



Pain Education and Deep Breath Therapy for Female Adolescents at Secondary School 2 Bayang, Pesisir Selatan Regency

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Abstract: *The issue of menstrual pain management, or dysmenorrhea, remains a critical public health concern, particularly among adolescent women. This community service initiative aimed to enhance knowledge and practices related to dysmenorrhea management through an educational program focused on pain relief and breathwork techniques. The target population consisted of female students at Secondary School 2 Bayang, South Pesisir Regency, who were experiencing menarche. A socialization approach was used, employing pre-test and post-test questionnaires to assess knowledge and skills. The results showed significant improvements: the average knowledge score increased from 54.20 to 83.95, and the ability to perform deep breathing exercises rose from 43.52 to 100. The findings highlight the effectiveness of the educational intervention in improving students' understanding of dysmenorrhea and their ability to manage menstrual pain through relaxation techniques.*



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Introduction

Dysmenorrhea is defined as one of the clinical manifestations related to gynecological disorders that is highly prevalent among adolescent females during puberty. The pain sensation is typically localized in the lower abdominal region, with the potential for radiating to the back, which can interfere with the ability to engage in daily activities¹. The clinical classification of dysmenorrhea can be divided into two categories: primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is caused by an increase in prostaglandin production, whereas

¹ Hassan Nagy, Karen Carlson, and Moien A B Khan, "Dysmenorrhea" (2024): 1–15.

secondary dysmenorrhea is due to pathological or structural abnormalities in the uterus ². The endometrium produces and releases prostaglandins during menstruation, which cause dysmenorrhea by causing the uterus to contract irregularly or abnormally. This results in hypoxia and decreased blood flow, which stimulate pain ³.

In addition to the primary symptom of menstrual pain, dysmenorrheal may present clinically with a number of other manifestations. These include nausea and vomiting (dyspepsia), gastroenteritis, migraine, fatigue, and, less commonly, syncope and chills. A considerable proportion of Indonesian women, estimated to be up to 90% in some studies, experience dysmenorrheal symptoms, yet the majority of them do not seek medical treatment. Data from the *Journal of Occupational and Environmental Medicine*, indicate that approximately 64.25% of Indonesian women suffer from dysmenorrhea, with 54.98% of these cases classified as primary dysmenorrhea and 9.36% as secondary dysmenorrhea ⁴. Primary dysmenorrhea is typically diagnosed in individuals under the age of 20, with a higher prevalence observed during adolescence. Additionally, a history of early menarche, elevated Body Mass Index (BMI), emotional distress, and excessive caffeine consumption are commonly reported alongside primary dysmenorrhea ⁵.

Hartinah et al. state that dysmenorrhea can be treated with pharmacological and non-pharmacological therapies. Pharmacological interventions can be carried out with analgesic collaboratives of the Non-Steroidal Anti-Inflammatory Drug (NSAID) class, which are commonly used but cause addictive effects and other dangerous physiological changes, such as peptic ulcers, accompanied by secondary anemia due to gastrointestinal bleeding, and impaired platelet function ⁶. Additionally, another study performed by Fergusson et al. indicated that the application of warm or cold compresses, deep breathing relaxation techniques, and the ingestion of herbal medications represent potential non-pharmacological therapies for the alleviation of pain ⁷.

² Zhao Hu et al., "Original Article Prevalence and Risk Factors Associated with Primary Dysmenorrhea among Chinese Female University Students : A Cross-Sectional Study," *Journal of Pediatric and Adolescent Gynecology* 33, no. 1 (2019): 15–22.

³ Samar Karout et al., "Prevalence , Risk Factors , and Management Practices of Primary Dysmenorrhea among Young Females," *BMC Women's Health* (2021): 1–14.

⁴ Fitria Fitria and Arinal Haqqattiba'ah, "Pengaruh Akupresur Dengan Teknik Tuina Terhadap Pengurangan Nyeri Haid (Disminore) Pada Remaja Putri," *Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery)* 7, no. 1 (2020): 073–081.

⁵ Hu et al., "Original Article Prevalence and Risk Factors Associated with Primary Dysmenorrhea among Chinese Female University Students : A Cross-Sectional Study."

