

# A Pilot Study On “A Study To Assess The Effectiveness Of Comprehensive Nursing Interventions (Hydrotherapy, Rice Heat Pad, Turmeric Therapy, Acupressure And Self Learning Booklet) On The Level Of Pain Perception And Dysmenorrhea Symptoms Among Adolescent Girls In Selected Settings At Chennai”.

Muneeswari J<sup>1</sup>, Dr. Susila. C.<sup>2</sup>, Dr. Padmavathy<sup>3</sup>

<sup>1</sup> Ph.D. Nursing Scholar, Dhanvantri College of Nursing, Erode. The Tamil Nadu Dr. M.G.R. Medical University. [djm162516@hotmail.com](mailto:djm162516@hotmail.com)

<sup>2</sup> Principal cum Professor, Billroth college of Nursing, Chennai, India. The Tamil Nadu Dr. M.G.R. Medical University. [susilachandrasekaran@yahoo.com](mailto:susilachandrasekaran@yahoo.com)

<sup>3</sup> Principal, Dhanvantri College of Nursing, Erode. The Tamil Nadu Dr. M.G.R. Medical University. [Padmasekar2009@gmail.com](mailto:Padmasekar2009@gmail.com)

**Abstract:** Background: Menstruation is a natural phenomenon in women after puberty and is often associated with dysmenorrhea (Garg, 2015). Dysmenorrhea is very common, painful menstrual cramps of uterine origin, which is commonly divided into primary dysmenorrhea (pain without organic pathology) and secondary dysmenorrhea (pelvic pain with an identifiable pathologic condition, such as endometriosis or ovarian cysts) (Nagy, 2021). Doctors and other women give a lot of conflicting advice to reduce the pain during dysmenorrhea. To handle menstrual pain, we can utilize either the pharmacological or non-pharmacological methods. Pharmacologically, menstrual pain can be treated with medication. However, Non-pharmacologically, menstrual pain can be reduced by adequate rest, regular exercise (especially walking), water immersion, and pressing pressure points and by drinking traditional herbs such as turmeric water (Armour et al., 2019). Alleviation of pain during menstruation will result in good productivity and confidence among women. Aim of the study: To evaluate the effectiveness of comprehensive nursing interventions (Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self-learning booklet) on pain perception and dysmenorrhea symptoms among adolescent girls. Methods and design: The study was conducted using a Quantitative approach with Quasi Experimental Time Series with 2 group pretest and posttest design. Forty-Eight adolescent girls in the age group of 13-17 years were selected by using random sampling technique for both experimental and control group. In phase I, Data about background variables was collected before pretest, using socio demographic Performa and menstrual Performa. The researcher has conducted pretest level of Dysmenorrheal symptoms were assessed during first menstrual cycle for the first three days (1<sup>st</sup> day, 2<sup>nd</sup> day, 3<sup>rd</sup> day) by using Numerical Rating scale (NRS) and modified menstrual symptoms questionnaire (MMSQ) to the control group and experimental group. Comprehensive Nursing Interventions ((Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self-learning booklet) were given to adolescent girls in experimental group on individual basis. Assessment of Effectiveness of Comprehensive Nursing Interventions on level of pain perception and dysmenorrheal symptoms were measured by using same pretest scale. The major findings of the study: Comprehensive Nursing Interventions ((Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self-learning booklet) is an intervention in reducing Pain perception and dysmenorrheal symptoms as the pre-test mean score, SD and Mean percentage of experimental group shows that Mean (7.42±1.8) and control group Mean (7 ±2.34) on level of pain perception among adolescents with dysmenorrhea. So, the difference is 0.42, not statistically significant. Pretest mean score, SD, and Mean percentage of dysmenorrheal symptoms in experimental group shows that Mean (127.38±8.88) and control group Mean (125.25± 7.66) among adolescents with dysmenorrhea. So, the difference is 2.13, not statistically significant, assessed using student independent t-test. In posttest, there was a significant difference between experimental and control group of adolescent girls. The significant p- values 0.001 indicates, the level of pain perception and dysmenorrheal symptoms score were not similar in both groups, calculated using chi square test. Experimental groups are reduced the 44.20% of pain perception score and 20.67% of dysmenorrheal symptoms score after having comprehensive nursing interventions and control group are reduced only 2.90% of pain perception score and 1.61% of dysmenorrheal symptoms after routine care. There is significant association between posttest level of pain perception and demographic variables of adolescent girls with the age group of 13-14 years and 10<sup>th</sup> standard and posttest level of pain perception and menstrual variables of adolescent girls with 28 days menstrual cycle and moderate extent of blood loss in experimental group. There is significant association between posttest level of dysmenorrheal symptoms and demographic variables of adolescent girls with the type of family and family history and posttest level of pain perception and menstrual variables of adolescent girls with day of flow and material used in experimental group. Discussion: The findings of the study enlighten the fact that comprehensive nursing interventions can be used as cost-effective interventions and showed higher participant

