Vol. 12 . No.3. 2023.

DOI: 10.13140/RG.2.2.19796.37761

Contents available at:
http://www.crdeepjournal.org

International Journal of Life Sciences (ISSN: 2277-193x) ;SJIF: 6.431
UGC Accepted based on Peer Reviewed Journal

Full Length Research Paper

Effectiveness of Selected Muscle Stretching Exercises on Reducing Primary Dysmenorrhoea among Student Nurses

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ARTICLE INFORMATION

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Article history:
Received: 25-10-2023
Revised: 28-10--2023
Accepted: 12-11-2023
Published: 16-11-2023

Key words:
Menstrual Health, Muscle Stretching Exercise, nursing students, pain intensity, Primary Dysmenorrhoea.

ABSTRACT

A study to assess menstrual health and the effect of selected muscle stretching exercises on primary dysmenorrhoea among student nurses in a selected nursing educational institute Dehradun, Uttarakhand, India. This study was undertaken to assess the menstrual health of student nurses and to determine the effects of selected muscle stretching exercises on primary dysmenorrhoea among student nurses. Material and methods: The study has adopted Quasi experimental research design, Non-equivalent control group design. Sixty student nurses with primary dysmenorrhoea were selected from Shri Guru Ram Rai University, College of Nursing by using non probability , purposive sampling technique and group were randomly divided into experimental (n=30) and control group (n=30). In the experimental group, the student nurses were requested to complete selected muscle stretching exercises for 4 week (6 days/week, for 10 minutes daily) at girls hostel. In pre- test, data was collected related to menstrual characteristics and pain intensity (Numerical pain rating scale) at the time of menstruation. The post test was conducted after 4 weeks of intervention. After 4 week of muscle stretching exercises, dysmenorrhoea pain intensity was reduced from 3.87±0.776 to 1.37± 0.49 in experimental group (p<0.05). At a level of 0.05, no discernible reduction was seen in the control group. The study found that the experimental group was the only group in which there was a significant difference between pre-test and post-test scores following muscle stretching activities.

Introduction

Dysmenorrhea is a Greek term for *"painful monthly bleeding."[*1] Chronic, recurrent pelvic pain linked to menstruation is called dysmenorrhea. [2] It is typically characterized by lower abdomen discomfort that begins soon after menarche after normal ovulation is established and typically lasts for several days. However, few women with dysmenorrhea seek therapy because they believe it will not help, despite the fact that it has a significant impact on their quality of life and general wellbeing [3]. There are two types of dysmenorrhea: primary and secondary. Lower abdomen pain that occurs throughout the menstrual cycle and is known as primary dysmenorrhea is unrelated to other illnesses or pathologies. Secondary dysmenorrhea, on the other hand, is typically linked to other pathology inside or outside the uterus [4].

"The pain is caused by an overproduction of uterine prostaglandins F-2 (PFF-2), which leads to unpleasant menstrual cramps by inducing arterioscope vasoconstriction and myometrial hyper contractility. Dysmenorrhea affects a person's ability to concentrate while learning because of the pain and headaches it causes. It also lowers adolescent academic achievement because of increased absenteeism, among other factors. Therefore, measures to reduce, eliminate, or treat this dysmenorrheal pain should be taken" [5]. Exercises for stretching muscles involve moving the muscles in the various directions that they typically contract or operate. Stretching can aid in increasing muscular tone and strength. Injuries are also

avoided, and stress is reduced. Physical activity decreases serum aldosterone by lowering renin levels and increasing oestrogen and progesterone levels, improving physical symptoms [7]. Exercise also reduces sympathetic activity, which lessens the severity of menstrual pain and cramps. To lessen dysmenorrhea, a variety of muscle-stretching exercises have been suggested [6]. Additionally, exercise increases endorphin production, which could raise one's pain threshold [8].

