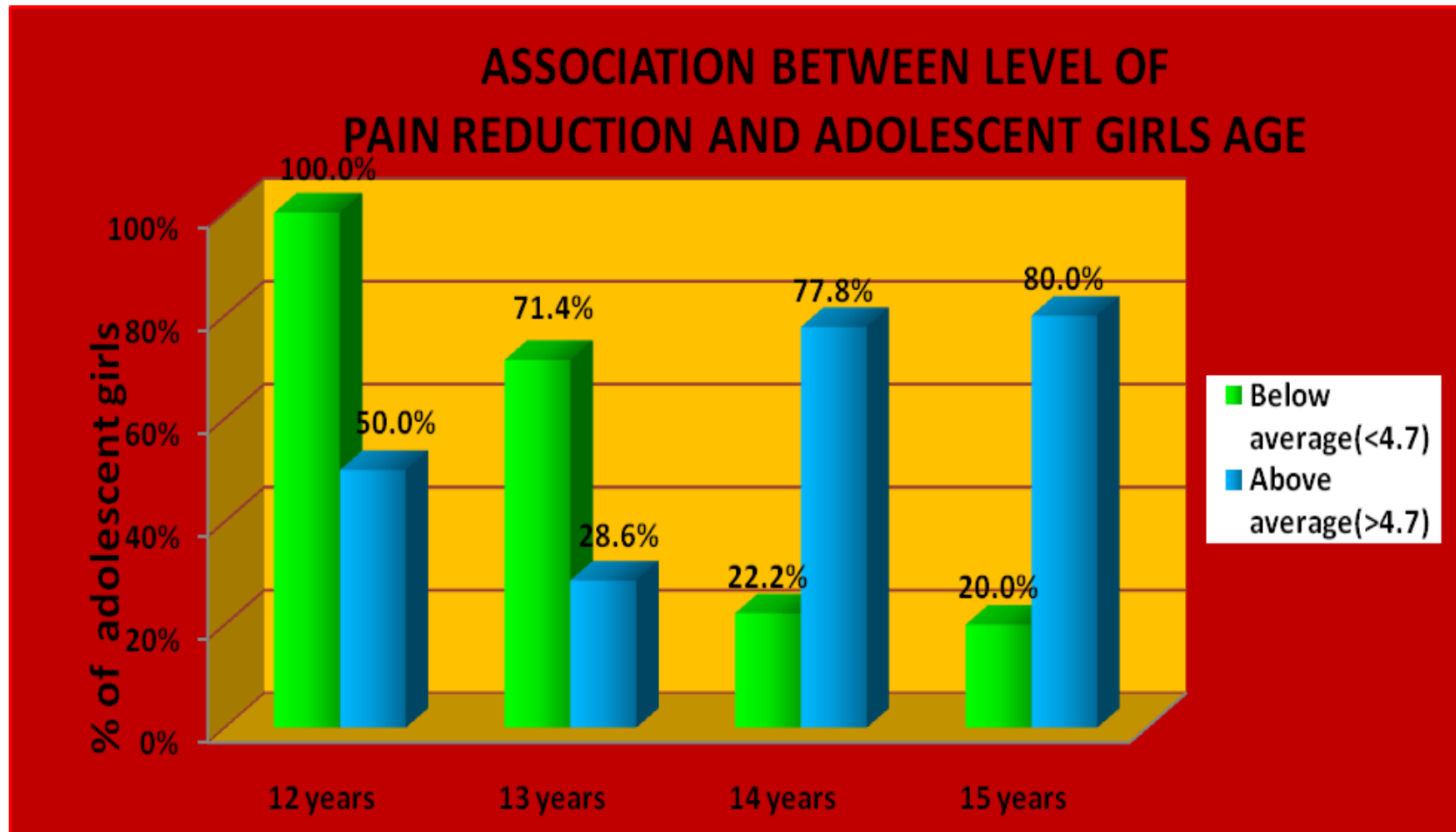


Figure 15: Graphical representation of association between level of pain reduction and age of adolescent girls in experimental group