satisfaction during intervention by reducing the level of pain perception and dysmenorrheal symptoms score in adolescent girls with primary dysmenorrhea.

Keywords: Dysmenorrhea, Acupressure, Hydrotherapy, Turmeric Therapy, Rice heat pad, adolescent, etc.

## 1. INTRODUCTION

***“It is not just pain. It is the complete physical, emotional, and mental assault on your body.”***  
**- James Wingo**

Woman is a precious creature of God. She has many roles in the society to perform being a daughter, sister, wife, and a mother. To perform these functions effectively, she requires more attention and care towards her health needs. Everything and everyone around her become disturbed if she is unwell. Amidst a lot of problems in their life, menopause and hormonal changes during their middle adulthood are the commonest one. Reproductive stage and health problems associated with it begins from menarche till menopause. (Malhotra C, et.al 2017). Dysmenorrhea is more likely in women with an earlier *menarcheal* age or longer duration of menstruation (menstruation beyond 7 days per cycle). The effects of dysmenorrhea results in laziness to perform any kind of job, bunking their job, adolescent girl's school bunking their schools among 40-45%, 30% and 15% of women respectively. Despite these effects, 30% of women failed to treat pain relief (Bernardi et al., 2017). Since, menstruation is a cyclic process and is an inevitable natural phenomenon in women's life, most of the women side with non-pharmacological interventions than medications and believes that it is safer and free of side effect (Yoshino et al., 2022). Dysmenorrhea features negative effect on the quality of life, social aspects, intellect, moods, concentration, sleep, and sports activities of numerous female teenagers. It is also reported to be the primary cause of absenteeism from work and school (Fernandez et al., 2020).

## 2. NEED OF THE STUDY

***The experience of physical agony evokes a profound sense of powerlessness.***

The Government of India, in its National Youth Policy (2003) defines adolescent's age group as “**13-19 years**”. Adolescence is a distinct developmental stage characterised by significant alterations in physical, social, emotional, and cognitive domains. The commencement of this phenomenon is signaled by the appearance of secondary sexual features and the achievement of reproductive maturity. Adolescents belong to the vital age group not only because they are the ‘entrant population’ to parenthood but because they are on the threshold between childhood and adulthood. As individuals strive to transition across this boundary, they encounter a range of physiological, psychosocial, and developmental transformations. Dysmenorrhea is a medical condition that affects mainly young women. It can be multifactorial, inflammatory mediators, pain pathways and a centralized response.

The prevalence of dysmenorrhea varies greatly across different studies, with reported rates ranging from 28% to 71.7% (Unsal et al., 2010). The estimated prevalence rates in the United States of America, Italy, and India are 85%, 84.1%, and 40.7% respectively. Regionally, about 54.29% respondents suffered from dysmenorrhea in a study to estimate prevalence among university students at SIMATS in Chennai. (**Keerthiga, 2017**). Over time, it is seen that the menstrual cycle becomes more regular, and the duration of monthly blood loss tends to decrease with increasing age. This indicates a progressive attainment of ovarian maturity over time. Irrespective of the fact of the maturation with aging results in lesser menstrual blood flow and lesser pain, it is highly necessary to aid in pain management for higher productivity at the highest productive age.

