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RESEARCH ARTICLE

AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF PELVIC ROCKING EXERCISES VERSUS AEROBIC EXERCISES ON PRIMARY DYSMENORRHEA AMONG ADOLESCENT GIRLS IN A SELECTED COLLEGE AT PUDUCHERRY

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ABSTRACT

Adolescence is a transition phase passing through between a child and an adult. During this period, rapid physical growth and physiological as well as psychological changes, occurs. Primary dysmenorrhea is a common menstrual complaint with a major impact on women's quality of life, work productivity and health-care utilization. The prevalence of primary dysmenorrhea varies between 16% and 91% in women of reproductive age, with severe pain in 2–29% of the women. The prevalence of dysmenorrhea varies all over the world. On a Global scale, more than 50% of post-pubescent menstruating women are affected by dysmenorrhea with 10–12% of them having severe dysmenorrhea. In India, dysmenorrhea incidence is 33.5% among adolescent girls. True experimental design was adopted for the study. The population of the study was only adolescent girls with primary dysmenorrhea. 60 samples were selected by simple random sampling technique, 30 in each group, group I received pelvic rocking exercises and group II received aerobic exercises. Pre-test was done using structured questionnaire and assessment of level of pain perception by numerical pain rating scale. After pelvic rocking exercises for group I and aerobic exercises for group II, level of pain perception was assessed using the numerical pain rating scale. The main conclusion of the present study was all adolescents girls with primary dysmenorrhea reported moderate and severe pain on numerical pain rating scale before intervention. Pelvic rocking exercises and aerobic exercises were effective on menstrual pain perception in both group I and group II. While comparing the effectiveness of pelvic rocking exercises and aerobic exercises, result shows that Wilcoxon test of group I and group II was -4.748 and -4.848, respectively. It indicates that there was variation in the level of pain reduction in group II than group I. thus the study concludes that aerobic exercises is effective on reduction of menstrual pain perception among adolescent girls with primary dysmenorrhea.

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INTRODUCTION

Adolescence is a transition period between childhood and adulthood and is characterized by a spurt in physical, endocrinal, emotional and mental growth with a change from complete dependence to relative independence. One of the major physiological changes that take place in adolescent girls is the onset of menarche. It is the stepping-stone from childhood to maturity. Menstruation is the monthly cycle or monthly vaginal discharges in woman. It is experienced by woman from puberty to menopause starts between the age of 8 to 15 and lasts up to 40 to 60 in some. Most of the women experience menstruation once in 28 days, but it can vary considerably from one person to another person. Though the menstruation is normal. The commonly experienced problem by the adolescent girls is cramping pain during menstruation, known as primary dysmenorrhea. Dysmenorrhea is the most common problem prevailing in women of reproductive age. It can be divided into two broad categories such as primary and secondary. Primary dysmenorrhea or painful menstruation, in absence of any specific pelvic diseases is one of the most common gynaecological problem worldwide. Secondary dysmenorrhea is menstrual pain associated with underlying pelvic pathology. Primary dysmenorrhea is characterized by lower abdominal pain which may irradiate to thigh and lower back. It is commonly associated with nausea, headache, fatigue and diarrhea. It is generally seen in age group of 16-25 years. Pain usually starts the day before or at the first day of menstrual cycle and disappears at the end of menstruation. The cause of menstrual pain is ischemia. During menstruation, the

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uterus get into spasm and this causes rise in tension which produce ischemia of muscles.

Need for the study: Adolescent form a significant proportion of the population of our country. Though menstruation is considered as a normal phenomenon, it is considered as highly emotional experience for adolescent girls. Many studies are conducted in India and abroad, revealed that primary dysmenorrhea is associated with several physical and psychological problems. Primary dysmenorrhea is highly prevalent in adolescent girls. According to the prevalence in worldwide, Previous studies on university students showed its prevalence to be 34% in Egypt, 64% in Nigeria and Mexico, 84% in Thailand, 88% in Turkey and 93% in Taiwan, 74.5% in Malaysia, 70% in Italy, 80% in Australia, 85% among Hispanic, and Lowest prevalence has been reported in Japan (16%). According to the prevalence in India, True incidence and prevalence of dysmenorrhea are not clearly established in India. Studies from various parts of India reported the prevalence of dysmenorrhea ranges between 50 and 87.8%.
According to the prevalence in Puducherry, studies are conducted in IGMCRI to evaluate the prevalence of dysmenorrhea and its severity among 142 female university students showed its prevalence of primary dysmenorrhea was 70.4% 5.6% of students reported severe primary dysmenorrhea with limitation of daily activities and the severity of dysmenorrhea was significantly associated with college absenteeism

