

A study to assess the effectiveness of Jacobson's muscle relaxation techniques on reducing the level of menstrual cramps or pain among teenage girls in a selected intermediate college, Tirupati, A.P

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Abstract

Teenage girls often experience menstrual cramps, requiring non-drug pain remedies like Jacobson Muscle Relaxation Techniques to reduce severity, increase physical activity, and reduce discomfort. The study aimed to identify the presence of Menstrual Cramps or Pain in Teenage Girls, to demonstrate relaxation techniques Jacobson's muscle for reducing Menstrual Cramps or Pain, to evaluate the effectiveness of the Jacobson muscle relaxation technique in reducing Menstrual Cramps or Pain, to find out the association between the level of Menstrual Cramps or Pain with their selected demographic variables. A Quasi-experimental pre-test-post-test one-group design was adopted by the researcher, and 50 teenage girls in a selected Intermediate College, Tirupati were selected using a purposive non-probability sampling technique. A structured knowledge questionnaire and a modified Visual Analog Scale were used to collect data. The result of the study showed that the post-test mean score (1.78) was less as compared to the pre-test mean score (2.6) of pain. There is a statistically significant difference between pre-test and post-test knowledge. The Chi-square test revealed that there was no significant association between the pre-test of Menstrual Cramps or Pain and all their selected demographic variables, i.e., Age in Years, Class or Standard, Age at Menarche (First Periods) years, Duration of Menstrual Cycle, Frequency of Menstruation, Family History of Dysmenorrhea (Menstrual Cramps or Pain), Self-management during Menstrual Cramps or Pain, Dietary Pattern, Known Disease related to Menstrual Cramps or Pain, and Previous Knowledge Regarding Menstrual Cramps or Pain at 0.05 level of significance. The overall findings of the study clearly showed that there is a need for continuous intervention to enhance the knowledge level of teenage girls suffering from menstrual cramps or pain.

Keywords: Knowledge; Home Remedies; Menstrual Cramps or Pain; Teenage Girls

1. Introduction

Edmund Jacobson developed Progressive Muscle Techniques or Jacobson's Muscle Relaxation technique in the 1920s to promote mental relaxation by straining and discharging muscles. This system involves working on one muscle at a time, tensing each muscle, and releasing it after some time unwinding, emphasizing the sense of unwinding within the zone.¹

Menstruation is regular uterine bleeding in women aged 12 to 45, triggered by decreased oestradiol and progesterone production. This cycle can take 3 to 7 days, with symptoms including back pain, chest aches, stiffness, and pelvic spasms.²

Jacobson muscle relaxation techniques are muscle relaxation techniques that help reduce cramping, pain, and discomfort experienced by women during their periods. These techniques intensify muscles, reducing spasms and pain.

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Proper demonstration can significantly reduce cramps and pain, reducing anxiety about periods and menstruation. Studies show these techniques are effective in reducing menstrual cramps and pain.²

Education is crucial in treating menstrual problems, and nurses and health professionals play a vital role in providing comprehensive care. They can educate women about menstrual issues and offer advice to improve their quality of life. Promoting awareness of this common condition and using safe herbal, alternative, and complementary therapies instead of medical chemicals is essential for holistic healthcare.³

Need of the study

Menstrual cramps or pain (Dysmenorrhea) is a common gynecological disease causing painful menstrual problems from the uterus, affecting women worldwide.⁴ Globally, it ranges from 17% to 80%, with 72.6% prevalence nationally. In the US, 45.7% and 31.7% of participants experience menorrhagia and irregular menstrual cycles.⁵

In 2019, S. Maheshwari conducted a study on 60 female students at KUV Higher Secondary Girls School, Madurai. The experimental group received 30 minutes of Jacobson muscle relaxation twice daily during menstruation, while the control group received 30 minutes. The study found that most girls suffer from dysmenorrhea, and Jacobson's muscle relaxation method effectively reduced menstrual pain levels in selected girls.⁶

Dysmenorrhea, or menstrual cramps, is a major cause of absenteeism among menstruating students worldwide. Many students struggle with self-management due to a lack of understanding about their menstrual health. A study was conducted to investigate the effectiveness of Jacobson's Muscle Relaxation techniques in reducing menstrual cramps or pain among teenage girls.