## 3. SIGNIFICANCE OF THE STUDY

Women and girls often receive a multitude of advice, which may at times be conflicting, from medical professionals and other female individuals. Pain relievers such as ibuprofen and naproxen have demonstrated efficacy. These pharmaceuticals are classified as non-steroidal anti-inflammatory drugs (NSAIDs). They are usually well tolerated and can relieve period pain by reducing the production of prostaglandins. However, they are proven to have side effects, especially stomach-related problems (cologne, 2006).

The birth control pill can also alleviate menstrual pain by inhibiting ovulation. This inhibits prostaglandin production. This also implies that the endometrial lining of the uterus does not undergo its typical level of thickening, resulting in a less substantial menstrual flow for the woman. The use of oral contraceptives can result in adverse effects, including but not limited to headaches, nausea, and an increased susceptibility to thrombosis. Research indicates that the application of warmth, such as using heat packs, may alleviate menstrual pain. Several studies have indicated that engaging in physical activities such as jogging, yoga, and exercise can be beneficial.

Various treatments, such as acupressure, heat application, dietary supplements, and herbal products, have demonstrated efficacy. Multiple studies have been conducted to investigate the efficacy of various techniques; however, the findings have been inconsistent or compromised due to limitations in the methodological approaches. Severe pain may necessitate the consideration of psychological treatment. This may involve engaging in psychotherapy sessions and acquiring pain-reducing techniques, such as relaxation and mindfulness exercises.

Period pain is often not given due consideration by friends, relatives, colleagues, and even medical professionals. Moreover, women often believe that enduring pain is an inherent aspect of their gender identity. Chronic pain that significantly impairs daily functioning, potentially hindering work productivity, should not be accepted as an inevitable consequence of the body's natural processes. This type of advice may hinder women's willingness to seek professional help or treatment, as it can create discomfort around taking breaks from activities for the purpose of rest. Although non-pharmacological measures are often preferred, their effectiveness has been tested in a limited number of studies, making it difficult to draw general conclusions. Furthermore, the results of these studies have been inconsistent, possibly due to methodological limitations. Therefore, the researcher conducted a study to investigate the efficacy of specific non-pharmacological interventions in alleviating menstrual pain and symptoms of dysmenorrhea.

#### **4. STUDY AIM**

This study aims to assess the degree to which the comprehensive Nursing intervention weighs significant difference on level of pain perception and dysmenorrhea symptoms which is measured using statistical analysis.

#### **The specific objectives of the study are to**

1. To assess the level of pain perception and dysmenorrhea symptoms among experimental group and control group in adolescent girls before and after comprehensive nursing interventions.
2. To evaluate the effectiveness of comprehensive nursing interventions (Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self-learning booklet) on pain perception and dysmenorrhea symptoms among adolescent girls in experimental and control group.
3. To find out the association between the posttest level of pain perception and dysmenorrhea symptoms scores among adolescents' girls in experimental and control group with their selected demographic variables.

#### **5. METHOD/ DESIGN**

##### **Study Design and Approach**

The conceptual framework in this study was based on the Modified Sister Callista Roy's adaptation model (1939) framework provides the perspective from which the investigators view the problems. The quantitative Research approach with Quasi Experimental Time Series 2-group pretest and posttest design were used as research design. Data analysis performed and the results combined in the data interpretation stage. The study's target population comprises adolescent girls aged 13 to 17 years.

##### **Sample size and sampling method**

The sample size in this study was determined using the methodology outlined in the study conducted by Chi-Hong Tseng et al. (2021). 20% of Main study sample with attrition rate 10%. Probability sampling - Simple Random technique was adopted by using power analysis to select forty-eight adolescent girls with dysmenorrhea in the age group between 13-17 years, twenty-four in each experimental and control group from selected schools, Chennai.

