

The Effect of Stretching Exercises on Improving Pain and Daily Activities of Girls with Primary Dysmenorrhea

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Abstract:

Background: Primary dysmenorrhea is prevalent issue among adolescent that may negatively impact their day-to-day activities. Stretching exercises are crucial for easing the symptoms of primary dysmenorrhea.

Aim: To evaluate stretching exercises' effect of on improving pain and daily activities of girls with primary dysmenorrhea.

Design: Quasi-experimental (pre and posttest) design was achieved.

Setting: study was implemented at Faculty of Nursing, Minia University.

Sample: purposive sample formed of 120 girl students that included two groups study and control.

Tools: Two tools were used to collect data: A structured interviewing questionnaire was used in this study and primary dysmenorrhea intensity scale.

Results: About 86.6% and 90% of the studied girls in both groups had severe level of dysmenorrhea before intervention. While after intervention changed to be 36.7% of them in the study group and 80% in the control group had severe level of dysmenorrhea, with highly statistical significant difference between both groups at p-value 0.001.

Conclusion: Following the implementation of stretching exercises in the study group, the level of dysmenorrhea and everyday activities among the girls under study significantly improved.

Recommendations: Health education programs in universities should prioritize regular stretching exercises performance as a means to reduce primary dysmenorrhea.

Keywords: Daily Activities, Improving Pain, Primary Dysmenorrhea Stretching Exercises

Introduction:

Menstruation, commonly referred to as a period, is the regular flow of mucous tissue and blood through the vagina that originates from the inner lining of the uterus. Menstruation that is so painful that it interferes with everyday activities is known as dysmenorrhea. One of the most prevalent gynecological issues among young girls and adolescent girls is dysmenorrhea (Saikia, B., Bhavani B., Logambal K. & Karpagam, 2024).

Globally, it is estimated that more than 50% of women who are menstruating and approximately 90% of female adolescents experience it, and 10%–20% report that their pain is acute, severe, or distressing (Esan et al., 2024). In Egypt, dysmenorrhea was very common (75.0%). Of the cases that were diagnosed, 30.0% were categorized as moderate, 14.8% as severe, and 55.2% as mild (Manjunath et al., 2020).

Distinguishing between primary and secondary dysmenorrhea. Menstrual pain that is not caused by pelvic pathology is referred to as primary dysmenorrhea. Non-pathological cramps are reported by half of girls, which can result in a worse quality of life and higher absenteeism rates. While gross pathology is seen in the pelvic structures in secondary dysmenorrhea, it is typically linked to dyspareunia,

dysmenorrhea, and persistent pelvic pain (Djupri et al., 2022).

The most common cause of chronic pelvic pain in girls of reproductive age is primary dysmenorrhea, which affects 60% of girls and 72% of adolescents. 5% to 20% of these girls report that their ability to participate in daily activities is negatively impacted (Itani et al., 2022). Dysmenorrhea has a negative impact on a girl's everyday activities and quality of life. (Agrawal & Ahmed, 2021). It is specified by pain in the lower abdomen that may or may not spread to the back and thighs. The pain may be associated with headache, fatigue, anxiety, nausea, vomiting, mood swings, and in rare and severe cases, syncope. According to reports, primary dysmenorrhea ends on its own after one to three years, though it can occasionally last until childbirth (Irozulike et al., 2023)

Treatment options for dysmenorrhea include paracetamol, medications that block prostaglandins, such as ibuprofen or other anti-inflammatory drugs; regular exercise and focus on overall physical fitness; using a hot water bottle to apply heat to the abdomen; relaxation techniques; the oral combined contraceptive pill, which reduces prostaglandins and thereby pain; and bed rest during the first day or two of the menstrual cycle (Dash et al., 2023).

Numerous studies' findings have demonstrated that frequent exercise reduces the severity of symptoms and pain. Strengthening exercises for the extremities, aerobic exercise, and physiotherapy procedures such as connective tissue massage, aerobic exercise, and the application of hot packs are non-pharmacological treatments for primary dysmenorrhea (**Agrawal & Ahmed, 2021**).

It is not a novel concept that different forms of exercise could help reduce pain in primary dysmenorrhea. Exercise is generally believed to lessen the severity and/or frequency of dysmenorrheal syndrome. Stretching exercises, playing sports, and engaging in regular exercise are among the recommended treatments and preventative measures for primary dysmenorrhea. In general, it appears that exercise therapy could ease dysmenorrhea-related discomfort (**Wijaya et al., 2024**).

Because they help girls and young girls maintain and improve their health, nurses emphasize the significance of wellness-enhancing tactics, illness prevention initiatives, and health promotion as healthcare modalities. She plays a significant role in running the school health program and teaching teenage girls and the community about various non-medical ways to manage

menstrual pain perception (**Priscilla & Priyanka, 2023**)

Significant of the study:

Painful menstruation without significant pelvic pathology is known as primary dysmenorrhea. Usually, it appears after the first two years of menarche (**Gandhi, 2022**). One of the most prevalent issues affecting teenagers, primary dysmenorrhea typically manifests between the ages of 17 and 22. The prevalence of dysmenorrhea was high in Egypt, at 24.3% and 13.3% for moderate and severe pain respectively (**Goda et al., 2020**). Adolescents with dysmenorrhea often experience decreased academic performance, a decrease in physical and social activities, and illness absences (**Donayeva et al., 2023**).