Objectives

1. To identify the presence of Menstrual Cramps or Pain among Teenage Girls in a selected Intermediate College, Tirupati.
2. To demonstrate Jacobson's Muscle Relaxation Techniques for reducing Menstrual Cramps or Pain among Teenage Girls in a selected Intermediate College, Tirupati.
3. To assess the effectiveness of Jacobson's Muscle Relaxation techniques in reducing Menstrual Cramps or Pain among Teenage Girls in a selected Intermediate College, Tirupati.
4. To find the interrelation between the level of Menstrual Cramps or Pain with their selected demographic variables.

1.1. Hypothesis

1.1.1. Null hypothesis

H₀₁: There is no significant effect of Jacobson's Muscle Relaxation Techniques on reducing the level of Menstrual Cramps or Pain among Teenage Girls.

H₀₂: There is no significant relationship between the level of Menstrual Cramps or Pain among Teenage Girls with their selected demographic variables.

1.1.2. Research hypothesis

H₁: There is a significant effect of Jacobson's Muscle Relaxation Techniques on reducing the level of Menstrual Cramps or Pain among Teenage Girls.

H₂: There is a significant relationship between the level of Menstrual Cramps or Pain among Teenage Girls with their selected demographic variables.

2. Materials and methods

The researcher's critique strategy for evaluating the effectiveness of Jacobson's Muscle Relaxation Techniques on reducing the number of Menstrual Cramps or Pain among Teenage Girls of a Selected Intermediate College in Tirupati. As its research approach, this study employed a quantitative evaluative research strategy. The current study used a Quasi-Experimental one-group pre-test-post-test research design. The research was conducted at Inter College in Tirupati, in Leela mahal. The setting was entirely reliant on the sample's availability and viability. The population

consists of all Teenage Girls enrolled in Tirupati's Intermediate College in Andhra Pradesh. Girls aged 13 to 19 years old having regular menstruation and Menstrual Cramps or Pain were recruited from Inter College in Tirupati, Andhra Pradesh. The study included 50 teenage girls as participants. The current study's sampling method was a non-probability sampling strategy. Teenage Girls aged 13 to 19, teenage girls eager to participate in the study, teenage girls from a selected Intermediate College in Tirupati, who could read, write, and interpret English and Hindi, teenage girls with a regular menstrual cycle, and teenage girls with Menstrual Cramps or Pain were included in the study.

2.1. Instruments

Following a thorough assessment of literature, textbooks, journals, internet references, and professional advice, a Modified Visual Analog Scale for Pain was established. Experts provided me with helpful feedback on the critique's veracity and appropriateness.

Section A: Demographic data which consisted of demographic variables like age in years, class or standard, age at menarche (first periods) in years, duration of the menstrual cycle, frequency of menstruation (periods), family history of dysmenorrhea (Menstrual Cramps or Pain), dietary pattern, known diseases related to menstruation, and previous knowledge regarding Menstrual Cramps or Pain.

Section B: In 1983, Wong-Baker developed a visual analog scale. A visual analog scale for pain was modified and utilized to assess the level of discomfort and pain during menstruation. According to the summed-up scores obtained by the study subjects, these were categorized into 5 categories, i.e., no pain (0), mild (1-3), moderate (4-6), severe (7-8), and worst pain possible (10).

The wide spread of these tool designs among professionals in obstetrics and gynecology, nursing, and nursing research has established the content validity of a visual analog scale for pain instruments. The tool was validated by eight obstetricians and nursing specialists. The pilot study was conducted on five samples having similar characteristics. The Visual Analog Pain Scale for Teenage Girls was tested using the Karl-Her-Person correlation coefficient and test-retest method, proving its reliability, validity, and appropriateness for research, indicating its reliability, i.e., $r=1$ (acceptable range is 0.7–1).

2.2. Data collection

The researcher obtained permission from Rama University's Faculty of Nursing and R.G. Inter College's Recognized Dissertation Committee before collecting data. A non-probability purposive sampling method was used to select 50 girls of appropriate age. Informed consent was sought before enrolling patients, and privacy, dignity, and respect for religious and cultural views were ensured throughout the data collection process. A study involved respondents who were given a demographic profile questionnaire and a standardized visual analog pain scale to measure pre-test levels of Menstrual Cramps or Pain. After a 30-35-minute pretest, subjects were shown Jacobson's Muscle Relaxation techniques, and the pain scale was used to measure their levels after 30 days.

2.3. Ethical considerations

The Rama University, Faculty of Nursing's Ethical Committee granted authorization for the study. The nature and objective of the study were communicated to the participants. They were assured that the information acquired from them would be kept anonymous and secret. The subjects provided written informed consent.