⁶ Dewi Hartinah, Atun Wigati, and Leonny Vega Maharani, "Pengaruh Terapi Farmakologi Dan Non-Farmakologi Terhadap Penurunan Nyeri Menstruasi," *Jurnal Ilmu Keperawatan Dan Kebidanan* 14, no. 1 (2023): 245–252.

⁷ Fergusson Rj et al., "Endometrial Resection and Ablation versus Hysterectomy for Heavy Menstrual Bleeding (Review)" (2019).

The multitude of treatments for dysmenorrhea described above does not necessarily guarantee that adolescent women will utilize them. It is not uncommon for teenagers to disregard pain in the absence of appropriate intervention. The results of Kusumawardani's research indicated the distribution of non-pharmacological techniques, including deep breathing relaxation (68.42%), compressing the pain area (60.52%), massage of the pain area (55.26%), the knee-chest position (71.05%), rest (89.47%), and premenstrual dysmenorrhea gymnastics (44.73%)⁸.

It has recently been reported that deep breathing relaxation techniques have the capacity to reduce pain intensity through a number of different mechanisms. In other words, an increase in prostaglandins facilitates relaxation of spasmodic skeletal muscles, which in turn enhances blood flow to the area of spasticity and induces vascular vasodilation. Additionally, the body is stimulated to release endorphins and enkephalins, thereby blocking the perception of pain. By relieving muscle contractions, the massage effectively improves blood circulation.⁹.

A pre-study investigation was undertaken by the researcher, who conducted an interview with the emergency nurse at Bayang community health centre. The nurse revealed that a junior high school student had fainted due to dysmenorrhea on Thursday, 13 June 2024. The preliminary study was continued on Saturday, 15 June 2024 with an interview with the secondary school 2 Bayang teacher, who stated that three female students had been admitted to the student health unit due to experiencing pain during menstruation. The objective of the study is to analyze changes in knowledge related to pain education and deep breathing therapy in adolescent girls at secondary school 2 Bayang. In addition, the researcher aims to increase the knowledge of female students about dysmenorrhea and deep breathing therapy skills, which will be packaged in the form of community service.

Method

This program adopts a service learning approach, which integrates academic objectives with the development of student character through direct engagement in community-based activities. Within this framework, students not only receive educational materials but also take an active role in the learning process by participating in reflective practices and applying knowledge in real-life contexts. The community service program includes socialization, delivery of educational

⁸ Endah Kusumawardani et al., "Hubungan Tingkat Pengetahuan Dengan Penanganan Non Farmakologi Dismenore Primer Pada Mahasiswa Program Studi Keperawatan Angkatan 2015 Universitas Tanjungpura" (2016).

⁹ Ni Made Widyanthi and Ni Komang Ayu Resiyanthi, "Gambaran Penanganan Dismenorea Secara Non Farmakologi Pada Remaja Kelas X Di SMA Dwijendra Denpasar," *Jurnal Inovasi Penelitian* 2, no. 6 (2021): 1745-1756.

content, and an evaluation component. Its primary aim is to engage female students at SMP Negeri 2 Bayang, Pesisir Selatan Regency, particularly those who experience menstruation and dysmenorrhea. The goal is to increase their understanding of dysmenorrhea and introduce deep breathing relaxation techniques as a non-pharmacological therapy for menstrual pain. The implementation consists of introductory sessions, presentation of educational materials using Liquid Crystal Display (LCD) media and leaflets, practical demonstrations, and a final evaluation. The evaluation employs a questionnaire that has been tested for validity (0.751) and reliability (0.741), consisting of 15 questions designed to measure the effectiveness of the program in achieving its intended community service objectives.

Result

The community service activities were carried out at secondary school 2 Bayang, Pesisir Selatan Regency. This secondary school, which is under the authority of the Education Office of Pesisir Selatan Regency, was established in 1979 with the establishment decree 030/u/79 dated 17 December 1979. The respondents involved were female students who were in their menstrual period and had the potential to experience dysmenorrhea. Community service that has been conducted is able to improve and understand knowledge related to dysmenorrhea and conservative therapy. Patient characteristics consisted of blood pressure and BMI. Blood pressure is often associated with the incidence of hypertension in adolescents. Blood pressure statistics of secondary school 2 Bayang students showed that 54 students (100%) had blood pressure within normal limits [Table 1]. Meanwhile, BMI characteristics associated with nutritional status that can affect the learning outcomes of secondary school 2 Bayang students showed that the majority of respondents, namely 45 students (85%) had normal BMI [Table 2].