Statement of the problem: "An experimental study to evaluate the effectiveness of Pelvic Rocking Exercises verses Aerobic Exercises on primary dysmenorrhea among adolescent girls in a selected college at Puducherry."

Objectives of the study

- To assess the level of pain perception in primary dysmenorrhea among adolescent girls during pre-test
- To evaluate the effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls
- To compare the effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls
- To find out the association between the level of pain perception and the selected demographic variables of adolescent girls with primary dysmenorrhea

Operational definitions

- **Comparative:** The term used to express the higher benefits between pelvic rocking exercises and aerobic exercises on reduction of pain during menstruation.
- ASSESS: Evaluate the nature, intensity, quality of pain during menstruation.
- **Effectiveness:** It refers to the difference of scores from pre-test and post-test obtained by the subject measured by pain perception.
- **Adolescent Girls:** Adolescent girls who is having painful menstruation.
- **Primary Dysmenorrhea:** primary dysmenorrhea is the occurrence of painful cramps during menstruation.
- **Aerobic Exercise:** aerobic exercise is a type of physical activity that promotes increased use of oxygen in order to improve the overall body condition.
- **Pelvic Rocking Exercise:** Pelvic rocking exercise is an exercise to strengthen the abdominal muscles.

HYPOTHESES

- **H_1:** Level of pain perception differs on primary dysmenorrhea among adolescent girls before and after pelvic rocking exercise and aerobic exercises
- **H_2:** There is difference between the effectiveness of pelvic rocking exercises verses aerobic exercises in reduction of pain perception
- **H_3:** There is association between level of pain perception and selected demographical variables of adolescent girls

Delimitations

- The study is limited to adolescent girls with primary dysmenorrhea
- The study is limited to 60 subjects
- The study is limited to only 6 weeks
- The study is limited to samples available during period of data collection

Projected outcome

- This study will help the adolescent girls to assess the level of pain perception during primary dysmenorrhea
- It will help to identify the effect of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls
- This study will help to reduce the level of pain in adolescent girls with primary dysmenorrhea
- This will help to minimize the use of pharmacological pain management during primary dysmenorrhea

RESEARCH METHODOLOGY

Research approach: Research approach used in the study was quantitative research approach.

Research design: The research design used in the study was True Experimental design (two group pre-test post-test design)

Variables

Independent variables: Pelvic rocking exercises and Aerobic exercises

Dependent variable: Primary Dysmenorrhea

Setting of the study: Sampling is a process of selecting a portion of the population to represent the entire population. Sampling technique used for this study was simple random sampling technique and the sampling was done through the lottery method. Random sampling involves a selection process in which each element in the population has an equal and independent chance of being selected. The study was conducted in Vasavi College of Education and Vasavi teacher training institute in Puducherry.
It is a private college, which is situated 17 kms away from Kasturba Gandhi Nursing College, Puducherry. The total strength of the college student was 986, of which the number of adolescent girls were 248. The College has various courses in PG diploma and bachelor of education like biological

sciences, commerce, computer science, English, Hindi, home science, Malayalam, Tamil, Mathematics, Social studies and English, Physics, Chemistry. The nearby hospital was Be well hospital which is about 1.5 kms from Vasavi College of Education and Vasavi Teacher Training Institute in Puducherry. Bus and taxies were available from that area.

Study setting was selected on the basis of

- Availability of subjects
- Feasibility of conducting the study
- Economy of time

Population: The target population of the study were adolescent girls at the age group of 17 to 20 years with primary dysmenorrhea.