According to **Indian Medical Association New Delhi branch president R. R. Agarwal,** In India, it is unclear what the exact incidence and prevalence of dysmenorrhea are. According to estimates, the most common reason for absences from work, school, and colleges is dysmenorrhea. Despite the fact that dysmenorrhoea is so common, it is inadequately managed and ignored by doctors, pain researchers, and women themselves, who may view it as a typical aspect of the menstrual cycle. Primary dysmenorrhea is very prevalent, particularly in adolescents [9]. Up to 90% of adolescent girls and more than 50% of menstrual women around the world report having it, with 10-20% of them characterizing their pain as intense and unpleasant[10].

"Most of the severe episodes of dysmenorrhea happen before the age of 25, and they most frequently affect women between the ages of 20 and 24. Additionally, primary dysmenorrhea affects 61% more unmarried women than married women (51% vs. 51%), becoming less common as people get older, and doesn't seem to be associated to a woman's work or physical health" [11], therefore this is a severe concern while it is difficult to introduce therapies such as muscle stretching exercises into nursing practice is that There is not much empirical data to back up the use. Additionally, it has been noted that there are very few published research studies and trials on certain muscle-stretching exercises in Indian settings. As a result, this study may be significant in that it offers empirical support for its effectiveness in lowering primary dysmenorrhea among student nurses.

Statement of problem

"A Quasi experimental study to assess the effectiveness of Selected Muscle Stretching Exercises on Primary Dysmenorrhoea among Student Nurses (17-22yrs) in Shri Guru Ram Rai University, College of Nursing at Patel Nagar, Dehradun, Uttarakhand, India."

Objectives

1) To assess the menstrual health among student nurses in experimental group & control group.
2) To assess the degree of pain during primary dysmenorrhoea among student nurses in experimental group & control group before selected muscle stretching exercises.
3) To implement and evaluate the effectiveness of selected muscle stretching exercises on pain among student nurses with primary dysmenorrhoea in experimental group.
3) To determine the effectiveness of muscle stretching exercises by comparing the pain score during primary dysmenorrhoea in experimental group & control group before & after selected muscle stretching exercises.
4) To find association of pre test scores (dysmenorrhoea) among nursing students in experimental group & control group with their selected personnel variables

Assumptions:

• Samples are true representatives of populations.
• Pain is subjective to every individual
• Muscles stretching exercises will reduce dysmenorrhoea to some extend among student nurse.

Need of the study

*"One of the most prevalent gynaecological issues is dysmenorrhoea, which affects roughly 60% of women and girls. In the absence of any substantial pelvic illness, primary dysmenorrhoea is a painful menstruation. Typically, it appears after the first two years of menarche. Social activities are severely disrupted by the pain, which is frequently excruciating, agonising, and paralysing. Because primary dysmenorrhoea is a cyclic condition, it has a negative impact on the women's well-being and daily activities. Women who experience dysmenorrhea have historically gotten little sympathy or assistance from others. The therapy of primary dysmenorrhoea is not given more attention by doctors or non-doctors".[*12]

According to estimates from the US Census, almost two million teenagers, or 15% of all adolescents, suffer from severe dysmenorrhoea, which places a significant burden on public health. In Australia, a study on teenage menstruation problems revealed that 90% of adolescent females had Dysmenorrhoea. A survey in Norway found that 14% of adolescent girls have the symptom of severe dysmenorrhoea and avoid going to school. Similar to the UK study, which included 1266 females, 19% of adolescent girls had severe dysmenorrhea symptoms. According to a population-based study conducted in Canada, 60% of participants met the diagnostic requirements for primary dysmenorrhea. Among these women, more than half reported experiencing moderate to severe pain, and 51% said that dysmenorrhea symptoms had limit activities.[13]. Primary dysmenorrhea affects 60% of people in developing countries. 30% of females with primary dysmenorrhoea in both rural and urban groups did not take any analgesics. There is no statistically significant difference between dysmenorrhea-affected

females in urban and rural environments. Primary dysmenorrhea begins to manifest in young females as they experience ovulatory cycles for the first time. Its incidence increases during adolescence (15–17 years) and peaks between 20–24 years of age before progressively declining after that. Primary dysmenorrhoea is accompanied by pain that begins a few hours before or after the onset of menstruation and lasts for 24-48 hours. The pain is worst on the first day, and it is rarely worse on the next day. Primary dysmenorrhea is reported to vary between 50% and 90% in different societies. [14]

Research Methodology

Study area

This study was conducted in Shri Guru Ram Rai University, College of Nursing, Patel Nagar, Dehradun, Uttarakhand, India.