Table 1. Frequency Distribution of Blood Pressure of secondary school 2 Bayang students

Blood Pressure	f	%
Abnormal	0	0
Normal	54	100
Total	54	100

Table 2. Frequency Distribution of BMI of Female Students of secondary school 2 Bayang

BMI	f	%
Skinny	3	5,6
Normal	46	85,2

Fat	5	9,3
Total	54	100

A pre-posttest instrument was employed to calculate the students' knowledge status related to dysmenorrhea education. The results, obtained from 54 students of secondary school 2 Bayang, revealed an average pre-training knowledge score of 54.20, with a minimum score of 27 and a maximum score of 80. Following the educational intervention, the mean dysmenorrhea knowledge score increased to 83.95, with a minimum score of 60 and a maximum score of 100 [Table 3].

Table 3. a Knowledge of Female Students of secondary school 2 Bayang about Dysmenorrhea

Knowledge	Mean	Min-Max
Before education	54,20	27-80
After education	83,95	60-100

The program has accomplished considerable social change as a result of the students' paradigm shift toward reproductive health management in reaction to dysmenorrhea. Most students normalize and become passive in dealing with menstruation pain. However, education through exposure to presentation media such as LCDs, leaflets, and interactive talks on etiology, reproductive physiology, impact, and how to overcome using non-pharmacological strategies of breath relaxation in lowering menstruation pain. The increase in the aforementioned score indicates that education is delivered in proportions to raise awareness of a more proactive approach to health maintenance, implying that menstruation discomfort can be addressed independently and without the need of medicines.

The objective of the role play is to evaluate the proficiency of students in the implementation of deep breathing relaxation techniques for the alleviation of pain associated with dysmenorrhea. Table 4 illustrates the outcomes observed among the 54 students of secondary school 2 Bayang. Prior to receiving instruction, the mean score for deep breathing relaxation techniques was 43.52, with a minimum score of 22 and a maximum score of 50. Following the educational intervention, the mean score for deep breathing relaxation techniques increased significantly, reaching 100 [Table 4].

Table 4. The Average Ability of secondary school 2 Bayang Students in Performing Relaxation Techniques

Relaxation Techniques	Mean	Min-Max
Before education	43,52	25-50
After education	100	100

Such demonstrations are required to ensure that participants understand and implement the theory appropriately. During this phase, the facilitator interacted directly with the participants, allowing them to ask questions and adjust their skills. The girls knew how to role-play the deep-breathing relaxation technique they were taught, and as a result, they accomplished the intended behavior modification. Personal and emotional coaching, such as inviting the girls to ask questions, discuss personal measurement experiences, and express their feelings, increased the intimacy of the environment, resulting in more comfortable boundaries and successful kinesthetic learning.

The learning environment also promotes the use of stress coping skills, and increased knowledge can lead to a healthier lifestyle in which girls are more sensitive to their bodies' demands and better able to identify signs that require medical treatment. The establishment of peer counselors is the result of an effort to monitor repeated help over time. Peer counselors serve as a forum for schoolgirls as a preventive program, encouraging reproductive health and healthy lifestyle practices in their community. Meanwhile, the potential for the establishment of institutions inside the institution is still in the planning stages for the implementation of normal yearly school activities.

Discussion

The community service programmed, which employed socialization and training techniques for female students of secondary school 2 Bayang, Pesisir Selatan Regency, was successfully completed and achieved the desired outcome. The educational interventions related to dysmenorrhea knowledge and deep breathing relaxation skills to reduce pain in female students of secondary school 2 Bayang proved to be effective. The lecture method was employed to increase knowledge of dysmenorrhea, with the outcome of measuring the pre-post education score indicating success. The deep breathing relaxation training method was used to improve skills, with the outcome of the pre-post education role play measurement results demonstrating efficacy.

