

## Effect of practicing Pelvicrocking Exercises on Primary Dysmenorrhea among Adolescent Girls: A Randomized Controlled Trial

**Hoda Abedel Azim Mohamed\*, Azza Mohamed Hafez\***

Obstetric and Gynecological Nursing Department, Faculty of Nursing, Minia University,

### Abstract

Reproductive health Background: Dysmenorrhea is a very common gynecological problem in menstruating women and reported prevalence rate is as high as 90 percent. A pelvic rocking exercise helps in reducing menstrual cramps and improves associated symptoms. The aim of the study is to investigate the effect of pelvic rocking exercises on primary dysmenorrhea among adolescent girls. Subject and methods: A quasi-experimental research design with pre-post assessment was used. A randomized controlled clinical trial was conducted on one hundred students were representative from faculty of nursing at Minia University. Self-administered questionnaire, Visual Analogue Scale and follow up are used for data collection. Results: Following the intervention, pain intensity scores decreased significantly ( $p < 0.0001$ ) in the experimental group as compared to control group during the first and second cycle. Statistically significance ( $p < 0.000$ ) reduction in pain duration, menstrual flow duration and number of analgesic tablets consumption during first and second cycle after intervention between groups. Showed improvement in all life activity variable regarding attending school, social activities and relationship with friends and family. Conclusion and recommendations: Based on the results of the present study it can be concluded that, the application of pelvic rocking exercise for adolescent girls who were suffering from moderate to severe primary dysmenorrhea had a positive effect in reducing pain intensity scores, pain duration, menstrual flow duration and the number of analgesic tablets consumption during first and second menstrual cycle after intervention. Therefore, pelvic rocking exercise can be used as non-pharmacological methods to alleviate primary dysmenorrhea. Based on the findings, current study recommended that the obstetric nurse can help in supporting the adolescent girls to provide comfort during menstruation by encouraging them to practices rocking exercise. Health education program in schools to increase awareness about non-pharmacological methods of pain relief during menstruation and emphasize on exercise to decrease primary dysmenorrhea..

**Key words:** dysmenorrhea, Adolescent girls, pelvic rocking exercise,

### Introduction

Dysmenorrhea is a chronic, cyclic pelvic pain associated with menstruation in women with normal pelvic anatomy. It is a

common gynecologic disorder that experienced by about 60% of women during menstruation period, and has been classified to primary and secondary dysmenorrhea [Ferri FF. 2015]. Primary dysmenorrhea, experienced as cramping pain in the lower abdomen, first appears 1-2 years after onset

of menarche, once ovulatory menstrual cycles are established, and occurs just before and/or during menstruation with a typical duration of 2–3 days [Saffarieh E., & Pazoki R., 2015]. Primary dysmenorrhea is the most common cause of chronic pelvic pain in women of reproductive age, affecting 60% of women and 72% of adolescents and that participation in usual activities was adversely affected in 5% to 20% of these women [Brown J, & Brown S . 2010 & Ha Ryun Won & Jason . 2010].

Secondary dysmenorrhea can occur many years after menarche and is associated with identifiable pelvic pathology [Abed El-Hameed et al. 2011]. The intensity of menstrual cramps and associated symptoms of dysmenorrhea are directly proportional to the amount of prostaglandins released in endometrial secretions. Also it has been suggested that vasopressin hormone may also be involved in the etiology of primary dysmenorrhea [Dawood MY. 2006 & Lentz GM. 2012]. Dysmenorrhea is characterized by supra pubic and lumbosacral cramps that alleviated with pressure of palm or body movement and may radiate to the lower back and upper thighs, commonly associated with nausea, headache, fatigue, general malaise and diarrhea [Abed El-Hameed et al. 2011 & Berek, J. 2008]. Also, there are a number of psychological and emotional symptoms that occur premenstrual and during menstruation, which are reported by 96% of teenagers.