Research approach and design: - Quantitative, Quasi Experimental research approach used for this study to measure the effect of selected Muscle stretching exercises on reducing primary dysmenorrhoea among student nurses (17-22yrs).

Population: -Student nurses.

Sampling technique: - Purposive sampling technique was used in the present study.

Sample size: - The sample size was 60 student nurses (17-22yrs) studying in Shri Guru Ram Rai University, College of Nursing, Patel Nagar, Dehradun, Uttarakhand, India.

Tool: - Structured questionnaire was designed to assess Menstrual Characteristics, Pre and post-test Numerical pain rating scale was used for severity in Primary dysmenorrhoea. The tool scoring was categorized

a) 0 - No pain
b) 1-3 – Mild pain
c) 4-6 – Moderate pain
d) 7-9 – Extreme pain
e) 10- Worst possible pain

Intervention: - Selected muscle stretching exercises

This study includes six different kinds of groin, pelvic, and abdominal muscle stretching exercises. **First stretching exercise** - Participants are instructed to stand straight and bend forward from the hip joint so that their shoulders and back are aligned with one another and their upper bodies are parallel to the ground. Five seconds are spent holding the position, followed by ten repetitions. **Second stretching activity** - In the second stretching exercise, participants are instructed to stand straight and lift one of their heels off the ground. They are then instructed to alternately repeat the exercise with the other heel. Perform the workout 20 times. **Third stretching exercise** - In the third exercise, participants are instructed to extend their feet wider than their shoulders, position their hands and trunk in a forward-stretching position, and then fully bend their knees while maintaining a squatting position. This position is held for 5 seconds, after which the body is raised and the motion is repeated 10 times. **Fourth stretching exercise** - In the fourth exercise, participants are instructed to spread their feet wider than shoulder width, bend and touch their left ankle with their right hand while holding their left hand stretched over their heads, turning their heads to look for their left hand. The same technique is used to repeat this exercise with the other foot. Repeat the exercise 10 times in a row for each side. The **fifth stretching exercise** has the participants lie on their backs with their shoulders, backs, and feet flat on the floor. With the aid of their hands, they will bend their knees into a chin-high position. There are ten repetitions. The **sixth stretching exercise** has the participants stand up against a wall with their hands behind their heads and their elbows pointing forward toward their eyes. Without bending their vertebral column, they then tighten their abdominal muscles for 10 seconds. 10 times will this activity be repeated?

Students were solicited by their fellow nursing students. A personnel interview was conducted in order to speak with the student nurses who had primary dysmenorrhea. Every student nurse provided their freely given consent. All participants received written or verbal information regarding the goals and execution strategies. Students who accepted to take part in the study were asked to fill out a self-reported questionnaire and rate their level of dysmenorrhea at the time of their period on a numerical pain rating scale. Once the formal consent form had been filled out, the student's involvement was voluntary.
Menstrual health information includes age at menarche, length of each cycle (in days), duration of bleeding in each cycle (in days), Pattern of menstrual cycle, Blood loss per cycle, and factors related to socio demographic characteristics that addressed age, height, weight, BMI, religion, and dietary habits Menstrual pain's onset, how long it lasts throughout each cycle, and its symptoms when dysmenorrhoea is present.