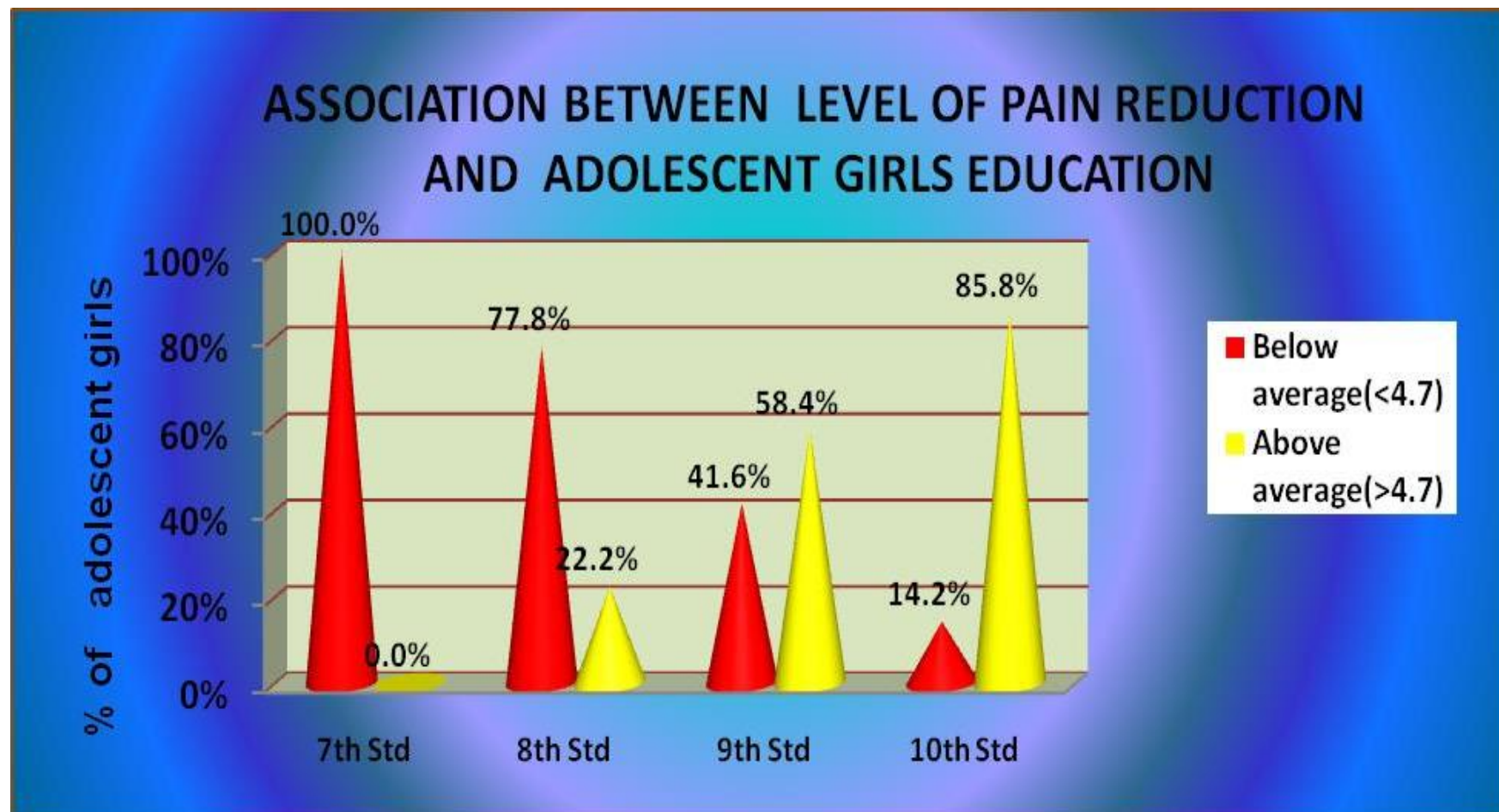


Figure 16: Graphical representation of association between level of pain reduction and education of adolescent girls in experimental group