Sample size: Sample were calculated to the earlier study on effectiveness of pelvic rocking exercises aerobic exercises among ,adolescent girls with primary dysmenorrhea in study setting, the samples was calculated by power analysis with the confidence of 98%. Number of the sample was 24 which was rounded as 30 in each group. Totally 60 adolescent girls were selected as samples for my study. Each group (i.e.) group I and group II comprised of 60 adolescent girls with primary dysmenorrhea

Sampling technique: The sample selected for the present study was 60 adolescent girls with primary dysmenorrhea who satisfied the inclusion criteria and available during the data collection period were selected as samples. The samples were divided into 2 groups as 30 in group I (pelvic rocking exercises) and 30 in group II (aerobic exercises). Samples were selected by simple random sampling technique (lottery methods).

Criteria for sample selection

Inclusion criteria

- Adolescent girls with primary dysmenorrhea
- Adolescent girls who were willing to participate

Exclusion Criteria

- Adolescent girls with orthopaedic condition
- Adolescent girls with irregular menstrual periods and other gynaecological problems

Description of the tool

The Tool consists of 2 parts: PART-1 It consists of questionnaire method, to assess the demographic data such as a Age, Height, Weight, Religion, Residential area, Family income, Diet pattern, Level of activity, Specific health practices, Age of menarche, Menstrual cycle in days, Duration of menstrual flow, duration of pain, & undergoing any pain relieving measures for primary dysmenorrhea. PART-2 It includes assessment of level of pain perception in primary dysmenorrhea by numerical pain rating scale.

Content validity of the tool: The content validity of the instrument was assessed by obtaining opinion from experts in the field of nursing and statistics. The experts were requested to give their opinion regarding relevance, accuracy and appropriateness of the items for further modification. As per the suggestions the necessary changes were incorporated in the tool.

Reliability of the instrument: Reliability of research instrument is defined as the extent to which the instrument yields the same results on repeated measures. The standard Numerical pain rating scale, was administered to 10 adolescent girls in each group with primary dysmenorrhea at Bharathidasan Government College for women, Puducherry. The reliability of the tool was established by using Spearman's brown reliability formula. Correlation coefficient was found to be $r = 0.84$, so tool was considered reliable for this study

Ethical consideration: The proposed study was conducted after approval of Institutional Human Ethical Committee. Informed consent was obtained from the adolescents. Subjects were given the rights to withdraw from the study at any time.

Report of the pilot study: There should be a small-scale version or trial run done in preparation for major study.it was developed in a similar way to the proposed study, using similar subjects, the same setting, the same treatment, the same data collection method and the same analysis technique. The purpose of the pilot study was to find out the feasibility of the study and to finalize the plan for analysis. The pilot study was conducted in Bharathidasan Government College for women, Puducherry, for 4 weeks from 29-09-2017 to 27-10-2017 every day who fulfilled their inclusion criteria during the data collection period were selected for pilot study using simple random sampling technique.

The samples are equally distributed by lottery method by ten in each group-I and group-II. Pre-test was done using interview schedule to assess the demographic data and estimation of primary dysmenorrhea by using numerical pain rating scale. Group I received pelvic rocking exercises and group-II received aerobic exercises daily for 45 Minutes for 4 weeks. The data of the pilot study were analysed and no further changes were made in the tool after the pilot study. The investigator proceeded for the main study. The data were analyzed using reliability test. The obtained result showed the level of pain perception among adolescent during primary dysmenorrhea. In pre-test out of 10 subjects in group I, none of them reported no pain and mild pain, 5(50%) had moderate pain, 15(50%) had severe pain. In group II, none of them reported no pain and severe pain 2(20%)) had mild pain, 8 (80 %) had moderate pain. Coefficient of correlation was $r = 0.89$. So tool was considered reliable for this study. The obtained result of the pilot study has shown that the selected tool was accurate for conducting the main study

Data collection procedure and method: Formal approval was obtained from the institutional ethical committee, joint director of educational department from Puducherry and principal of college (Vasavi College of Education and Vasavi teacher training institute in Puducherry). Adolescent girls, who fulfilled the inclusion criteria, were selected by using simple random sampling technique (lottery method) and the purpose of the study was explained and informed consent was obtained from them. Following the approval data collection was carried from 30-10-2018 to 24-11-2018 in four steps.

Step-1: demographic variables were collected by using questionnaire form the entire sample.