Menstrual pain and symptoms cause school absence in 14–51% of teenagers and interference with life activities for 15–59% [Parker, Sneddon, and Arbonb. 2009]. Generally dysmenorrhea is one of the major causes and the most important single cause of school absence among adolescent girls [El-Gilany A. et al. 2005]. An epidemiological study in Egypt reported that 75% of pubertal adolescents experienced dysmenorrhea, with 20.3% reporting absenteeism from school because of severity of symptoms [Esimai O.A. and Esan G.O. 2010]. Other study

done by [Chia cf., et al. 2013] who reported that dysmenorrhea has effect on quality of life as it reduced ability of girls to concentrate, changes in normal physical activity, adverse effect on psychosocial well-being, sleep disturbance, absence from school and work absenteeism in young girls and women.

Pharmacologic and non-pharmacologic measures are used for the treatment of dysmenorrhea. It has been widely claimed that exercise and use of complementary and alternative methods are beneficial for dysmenorrhea [Thabet.A. et al. 2011]. Studies have shown there is increasing evidence that exercising at home may help reduced menstrual cramp, strengthen muscles in the abdomen and lower back, relieving stress, elevating mood and improved associated symptoms. Exercise today is an integral part of normal life for many women. Physical activities and exercise are widely accepted as a means of moderating stress and stress-related symptoms. Exercise increases the release endorphins (the brain natural painkillers) as well as altering the reproduction of hormone secretion, suppressing prostaglandin from being released and decrease endometrial proliferation and shunts blood flow away from the uterus [Julie.A et al. 2011].

Exercise is an accessible and convenient form of pain relief for women with primary dysmenorrhea, or pain during periods. Health care providers suggest some form of aerobic exercise such as pelvic rocking and tilting, and walking for dysmenorrhea. A study conducted on the effect of pelvic rocking exercise on dysmenorrhea among school girls have shown that practicing the exercise for a period of three weeks had reduced dysmenorrhea significantly [Lakshmi. 2009].

### **Significance of the current study**

---

Dysmenorrhea is a very common gynecological problem in menstruating women and reported prevalence rate is as high as 90 percent. Pain or cramping sensations in the lower abdomen may accompanied by headaches, dizziness, diarrhea, nausea and vomiting, backache and leg pain. These symptoms are reported to be the most common reasons for adolescents visiting a gynecologist. Many adolescents report limitations on daily activities, such as missing school, sporting events, and other social activities because of dysmenorrhea. Study of Egyptian adolescent female students got the rural-urban prevalence of dysmenorrhea as 80.1% and 69.6% respectively [El-Gilany A. et al. 2005].

However, because of high prevalence of primary dysmenorrhea in different area and the potential benefits of exercise found in treating dysmenorrhea. Pelvic rocking exercise has a vital role in the reducing dysmenorrhea and can contribute positively in maintaining a healthy body. So there is need to teach exercise to adolescents in order to decrease pain, fatigue, weakness, and nausea, strengthen abdominal muscles, and help in physical as well as emotional recovery.

### **Aim of the study:**

---

Was to investigate the effect of pelvic rocking exercises on primary dysmenorrhea among adolescent girls.

### **Research hypotheses:**

- Students who performed pelvic rocking exercises will have decrease in pelvic pain intensity scores and diminishes pain duration than those who do not
- Students who performed pelvic rocking exercises will have decreased in the consumption of analgesics drugs.

- Students who performed pelvic rocking exercises will have improving in all life activity variable regarding attending school, social activities and relationship with friends and family than those who do not.

### **Conceptual Framework**

The conceptual framework that used in this study was Orem's model that's emphasizes on each individual has the ability to help him by perform self-care, and are responsible for their health and the health of their dependents. Self-care is "the practice of activities that individuals perform it to maintaining life and their health". According to Cardinal and Stritch (2011) [El-Gilany A. et al. 2005] "Orem's Self-Care Model describes a structure where in the nurse assists the client, where needed, to maintain an adequate level of self-care.