In pre- test Dysmenorrhoea was assessed based on the pain experienced in last 2 months and post –test was assessed on basis of student nurses experienced pain in the last 24 hours by using numerical pain rating scale. The 60 nursing students with primary dysmenorrhea who were chosen for the study used a non-probability, purposive sampling technique. The experimental group received intervention, which consisted of specific muscle-stretching exercises for 4 weeks (6 days/week,

every day for 10 minutes). Exercises to stretch the abdomen, pelvis, and groin were included. The subjects were instructed to exercise regularly at the hostel and were also forbidden from stretching during the test periods. The researcher periodically monitored their performance while keeping a diary of their attendance and level of exercise performance. On completion of 4 weeks of selected muscles stretching exercise programme, post intervention data was collected by administering numerical pain rating scale on first day of next cycle of menstruation, pain experienced in the last 24 hours.

Results

SECTION- A: *Description of socio demographic variables of study participants.*

Table. 1 Distribution of demographic factors among study participants in terms of frequency and percentage.

N=60

S.No	Demographic variable	Respondent			
		Experimental		Control	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Age (in years)				
	17-18yrs	9	30.0%	7	23.3%
	19-20yrs	11	36.7%	12	40.0%
	21-22yrs	10	33.3%	11	36.7%
2.	Year of study				
	1st year	16	53.3%	12	40.0%
	2nd year	6	20.0%	13	43.3%
	3rd year	8	26.7%	5	16.7%
3.	Body weight				
	39-46 kg	11	36.7%	11	36.7%
	47-54 kg	12	40%	12	40%
	55- 62 kg	7	23.3%	7	23.3%
4.	Height				
	144-152 cm	7	23.3%	7	23.3%
	153-161 cm	16	53.3%	16	53.3%
	162-170 cm	7	23.3%	7	23.3%
5.	BMI				
	<18.5 kg/cm2	6	20%	6	20%
	18.5-24.99 kg/cm2	22	73.3%	22	73.3%
	25-29.99 kg/cm2	2	6.7%	2	6.7%
6.	Dietary habit				
	Vegetarian	6	20%	6	20%
	Non vegetarian	21	70%	11	36.7%
	Eggetarian	3	10%	13	43.3%

The data presented in table no. 1 shows According to the frequency and percentage distribution of the study's demographic data, the majority of the student nurses (36.7%) in the experimental group are between the ages of 19 and 20; in the control group, that number is 40%. According to their year of study, student nurses with primary dysmenorrhea are more prevalent (53.3%) in the experimental group than they are in the control group (43.3%). 40% of the student nurses, who were equally prevalent in both groups, were between 47 and 54 kg in weight. In both groups, the highest percentage (53.3%) said that student nurses' heights ranged from 153 to 161 cm. The majority (73.3%) of student nurses were non-vegetarian (70%) in the experimental group and eggetarian (43.3%) in the control group. The majority (18.5-24.99kg/cm2) of student nurses were in both groups.

SECTION – B: *Analysis based on the objectives*

Objective 1: To assess the menstrual health among student nurses in experimental and control group

The data shown in table no. 2 shows that the majority of student nurses (63.3%) in the experimental group and (46.7%) in the control group reached menarche between 13 and 14 years of age. Most student nurses (80%) in the experimental group and (40%) in the control group had menstrual cycles that lasted 21–35 days on average. The majority of student nurses (63.3%) in the experimental group had bleeding that lasted three to five days. More over half of the student nurses (63.3%) in the experimental group and 56.7% in the control group reported regular menstrual cycles in the previous two months. In the control group, the majority (36.7%) of bleeding lasted 5-7 days. Majority student nurses with (76.7%) in experimental group and (60%) in control group were having moderate amount of bleeding. In relation to their onset of menstrual pain majority (53.3%) in experimental group shows during menstruation whereas (43.3%) majority student nurses in control group shows

at onset of menstruation. Majority (80%) and (70%) in experimental group and control group simultaneously shows 1st day menstrual pain occur in each cycle. Percentage wise distribution of student nurses having menstrual pain ever interfere with Work or daily activity shows yes with (60%) in experimental group, whereas half of the student nurses (46.7%) in control group showed no. Student nurses taking any pain relief medication showed that (70%) in control group taking pain medication with doctor prescription & (53.3%) in experimental group taking pain relief medication over the counter without prescription. Student nurses (53.3%) in experimental group were taking meftal-spas, (46.7%) in control group were taking ibuprofen. Associated symptoms with dysmenorrhoea showed that (40%) in control group were having symptoms always whereas (60%) in experimental group showed no symptoms occurrence. Percentage wise distribution of habit of doing exercise (46.7%) in control group showed sometimes, whereas (60%) in experimental group showed not having habit of doing exercise.