Step-2: PRE TEST assessed the level of pain perception in primary dysmenorrhea among adolescent girls in both the groups using numerical pain rating scale.

Step-3: a) **Application of pelvic rocking exercises for group I**

Method: The subjects for the study was selected as per inclusion criteria. Participants were informed about the purpose of the study and also explained about the procedure of the pelvic rocking exercises. The exercises were conducted daily to the adolescent girls up to 4 weeks lasting for 45 minutes

Pelvic rocking exercises

WARM UP: 10 mts
1.Walking: 4 mts
Stretching: 5 mts

- Pectoralis stretching
- Calf & hamstring stretching
- Triceps stretching
- Illiopsoas stretching

All the muscles given 3 repetitions

Pelvic rocking exercises: 20 mts
Strengthening exercise: 5 mts

1.Shoulder flexors
2.Shoulder adductors
3.Shoulder internal rotator
4.Shoulder external rotator

COOL DOWN: (Savasana) 5 mts

Application of aerobic exercises for group II

Method: The subjects for the study was selected as per inclusion criteria. Participants were informed about the purpose of the study and also explained about the procedure of the aerobic exercises. The exercises were conducted daily to the adolescent girls up to 4 weeks lasting for 45 minutes

Aerobic Exercises

WARM UP: 10 mts
1.Walking: 4 mts
Stretching: 5 mts

- Pectoralis stretching
- Calf & hamstring stretching
- Triceps stretching
- Illiopsoas stretching

All the muscles given 3 repetitions
Aerobic exercise: 20 mts

- Bicycling: 10 mts
- Step up-down :10 mts

Strengthening exercise: 5 mts

- Shoulder flexors
- Shoulder adductors
- Shoulder internal rotator
- Shoulder external rotator

COOL DOWN: (Savasana) 5 mts

Step-4: POST TEST assessed the level of pain perception in primary dysmenorrhea among adolescent girls in both the groups using numerical pain rating scale.

Data analysis and interpretation: In this chapter, the study findings are grouped, analysed and presented under the following headings.

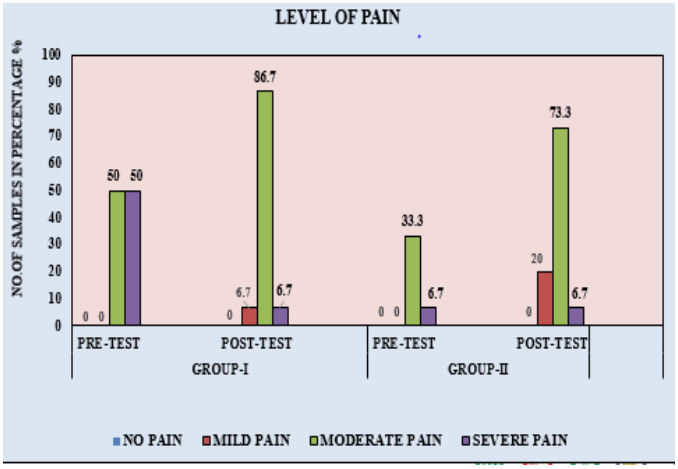
Section A: Frequency and percentage distribution of adolescent girls with primary dysmenorrhea with respect to their demographic variables.

Section B: Assessment of level of pain perception during primary dysmenorrhea among adolescent girls before and after pelvic rocking exercises and aerobic exercises.

Section C: Effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls

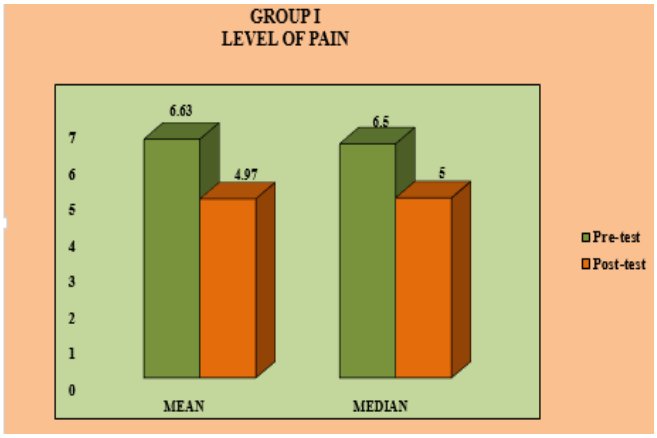
Section D: Association of the level of pain perception on primary dysmenorrhea with selected demographic variables

Section A: Assessment of level of pain perception during primary dysmenorrhea among adolescent girls before and after pelvic rocking exercises and aerobic exercises.