3. Results

Out of 50 Teenage Girls, in the pre-test, 7 (14%) had no pain, 14 (28%) had mild pain, 23 (46%) had moderate pain, 4 (8%) had severe pain, and 2 (4%) had worst pain possible, whereas in post-test, 15 (30%) had no pain, 32 (64%) had mild pain, 2 (4%) had moderate pain, 1 (2%) had severe pain, and 0 (0%) had worst pain possible.

Table 1 Dissemination and comparison of pre-test and post-test levels of menstrual cramps or pain among teenage girls N=50

Level of menstrual cramps or pain	Pre-test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No Pain	7	14%	15	30%
Mild Pain	14	28%	32	64%
Moderate Pain	23	46%	2	4%
Severe Pain	4	8%	1	2%
Worst Pain Possible	2	4%	0	0%
TOTAL	50	100%	50	100%

The mean score and standard deviation of the pre-test were 2.6 (SD= 0.9591) and the post-test was 1.78 (SD=0.6095).

Table 2 Dissemination of mean and standard deviation of pre-test & post-test level of menstrual cramps or pain among teenage girls n=50

Level of pain	Mean	Standard deviation (s. D.)
Pre-Test	2.6	0.9591
Post-test	1.78	0.6095

The mean and standard deviation (SD) of the pre-test and post-test were compared and a paired “t” test was applied to see the effectiveness of Jacobson’s Muscle Relaxation techniques. It was seen that the calculated paired “t” value was 5.857 which is greater than the table value, i.e., 2.00 at the significance level of 0.05, which clearly shows that Jacobson’s Muscle Relaxation techniques were very effective in reducing the Menstrual Cramps or Pain of Teenage Girls. Therefore, H_1 , i.e., There is a significant effect of Jacobson’s Muscle Relaxation Techniques on reducing the level of Menstrual Cramps or Pain among Teenage Girls is accepted and H_{01} (null hypothesis) is rejected.

Table 3 Effectiveness of Jacobson’s muscle relaxation techniques on reducing menstrual cramps or pain among teenage girls n= 50

Intervention	Calculated paired “t” value	Df	Table value	Significance
			(p=0.05)	
Jacobson’s muscle relaxation techniques	5.857	49	2	Significant

df- Degree of freedom

Table 4 Association between the level of pre-test pain score of teenage girls with their selected demographic variables
n= 50

Demographic variables	Response	PAIN SCORE					Chi-Square	Significant/Not significant
		No Pain	Mild Pain	Moderate Pain	Severe pain	Worst Pain Possible	χ^2	
Age in years	12- 14 years	0	4	5	0	0	4.3	Not Significant
	15- 17 years	4	6	10	2	1	df=8	
	18 years or above	3	4	8	2	1		
Class or Standard	6th-8th	2	1	7	1	0	5.26	Not Significant
	8th-10th	4	7	9	1	1	df=8	
	11th-12th	1	6	7	2	1		
Age of Menarche (first periods) Years	10-12 years	3	2	1	1	0	9.13	Not Significant
	13-14 years	3	11	19	2	2	df=8	
	above 14 years	1	1	3	1	0		
Duration of Menstrual cycle	3 days	2	8	15	2	1	5.77	Not Significant
	4 days	1	1	1	0	0	df=12	
	5 days	3	3	5	2	1		
	Above 5 days	1	2	2	0	0		
Frequency of Menstruation (Periods)	Every 28 Days	0	3	4	2	0	4.86	Not Significant
	Every 30 Days	7	11	19	2	2	df=4	
Family History of Dysmenorrhea (Menstrual Cramps or Pain)	Present	4	12	16	3	2	2.97	Not Significant
	Absent	3	2	7	1	0	df=8	
	Not Known	0	0	0	0	0		
Self-management during Menstrual Cramps or Pain	Use of hot water bottle	2	5	7	1	2	10.92	Not Significant
	Medications	2	6	12	1	0	df=12	
	Exercise	1	1	0	0	0		
	Nothing	2	2	4	2	0		
Dietary Pattern	Vegetarian	4	8	17	4	2	4.39	Not Significant
	Non-vegetarian	3	6	6	0	0	df=4	
Known Disease Related to Menstrual Cramps or Pain	Dysmenorrhea (Menstrual Cramps or Pain)	7	10	8	4	2	7.04	Not Significant
	Menorrhagia (abnormally heavy bleeding during periods)	0	1	0	0	0	df= 12	