Table 2. Frequency and Percentage Distribution of menstrual health characteristics among student nurses in experimental and control group. .

N=60

S.N	Subject profile	Experimental group		Control group		t value	p value
		f	%	f	%		
1	Age of menarche(years)						
	11-12	3	10%	14	46.7%		
	13-14	19	63.3%	11	36.7%	3.120	*0.004
	>14	8	26.7%	5	16.7%		
2	Interval between two menstrual cycle(days)						
	<21	3	10%	12	40%		
	21-35	24	80%	10	33.3%	0.812	0.423
	>35	3	10%	8	26.7%		
3	Duration of menstruation bleeding days						
	2-3						
	3-5	3	10%	9	30%		
	5-7	19	63.3%	10	33.3%	0.551	0.586
		8	26.7%	11	36.7%		
4	Pattern of menstrual cycle(last 2 month)						
	Regular						
	Irregular	19	63.3%	17	56.7%		
	Occasional variation	8	26.7%	10	33.3%	0.403	0.690
		3	10%	3	10%		
5	Flow of menstruation during dysmenorrhoea						
	Mild bleeding	1	3.3%	9	30%		
	Moderate bleeding	23	76.7%	18	60%	2.483	0.019
	Severe bleeding	6	20%	3	10%		
6	Onset of menstrual pain						
	Before onset of menstruation	9	30%	10	33.3%		
	At onset of menstruation	5	16.7%	13	43.3%	1.670	0.106
	During menstruation	16	53.3%	7	23.3%		
7	On which day menstrual pain occur in each cycle						
	1st day	24	80%	21	70%		
	2nd day	6	20%	9	30%	1.140	0.264
	3rd day	-	-				
8	Have menstrual pain ever interfere with your work or daily activities						
	Yes	18	60%	8	26.7%		
	No	5	16.7%	14	46.7%	1.613	0.118
	Not always	7	23.3%	8	26.7%		
9	Are you taking any pain relief medication						
	Yes, with doctor prescription	14	46.7%	21	70%		
	Yes, over the counter without prescription	16	53.3%	9	30%	1.756	*0.090
		-	-	-	-		

	None						
	Which pain relief medication is taken during primary dysmenorrhoea						
10	Ibuprofen	9	30%	14	46.7%		
	Meftal spas	16	53.3%	8	26.7%	0.338	0.738
	Others	5	16.7%	8	26.7%		
	Do you have any symptoms with dysmenorrhoea						
11	Yes, always	10	33.3%	12	40%		
	Yes, sometimes	9	30%	9	30%	0.724	0.475
	No	11	36.7%	9	30%		
	Habit of doing exercise during menstruation						
12	Yes, always	3	10%	8	26.7%		
	Yes , sometimes	9	30%	14	46.7%	3.042	*0.05
	No	18	60%	8	26.7%		

**Independent 't' test , t=2.0 * df= 29 *p<0.05*

Objective 2:- To assess the degree of pain during primary dysmenorrhoea among student nurses in experimental group & control group before selected muscle stretching exercises.

Table 3. Comparison of pre-test level of dysmenorrhoea scores between experimental and control group

N=60

Group	N	Average pre–test level of dysmenorrhea score (Mean±SD)	MD	t value	P value
Experimental group	30	3.87± 0.776	0.20	0.97	0.32
Control group	30	4.07± 0.785			

Standard of error=0.202; 't' = 2.0 Df =58 p <0.05; Minimum score = 4; Maximum score = 9

Table 3 above shows comparison of pre- test level of dysmenorrhoea scores between experimental and control group depict that the average pre-test level of dysmenorrhoea score (mean ±SD) in experimental group is 3.87±0.776 and 4.07± 0.785 in control group and the mean difference of pre- test pain score between experimental and control group is 0.20. The obtained t value (0.97) is lesser than table value (2.0) which is found out be not significant at the level of p<0.05. It illustrates that experimental and control group were homogeneous in terms of their mean pain score before intervention.

