

A Pre-Experimental Study to Assess the Effectiveness of Aerobic Exercises on Dysmenorrhoea among Nursing Students at SGRD College Of Nursing Vallah, Amritsar

Ms. Harpreet Kaur¹, Dr. Karuna Sharma², Ms. Ujala Joshi³

¹Student, ²Professor, ³Assistant Professor,
Sri Guru Ram Das College of Nursing, Vallah, Amritsar, Punjab

Corresponding Author: Ms. Harpreet Kaur

ABSTRACT

Introduction: Adolescence in girls has been recognized as a special period which signifies the metamorphosis from girlhood to womanhood. One of the major physiological changes that take place in the adolescent girls is the onset of menarche, which is often associated with problems of irregular menstruation, excessive bleeding and dysmenorrhoea. Dysmenorrhoea is the term for painful menstruation. Aerobic exercises are found to be very beneficial for the treatment of menstrual problems. Aim of the study is to assess the effectiveness of aerobic exercises on dysmenorrhea among nursing students.

Methods: A pre-experimental was conducted at Sri Guru Ram Das College of Nursing, Vallah, Amritsar (Punjab). Total 60 students were selected by using purposive sampling technique. Written consent was taken from participants of study. Socio demographic variables, menstrual profile and Numeric Pain Rating Scale were used as tool for data collection.

Results: The present study revealed that mean pain score and standard deviation was 5.58 ± 1.45 before giving intervention and 4.88 ± 1.10 after giving intervention. The effectiveness was statistically tested by using paired t- test which revealed that t value = 7.52 and the result was found to be significant at $p < 0.001$ level of significance. So, the results of the present study also revealed that, there was statistically significant association between the post-test level of dysmenorrhoea with the selected socio-demographic variables among nursing students at $p < 0.05$ level of significance. The study concluded that, there was a decrease in level of pain during dysmenorrhoea after intervention (Aerobic exercises).

Keywords: Dysmenorrhoea, Aerobic exercises, Nursing Student.

INTRODUCTION

Health is an essential factor for a happy contended life. Change makes life more beautiful and worth living if one knows how to adapt oneself and adjust to the challenges presented by the situation. The changes are more frequent in girls than boys, the rapid growth and change in the physical structure is after the attainment of puberty. ^[1]

Puberty is the period in life of all women generally between the age of 10 to 15 years. Adolescence is the period of

metamorphosis from childhood to adulthood. WHO defined adolescence as the ages between 10 to 19. The transitional period marked with the onset of menarche, an important milestone. ^[2] Menarche is the first menstrual period. The most common physiological change that takes place in girls of adolescent age is the onset of menarche, which is often accompanied with problems of excessive bleeding, irregular menstruation and dysmenorrhea. ^[3]

Menstruation is a normal physiological phenomenon for a woman

indicating her capability for procreation. The prevalence of menstrual disorders has been recorded as high as 87%. [3] Menstruation can be defined as the periodic physiologic discharge of blood, mucous and other cellular debris from the uterine mucosa. [4]

Menstruation is an important part of female reproductive cycle. The young adult female students are more exposed to stress as compared to any other age group. The different types of stress and its gravity are related to their jobs, studies, social and economic factors. Therefore, they are more prone to develop menstrual problems. Dysmenorrhea is a common condition that occurs in 52%, 72% or even 90% of women. [5]

The term dysmenorrhea derived from the Greek word "DYS" meaning difficulty/painful/abnormal, "MENO" meaning month and "RRHEA" meaning flow. Dysmenorrhea literally means painful menstruation. [6] Dysmenorrhea is very common problem affecting academic performance and limiting daily activities requiring appropriate intervention. [7] The prevalence of dysmenorrhea worldwide varies between 15.8% to 89.5%. The prevalence of dysmenorrhea in India is 16.8% to 81%. [4]

There are so many ways to treat dysmenorrhea like non-steroidal anti-inflammatory drugs a day before period begins, heating pad or soaked towel in a hot water over the abdomen to relieve the pain of menstrual cramps. It is ideal to find a natural method to relieve menstrual cramps. Today Exercises are an integral part of normal day to day life for many women. Health care providers suggest some form of aerobic exercises such as pelvic rocking and tilting, walking and bicycling are beneficial for dysmenorrhea. [8] Women who exercises, show less severe dysmenorrhea and greater positive effects than women who are sedentary. [9]