ASSOCIATION BETWEEN LEVEL OF PAIN REDUCTION AND MENSTRUAL CYCLE

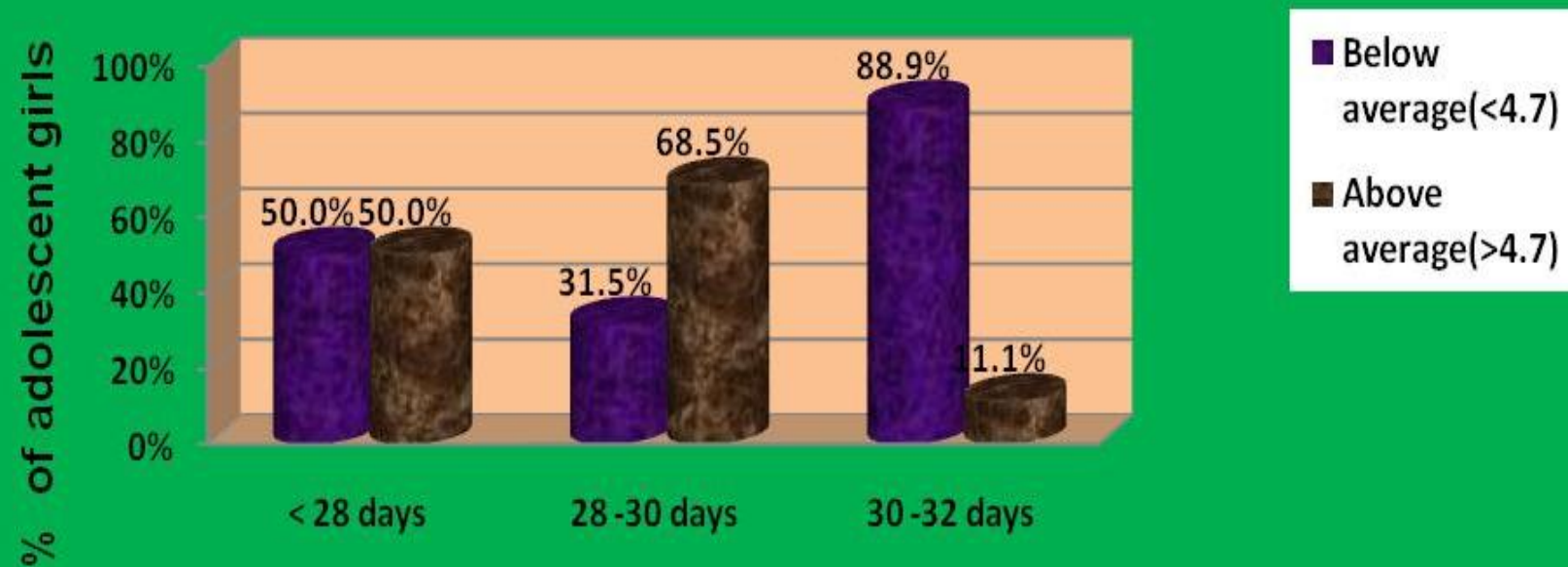


Figure 17: Graphical representation of association between level of pain reduction and menstrual cycle among adolescent girls in experimental group