Objective: 3: To Implement and evaluate the effectiveness of selected muscle stretching exercises on pain among student nurses with primary dysmenorrhoea in experimental group. In this section, difference of pre- test and post – test dysmenorrhoea score of the student nurses were analysed to assess the effect of muscle stretching exercise on primary dysmenorrhoea. All the hypotheses were tested at p<0.05 significance level. H_1- Mean post interventional severity of pain score in experimental group will be significantly lower than mean dysmenorrhoea score in control group.

Table 4. Comparison of post - test level of dysmenorrhoea scores between experimental and control group

N=60

Group	N	Post-test level of dysmenorrhoea score Mean ± SD	MD	t value	P value
Experimental	30	1.37± 0.49	2.73	16.69	* 0.001
Control	30	4.10± 0.750			

**independent samples test 't' = 2.0 at df =58 and p= 0.05*

Table4 shows that comparison of post- test level of dysmenorrhoea score between experimental and control group. It revealed that the mean post- test dysmenorrhoea score in experimental group (1.37± 0.49) is lower than the mean post dysmenorrhoea score (4.10 ± 0.75) of control group. Paired't' test was performed to find out the significance difference between mean of pre- test and post – test dysmenorrhoea score. The calculated value (16.69) was more than the't' tabulated value. (t=2.0 at df = 58 at p< 0.05 level of significance). Hence there is significant difference between experimental and control group. The mean post- test dysmenorrhoea score of experimental group was lower than that of mean post test

dysmenorrhoea score of control group.

Objective 4: To determine the effectiveness of muscle stretching exercises by comparing the pain score during primary dysmenorrhoea in experimental group & control group before & after selected muscle stretching exercises.

Hypothesis 2: H_2 - There will be significant difference between pre - test and post- test of pain among student nurses with primary dysmenorrhoea in experimental group.

H_0 - There will be no significant difference between pre - test and post- test of pain among student nurses with primary dysmenorrhoea in experimental group.

Table 5. Comparison of mean and standard deviation computed by independent t test pre and post intervention level of dysmenorrhoea scores in experimental and control group

N=60

Pain assessment	**N**	**Mean±sd**		**'t' value**	**'p' value**
		Pre test	**posttest**		
Experimental	30	3.87±0.776	1.37± 0.49	14.920	0.001
Control	30	4.07± 0.785	4.10± 0.759	0.571	0.573

"t"(0.05) =2.02 "p<0.05"

Data shown in table 5 revealed that In comparison to the mean pre-test scores, the mean post-test pain score was considerably lower. The selected muscle stretching exercise was determined to be successful in relieving pain because the calculated "t" value was 14.920 more than the table value at the 0.05 level of significance. (H0) is disproved in this theory. Therefore, there will be a substantial difference in the pre-test and post-test levels of pain among student nurses in the experimental group who had primary dysmenorrhea.

It became clear that there was a difference between the mean dysmenorrhoea scores of student nurses in the experimental and control groups when comparing the mean scores before and after the intervention between the experimental and control groups.

Therefore, the researcher rejects the null hypothesis and concludes that the intervention's effect on the experimental group's post-intervention dysmenorrhoea score was causal rather than coincidental. Thus, it was determined that stretching exercises were successful in lessening the severity of dysmenorrhea.