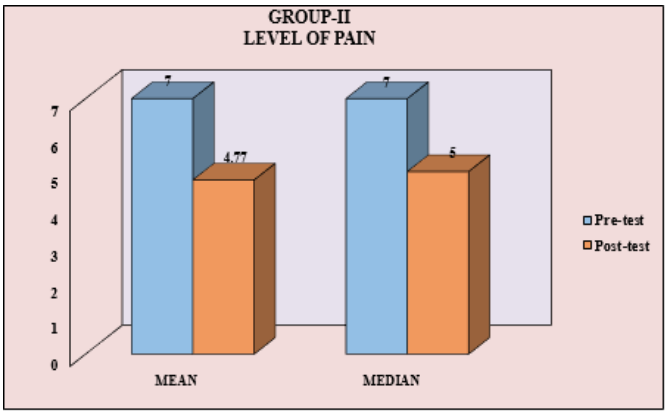
Section B: Effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls. Comparison of Pre and Post-test Mean and Median Level of Pain Perception in primary dysmenorrhea among adolescent girls in Group I.

LEVEL OF TEST	MEAN	MEDIAN	STANDARD DEVIATION	WILCOXON TEST	'p' VALUE
Pre-test	6.63	6.5	1.16	-4.748	<0.001*
Post-test	4.97	5	1.1		



The result shows that the application of pelvic rocking exercises was effective in reduction of primary dysmenorrhea among adolescent girls. Hence the stated hypothesis (H_1) was accepted. Comparison of Pre and Post-test Mean and Median Level of Pain Perception in primary dysmenorrhea among adolescent girls in Group II.

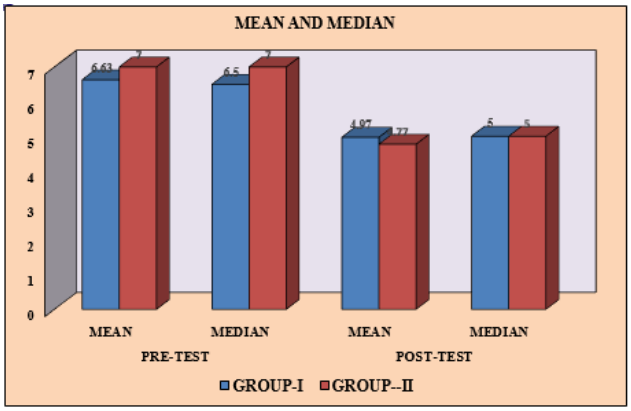
LEVEL OF TEST	MEAN	MEDIAN	STANDARD DEVIATION	WILCOXON TEST	'p' VALUE
Pre-test	7	7	1.14	-4.848	<0.001*
Post-test	4.77	5	1.1		



The result shows that the application of aerobic exercises was effective in reduction of primary dysmenorrhea among adolescent girls. Hence the stated hypothesis (H_1) was accepted.

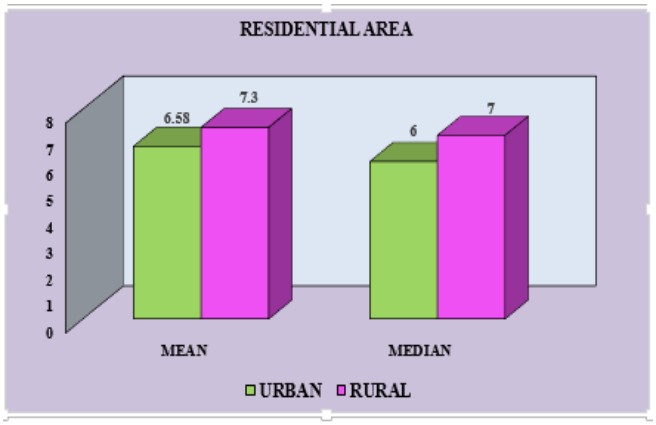
Section C: Comparison of Pre and Post-test Level of Pain Perception in primary dysmenorrhea among adolescent girls in Group I and Group II