## **Recruitment**

Potential participants 48 adolescent girls were selected in schools according to inclusion criteria. The research objectives and procedures were clearly communicated to the chosen adolescent girls and their parents. The study participants provided written informed permission before to their participation in the research. After consenting, collected demographic variable along with phone number and expected date of menstruation.

Teaching and demonstration were given by using power point presentation for 30 minutes regarding Comprehensive Nursing Interventions on Dysmenorrhea and at the end of the class, self-Learning booklet distributed to experimental group of adolescent girls.

## **Inclusion Criteria**

The inclusion criteria were attained menarche with history of primary dysmenorrhea, regular cycle of menstruation, age between 13 and 17 years and with pain score between 1-6 during menstruation.

## **Exclusion criteria**

The exclusion criteria were suffering from secondary dysmenorrhea, irregular menstrual cycle, on medication for dysmenorrhea.

## **6. SCALES AND DATA COLLECTION**

The Quantitative data collected from adolescent girls with dysmenorrhea in experimental and control group after obtaining permission from authorities, the headmaster/ Principal of selected schools in Chennai. Done Screening with numeric rating pain scale, adolescent girls with 1-6 pain scores was considered as samples. Pretest was assessed for adolescent girls by using demographic characteristics, menstrual characteristics, and menstrual symptoms questionnaire in experimental and control group. After the pretest, comprehensive nursing interventions (Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self learning booklet) was administered for next month consecutive successive cycles in experimental group. Control group received standard routine care. Posttest conducted by using the same assessment tools on each menstrual cycle for next month successive cycles in experimental and control group.

### **Sampling method and data collection**

In this study, data collected in three phases by selecting adolescent girls through Probability sampling simple random technique. In first phase, demographic, menstrual variables, Numerical Rating Pain Scale (NRS) and Modified Menstrual symptoms questionnaire (MMQS) were administered as pretest. Dysmenorrheal Symptom assessment Diary was distributed to the school adolescent girls and assessed the level of pain perception and Dysmenorrheal symptoms for the first three days during first menstrual cycle before administration of Comprehensive Nursing Interventions.

In second phase Comprehensive Nursing Interventions (Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self-learning booklet) were given to adolescent girls in experimental group on individual basis. During 2<sup>nd</sup> consecutive menstrual cycles, adolescent girls were asked to drink a glass of water containing 250ml every 3 hours in a day, given a total of 2000 ml of water intake per day for first three days of menstruation. Instructed them on the maintenance of the water intake in a diary by self-charting. The investigator was applied rice using heating pad on lower back and abdomen for 15-20 minutes, twice a day for first three days during 2<sup>nd</sup> consecutive cycles. The investigator was administered turmeric therapy or water orally for twice a day for the first three days to the adolescent girls. The researcher administered acupressure to the alternative legs at the sanyinjiao point (SP6) located at four finger widths up the leg, deep pressure applied slightly behind the tibial bone and the area massaged for 5-6 seconds. The same repeated to the other leg. This acupressure performed by the researcher by pressing with a thumb for 6 seconds and released for 2 seconds without pressure, continued for 10 minutes on the point on each leg to bring the total duration of 20 minutes a day for first five days. A self-learning booklet on "Comprehensive Nursing Interventions during Dysmenorrhea" was distributed to a group of 24 adolescent girls on the day of their menstrual cycle and asked them to go through it.

In third phase, Posttest was conducted to the experimental group following administration of Comprehensive Nursing Interventions and to the control group based on their regular habits on dysmenorrhea assessed during 5<sup>th</sup> day of 2<sup>nd</sup> menstrual cycle by using Numerical Rating Pain Scale (NRS) and modified menstrual symptoms questionnaire (MMSQ).

## 7. DATA ANALYSIS

The data collected were compiled for data analysis. The Statistical Package for the Social Sciences (SPSS, version 22) along with STATA (version 10) and Epi info (Version 3.5.1) were utilized to carry out the statistical analysis.