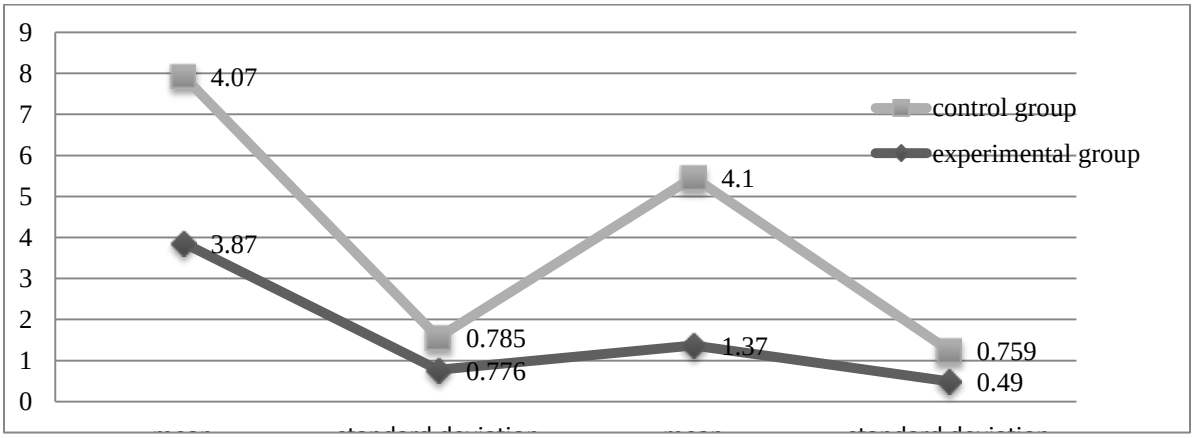

Fig 1 Mean and Standard Deviation of Pre test and Post test Nprs score of Experimental Group & Control Group.

Objective 5: To find association of pre test scores (dysmenorrhoea) among nursing students in experimental group & control group with their selected personnel variables.

Hypothesis 3: H_3 – There will be significant association between pre interventional dysmenorrhoea score in experimental group & control group with their selected personnel variables.

H_0 - There will be no significant association between pre interventional dysmenorrhoea score in experimental group & control group with their selected personnel variables.

Table 6. Association between pre interventional dysmenorrhoea score with their selected personnel variables :

N=60

S. No	Personnel variable	Frequency	df	Chi square	p value
1.	Age (in years)				
	17-18	16	6	$\chi2$=2.226	0.898
	19-20	23			
	21-22	21			
2.	Year of study				
	1st year	28	6	$\chi2$=15.334	0.018
	2nd year	19			
	3rd year	13			
3.	Body weight (kg)				
	39-46 kg	21			
	47-54 kg	24	6	$\chi2$= 10.05	0.122
	55-62 kg	14			
4.	Height (in cm)				
	144-152 cm	14	6	$\chi2$ =6.315	0.389
	153- 161 cm	33			
	162-170 cm	14			
5.	Body mass index				
	<18.5 kg/cm^2	12	6	$\chi2$=2.117	0.909
	18.5- 24.99 kg/cm^2	44			
	25-29.99 kg/cm^2	4			
6.	Dietary habit				
	Vegetarian	12	6	$\chi2$ = 5.962	0.427
	Non vegetarian	32			
	Eggetarian	16			

S. No	Personnel variable	Frequency	df	Chi square	p value
1.	Age at menarche (In years)				
	11-12	17			
	13-14	30	6	$\chi2$= 12.257	0.056
	>14	13			
2.	Interval between two menstruation cycle (in days)				
	<21	15		$\chi2$ = 4.202	0.649
	21-35	34	6		
	>35	11			
3.	Total number of days bleeding occur				
	2-3	12			
	3-5	29	6	$\chi2$ = 8.403	0.210
	5-7	19			
4.	Flow of menstruation during dysmenorrhoea (amount of bleeding)				
	Mild bleeding	10	6	$\chi2$ = 7.410	0.285
	Moderate bleeding	41			
	Severe bleeding	9			