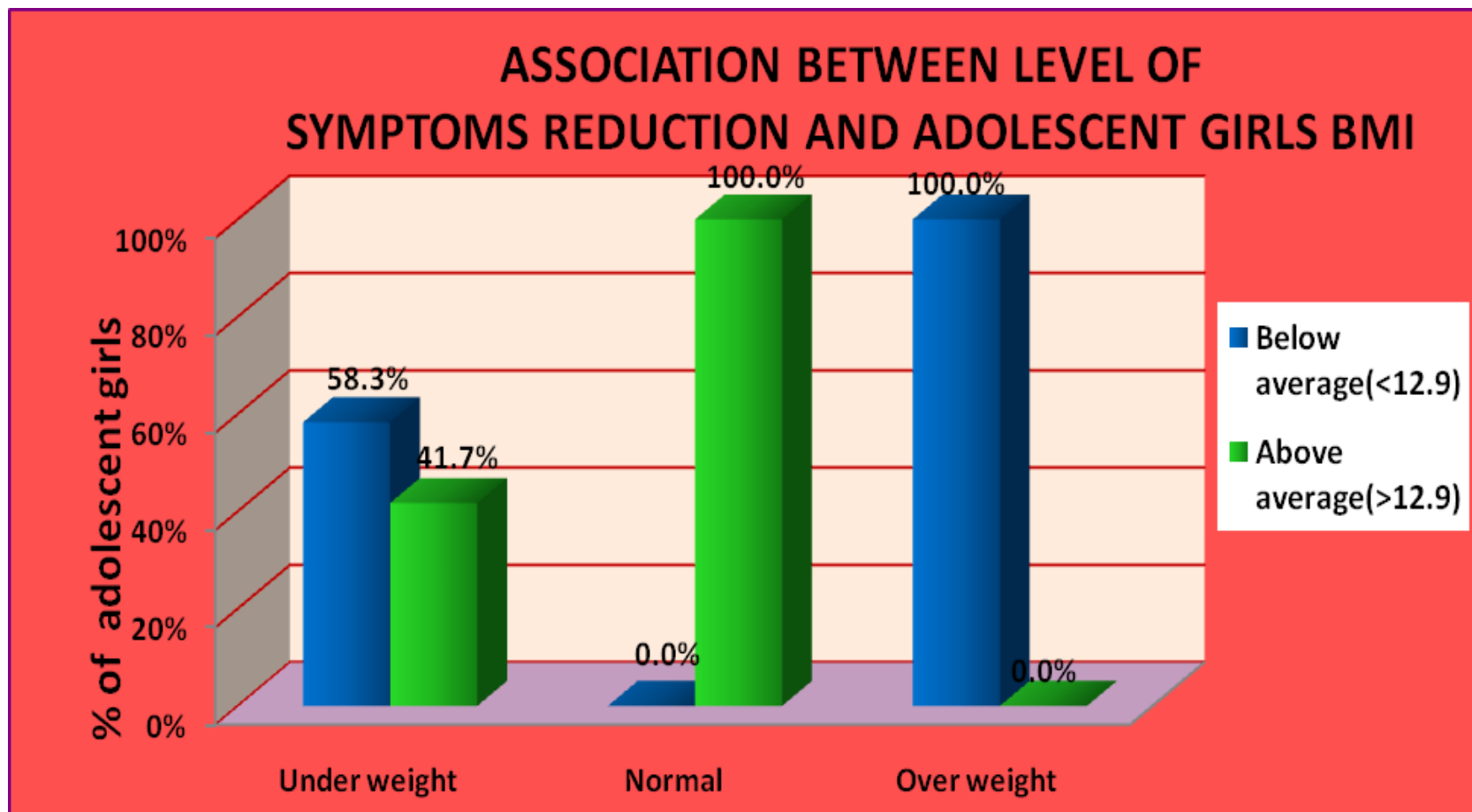


Figure 18: Graphical representation of association between level of symptoms reduction and adolescent girls Body Mass Index in experimental group