Recent work by a Hong Kong research team demonstrated that raising the progesterone level can reduce prostaglandin and pro-inflammatory cytokine production, which in turn reduces pain perception. It is well known that engaging in physical activity raises blood levels of endocannabinoids and endorphins. Exercise for a brief period of time lowers cortisol production and has a general analgesic effect (**Kovács et al., 2024**). So, the researcher interesting in evaluating the effect of stretching exercises on improving pain and daily activities of girls with primary dysmenorrhea.

Aim of the study:

Evaluate the effect of stretching exercises on improving pain and daily activities of girls with primary dysmenorrhea

Research hypothesis:

H (1): Girls with primary dysmenorrhea who apply stretching exercises expected to reduced their level of pain.

H (2): Girls with primary dysmenorrhea who apply stretching exercises expected to enhance their daily activities.

Subjects & Methods:

Four designs were used to present the study's subjects and methodology: technical, operational, administrative, and statistical.

Technical Design: which included the study sample, setting, research design, and data collection instruments.

Study design:

Quasi- experimental (pre and posttest) research design was utilized to implement the aim of this study.

Setting: The study was achieved at Faculty of Nursing, Minia University. This faculty consists of eight main nursing department.

Sample size: - a purposive sample formed of 120 girl students. The sample involved criteria of girl students, unmarried, regular menstruation, have moderate or severe level of dysmenorrhea, and not received any analgesics during the study period. And girl students who have any cardiac problem or

receive treatment for medical disease prevent practicing exercise, have poly cystic ovarian or endometriosis were excluded.

The Epi info program was used to determine the sample size, which had a population size of 1910, a 95% confidence coefficient, a 10% tolerable error, and a 10% predicted frequency. A sample size of 120 female students from all four academic years was initially determined by the program to consist of 119 girls. The sample involved 30 student from each academic year. It divided equally into two main groups (60 for each one), study (which will receive educational intervention) and control group (which will receive routine care).

Tools of Data Collection:

Data was gained using two tools as the following

Tool (I) A structured questionnaire for interviews was used in this study: This tool was designed and utilized by the researcher according to literature review and consulting expertise in this area, it structured to include the following parts: (Goda et al., 2020), (Mohamed et al., 2024), and (Elmoniem et al., 2020)

Part 1: Personal characteristics included: age, residence, academic level, weight, height, and BMI.

Part 2: Menstrual history: It used to assess basic characteristics of menstrual cycle for each student such as (age of menarche, interval, duration, , and number of pads per day),

family history of dysmenorrhea, presence of any symptoms with dysmenorrhea, if yes, type of symptoms, frequency of dysmenorrhea, and taking analgesics in previous menstruation).

Part 3: student activities during menstruation: to assess effect of dysmenorrhea on daily activity as has an effect on attending faculty, on studying and understanding the lesson, on examination scores, household activities, visiting holy places, friends and relatives during menstruation, physical activities, and daily activities change with menstruation.

Tool (II): WALIDD primary dysmenorrhea intensity scale.

The researchers adapted this scale, which was initially created by **Teherán et al. (2018)**, for the purpose of measuring the severity of primary dysmenorrhea. Working ability (zero: no; one: almost never; two: almost always; three: always) was one of the four components. Location is the second item, and it can be zero, one, two, three, or four sites; Item 3: Dysmenorrhea Intensity (0: no pain, 1: mild discomfort, 2: severe pain, 3: tremendous pain) Pain days (zero, one to two, three to four, and three to five days) make up the fourth item.

Scoring system for primary dysmenorrhea intensity scale.

Each variable had a total score between 0 and 3, and the cumulative score could be

anywhere between 0 and 12. The degree of dysmenorrhea was evaluated and ranked in the following order: There are three types of dysmenorrhea: absent (zero), minor (1-4), moderate (5-7), and severe (eight to twelve) (**Mohamed et al., 2024**),

Supportive materials

It was done by the researcher according to literature review (**Unganlawar et al., 2023**) and (**Rejeki et al., 2021**). In order to provide the girls with some information, it was prepared as a brochure using straightforward Arabic language and a picture regarding dysmenorrhea definition, symptoms, examples of stretching exercises and how to perform.

Tools Validity

Before making any necessary changes to test the tool's content validity, a panel of three obstetrics and gynecological nursing experts assessed the instruments for clarity, relevance, comprehensiveness, understanding, applicability, and ease of use.

Tools Reliability

The consistency of the tools was calculated by using Cronbach's Alpha; and they were 0.760 and 0.689 for structured interviewing questionnaire and WALIDD primary dysmenorrhea intensity scale respectively

Operational design

Pilot study and field work were the two phases of implementing this design.

Pilot study:

Twelve girl students, representing 10% of the population, participated in a pilot study to assess the tools' comprehensiveness and clarity as well as the time needed to complete the questionnaire. Because the results of the pilot study showed that no additional changes or improvements were needed, the girls from the pilot study were added to the final sample.

Field work

This study's data collection period ran for four months, from September 2024 to December 2024.

Procedures phases: This was carried out in five phases as follow

Preparatory Phase: An extensive review of the study area was carried out, as available books, scientific magazines, electronic dissertations, the internet, articles, and periodicals.

Assessment phase (for study and control group):

- The faculty of nursing's research ethics committee granted formal approval (REC202492). The researcher welcomed each student, introduced herself, went over the purpose, time frame, and activities of the study, and discussed informed consent at the start of the interview.
- The intensity of pain was evaluated by the researchers using WALIDD primary dysmenorrhea intensity scale to determine level of dysmenorrhea,

and students with moderate and severe form of dysmenorrhea was involved to the study.