**chi square *df = 6, * p<0.05*

Table 6 Shows the association between pre intervention dysmenorrhoea score and the selected personnel variable. To test the association $\chi2$ were performed. Association between pre intervention dysmenorrhoea with age (p= 0.898), height (p= 0.389) , weight (p= 0.122), BMI (p= 0.909), dietary habit (p= 0.427), Interval between two menstruation cycle (in days) (p= 0.649), Total number of days bleeding occur (p=0.210), Flow of menstruation during dysmenorrhoea (amount of bleeding) (p= 0.285) .The result indicate that there is no significant association between dysmenorrhoea score in experimental and control group with these personnel variable, therefore the investigator accepts the null hypothesis for these personnel variables. From the above data it can be inferred that age, height, weight, BMI, dietary habit, Interval between two menstruation cycle (in days), Total number of days bleeding occur, Flow of menstruation during dysmenorrhoea (amount of

bleeding) did not have any influence on dysmenorrhoea score among the female nursing students.
There is significant association between demographic variable in relation to year of study (p= 0.018) & age at menarche (p= 0.056) at 0.05 level of significance

Nursing implications

- The study's findings have a number of consequences for nursing practice, nursing research, nursing education, and nursing administration. Professional nurse practitioners, nursing educators, nursing administrators, and nursing researchers are especially concerned about these implications.

Nursing service:

- Nursing plays a vital role in improving the nursing care, imparting knowledge and reducing the pain among student nurses having primary dysmenorrhoea by selected muscle stretching exercises. The present finding of the study revealed that majority of primary dysmenorrhoeal student nurses found reduction of pain after implementation of selected muscle stretching exercises for 4 weeks. The nursing personnel can enhance practice on measure of pain controlling i.e. implementation of selected muscle stretching exercises

Nursing education:

- Nursing education emphasizes that health care system should pay more attention on training student nurses so that they themselves will gain knowledge about benefits of performing exercises. Class coordinator should keep a record of absentism due to primary dysmenorrhoea and teach then to perform muscle stretching exercises and benefits of performing.
- The nursing students should be made aware of the importance of selected muscle stretching exercises in reducing pain. The curriculum should give importance to these pain reduction measures rather than medications.

Nursing administration:

- The present study proposed to help the health administrator to create awareness about the effectiveness of selected muscle stretching exercises on primary dysmenorrhoea among student nurses to give a valuable life.
- The nurse administrators should take interest in providing information to student nurses regarding primary dysmenorrhoea pain , risk factors related to pain and about benefits of muscle stretching exercises.
- Class coordinators can also co-ordinate and discuss about pain and benefits of exercises in reducing pain on student nurses, can organize seminar or special class for student nurses.

Nursing research:

- The study will be valuable reference for further research.
- The findings of the study would help to expand the scientific body of professional knowledge upon which further research can be conducted.
- The nurses and the educators can conduct the same study with different variables on a large sample.

Strength of the study

This study can act as a baseline data for other studies related to the effect of selected muscle stretching execises on reducing primary dysmenorrhoea among student nurses related studies in India.

Limitations:

The following limitations in this study are worth noting:

1. The sample size was modest. As a result, it limited the generalisation.
2. The study's time frame was constrained.
3. No attempt was made to detect additional characteristics like attitude and practises; only clinical skill was evaluated.

Conclusion

The paired "t" values obtained for all knowledge characteristics were judged to be significant at $p<0.05$, according to the study's findings. As a result, the research hypothesis was supported and the null hypothesis was rejected. Therefore, it may be concluded that specific muscle stretching exercises were successful in reducing primary dysmenorrhea in student nurses.

Acknowledgements

Without the team's coordinated efforts, a research project would never be successful. Being able to benefit from the invaluable advice of our consultants and professionals has truly been a blessing. We want to thank everyone who helped validate my research tools and offered their insightful criticism. We also like to express our gratitude to all of the study participants for their dedication to finishing this investigation.

Conflict of interest
The authors say they have no competing interests.

Source of funding
Self

Ethical clearance
- The principal of SGRRU's college of nursing granted administrative approval.
- The ethical committee of SGRRU granted approval.
- Prior to beginning data collection, participants provided their written consent.
- Each participant was required to pledge their commitment to protecting their privacy.

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