ASSOCIATION BETWEEN LEVEL OF SYMPTOMS REDUCTION AND ADOLESCENT GIRLS EDUCATION

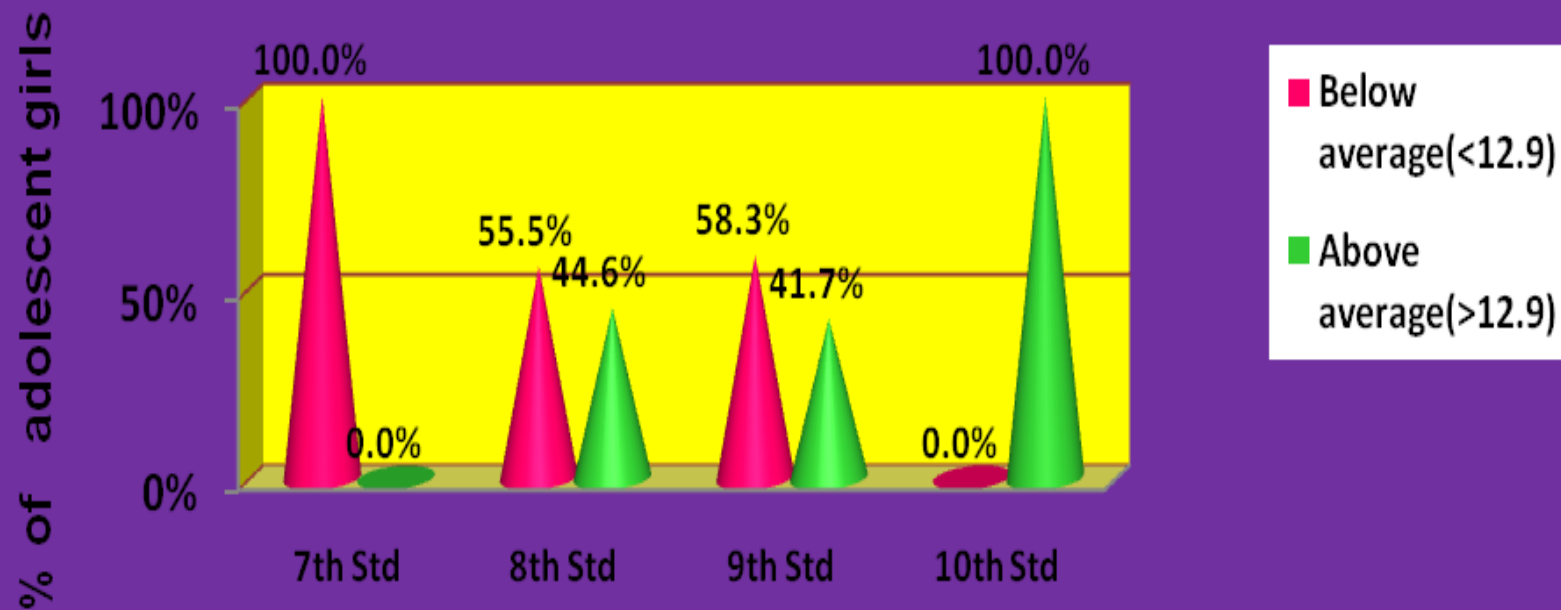


Figure 19: Graphical representation of association between level of symptoms reduction and education of adolescent girls in experimental group

ASSOCIATION BETWEEN LEVEL OF SYMPTOMS REDUCTION AND MENSTRUAL CYCLE

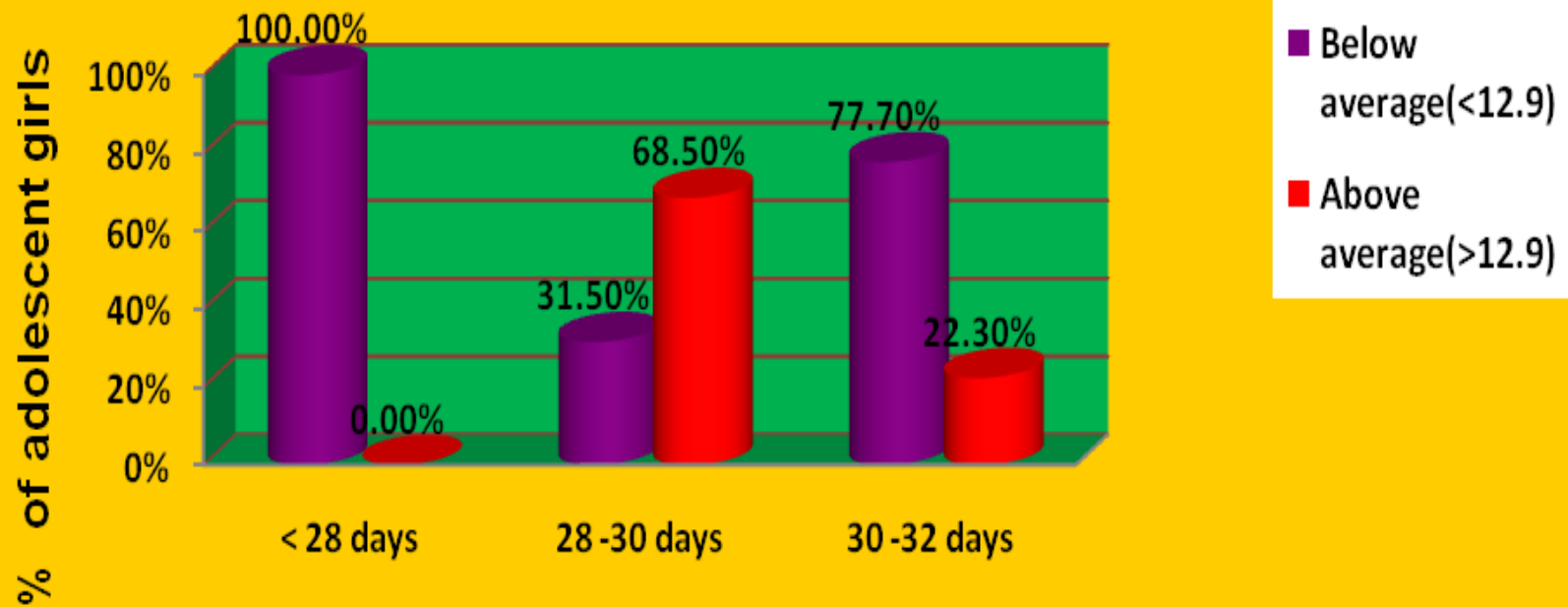


Figure 20: Graphical representation of association between level of symptoms reduction and menstrual cycle among adolescent girls in experimental group

DISCUSSION

The adolescent phase represents a transition from childhood's immaturity to the maturity of adulthood. It encompasses the period from puberty to adulthood, marked by significant physiological transformations, the emergence of sexual feelings, endeavors in shaping identity, and a shift from concrete to abstract thinking. Menstruation can be defined as a periodic physiologic discharge of blood mucous and other cellular debris from the uterine mucosa.