Comprehensive Nursing Interventions (Hydrotherapy, Rice heat pad, Turmeric therapy, Acupressure and Self-learning booklet) is an intervention in reducing Pain perception and dysmenorrheal symptoms as the pre-test mean score, SD and Mean percentage of experimental group shows that Mean (7.42±1.8) and control group Mean (7 ±2.34) on level of pain perception among adolescents with dysmenorrhea. So, the difference is 0.42, not statistically significant. Pretest mean score, SD, and Mean percentage of dysmenorrheal symptoms in experimental group shows that Mean (127.38±8.88) and control group Mean (125.25± 7.66) among adolescents with dysmenorrhea. So, the difference is 2.13, not statistically significant, assessed using student independent t-test.

In posttest, there was a significant difference between experimental and control group of adolescent girls. The significant p- values 0.001 indicates, the level of pain perception and dysmenorrheal symptoms score were not similar in both groups, calculated using chi square test.

Experimental groups are reduced the 44.20% of pain perception score and 20.67% of dysmenorrheal symptoms score after having comprehensive nursing interventions and control group are reduced only 2.90% of pain perception score and 1.61% of dysmenorrheal symptoms after routine care.

There is significant association between posttest level of pain perception and demographic variables of adolescent girls with the age group of 13-14 years ( $\chi^2=4.53$   $p=0.03^*$ ) and 10<sup>th</sup> standard ( $\chi^2=8.22$   $p=0.05^*$ ) and posttest level of pain perception and menstrual variables of adolescent girls with 28 days menstrual cycle ( $\chi^2=7.87$   $p=0.05$ ) and moderate extent of blood loss ( $\chi^2=9.18$   $p=0.05^*$ ) in experimental group. There is significant association between posttest level of dysmenorrheal symptoms and demographic variables of adolescent girls with the type of family and family history and posttest level of pain perception and menstrual variables of adolescent girls with day of flow and material used in experimental group.

## 8. DISCUSSION

Results revealed about posttest on level of pain perception among adolescent girls, considering experimental group 45.83% having no pain, 41.67% of them having mild pain perception and 12.50% having moderate pain. Posttest menstrual symptoms among adolescent girls, considering experimental group 54.17% having mild dysmenorrhea symptoms, 45.83% of them are having moderate menstrual symptoms. Statistically, there was a significant difference in pain perception during dysmenorrhea between experimental and control group of adolescent girls. Similar studies showed by Granot et al (2001) that Significant differences were found that longer latencies of pain-evoked potentials (383.08 ± 6.8 msec versus 345.05 ± 7.0 msec,  $P < .001$ ), higher magnitude estimations on Numerical Rating pain scale of supra-threshold pain (83.29 ± 2.87 versus 63.50 ± 3.82,  $P < .001$ ), and higher state anxiety scores (37.69 ± 1.7 versus 29.20 ± 1.9,  $P = .002$ ). Association between posttest level of pain perception score and menstrual variables of adolescent girls. 28 days menstrual cycle and moderate extent adolescent girls are having more no pain score than others. posttest menstrual symptoms score and demographic variables of adolescent girls. Joint family and no family history adolescent girls had mild Menstrual Symptom score than others. Statistical significance was calculated using chi square test. Similar studies showed by Anil K Agarwal et al (2010) that the prevalence of dysmenorrhea in adolescent girls was found to be 79.67%. Most of them, 37.96%, suffered regularly from dysmenorrhea severity. The day before the start of menstruation, as well as the first day of menstruation, lethargy and tiredness were the most common symptoms, followed by depression and inability to concentrate in work.