Group	Pre-test			Post-test			Wilcoxon Test	p-value
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation		
Group I	6.63	6.5	1.16	4.97	5	1.1	-4.748	<0.001*
Group II	7	7	1.14	4.77	5	1.3	-4.848	<0.001*
Mann-Whitney test	-1.266			-0.503				
p-value	0.206			0.015*				



It shows that aerobic exercises (Group-II) was effective than pelvic rocking exercises (Group-I). It is statistically significant at <0.001*.Hence the stated hypothesis (H_2) was accepted

Section D: Association of the level of pain perception on primary dysmenorrhea with selected demographic variables



There is significant association between the levels of pain with the demographic variable of residential area. It was statistically significant at *P*-value of 0.0178 and there is no significant association between the levels of pain with the demographic variables of age, weight, height, religion, family income, diet pattern, level of activity, specific health practices, menstrual cycle, duration of menstrual flow, pain relief measures. Hence the stated hypothesis (H_3) was accepted.

DISCUSSION

This chapter presents the major findings of the study and discusses them in relation to the similar studies conducted by other researchers. The main aim of the present study was to evaluate and compare the effectiveness of pelvic rocking exercises versus aerobic exercises on primary dysmenorrhea among adolescent girls in selected college in Puducherry. True experimental design was adopted for the study. The population of the study was adolescent girls with primary dysmenorrhea in the age group of 16-19 years in Vasavi College of Education and Vasavi Teacher Training Institute in Puducherry. 60 samples were selected by simple random sampling technique and divided in two groups 30 in each group, group I received pelvic rocking exercises and group II received aerobic exercises. Pre-test was done using interview schedule using structured questionnaire and assessment of level of pain perception in primary dysmenorrhea by numerical pain rating scale. Pelvic rocking exercises were given to group I and aerobic exercises was given to group II for 4 weeks.

Post-test was done after the intervention, their level of pain perception in primary dysmenorrhea was assessed during their menstrual cycle using numerical pain rating scale. The response was analysed through both descriptive statistics (Mean, Frequency, Percentage and Standard deviation) and inferential statistics (Wilcoxon Test and Mann–Whitney Test). Discussion on the findings was presented based on the objectives of the study.

The first objective of the present study was to assess the level of pain perception in primary dysmenorrhea among adolescent girls during pre-test: Its hows the distribution of level of pain perception in primary dysmenorrhea among adolescent girls in group I and group II during pre-test and post-test. In pre-test out of 30 subjects in group I, none of them reported no pain and mild pain, 15(50%) had moderate pain, 15(50%) had severe pain. In group II, none of them reported no pain and mild pain, 10(33.3 %) had moderate pain and 20(66.7 %) had severe pain.

The second objective of the study was to evaluate the effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls during post-test: It indicates Group I pre- and post-test mean pain level. The pre and post-test mean value was 6.63 and 4.97, respectively. The obtained Wilcoxon value was -4.748. It was highly statistically significant at $P< 0.001$ level. There is significant difference between pre-test and post-test values of pain level in group I. The result shows that pelvic rocking exercises was effective on primary dysmenorrhea among adolescent girls. Hence the stated Hypothesis (H_1) was accepted. It indicates Group II pre and post-test mean pain level. The pre- and post-test mean value was 7 and 4.97 respectively. The obtained Wilcoxon value was -4.848. It was highly statistically significant at $P< 0.001$ level. There is significant difference between pre-test and post-test values of pain level in group II. The result shows that aerobic exercises was effective on primary dysmenorrhea among adolescent girls. Hence the stated Hypothesis (H_1) was accepted.