This article focuses on presenting the outcomes of the data analysis in alignment with the study objectives. The primary goal of the study is to assess the effectiveness of acupressure in altering pain perception among adolescent girls experiencing primary dysmenorrhoea at selected Government Higher Secondary School in Chennai. The study sample consisted of 60 patients who underwent acupressure on sanyinjiao acupoint (30 experimental and 30 control group), their level of pain was assessed with modified numerical categorical pain scale.

The first objective of the study was to assess the intensity of pain during menstruation between experimental and control group of adolescent girls before intervention.

In a cross-sectional in India, women attending Primary Health Centers were investigated to outline the prevalence and factors influencing dysmenorrhoea. Among the surveyed subjects, the most frequent menstrual complaints were reported by 95%, describing experiences of moderate to severe dysmenorrhoea, while the remaining 5% reported other forms of dysmenorrhoeal complaints. In this study, the pretest level of pain score before acupressure application at sayinjio acupoint shows that there is not much difference in pain score between experimental and control group. In experiment group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain. In control group, 30.0% of the girls are having moderate pain, 70.0% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

The second objective is to assess the intensity of pain during menstruation between experimental group and control group of adolescent girls after

intervention.

According to researcher primary dysmenorrhoea is highly prevalent, leading to significant work loss and discomfort. A total of 100 students experiencing primary dysmenorrhoea were selected through targeted sampling and divided into two groups: experimental and control. Acupressure treatment was administered during two consecutive menstrual cycles coinciding with pain and bleeding. In the experimental group, pain rating scales were assessed at 30 minutes, 1 hour, 2 hours, and 3 hours intervals using the Visual Analogue Scale (VAS). The findings indicated a noteworthy difference in mean pain scores before (8.2, 1.6) and after (2.6, 1.3) treatment in the experimental group, signifying the effectiveness of acupressure. This suggests that acupressure can serve as a non-medicated, cost-effective, and safe method for reducing dysmenorrhoea pain in girls and women. In the experimental group of this study, 73.3% of the girls reported experiencing mild pain, 26.7% reported moderate pain, and none reported having no pain, severe pain, or excruciating pain. In control group, 33.3% of the girls are

having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

The third objective is to compare the pretest and posttest score of pain during menstruation between experimental group and control group.

An experimental study conducted of 60 Australian women and 60 Chinese women to know the effectiveness of acupressure in reducing dysmenorrhoea. In pretest, experimental group among Australian women had mean 7.23 pain score and control group among Chinese women had mean 7.17 pain score. In posttest, experimental group had mean 2.46 pain score and control group had mean 6.94 pain score, this difference is large and it is statistically significant difference and it was calculated using student's paired t-test. **In this study, pretest** experimental group girls had 7.30 pain score and control group had 7.47 pain score, so the difference is 0.17, this difference is small and it is not statistically significant difference. **In posttest** , experimental group people had 2.57 score and control group had 7.23 score in posttest, so the difference is 4.67 , this difference is large and it is statistically significant difference. Statistical significance was calculated using **student's independent t-test**.

In pretest, experiment group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/. Mild pain / Excruciating pain and in control group, 30.0% of the girls are having moderate pain, 70.0% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain

In posttest, experiment group, 73.3% of the girls are having mild pain, 26.7% are having moderate pain and none of them are having No pain/severe pain / Excruciating pain and in control group, 33.3% of the girls are having

moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain. This difference is large and it is statistically significant difference. Statistical significance was calculated using **chi square test**.

The fourth objective of the study was to determine the effectiveness of acupressure by comparing the intensity of pain during menstruation before and after intervention between experimental group and control group.