Dysmenorrhea, or menstrual pain, is a gynecological disorder that results from an imbalance of the hormone progesterone in the blood. The occurrence of lower abdominal cramps and back pain caused by uterine muscle spasms can also contribute to menstrual pain, which may impair normal activities and may necessitate medical intervention ¹⁰. A deficiency in knowledge regarding

¹⁰ Nuralam Nuralam, Ni Deni Dharmayanti, and Siti Jumhati, "Pengaruh Abdominal Stretching Exercise Terhadap Penurunan Nyeri Haid (Dismenoreia) Primer Pada Mahasiswi DIII Analis Kesehatan," *Jurnal Ilmiah Kesehatan* 12, no. 2 (2020): 213-220.

dysmenorrhea represents an additional risk factor for increased morbidity ¹¹. This study corroborates findings from prior research conducted by Prihatin et al., which indicated an improvement in knowledge regarding menorrhagia among adolescent girls who previously exhibited limited understanding of the condition. It was observed that their level of knowledge increased after being provided with counselling ¹². The researchers hypothesize that the implementation of education provided to secondary school 2 Bayang students as an approach may potentially contribute to a reduction in menorrhagia morbidity.

The pain experienced can be psychologically distressing, manifesting as anxiety, emotional lability and disruption to daily activities that may necessitate therapeutic intervention to overcome. Researchers adopted an alternative approach, exploring curative and rehabilitative strategies in the form of training, which demonstrated an enhancement in non-pharmacological management skills.

The deep breathing relaxation technique represents one of the conservative therapeutic modalities employed to enhance the improvement of vital capacity and lung function ¹³. In a study by Wuryaningsih et al., it was demonstrated that the application of relaxation techniques represents a human behavior-based approach that is capable of assisting in the overcoming of fear, pain and stress. In attempting to achieve maximum inspiration and expiration, stretch receptors within the lungs are stimulated, thereby activating parasympathetic nerves and inhibiting sympathetic nerve flow ¹⁴.

The demonstration is evaluated via an observation sheet, which demonstrates the students of secondary school 2 Bayang's comprehension of the deep breath relaxation technique in accordance with the Standard Operating Procedure (SOP). The students of secondary school 2 Bayang demonstrated enthusiasm when they began to simulate the relaxation technique, adjusting their posture to a relaxed position and holding it for a few seconds to maximize oxygen intake to the lungs. Subsequently, a score of 100 post-education indicated that the ability of secondary school 2 Bayang students in using relaxation techniques had increased. A series of community service activities were conducted as a means of assisting health workers and educational institutions in the management of pain

¹¹ Ningsih Saputri, Sri Andar Puji Astuti, and Asri Widya Rizky, "Hubungan Tingkat Pengetahuan Dan Sikap Dengan Penanganan Dismenore Primer Pada Remaja Putri," *Jurnal Kesehatan Masyarakat* 6, no. 3 (2022): 1804.

¹² Nova Sumaini Prihatin et al., "Penyuluhan Dismenore Pada Remaja Putri Di Pesantren Misbahul Ulum Kota Lhokseumawe," *Jurnal Abdimas Kesehatan (JAK)* 4, no. 3 (2022): 532.

¹³ Kessy Verawaty and Sri Hunun Widiastuti, "Pengaruh Teknik Relaksasi Napas Dalam Terhadap Tingkat Kecemasan Mahasiswa Semester II Dalam Menghadapi Ujian Akhir Semester Di Akademi Perawatan RS PGI Cikini," *Jurnal Keperawatan Cikini* 1, no. 1 (2020): 16–21.

¹⁴ Ari Muhammad, "Teknik Relaksasi," *Journal of Chemical Information and Modeling* 53, no. 9 (2019): 1689–1699.

reduction, particularly in adolescent girls who experience dysmenorrhea.

Conclusion

The community service activities conducted at Secondary School 2 Bayang in 2024 have demonstrated significant positive outcomes in enhancing students' understanding of dysmenorrhea and their ability to apply deep breathing relaxation techniques. The educational intervention effectively increased the knowledge of dysmenorrhea, with the average score rising from 54.20 to 83.95. Moreover, students exhibited considerable improvement in performing deep breathing exercises, as indicated by the increase in their scores from 43.52 to 100. These results suggest that community service activities, particularly educational programs targeting health awareness and skill-building, can significantly contribute to addressing public health issues like menstrual pain. It is recommended that similar programs be expanded to other schools to improve menstrual health education and empower young women with practical coping strategies for managing dysmenorrhea.

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