- Following obtaining informed consent from all girl students who satisfied the inclusion criteria, data pertaining to personal characteristics, menstrual history, and daily activity were collected through interviews and pretest questionnaires.

Planning phase:

- In this phase, the researchers set the study goals and objectives, prepare the sources and teaching techniques.

To attain the goal and objectives of the study, the researchers developed and prepared the information contents and the teaching strategies including group discussion, lectures, brainstorming, demonstration and re-demonstration, and the use of visual aids like pictures, handouts, poster, and videos.

- The study students separating into two equal groups randomly (study and control).

Implementation phase (for study group):

- It started immediately after assessment (pre- intervention).

Each student received one training session in the laboratory of the obstetric and gynecological department of the faculty, to provide information about the exercise as definition and advantages of the exercise and how to perform the stretching exercise.

- The exercise demonstrated first

- by the researchers and then the students were Permitted to engage in exercise as supervised by the researchers.
- These instructions were given to each girl student separately or in a group from 5 to 10 students according to the availability of the girl students.
 - The researcher obtained each student's WhatsApp number and sent them videos and brochures with written instructions and illustrated exercises along with pictures. The purpose of the brochures was to remind the students to complete the exercise within the designated time.
 - Every girl student was urged by the researchers to perform all four stretch exercises; each exercise lasted for five seconds and was repeated ten times, or three times a week. The students were instructed by the researchers to refrain from exercising when they were menstruating (**Kisner and Colby, 2007; Murtiningsih et al., 2019**).
 - For the first stretching exercise, the students were instructed to stand, bend their trunk forward from the hip joint in a straight line, aligning their back and shoulders, and keep their upper body parallel to the floor for five seconds (ten repetitions). Students were to stand for the second stretching exercise, lift one heel off the ground, and then alternately perform the exercise with the other heel (20 repetitions). In order to perform the third stretching exercise, students were instructed to open their shoulders, extend their hands and trunks forward, and then, after ten repetitions, squat for five seconds while fully bending their knees. Students were instructed to place their feet wider than their shoulders as part of the fourth stretching exercise. The student was told by the researchers to bend, reach her left hand above her head, and touch her left ankle with her right hand. The exercise described above was repeated ten times for the other foot, following the same methodology (**Thermacare, 2010**).
 - Students was given schedule to do the exercise three times per week for four weeks, so the researchers sent a massage to remind them to do this exercise three times per week (minimum each step repeated 10 exercises at each time)
 - Control group received routine care.
- Evaluation phase:**
In this phase, the post-test was administered after eight weeks of implementing the exercise for the study and control groups to compare effect of stretching exercise on dysmenorrhea intensity
- Administrative design:**
Each girl students who took part in the research gave her informed consent, and the study was kept totally private. The girl student could have left the study at any moment.

Statistical design:

For statistical analysis, SPSS for Windows version 26.0 was utilized. Every variable in continuous data had a normal distribution and was expressed as mean, standard deviation (SD). The data was presented using percentages and numbers to indicate its categories. The t-test was used to compare variables whose data were continuous. Using categorized data, the Chi-square and McNemar tests were applied to compare variables. P-values were deemed statistically significant if they were less than 0.05.

Results:

Table (1) illustrates that regarding age 85% and 78.3% of the studied girls in the study and the control group respectively had an age from 19-22 years old, about 60% and 66.7% the study and the control group respectively lived at rural areas, 65.0% of them in the study group and 53.3% in the control group had a normal BMI. With no statistical significant difference between the study and control groups regarding all previous variables at p-value > 0.05.

Table (2) shows menstrual characteristics of the studied girls, and reported that regarding age of menarche 75.0% of the studied girls in the study group and 83.3% in the control group had their menarche from 12-15 years old. Concerning its duration, 83.3% of them in the study the control group had

duration from 3-7 days, about 83.3% of them in the study group and 86.6% in the control group had interval from 21-35 day. Also 46.7% and 58.3% of them in the study and control group respectively used from 2-3 pads per days. Regarding onset of menstrual pain, 70.0% and 78.3% of them in the study and control group their pain started in the first day of menstruation. About 81.7% and 78.3% of them in the study and control group their pain repeated every month. Concerning symptoms with dysmenorrhea, 83.3% in the study group and 80.0% in the control group experienced severe and persistent abdominal pain. With no statistical significant difference between the study and control groups regarding all previous variables at p-value > 0.05

Figure (1) demonstrates that 55.0% and 51.7% of the studied girls in the study and control group had a family history of dysmenorrhea, with no statistical significant difference between the study and control groups at p-value 0.714.

Table (3) clarifies that there were no statistical significant difference between the study and control groups before intervention regarding all items of their change on daily activities at p-value > 0.05.

Table (4) clarifies that there were highly statistical significant difference between the study and control groups after intervention

regarding all items of their change on daily activities at p-value 0.001**.

Figure (2) reveals that 86.6% of the studied girls in the study group and 90% in the control group had severe level of dysmenorrhea before intervention, with no statistical significant difference between the study and control groups at p-value 0.703. While after intervention changed to be 36.7% of them in the study group and 80% in the control group had severe level of dysmenorrhea, with highly statistical significant difference between the study and control groups at p-value 0.001**.

Table (5) illustrates that, there were positive correlation between level of dysmenorrhea in the study group and the studied girls' age, academic year, weight, and height, while there were no correlation between level of dysmenorrhea residence and BMI. In the control group, there were positive correlation between level of dysmenorrhea and the studied girls' age and weight, while there were no correlation between level of dysmenorrhea residence academic year, height and BMI.