The idea that exercise might help to relieve period pain is not new; in 1943 Billing proposed that women with pain

during menstruation had contracted ligamentous bands in the abdomen and then she developed a series of stretching exercises which results in high rate of symptom relief. The belief that exercise was effective seems to have prevailed and lead to anecdotal belief among health agencies and clinicians. However, a combination of organic, psychological, and socio-cultural factors may be responsible. [10]

Exercise improves cardiovascular status, increased bone mineral content; improve dysmenorrhea and premenstrual symptoms. Exercises increases the release of several neurotransmitters including natural endorphins oestrogen, as well as altering the reproduction of hormone secretion, suppressing prostaglandin from being released and raising the estrone-estradiol ratio which decreases endometrial proliferation and shunts blood flow from the uterus. [11] Exercise may act as a distraction from intrusive thoughts and promote positive thoughts, decreasing short-term depression. Exercise may increase concentration and improve mood and behavior. [12]

Therefore, it is evident that dysmenorrhea is a very common problem among adolescent girls and they experience a number of physical, psychological and emotional symptoms associated with dysmenorrhea. Some studies reported that dysmenorrhea affects both academic and clinical quality of work; peer and social interaction were also markedly affected during their menstrual days. So, exercises have the positive effects on the reduction of dysmenorrhea.

Objectives

1. To assess the level of dysmenorrhoea among nursing students.
2. To evaluate the effectiveness of aerobic exercises on dysmenorrhoea among nursing students.
3. To find out the association between the level of dysmenorrhoea with selected socio-demographic variables among nursing students.

Hypothesis

H₀ - There is no significant difference between the level of dysmenorrhea before and after administration of aerobic exercises among nursing students.

H₁- There is significant difference between the level of dysmenorrhea before and after administration of aerobic exercises among nursing students.

METHODOLOGY

The methodology is the most important in research as it is the framework for conducting a study. It indicates the general pattern for organising the procedure to gather valid and reliable data or an investigation. The present study was conducted at Sri Guru Ram Das College of Nursing, Vallah, Amritsar. Quantitative research approach was considered for the present study. Research design for the present study was Pre-Experimental (One group pre-test post-test) design. The population of the study was 60 Nursing students who fulfilled the inclusion and exclusion criteria. Sample size of the study comprised of 60 Nursing students. Purposive sampling technique was used to select the sample. Ethical clearance was taken from the ethical committee of the SGRD College of Nursing Vallah, Amritsar. A written permission was taken from the Principal Sri Guru Ram Das College of Nursing, Vallah, Amritsar, for data collection. The tool consists of following sections:

Part-A:- Socio-demographic variables.

Part-B:- Sel- Structured menstrual profile.

Part-C:- Numeric Pain Rating Scale developed by McCaffery Margo and Beebe Alexandra (1989).

Criterion Measure For Numeric Pain Rating Scale

S.NO	SCORE	LEVEL OF PAIN
1	0	No Pain
2	1-3	Mild Pain
3	4-6	Moderate Pain
4	7-10	Severe Pain

Informed consent was obtained from each study sample. Anonymity and confidentiality of sample was maintained. The data was analysed using descriptive and inferential statistics.

RESULTS

Table 1: Frequency and percentage distribution of Nursing students according to socio demographic variables N=60

S.No	Demographic Variable	Frequency (f)	Percentage (%)
1.	Age (in Years)		
	18-20	35	58.3
	21-23	25	41.7
2	Year of course		
	B. Sc (N) II year	26	43.3
	B. Sc (N) III year	14	23.3
	B. Sc (N) IV year	20	33.3
3	Family income per month		
	≤ 5000	13	21.7
	5001-10000	15	25
	10001-20000	0	0
	≥ 20000	32	53.3
4	Type of family		
	Nuclear	50	83.3
	Joint	10	16.7
5	Dietary habits		
	Vegetarian	45	75
	Non-Vegetarian	15	25
6	Family history of dysmenorrhea		
	Present	17	28.3
	Absent	43	71.7

Table 1: shows that maximum nursing students 35 (58.3%) were in age group 18-20 years followed by 25 (41.7%) were in age 21-23 years. In year of course majority of students were from b.sc (n) 2nd year that is 26 (43.3%), whereas 14 (23.3%) students from 3rd year and 20 (33.3%) from 4th year. The monthly family income of their family revealed that highest percentage 32(53.3%) belonged to income group of above 20000 whereas 15 (25%) lies in 5001-10000 and 13 (21.7%) had family income below 5000. In type of family majority of students 50 (83.3%) belonged to nuclear family as well as 10 (16.7%) from joint family. In dietary habits, maximum students were vegetarian 45 (75%) followed by 15 (25%) were non-vegetarian. In family history of dysmenorrhea majority 43 (71.7%) had no history of dysmenorrhea and 17 (28.3%) had family history of dysmenorrhea.