The third objective of the study was to compare the effectiveness of pelvic rocking exercises vs aerobic exercises on primary dysmenorrhea among adolescent girls: It indicated the pre-test and post-test data on Mean and Median Pain Levels. In Group I, the pre-test and post-test mean and median value was 6.63, 6.5 and 4.97,5 respectively. In Group II, the pre-test and post-test mean and median value was 7,7and 4.77,5 respectively. While comparing pre-test and post-test, According to Mann-Whitney Test the pre-test value was -1.266 and P-value was 0.206 and post-test value was -0.503 and P-value was 0.015* respectively. While comparing Group I and Group II, the obtained Wilcoxon value of Group I was -4.748 and Group II was -4.848. It is highly statistically significant at P<0.001*. It indicates that there was variation in the level of pain perception on primary dysmenorrhea in Group I than Group II. It shows that aerobic exercises reduced the severe pain level to moderate level. It shows that aerobic exercises was effective. Hence the stated Hypothesis (H_2) was accepted.

The fourth objective of the study was to find out the association between the levels of pain perception in primary dysmenorrhea with selected demographic variables: It depicts the association between level of pain perception in primary dysmenorrhea and selected demographic variables. There is significant association between the levels of pain perception in primary dysmenorrhea with the demographic variable of residential area. It was statistically significant at p value of 0.0178 and there is no significant associated between level of pain perception in primary dysmenorrhea with demographic variables of age, weight, height, religion, family income, diet pattern, level of activity, specific health practices, menstrual cycle, duration of menstrual flow, pain relief measures. Hence the stated Hypothesis (H_3) was accepted.

Summary, findings and conclusion

Summary

The present study was to compare the effect of pelvic rocking exercises versus aerobic exercises on primary dysmenorrhea among adolescent girls in Vasavi College of Education at Puducherry.

Statement of the problem: An experimental study to evaluate the effectiveness of Pelvic Rocking Exercises verses Aerobic Exercises on Primary Dysmenorrhea among adolescent girls in a selected college at Puducherry**.**

Objectives

- To assess the level of pain perception in primary dysmenorrhea among adolescent girls during pre-test
- To evaluate the effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls
- To compare the effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls
- To find out the association between the level of pain perception and the selected demographic variables of adolescent girls with primary dysmenorrhea

True experimental study design was used for this study. 60 samples of adolescent girls with primary dysmenorrhea in the age group of 16-19 years were selected by simple random sampling method. 30 in group I who received pelvic rocking exercises and 30 in group II who received aerobic exercises. The data collected by structured questionnaire and assessment of menstrual pain during menstrual period using numerical pain rating scale. The content validity of the tool was evaluated by 3 experts. Permission was obtained from institutional ethical committee and informed written consent was obtained from the subjects. Demographic variable of the adolescent girls in two groups were collected using interview schedule and their level of pain was assessed during menstrual period using numerical pain rating scale. Followed by that, pelvic rocking exercises and aerobic exercises were given to adolescent girls of two groups respectively daily for 4 minutes over a period of 4 weeks. After 4 weeks, level of pain was assessed during menstrual period using numerical pain rating scale. The response was analysed through both descriptive statistics (Mean, Frequency, Percentage and Standard deviation) and inferential statistics (Mann-Whitney test and Wilcoxon test).

Major study findings

- With regard to age, Majority of samples 11(36.7%) in group I, 9(30%) in group II belongs to the age group of

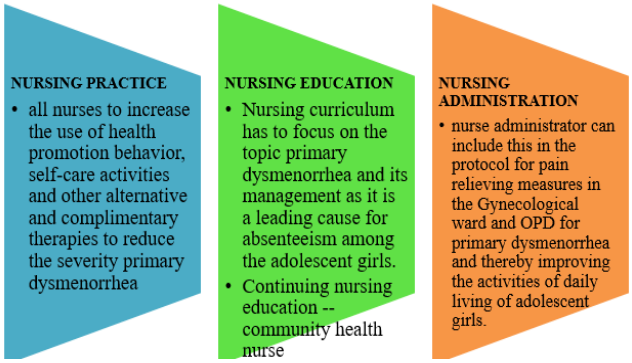
18 years. Regarding Height Most of the Samples 16(53.3%) in group I, 12(40%) in group II were belong to the height less than 150 cm. In regard of weight, Majority of samples 17(56.7%) in group I, 15(50%) in group II were belong to the weight of 35-65kg. Regarding religion, majority of samples 22 (73.3 %) in group I, 18 (20 %) were belongs to Hindu. Regarding residential area, Majority of samples 22(73.3%) in group I, 18(60%) in group II were belongs to urban area. In regard of menstrual cycle, Majority of samples 30(100%) in group I, 30(100%) in group II were belongs to 26-30 days of menstrual cycle. Regarding Duration of menstrual flow, Majority of samples 18(60%) in group I, 16(53.3%) in group II were belong to 4 days of menstrual flow. Regarding family income majority of the samples 15 (50%) in group I, 11 (36.7%) in group II were belong to the family income of Rs5001-10000. Regarding Diet pattern, majority of samples 26(86.7%) in group I, 25(83.3%) in group II belong to non-vegetarian. Regarding level of activity, majority of the samples 20(66.7%) in group I, 19(63.3%) in group II belong to moderate level of activity. Regarding age of menarche, majority of the samples 16 (53.3%) in group I, 23(76.7%) in group II belong to the 12-13 years of age of menarche.