Table (1) The studied girls' personal characteristics in the study and control groups (n=120)

Personal characteristics	Study group		Control group		X ²	P-value
	N (60)	%	N (60)	%		
Age / years					.897	.639
17-18	4	6.7	6	10.0		
19-22	51	85.0	47	78.3		
>22 years	5	8.3	7	11.7		
Age (mean±SD)	20.50±1.408		20.60±1.520		1.245	.940
Residence					.574	.449
Urban	24	40.0	20	33.3		
Rural	36	60.0	40	66.7		
Academic year					.000	1.000
First	15	25.0	15	25.0		
Second	15	25.0	15	25.0		
Third	15	25.0	15	25.0		
Fourth	15	25.0	15	25.0		
Weight/Kg (mean±SD)	60.68±7.514		61.33±8.909		.188	.665
Height/Cm (mean±SD)	158.53±3.744		159.13±3.942		.732	.392
Body mass index (BMI)					5.010	.171
Underweight(<18.5)	2	3.3	3	5.0		
Normal (18.5-25)	39	65.0	32	53.3		
Obese (>25-30)	17	28.4	23	38.4		
Overweight> 30	2	3.3	2	3.3		
BMI(mean±SD)	24.13±3.05986		24.26±3.69812		.039	.843

Table (2) The studied girls' menstrual characteristics in the study and control groups (n=120):

Menstrual characteristics	Study group		Control group		X ²	P-value
	N(60)	%	N (60)	%		
Age of Menarche					1.673	.433
<12 years	8	13.3	4	6.7		
12-15 years	45	75.0	50	83.3		
>15 years	7	11.7	6	10.0		
Duration/ day					.630	.730
< 3 days	4	6.7	3	5.0		
3-7 days	50	83.3	53	88.3		
> 7 days	6	10.0	4	6.7		
Interval/ day					1.000	.606
< 21 day	7	11.7	4	6.7		
21-35 day	50	83.3	52	86.6		
> 35 day	3	5.0	4	6.7		
Number of pads per day					1.637	0.201
2-3 pads	28	46.7	35	58.3		
More than 3 pads	32	53.3	25	41.7		
Number of pads (Mean±SD)	3.62±1.075		3.37±1.134		3.935	.269
Onset of menstrual pain					1.087	.297
1-2 day before menstruation	18	30.0	13	21.7		
The first day of menstruation	42	70.0	47	78.3		
Frequency of dysmenorrhea:					.243	.885
Every month	49	81.7	47	78.3		
Irregular	8	13.3	47	15.0		
With stress only	3	5.0	4	6.7		
Type of symptoms with dysmenorrhea :						
Severs and persistent abdominal pain	50	83.3	48	80.0	.223	.637
Back or leg pain	35	58.3	39	65.0	.564	.453
Nausea and vomiting	11	18.3	9	15.0	.240	.624
Constipation or diarrhea	7	11.7	6	10.0	.086	.769
Severe headache	9	15.0	7	11.7	.288	.591
Taking analgesics in previous menstruation					3.663	.056
Yes	44	73.3	34	56.7		
No	16	26.7	26	43.3		

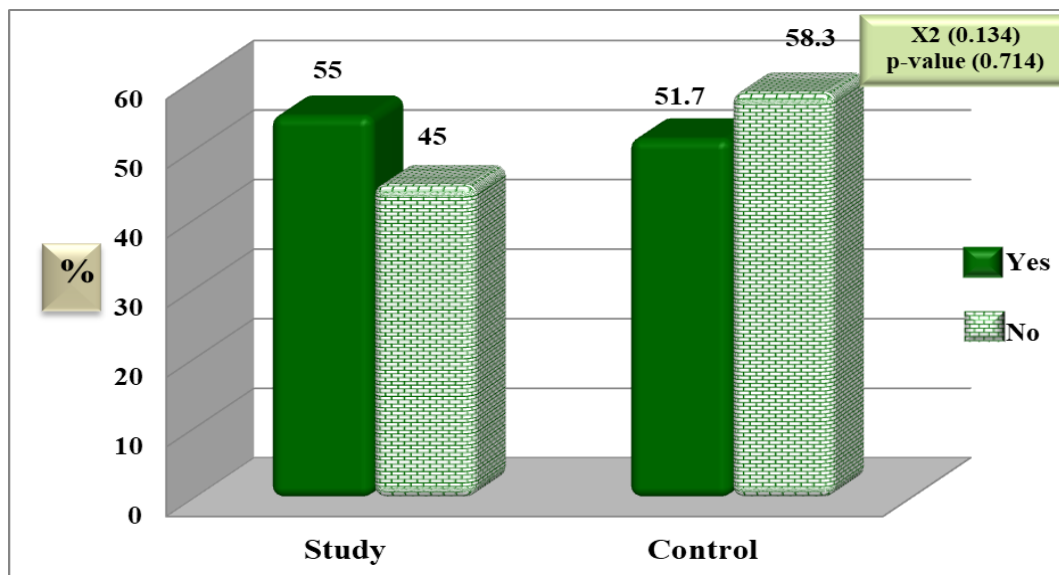


Figure (1) The studied girls' family history of dysmenorrhea in the study and control groups (n=120)

Table (3) The studied girls' change on daily activities in the study and control groups before intervention (n=120)