## 9. CONCLUSION

Based on the results obtained in this pilot study, we can conclude that comprehensive nursing interventions such as hydrotherapy, rice heat pads, turmeric therapy, acupressure, and self-instructional modules have a beneficial effect on the level of pain perception and dysmenorrheal symptoms in adolescents' girls and have been found to be effective alternative therapies in reducing primary dysmenorrhea. The participants of the Comprehensive Nursing Intervention Group experienced a decrease in medication intake and found these interventions affordable, comfortable, and had no side effects during the time of dysmenorrhea. The findings of the study enlighten the fact that comprehensive nursing interventions can be used as cost-effective interventions and showed higher participant satisfaction during intervention by reducing the level of pain perception and dysmenorrheal symptoms score in adolescent girls with primary dysmenorrhea.

## 10. RECOMMENDATIONS

This study is generalizable to different situations.

- The study can be done with the age group of above 20 years.
- The impact of acupressure, hydrotherapy, rice heat pad, turmeric therapy can be measured in terms of quality of life during dysmenorrhea.
- The impact of comprehensive Nursing interventions can be analyzed on each domain.
- A Comparative study can be conducted to evaluate the effectiveness of comprehensive Nursing interventions on dysmenorrheal symptoms.
  - Longitudinal correlational studies can be conducted to assess the long-term effects of junk food consumption on symptoms of Dysmenorrhea.
  - The study can be extended to a larger sample size to establish the generalizability of the findings.

## 11. ETHICAL APPROVAL AND CONSENT TO PARTICIPATE.

Written informed consent was obtained from each participant, this protocol has been approved by the Ethics committee of Dhanvantri College of Nursing, Erode.

## 12. REFERENCES

- [1]. ABD EL-azeem, N. M., Atia, A. A., Abd El Salam, M., & Ramadan, S. A. E. (2020). Comparative Study between Different Acupressure Points on Relieving severity of Primary Dysmenorrhea. *Egyptian Journal of Health Care*, 11(3), 81-91.
- [2]. Torkan, B. et. Al., (2021). The role of water intake in the severity of pain and menstrual distress among females suffering from primary dysmenorrhea: a semi-experimental study. *BMC Women's Health*, 21, 1-9.
- [3]. Makiyah, A. C., & Anggraini, N. (2023). The Effectiveness of Giving Tumeric Tamarind in Reducing Menstrual Pain (Dismenoroe) in Young Girls at Mts Al-Muqowamah. *Asian Journal of Community Services*, 2(1), 23-34.
- [4]. Padmavathi, P., & Kokilavani, N. (2013). Assess the Effectiveness of Self-Instructional Module on Knowledge of Premenstrual Syndrome among Adolescent Girls in Selected Area, Erode. *Asian Journal of Nursing Education and Research*, 3(3), 164-166.
- [5]. Hewitt, G. D., & Gerancher, K. R. (2018). ACOG committee opinion Number 760 Dysmenorrhea and Endometriosis in the Adolescent. *OBSTETRICS AND GYNECOLOGY*, 132(6), E249-E258.
- [6]. Bakhsh, H., Algenaimi, E., Aldhuwayhi, R., & AboWadaan, M. (2022). Prevalence of dysmenorrhea among reproductive age group in Saudi Women. *BMC Women's Health*, 22(1), 1-14.
- [7]. Kural, M., Noor, N. N., Pandit, D., Joshi, T., & Patil, A. (2015). Menstrual characteristics and prevalence of dysmenorrhea in college going girls. *Journal of family medicine and primary care*, 4(3), 426.
- [8]. Andrew, S., & Coco, M. D. (1999). Primary dysmenorrhea. *Am Fam Physician*, 60(2), 489-96.
- [9]. Al-Matouq, S., Al-Mutairi, H., Al-Mutairi, O., Abdulaziz, F., Al-Basri, D., Al-Enzi, M., & Al-Taiar, A. (2019). Dysmenorrhea among high-school students and its associated factors in Kuwait. *BMC pediatrics*, 19, 1-12.
- [10]. Singh, M., Rajoura, O. P., & Honnakamble, R. A. (2019). Menstrual patterns and problems in association with body mass index among adolescent schoolgirls. *Journal of family medicine and primary care*, 8(9), 2855

DOI: <https://doi.org/10.15379/ijmst.v10i4.2255>

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.