	Polymenorrhea (frequent periods)	0	0	1	0	0		
	Oligomenorrhea (irregular or inconsistency periods)	0	3	4	0	0		
Previous Knowledge Regarding Menstrual Cramps or Pain	Yes	3	3	10	2	1	2.36	Not Significant
	No	4	11	13	2	1	df= 4	

4. Discussion

The calculations of the study revealed that out of 50 Teenage Girls, in the pre-test, 7 (14%) had no pain, 14 (28%) had mild pain, 23 (46%) had moderate pain, 4 (8%) had severe pain, and 2 (4%) had worst pain possible. Therefore, it says that the maximum of the Teenage Girls had some altitude of pain during menstruation.

A cross-sectional study was conducted on 1,000 healthy women aged 11 to 28 years. A standardized self-report questionnaire was utilized to collect relevant data. Pain intensity was assessed using the Numerical Pain Scale (NPS). Data were calculated using SPSS software version 16. As a result, the Menstrual Cramps or Pain rate was 70.2%. Most subjects experienced pain for 1 to 2 days during menstruation. 23.2% of girls have menstrual problems that last for 2-3 days.⁷

The mean score and SD of pre-test pain scores were found to be 0.9591 and 2.6 respectively and that of post-test pain scores were 0.6095 and 1.78 respectively. The calculated 't' value was 5.857, indicating a significant decrease in the post-test pain scores ($p < 0.05$). Their decreased score of post-test scores showed that Jacobson's Muscle Relaxation Techniques were effective in minimizing the level of Menstrual Cramps or Pain among Teenage Girls.

The study design was a combination of a pre-experimental design and a pre-post-group experimental design. The population of this study included only adolescents from Candi Sidoarjo village in the Brigo district. Using a purposive sampling technique, the sample size was 9 patients with Menstrual Cramps or Pain. The dependent variable was menstrual problems and the independent variable was yoga practice. The researcher's SOP was used as the research tool and the data were calculated utilizing paired samples t-test. The results showed that before yoga practice, the pain level reached an average of 6.44 (severe pain), and after yoga practice, the average pain level was 4.11 (moderate pain). Example t-test result $p = 0.000 = < \alpha = 0.05$.⁸

The 0.05 level of significance, it was discovered that there was no significant association between the pre-test of Menstrual Cramps or Pain and all of their selected demographic variables, namely, Age in Years, Class or Standard, Age at Menarche (First Periods) years, Duration of Menstrual Cycle, Frequency of Menstruation, Family History of Dysmenorrhea (Menstrual Cramps or Pain), Self-management during Menstrual Cramps or Pain, Dietary Pattern, Known Disease related to Menstrual Cramps or Pain, and Previous Knowledge Regarding Menstrual Cramps or Pain.

A similar cross-sectional analysis was conducted on a group of 408 young women who completed a self-report questionnaire. The results disclosed that pain altitude was positively correlated with the menstrual cycle ($CR = 0.336$), abortion history ($CR = 3.640$), and gynecological diseases ($CR = 0.336$) ($r = 0.302$, $P < 0.0001$). $CR = 0.948$), age at menarche ($CR = -0.225$), use of hormonal contraceptives ($CR = -0.787$), and history of gynecologic surgery ($CR = -2$) were negative.⁹

4.1. Delimitation

The study's restrictions were teenage girls who were present at the time of data collection, the study would only be conducted in a school setting, and teenage girls who were willing to participate in the study.

5. Conclusion

It can be concluded that Jacobson's Muscle Relaxation Techniques were very effective in reducing Menstrual Cramps or Pain among Teenage Girls. Regular training is needed to decrease the level of Menstrual Cramps or Pain among Teenage Girls.

The study recommends descriptive studies to investigate menstrual pain prevalence and risk factors, as well as the effects of Jacobson's relaxation techniques on cramps and pain. Comparative studies between married and unmarried individuals can also be conducted. The study used a demographic profile questionnaire and standardized pain scale to measure pre-test levels and the effectiveness of the techniques.

Compliance with ethical standards

Disclosure of conflict of interest

There are no conflicts of interest.

Statement of ethical approval

The Rama University, Faculty of Nursing's Ethical Committee granted authorization for the study. The nature and objective of the study were communicated to the participants. They were assured that the information acquired from them would be kept anonymous and secret. The subjects provided written informed consent.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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