Items	Study group		Control group		X ²	P-value
	N (60)	%	N (60)	%		
Dysmenorrhea has an effect on attending faculty					.076	.783
Yes	52	86.7	53	88.3		
No	8	13.3	7	11.7		
Dysmenorrhea has an effect on studying and understanding the lesson					.120	.729
Yes	56	93.3	55	91.7		
No	4	6.7	5	8.3		
Dysmenorrhea has an effect on examination scores					.076	.783
Yes	52	86.7	53	88.3		
No	8	13.3	7	11.7		
Dysmenorrhea has an effect household activities					.063	.863
Yes	50	83.3	51	85		
No	10	16.7	9	15		
Visiting Holy places, friends and relatives during menstruation					.261	.609
Yes	50	83.3	52	86.7		
No	10	16.7	8	13.3		
Physical activities (walking ,exercises)					223	.637
Yes	48	80.0	50	83.3		
No	12	20.0	10	16.7		
Do any of your daily activities change with menstruation?					1.154	.283
Yes	50	83.3	54	90.0		
No	10	16.7	6	10.0		

Table (4) The studied girls' change on daily activities in the study and control groups after intervention (n=120)

Items	Study group		Control group		X ²	P-value
	N (60)	%	N (60)	%		
Dysmenorrhea has an effect on attending faculty					15.00	0.001**
Yes	30	50.0	50	83.3		
No	30	50.0	10	16.7		
Dysmenorrhea has an effect on studying and understanding the lesson					18.15	0.001**
Yes	29	48.3	51	85.0		
No	31	51.7	9	15.0		
Dysmenorrhea has an effect on examination scores					15.404	0.001**
Yes	31	51.7	51	85.0		
No	29	48.3	9	15.0		
Dysmenorrhea has an effect household activities					13.374	0.001**
Yes	30	50.0	49	81.7		
No	30	50.0	11	18.3		
Visiting Holy places, friends and relatives during menstruation					8.336	0.004**
Yes	32	53.3	47	78.3		
No	28	46.7	13	21.7		
Physical activities (walking ,exercises)					19.548	0.001**
Yes	22	36.7	46	76.7		
No	38	63.3	14	23.3		
Do any of your daily activities change with menstruation?					12.626	0.001**
Yes	27	45.0	46	76.7		
No	33	55.0	14	23.3		

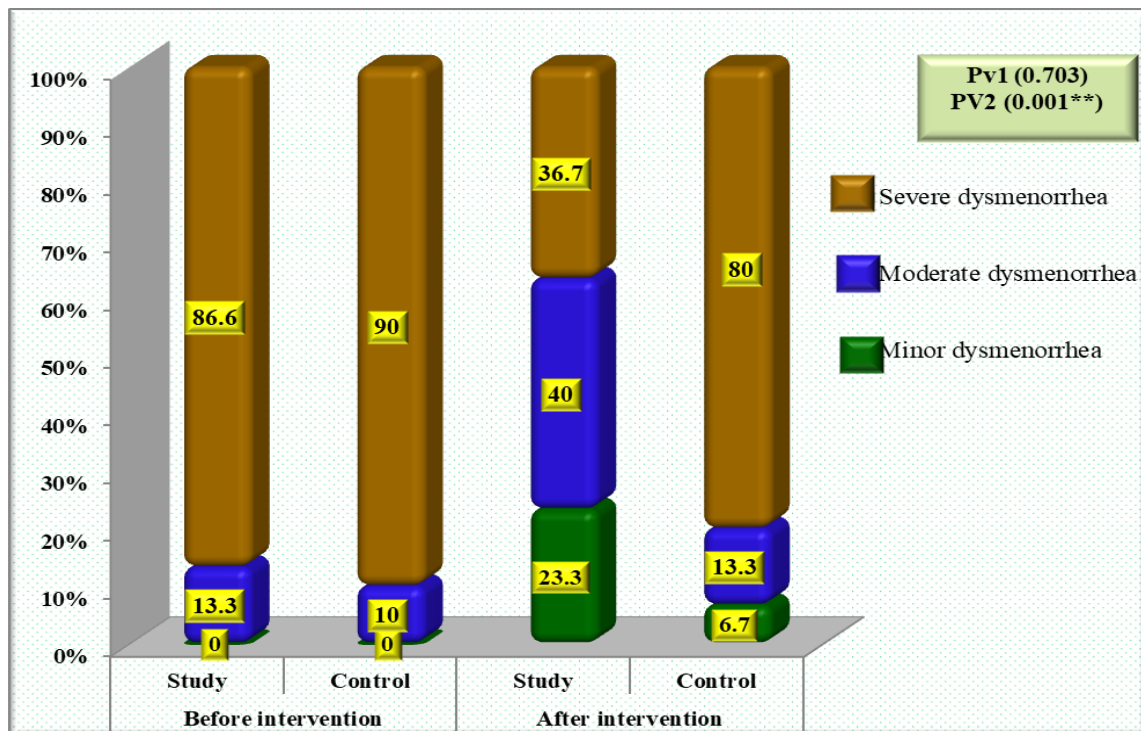


Figure (2) level of dysmenorrhea in the study and control groups before and after intervention (n=120)

Table (5) correlation between level of dysmenorrhea in the study and control groups before intervention and personal characteristics (n=120)

Item		Study group	Control group
Age	Pearson Correlation	.337^{**}	.530^{**}
	Sig. (2-tailed)	.008	.000
Residence	Pearson Correlation	.109	.149
	Sig. (2-tailed)	.405	.256
Academic year	Pearson Correlation	.341^{**}	.180
	Sig. (2-tailed)	.008	.168
Weight	Pearson Correlation	-.259[*]	.319[*]
	Sig. (2-tailed)	.046	.013
Height	Pearson Correlation	-.352^{**}	-.028
	Sig. (2-tailed)	.006	.830
BMI	Pearson Correlation	-.117	-.164
	Sig. (2-tailed)	.372	.212
Family history of dysmenorrhea	Pearson Correlation	-.133	-.010
	Sig. (2-tailed)	.310	.938