An evaluative study conducted to determine the effectiveness of acupressure on reducing the dysmenorrhoea in Australia. The research design was pre experimental one group pretest post test design. The sample consisted of 30 B .Sc nursing students between the age group of 18- 21Years. Convenient sampling technique was used to select the samples. Numerical pain rating scale and self administered rating scale were used to assess the discomfort during menstruation. The collected data was analyzed by descriptive and inferential statistics .The result showed that mean post test scores 35.33% is lower than mean pretest scores (53.67%). Dysmenorrhoea score were reduced after giving acupressure. The paired 't' test ($t_{29}=6.26, P<0.05$) showed that there is significant difference between dysmenorrhoea score before and after acupressure. It reveals that acupressure was effective in reducing the dysmenorrhoea.

In this study, on an average, experimental girls are reduced 47.3% of pain score whereas in control group are reduced 2.3%. Differences between pretest and posttest score was analyzed using proportion with 95% CI and mean difference with 95% CI. **This difference shows the effectiveness of acupressure.**

In this study, on an average, experiment girls are reduced 17.2% of symptoms score whereas in control group are reduced 0.9%. Differences between pretest and posttest score was analyzed using proportion with 95% CI

and mean difference with 95% CI. **This difference shows the effectiveness of acupressure.**

The fifth objective of the study was to associate the pretest and posttest level of pain among adolescent girls in experimental group with selected demographic variables.

An experimental study conducted in Iran to evaluate effect of acupressure on primary dysmenorrhoea in Iranian medical science students. The sample was 30 young college female students with primary dysmenorrhoea. The control group comprised 15 female students of Iranian medical science. The data was collected using visual analogue scale. The result showed significant difference in the scores of dysmenorrhoea between the two groups immediately after (3.50 ± 1.42 v/s 5.06 ± 1.4 , $p=0.004$) and also 3 hours after treatment (1.60 ± 1.98 v/s 4.80 ± 1.37 , $p=0.000$) and students within normal range of Body Mass Index and students with moderate flow of menstruation got reduced pain score.

In this study, association between level of pain reduction and their demographic variables shows elders and more educated got their pain reduced, association between level of pain reduction and menstrual variables shows 28- 30 days menstrual cycle girls got their pain reduced. Statistical significance was calculated using chi square test.

In this study, association between level of symptom reduction and their demographic variables shows elders and more educated got their symptoms reduced, association with their menstrual variables shows 28-30 days menstrual cycle girls got their symptoms reduced Statistical significance was calculated using chi square test.

SUMMARY

Many women's are suffering from painful menstrual cramps (Dysmenorrhoea) and the associated symptoms include lower abdomen pain with or without radiating to back and thighs, headache, diarrhoea, constipation, nausea, dizziness and fainting. During the menstrual cycle, the lining of the uterus produces a hormone that causes the uterus to contract often painful. Women with severe cramps may produce higher than normal amount of prostaglandins or may be more sensitive to its effects.

In traditional Chinese medicine (TCM) term acupressure points prompt in the body to work more efficiently. From a medical model, they can be viewed as promoting the release of endorphins, blocking the pain receptors to the brain. Thus the painful menstrual cramps and associated symptoms can be harmonized and balanced by stimulation of acupressure points.

So the investigator undertook the study to "Assess the effectiveness of acupressure on pain perception among adolescent girls with primary dysmenorrhoea at selected Government Higher Secondary School, Chennai." The purpose of the study was to decrease the dysmenorrhoea and its associated symptoms among adolescent girls.

A formal permission was obtained from the Chief Educational Officer, Saidapet, Chennai and from Headmaster, Presidency Government Girls Higher Secondary School, Chennai. The data was collected with the help of structured questionnaire and modified numerical categorical pain scale, pretest and posttest assessment method for a period of 4 weeks.

The conceptual framework adopted for the study was Modified Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory. This model helped the investigator in approaching the problem in a comprehensive and systematic manner. Review of research helped the investigator in the preparation of the conceptual model, tool and methodology of the study.

The experimental approach was utilized to achieve the overall purpose. The research design used for the study was quasi-experimental design. Samples were collected using non-probability sampling technique for the study and this continued till the desired size was met. The study was conducted in Presidency Government Girls Higher Secondary School and Government Girls Middle School, Chennai. Convenient sampling method was used. The samples consist of 60 adolescent girls with primary dysmenorrhoea, 30 in experimental and 30 in control group.

MAJOR FINDINGS OF THE STUDY ARE AS FOLLOWS

- The pretest pain score in experimental group, 33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain and in control group, 30.0% of the girls are having moderate pain, 70.0% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.
- The pretest symptoms score in experimental group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms and in control group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms.
- The posttest pain score in experimental group, 73.3% of the girls are having mild pain, 26.7% are having moderate pain and none of them are having No pain/severe pain / Excruciating pain and in control group,

33.3% of the girls are having moderate pain, 66.7% are having severe pain and none of them are having No pain/ Mild pain / Excruciating pain.