Table 2: Frequency and percentage distribution of Nursing students according to clinical characteristics of menstrual cycle
N= 60

S. No	Demographic Variable	Frequency (f)	Percentage (%)
1.	Age at menarche (in Years)		
	≤ 12	6	10
	13-14	40	66.7
2	Duration of menstrual cycle		
	≤ 20 days	3	5
	21-28 days	32	53.3
3	No. of days of menstruation		
	≤ 2 days	58	96.7
	3-5 days	2	3.3
4	Days of menstruation with pain		
	≤ 1 day	37	61.7
	2-3 days	21	35
5	Characteristics of bleeding		
	Only blood	17	28.3
	Blood with clots	43	71.7
6	Nature of pain		
	Cramping	45	75
	Severe pain	14	23.3
7	Soakage of pads during menstruation		
	Heavy	14	23.3
	Moderate	44	73.3
8	Rest during dysmenorrhea		
	Yes	40	66.7
	No	20	33.3
9	Skip meals during dysmenorrhea		
	Yes	25	41.7
	No	35	58.3
10	Daily activities affected during dysmenorrhea		
	Yes	35	58.3
	No	25	41.7
11	Measures taken to relieve pain		
	Hot application	16	26.7
	Bed rest	30	50
12	Any exercise during menstruation		
	Yes	2	3.3
	No	58	96.6
13	Have yourself investigated during dysmenorrhea		
	Yes	7	11.7
	No	53	88.3
14	Have you admitted during dysmenorrhea		
	Yes	1	1.7
	No	59	98.3
15	Other menstrual symptoms		
	Backache	46	76.7
	Headache	5	8.3
	Vomiting	1	1.7
	Others	8	13.3

Table 2: depicts that distribution of nursing students according to clinical characteristics. Menarche majority of students attained menarche at age 13-14 years that is 40 (66.7%) and least number of students 6 (10%) in age group < 12 years. In duration of menstrual cycle most of the students that is 32(53.3%) had 21-28 days cycle followed by 3 (5%) had < 20 days cycle. As stated by number of days of

menstruation the bulk of students 58 (96.7%) had < 2 days flow and 2 (3.3%) students had 3-5 days flow. As confirming by days of menstruation with pain maximum students that is 37 (61.7%) had <1 day and 2 (3.3%) had >4 days. In Characteristics of bleeding greatest number that was 43 (71.7%) students had blood with clots and others 17 (28.3%) students had only blood. The nature of pain shown 45

(75%) students had cramping and 1(1.7%) students had Incapacitating pain. As the opinion of soakage of pads during menstruation majority of students 44 (73.3%) had moderate bleeding while 2 (3.3%) students had stained bleeding. As stated by rest during dysmenorrhea most of students 40 (66.7%) took rest and 20 (33.3%) students did not take any rest. According to skip meals during dysmenorrhea, 25 (41.7%) students skipped meals and 35 (58.3%) students did not skip meals. The daily activities affected during dysmenorrhea claimed highest number of students that were 35 (58.3%) had activities affected and lowest number 25 (41.7%) students had no change in daily activities. In measures taken to relieve pain majority of students 30 (50%) taken bed rest followed by 14 (23.3%) students had not taken any measures. In any exercise during dysmenorrhea shown greatest number of students 58 (96.6%) had not done exercises and only 2 (3.3%) students did exercise. As a report of investigated during dysmenorrhea a greater number of students 53 (88.3%) had not done any investigations and on the contrast 7 (11.7%) students had done investigations. As admitting during dysmenorrhea illustrated almost 59 (98.3%) students had no admission except 1 (1.7%)

students had admitted in hospital. As mentioned in other menstrual symptoms 46 (76.7%) students felt backache and 1 (1.7%) students had vomiting.

Table 3: Pre-test and Post-test level of pain during dysmenorrhea among nursing students N=60

Level of pain	Pre-test		Post-test	
	f	%	f	%
No pain (0)	0	0	0	0
Mild pain (1-3)	7	11.7	12	20
Moderate pain (4-6)	37	61.7	48	80
Severe pain (7-10)	16	26.6	0	0
Mean±SD	5.58±1.45		4.88±1.10	
Mean %	55.8		48.8	
Mean D	0.7			