- Assessment of level of pain perception among adolescent during primary dysmenorrhea. In pre-test out of 30 subjects in group I, none of them have no pain and mild pain, 15(50%) rated pain score as moderate pain, 15(50%) rated pain score as severe pain. In group II, none of them have no pain and mild pain, 10(33.3 %) rated pain score as moderate pain and 20(66.7 %) rated as severe pain.
- Assessment of effectiveness of pelvic rocking exercises and aerobic exercises on reduction of pain on primary dysmenorrhea among adolescent in group I and group II during pre-test and post-test.

* In Group I, The pre- and post-test mean value was 6.63 and 4.97 respectively. The obtained Wilcoxon value was -4.748. It was highly statistically significant at *P*< 0.001 level. There is significant difference between pre-test and post-test values of pain level in group I. The result shows that pelvic rocking exerciseswas effective on primary dysmenorrhea among adolescent girls.
* In Group II, the pre and post-test mean pain level. The pre- and post- test mean value was 7 and 4.97, respectively. The obtained Wilcoxon value was -4.848. It was highly statistically significant at *P*< 0.001 level. There is significant difference between pre-test and post-test values of pain level in group II. The result shows that aerobic exerciseswas effective on primary dysmenorrhea among adolescent girls

- Comparison of the effectiveness of pelvic rocking exercises and aerobic exercises on primary dysmenorrhea among adolescent girls reveals that the pre-test and post-test data on Mean Pain Levels. According to Mann-Whitney Test the mean rank of Group I was -1.266 and Group II was -0.503 respectively. Wilcoxon value of Group I was -4.748 and Group II was -4.848. It indicates that there was variation in the level of pain perception on primary dysmenorrhea in Group I than Group II. It shows that aerobic exercises reduced the severe pain level to moderate level. It shows that aerobic exercises was effective
- Assessment of the association between level of pain perception in primary dysmenorrhea and selected demographic variables. There is significant association between the levels of pain perception in primary dysmenorrhea with the demographic variable of residential area. It was statistically significant at *P*-value of 0.0178 and there is no significant association between the levels of pain perception in primary dysmenorrhea with the demographic variables of age, weight, height, religion, family income, diet pattern, level of activity, specific health practices, menstrual cycle, duration of menstrual flow, pain relief measures.

Implications



Recommendations

- The study can be replicated with a large sample for better generalization.
- A similar comparative study can be conducted between the schools and college's adolescent's girls with primary dysmenorrhea.
- A comparative study can be conducted among rural and urban areas as well as among teenage girls and married girls.
- A qualitative study could be carried out in depth to explore the problems associated with menstruation and ways to manage it.

Conclusion

The main conclusion of the present study was all adolescent girls reported severe pain, moderate pain and mild pain on Numerical Pain Rating Scale before intervention. Pelvic rocking exercises and aerobic exercises were effective on primary dysmenorrhea in both group I and group II. While comparing the effectiveness of Pelvic rocking exercises and aerobic exercises, According to Mann–Whitney test the pre-test value was -1.266 and '*P*' value was 0.206, the post-test value was -0.503 and '*P*' value was 0.015*. While comparing group I and Group II, the obtained Wilcoxon value was -4.748 and -4.848. It was statistically significant at <0.001*. It indicates that there was variation in the level of pain reduction in Group II than Group I. Thus the study concludes that aerobic exercises is effective on reduction of primary dysmenorrhea among adolescent girls.

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