Discussion:

More than half of girls between the ages of 18 and 25 suffer from dysmenorrhea, the most prevalent gynecologic disorder in young girls. Its main symptoms, including pain, have a negative impact on everyday life and academic performance. Primary dysmenorrhea is treated with both pharmaceutical and non-pharmacological methods. About 15% of girls with primary dysmenorrhea may experience side effects from pharmaceutical treatments, which may not always be completely effective. Furthermore, Egyptian girls and young women are discouraged from taking medication for dysmenorrhea because they think it could impair fertility or result in dependence (Moustafa1 et al., 2023). So, the present study designed to evaluate the effect of stretching exercises on improving pain and daily activities of girls with primary dysmenorrhea.

Concerning personal characteristics, present study illustrated that three-fifths of the study group and two-thirds of the control group lived in rural areas, and less than two-thirds of the study group and more than half of the control group had a normal BMI. The majority of the girls in the study group and the control groups were between the ages of 19 and 22. Considering all prior variables, there was no statistically significant difference between the study and control groups..

Similar finding were reported by (ElShora et al., 2023), who conducted research in Egypt to

evaluate the impact of a set of combined exercises on primary symptoms of dysmenorrhea in nursing students. They found that the vast majority of nursing students in both the study and control groups were between the ages of 19 and 22, and that over two-thirds of the study group and over one-third of the control group had normal body mass indexes. Considering all prior variables, there was no statistically significant difference between the study and control groups. Also (Elmoniem et al., 2020), who conducted a study to compare the effectiveness of stretching exercises and heat application in easing the discomfort of primary dysmenorrhea in female university students. The results showed that there was no statistically significant difference in BMI, age, residence, or academic year between the study and control groups. This resemblance stems from using comparable study samples and environments.

Regarding menstrual characteristics, actual study represented that three quarters of the studied girls in the study group and the majority in the control group had their menarche from 12-15 years old. The majority of them in the study the control group had duration from 3-7 days, and had interval from 21-35 day. Also less than one half of them in the study and less than three fifths in the control group used from 2-3 pads per days. Regarding onset of menstrual pain, more than two thirds in the study and more than three in the control group their pain started in the first day of menstruation. The

majority of them in the study the control group their pain repeated every month.

On the same line, **(Mohamed et al., 2024)**, who implemented their study in Egypt to compare between the effect of Rocking, Stretching, and Kegel exercises on pain intensity of primary dysmenorrhea among university girl students, Also **(Saleh & E Mowafy, 2016)**, who carried out their study in Egypt to compare between stretching and core strengthening exercises in management of dysmenorrhea, and both of them found that there were no statistical significant difference between both groups regarding menarche, duration, interval, and number of pads per day. Similarity back to working on similar sample, and the same settings (Egypt).

Concerning symptoms associated with dysmenorrhea actual study illustrated that the majority of them in the study the control group experienced severe and persistent abdominal pain. With no statistical significant difference between both groups regarding all previous variables. Congruent with previous findings **(Elmoniem et al., 2020)**, showed that less than three quarters of the studied girls experienced lower abdominal pain and back pain, slightly more than one quarters of them had nausea and vomiting during menstruation. Also **(Abedel & Mohamed, 2017)**, who carried out their study to investigate the effect of pelvic rocking exercises on primary dysmenorrhea among adolescent girls, showed that one half of the studied girls experienced

lower back pain during menstruation.

Regarding family history of dysmenorrhea, more than half of the studied girls in both group had a family history of dysmenorrhea, with no statistical significant difference between both groups. Near to previous findings, **(John & Sr, 2019)**, who conducted their study to determine the impact of pelvic rocking exercise on adolescent girls' dysmenorrhea by evaluating the pre-test and post-test levels of the condition in both the experimental and control groups, and found that more than three fifths in the study and the control group had a family history of dysmenorrhea, with no statistical significant difference between both groups. This ensured that family history of dysmenorrhea act as a risk factor for having dysmenorrhea. Also **(Mohamed et al., 2024)**, who showed that more than three fifths in the stretching group, less than half of them in the pelvic exercise, but less than one third of them in the kegel group, but these difference made statistical significant difference between the three study groups. From the researcher point of view family history of dysmenorrhea still act as a risk factor for having dysmenorrhea, but statistical difference between the three study groups back to dissimilarity in the percent of family history in each group.

As regard change on daily activities, current study clarifies that around one half of the studied girls their daily activities affected by dysmenorrhea, with no statistical

significant difference between the study and control groups before intervention regarding all items of their change on daily activities. While after intervention, that there were highly statistical significant difference between both groups after intervention regarding all items of their change on daily activities at as there was improvement in the study group in daily activities back to improvement in level of pain. In agreement with previous findings, **(Abedel & Mohamed, 2017)**, who revealed that there was a significant improvement in the daily activities after applying rocking exercises, that not found in control group. This similarity ensured that exercise play a vital role in improving menstrual pain that affect positively on their life activities.

Regarding the severity of the dysmenorrhea, the current study found that there was no statistically significant difference between the study and control groups, with the majority of the girls in the study and the vast majority of those in the control group experiencing severe dysmenorrhea prior to intervention. Following the intervention, there was a highly statistically significant difference between the study and control groups, with over one-third of the study group experiencing severe dysmenorrhea and the majority of the control group experiencing the same condition.