Maximum Score = 10
Minimum Score = 0

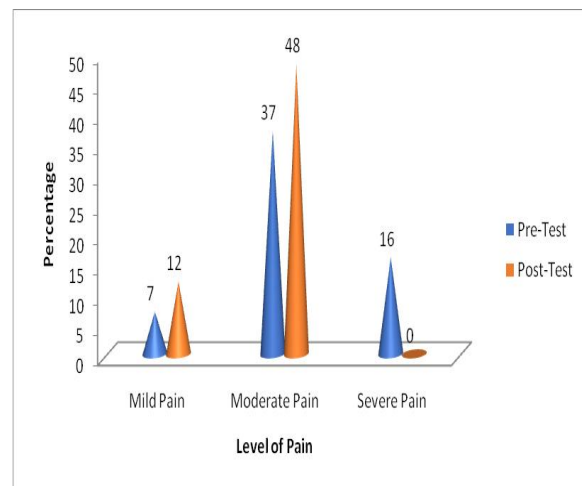


Fig 1: Pre-test and Post-test level of pain during dysmenorrhea among nursing students

Table 4: Effectiveness of aerobic exercises on level of pain among nursing students . N=60

Level of pain	Mean	SD	Mean D	't' value	df	'p' value
Pre-test	5.58	1.45	0.7	7.52	59	0.000*
Post-test	4.88	1.10				

* Significant at p< 0.001 level
Maximum Score = 10
Minimum Score = 0

Figure 1 Table 3 revealed that in pre-test 7 (11.7%) had mild pain and 37(61.7%) shown moderate pain followed by 16(26.6%) falls in severe pain while in post-test majority of students 48 (80%) had moderate pain whereas 12 (20%) marked in mild pain. The mean and SD in pre- test was 5.58 ± 1.45 and mean percentage was 55.8 and after giving interventions mean and SD was 4.88± 1.10 with a mean percentage of 48.8. The mean difference of pre-test and post-test was 0.7.

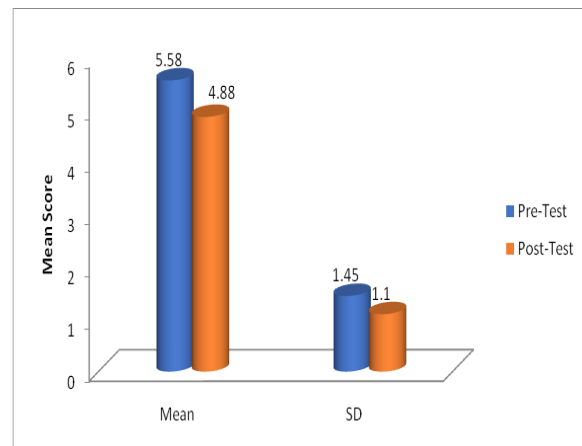


Fig 2: Pre-test and Post-test Mean and SD

Table 4 and figure 2 depicts that in pre-test mean score of nursing students was 5.58 ± 1.45 whereas in post-test mean score of nursing students was 4.88 ± 1.10 after giving an intervention with a mean difference of 0.7, therefore t value was 7.52 and df was

59. This difference in the mean scores was statistically significant at $p < 0.001$ level. It was inferred that there was a decrease in level of pain during dysmenorrhea after administration of aerobic exercises. Hence research hypothesis (H_1) was accepted.

Table 5: Association of pre-test level of pain score regarding dysmenorrhea with their socio demographic variables among nursing students N=60

S.No	Demographic Variable	Mild pain	Moderate pain	Severe pain	Chi value (X^2) df p value
s1.	Age (in Years) 18-20 21-23	4	20	11	0.997
		3	17	5	2 0.607 ^{NS}
2	Year of course B. Sc (N) II year B. Sc (N) III year B. Sc (N) IV year	3	14	9	7.862
		3	6	5	4
		1	17	2	0.097 ^{NS}
3	Family income per month ≤5001-10000 10001-20000 ≥ 20000	2	8	3	0.671
		1	10	4	4
		4	19	9	0.955 ^{NS}
4	Type of family Nuclear Joint	7	31	12	2.205
		0	6	4	2 0.332 ^{NS}
5	Dietary habits vegetarian Non-Vegetarian	3	29	13	4.416
		4	8	3	2 0.110 ^{NS}
6	Family history of dysmenorrhea Present Absent	1	11	5	0.783
		6	26	11	2 0.676 ^{NS}

NS=Non-Significant
*Significant at $p < 0.05$ level

Table 5: depicts that statistically there was no significant association observed between the pre-test level of pain among nursing students.