- The posttest symptoms score in experiment group, 76.7% of the girls are having mild pain, 23.3% are having moderate pain and none of them are having No / severe symptoms and in control group, 13.3% of the girls are having mild symptoms, 86.7% are having moderate symptoms and none of them are having No / severe symptoms.
- The obtained 't' value of pain scale in pretest and posttest for the experimental group and control group was 7.30, 2.57 and 7.47, 7.23 respectively.
- The obtained 't' value of severity of symptoms scale in pretest and posttest for the experimental group and control group was 36.40, 23.50 and 37.17, 36.47 respectively.

CONCLUSION

If I hear, I forget

If I see, I remember

If I do, I know

- A Chinese Proverb

Acupressure that can be used in all the areas of nursing intervention to prevent, to promote, to maintain and to modify the variety of pain in the adolescents. The present study assessed the effectiveness of acupressure on pain perception among adolescent girls with primary dysmenorrhoea. The results revealed that in experimental girls are reduced 47.3% of pain score whereas in control group are reduced 2.3%. Differences between pretest and posttest score was analyzed using proportion with 95% CI and mean difference with 95% CI. **This difference shows the effectiveness of acupressure** on the reduction pain score which was statistically significant in the experimental group.

IMPLICATIONS

The investigator had drawn the following implications from the study which is of vital concern in the field of nursing education, nursing practice, nursing administration and nursing research.

i) Nursing education

Nursing curriculum is a means through which future nurses are prepared and it emphasis needs to be preventive and promotive health practice. The results of the study emphasis learners to utilize the knowledge and practice of acupressure in reducing dysmenorrhoea. As a nurse educator, we must strengthen the concept of non-pharmacological methods for relief of pain and inreducing dysmenorrhoea among adolescent girls.

Nursing students should be exposed to these areas and learn regarding these interventions. The basic nursing curriculum must be modified to adapt to this internationally proved interventions.

ii) Nursing practice

Nurses play a vital role in pain management, since many of the adolescent girls are having dysmenorrhoea. Nurses must have adequate knowledge regarding other non pharmacological pain management likeacupressure which is efficient and cost effective.

Nurses should possess the skill of assessing the pain level using pain scale and specific pain management like acupressure may be given in reducing the pain. Acupressure can also be introduced as a policy for non pharmacotherapy management.

iii) Nursing administration

Nursing administrators or leaders should take interest in formulating principles and adapting the various modalities of non pharmacological

management for dysmenorrhoea. Through in-service education programme, nursing personnel can be motivated to learn and practice on management of dysmenorrhoea in the hospital and community settings, with modern technological video aids to gain adequate knowledge and practice about the acupressure therapy.

Nurse administrators must allocate resources for conducting various staff development programme and should provide opportunity for the nurses to attend national and international conferences.

iv) Nursing research

Research in acupressure will support the basic importance of the reduction of pain during dysmenorrhoea and supportive evidence regarding effectiveness of acupressure. Research related to utility of acupressure for different age group and different kind of physical problems. Thus, promoting the utilization of the research findings by the health provider in the delivery of comprehensive health of the humans.

Nurse researcher must make arrangement to make use of available resources and guidance and constant support for the clinical nurse to undertake research activities on acupressure. Periodic review of research findings and disseminate the findings through conferences, seminars and publications in professional, national and international journals and in the World Wide Web.

RECOMMENDATIONS

- This study results can be implemented in all settings like hospitals and community.
- This study results can be included in school education as in the form of health education.

SUGGESTIONS

- ❖ A similar study can be replicated for adults and their findings can be generalized to a large group.
- ❖ A comparative study can be conducted in one type of home remedies and acupuncture for the same problem.
- ❖ A comparative study can be conducted between various alternative complementary methods to reduce the primary dysmenorrhoea among adolescent girls
- ❖ An exploratory study can be conducted to find out the effect of acupuncture for other problems.
- ❖ A similar study can be done for large samples.
- ❖ The study can be conducted to assess the knowledge and practice of the nurses regarding application of acupuncture on pain management.

LIMITATIONS

- This study is limited to 60 samples.
- This study is limited to adolescent girls.

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