On the same line, **(Saleh & E Mowafy, 2016)** demonstrated that around three quarters of the studied girls had a severe level of dysmenorrhea before intervention,

that improved after intervention to be slightly more than one quarter with highly statistical significant difference between pre and post intervention. Also **(Sagita et al., 2024)**, who conducted their research to determine whether abdominal stretching exercises could lessen the severity of dysmenorrhea pain, and **(Amaliah et al., 2021)**, who implemented a study entitled “the effect of abdominal stretching exercise on the reduction of intensity of dysmenorrhea” , both of them illustrated that there was an improvement in the level of pain after applying stretching exercises, with highly statistical significant difference between pre and post intervention.

Also **(Goda et al., 2020)**, demonstrated that the great majority of the studied girls had no and mild pain in the study group after intervention, while more than one half of them had a severe dysmenorrhea level, with highly statistical significant difference between the study and control groups. This improvement might be the result of exercise increasing the uterus's blood flow and metabolism, which may help to lessen the symptoms of dysmenorrhea.

Regarding correlation between level of dysmenorrhea in the study group and personal characteristics, present study illustrates that, there were positive correlation between level of dysmenorrhea in the study group and control group and the studied girls' age and weight before intervention. Similar findings reported by **(Moustafal et al., 2023)**, who

carried out their study to assess the prevalence of dysmenorrhea among adolescent girls, and found that there were relation between dysmenorrhea level and the studied girls' age and weight. Also (Elmoniem et al., 2020), showed that high significant correlation between body mass index in stretching exercise group and demonstrated that severity of primary dysmenorrhea was increased by gaining weight and increasing BMI.

Conclusion:

Based on the current study's findings, it can be concluded that:

A significant improvement occurred in the studied girls' level of dysmenorrhea and daily activities after application stretching exercise in the study group.

Recommendations:

- Regular stretching exercises should be emphasized in college and university health education programs as a way to lessen primary dysmenorrhea.
- Generally speaking, stretching exercises are a better treatment for dysmenorrhea than taking analgesics.
- Provide all teenage girls with dysmenorrhea with an illustrated booklet that includes figures and a brief explanation of stretching exercises.
- Making generalizations with a large sample size.

References:

Abedel, H., & Mohamed, A. (2017). Effect of practicing Pelvic Rocking exercises on primary dysmenorrhea among Adolescents Girl: A randomized

controlled clinical trial. *In Galen Medical Journal*. 4,(1):26–32. <http://onlinelibrary.wiley.com/doi/10.1111/galen.121452>

Agrawal, R., & Ahmed, d R. (2021). A compaeative study of stretching exercises versus core stretching exercises on Primary dysmenorrhea in young secondary girls. *European Journal of Biomedical and Pharmaceutical Sciences*, 8(8), 368-374.

Amaliah, A., Sriyanah, N., & Nurfitri. (2021). the effect of abdominal stretching exercise on the reduction of intensity of dysmenorrhea. *Journal Kesehatan 14*(1), 55–61.

Dash, S., Thomas, A., & Dash, G. (2023). Preferences in Treatment of Menstrual Pain Among Girls- a Narrative Review. *European Chemical Bulletin*, 12(10), 3462–3468. <https://doi.org/10.48047/ecb/2023.12.10.00395>

Djupri, D., Said, I., Irawati, H., & Manggabarani, S. (2022). The Effect of Pelvic Rocking Exercise and Buteyko Exercise on Reducing Primary Dysmenorrhea Pain Levels. *Journal Keperawatan Padjadjaran*, 10(1), 22–26. <https://doi.org/10.24198/jkp.v10i1.1938>

Donayeva, A., Amanzholkyzy, A., Abdelazim, I., Nurgaliyeva, R., Gubasheva, G., Sapparbayev, S., Ayaganov, D., Kaldybayeva, A., & Samaha, I. (2023). The impact of primary dysmenorrhea on

- adolescents' activities and school attendance Ainur. *Journal of medicine and life*, 16(10), 1462–1467.
- Elmoni, S. Oudia, Abd-Elhakam, E. Mohammed., & Aliem, R. Soliman (2020). Effect of Heat Application versus Stretching Exercises on Relieving Discomforts of Primary Dysmenorrhea among University Student Girls Somaya. *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 9(4), 20–32.
- ElShora, S. Nasser, Elnabi, M. Ebrahim, & Elbeltagy, E. Sabry (2023). Effect of a Group of Merged Exercises on Primary Dysmenorrhea Symptoms among Nursing Students. *Egyptian Journal of Health Care*, 14(3), 486–501.
- Esan, D., Ariyo, S. Akinlolu, E., Akingbade, O., Olabisi, O., Olawade, D, Bamigboye, T, & Ogunfowokan, A. (2024). Prevalence of dysmenorrhea and its effect on the quality of life of female undergraduate students in Nigeria. *Journal of Endometriosis and Uterine Disorders*, 5,120-130. 100059. <https://doi.org/10.1016/j.jjeud.2024.100059>
- Gandhi, N. V. (2022). Effect of Laura Mitchell ' S Relaxation Versus Physiotherapy Exercise for Primary Dysmenorrhea in College Going Students and Correlation of Core Strength With Dysmenorrhea-A Randomized Controlled Trial. *VIII(X)*, 130–140.
- Goda, S., Mohamed, S., Hassan, A., & El-aty, N. . (2020). Effect of Stretching Exercise on Primary Dysmenorrhea among Secondary Girl Students at Assiut City
Keywords : Adolescent , Primary Dysmenorrhea & Stretching Exercise . *Assiut Scientific Nursing Journal*, 8(20), 144–156.
- Irozulike, F., Asiwe, N., Ekokodje, J., Wedeh, M. S., Izibeya, J., & Filima, P. (2023). Prevalence of Dysmenorrhea and its Management among Undergraduate Students of the University of Port Harcourt, Nigeria. *Asian Journal of Advanced Research and Reports*, 17(12),19–28. <https://doi.org/10.9734/ajarr/2023/v17i12582>
- Itani, R., Soubra, L., Karout, S., Rahme, D., Karout, L., & Khojah, H. (2022). Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. *Korean Journal of Family Medicine*, 43(2), 101–108. <https://doi.org/10.4082/kjfm.21.0103>
- John, N., & Sr, R. (2019). Effectiveness of pelvic rocking exercise on Dysmenorrhoea among adolescent girls. *International Journal of Medical and Health Research*, 5(1), 61–71. www.medicalsciencejournal.com
- Kisner C, Colby L. (2007). *Therapeutic exercise: foundations and techniques*. Philadelphia: F.A. Davis