Table 6: Association between post-test level of pain score regarding dysmenorrhea with their socio demographic variables among nursing students. N=60

S.No	Demographic Variable	Mild pain	Moderate pin	Chi value (X^2) df p value
1.	Age (in Years) 18-20 21-23	7	28	0.000
		5	20	1 1.000 ^{NS}
2	Year of course B. Sc (N) II year B. Sc (N) III year B. Sc (N) IV year	6	20	0.484
		3	11	2
		3	17	0.785 ^{NS}
3	Family income per month ≤ 5001-10000 10001-20000 ≥ 20000	3	10	0.876
		4	11	2
		5	27	0.645 ^{NS}
4	Type of family Nuclear Joint	11	39	0.750
		1	9	1 0.386 ^{NS}
5	Dietary habits vegetarian Non-Vegetarian	7	38	2.222
		5	10	1 0.136 ^{NS}
6	Family history of dysmenorrhea Present Absent	2	15	1.005
		10	33	1 0.316 ^{NS}

NS=No Significant
*Significant at $p < 0.05$ level

Table 6 revealed that statistically there was no significant association observed between

the post-test level of pain among nursing students.

DISCUSSION

The current study revealed that there was significant difference between pre-test and post-test level of pain among nursing students. The 't' value was 7.52 which was statistically significant at $p < 0.001$ level. Hence the null hypothesis was rejected and research hypothesis was accepted. To support my objectives a similar study on the effectiveness aerobic exercises on dysmenorrhea by Gosai Devangi R, Jadeja Hemangi H (2015) [13] the study was conducted among 30 adolescent girls. The study exhibits that in pre-test mean and S.D were 6.46 ± 1.83 whereas in post-test mean and S.D were 5.06 ± 1.94 which is significant at $p < 0.001$ from where it was concluded that aerobic exercises had significant effect on primary dysmenorrhea among college students.

Recommendation

1. A comparative study can be conducted to assess the effectiveness of aerobic exercises with other alternative therapies for primary dysmenorrhea.
2. An exploratory study can be conducted to identify the causes of dysmenorrhea.
3. Similar study can be conducted with large sample size to generalize the findings.
4. A study can be conducted to assess the attitude of adolescent girls about aerobic exercises for the management of primary dysmenorrhea.
5. A study can be conducted to assess the level of knowledge on management of primary dysmenorrhea among adolescent girls.
6. A similar study can be conducted by true experimental approach.
7. A more comprehensive investigation can be undertaken to ascertain the effect of dysmenorrhea on psychosocial health status of the nursing students.

Implication

The findings of the study have several implications which was discussed under the following areas:

Nursing Education

1. Nurses play an important role in providing adequate knowledge to the adolescents about different aerobic exercises for reducing the dysmenorrhea during menstruation.
2. The findings can help the nursing students to organize the educational programmes in schools or community area providing knowledge regarding treatment of dysmenorrhea with exercises.
3. As a nurse educator, there are abundant opportunities for the professional nurse to educate adolescents and their families about dysmenorrhea.
4. The continuing nursing education as well as in-service education programmes can be conducted to provide awareness to the nurses about measures to reduce dysmenorrhea.

Nursing Practice

1. The nurses play a key role in educating others regarding various psychological and physical problems related with dysmenorrhea.
2. Knowledge influence better practice, therefore adolescents should be advised for aerobic exercises to reduce pain during dysmenorrhea.
3. Increasing awareness and understanding of the phenomenon among the general population will result in lower level of dysmenorrhea during menstruation.
4. Educational campaigns will help in reducing the problems related with dysmenorrhea. This should include television documentary, short films and printed materials such as posters, stickers, booklets and newspaper articles.

Nursing Administration

1. Nurse administrators were the backbone to provide facilities to educate others regarding effectiveness of aerobic exercises on dysmenorrhea.
2. Nurse administrator can plan for periodic population-based surveys to collect information regarding problems occurred with dysmenorrhea.

3. In-service education can be conducted for nurses on the detection of physical and psychological effects of dysmenorrhea.
4. The administrators should encourage the staffs and students to carry out small project work in different population, so as to find out the factors influencing dysmenorrhea.

Nursing Research

1. In nursing, there is scarcity of research done on effective measures to reduce dysmenorrhea. There is a great need for more study on the problem of dysmenorrhea among girls.
2. Studies should be carried out and published for the benefit of girls, families and nursing fraternity. The study will motivate the beginning researchers to conduct same study with different variables on a large scale considering individual aspects.
3. Nurses being the largest group in health care delivery system should take initiative to conduct further research studies on dysmenorrhea.
4. Since, the Indian Nursing Council introduced a research subject in the diploma and under graduation also, it is easy to carry out the research steps by them.

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