- Company
- Kovács, Z., Atombosiye, E., Hegyi, G., & Szőke, H. (2024). The Effect of Aviva Exercise Intervention on Pain Level and Body Awareness in Girls with Primary Dysmenorrhea. *In Medicina (Lithuania., 60(1)*, pp. 1–15).
<https://doi.org/10.3390/medicina60010184>
- Manjunath, Lakshmipathi B. S., Ravi Kumar S.2& Srinivasa, V. (2020). Prevalence and treatment patterns of dysmenorrhea among girl medical students: a questionnaire based study at KIMS, Koppal. *International Journal of Basic & Clinical Pharmacology, 9(12)*, 1844. <https://doi.org/10.18203/2319-2003.ijbcp20205121>
- Mohamed, H., Habib. M, Gamal A., & Abu Setta S. (2024). Comparison between the Effect of Rocking, Stretching, and Kegel Exercises on Pain Intensity of Primary Dysmenorrhea among University Girl Students. *Egyptian Journal of Health Care, 15(2)*, 735–752.
- Moustafa1, R. El-Sayed., Ahmed, W. Ali, Mohammed, M. Lotfy., & El-Fatah, R. El-Sayed (2023). Prevalence of Dysmenorrhea and Its Psychological Impact on Adolescent Girls. *The Egyptian Journal of Hospital Medicine, 1(9)*, 4456–4461.
- Murtiningsih M, Solihah L, Yuniarti S. (2019). The effect of abdominal stretching exercises on dysmenorrhea in adolescent girls. *Matern Care Reprod Health. 2:247– 256.*
- Priscilla, K., & Priyanka Israel, M. (2023). A quasi-experimental study to evaluate the effectiveness of a structured teaching programme on knowledge regarding dysmenorrhea among adolescent girls at selected schools in Madurai district. *Indian Journal of Forensic and Community Medicine, 10(4)*, 148–151.
- Rejeki, S., Pratama, F., Ernawati, E., Yanto, A., Soesanto, E., & Pranata, S. (2021). Abdominal stretching as a therapy for dysmenorrhea. *Open Access Macedonian Journal of Medical Sciences, 9*, 180–183. <https://doi.org/10.3889/oamjms.2021.6711>
- Saleh, H., & Mowafy, H. (2016). Stretching or Core Strengthening Exercises for Managing Primary Dysmenorrhea. *Journal of Girlss Health Care 5(1):1–6*. <https://doi.org/10.4172/2167-0420.1000295>
- Sagita, A., Novianti, Linda Yusanti, Ramadhaniati, F., & Asmariyah, L. (2024). The Effect of Abdominal Stretching Exercise on Reducing the Intensity of Dysmenorrhea Pain. *Journal of Health Sciences and Medical Development, 3(2)*, 112–121.
- Saikia, B., Bhavani B. , Logambal K. & Karpagam S.(2024). Impact of pelvic rocking exercise on dysmenorrhea among adolescent girls. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 3(4)*, 1228–1233.

- Teherán, A., Piñeros, L., Pulido, F., & Mejía Guatibonza, M. (2018). WaLIDD score, a new tool to diagnose dysmenorrhea and predict medical leave in university students. *International Journal of girls's health*, 10, 35-45.
[https://doi.org/10\(1\).2147/ijwh.s143510](https://doi.org/10(1).2147/ijwh.s143510).
- Thermacare. (2010). Abdominal Stertching Exercise for Menstruasi Pain. [http://www.chiromax.com/Media/abstetch, pdf](http://www.chiromax.com/Media/abstetch.pdf). Diakses 23 Januari 2015, 09.00 WIB
- Unganlawar, D. S., Patil, S., & Dhage, P. (2023). Efficacy of Connective Tissue Therapy and Abdominal Stretching Exercises in Individuals With Primary Dysmenorrhea: A Review. *Cureus*, 15(10), 1–7.
<https://doi.org/10.7759/cureus.46553>
- Wijaya, A., Anwar, R., Adnani, Q., Susiarno, H., Arya, I., & Setiawan, I. (2024). How physical exercises ameliorate dysmenorrhea in adolescence. *Journal Keolahragaan*, 12(1), 40–49.
<https://doi.org/10.21831/jk.v12i1.72075>