### **Subjects & Methods**

#### **Research design and setting:**

A quasi-experimental research design with pre-post assessment was used in this study that is suitable for the current research problem and often used in nursing researches. The present study was conducted in faculty of nursing at Minia University Minia city at Egypt

#### **Research Subjects:**

The present randomized controlled clinical trial was conducted on one hundred (100) students (experimental and control groups) were representative from the previously mentioned setting, each group consisted of 50 students.

#### **Inclusion criteria:**

- Aged ranged from 17- 25 years
- not having pelvic pathology

- without any regular exercise activity
- with regular cycles 21 to 35 days lasting three to seven days,
- with moderate to severe primary dysmenorrhea for three consecutive cycles with a pain level  $\geq 4$  on a visual analogue scale

**Exclusion criteria:**

- On hormonal therapy during the last 6 months,
- Receiving analgesics during the study period.

**Sampling technique and sample size:**

Samples were selected through convenience sampling. One hundred students were randomly allocated into two groups, experimental and control group using systematic random sample type, in which the first ten students were recruited in experimental group and the next ten students in control group and so on. Each group consisted of 50 students. The experimental group received instructions and demonstration about how to perform physical exercise from the researcher, while the control group follows their routine care.

**Tools used for data collection:**

**Tools of data collection used in current study were consisted of:**

A- Self-administered questionnaire: It was developed by the researcher after reviewing relevant literatures. It consists of three parts as the following:

**Part I:** was concerned with' socio demographic characteristics of the students such as age in years, education level, residence ...etc.

**Part II:** was concerned with menstrual characteristics such as age of menarche, menstrual cycle duration (days), menstrual flow duration (days), amount of menstrual bleeding by counting the number of saturated pads, and cycle pattern (regularity).

**Part III:** was concerned with characteristic of dysmenorrhea such as presence of pain in every cycle, beginning of menstrual pain, duration of menstrual pain during one cycle (days), severity of dysmenorrhea (mild, moderate, severe), region of pain ...etc.

B. Visual Analogue Scale (VAS): it is designed by Dombrowski L. (2000) used to identify the menstrual pain intensity (before and after intervention). A visual analogue scale measured the severity of pain. This technique involves the use of a 10 cm line on a sheet of paper and represents the continuum of the students' opinion of the degree of pain. It was explained the one extremity of the line represented "unbearable pain" and the other extremity, "no. The researcher asked the students to rate the degree of their pain by making a mark on distance from zero to that mark unbearable pain

C. Follow up sheet it was designed by the researcher to collect data related to menstrual pain intensity, pain duration, menstrual flow duration, all analgesics tablets consumption and student life activity for two consequence cycle after intervention for both students groups.

**Tools Validity and Reliability:**

The current study tools were submitted to five academic nursing in the field of in the obstetrical and gynecological to test the content validity of the tools, modifications were carried out according to the academic nursing experts' judgment on clarity of sentences and the appropriateness of the content. Tools reliability was tested using Alpha Cronbach test. Its result was 0.90

**Effect of Practicing Pelvicrocking Exercises on Primary Dysmenorrhea among Adolescent Girls: A Randomized Controlled Trial**

which indicates an accepted reliability of the tools.

**Pilot study:**

A pilot study was carried out on ten (10%) female students at the previously mentioned settings to assess the current study tools for its clarity, validity and the time required to fill the tools. In addition necessary modifications were done. Also the steps of the exercises were evaluated for simplicity of language. The sample of the students who shared in the pilot study was excluded from the main study sample.

**Procedure:**

**Assessment phase:**

During assessment phase, the researcher divides the students into small groups according to their academic schedule. Then the researcher holds a meeting with each group in their faculty during one of their free classes or between lectures to introduce him and briefly explained the nature and the

purpose of the present study. Student’s approval to share in this study was achieved. After obtaining the acceptance from the students to participate in the current study, each student was randomly assigned to an experimental or control group and each constituted 50 student. The researcher provided an overview and clarification about the assessment tools questions to the whole class. Then, the Self –Administered Questionnaire was distributed to each student to assess required data related to socio demographic characteristics of the students, characteristic of menstrual history, and characteristic of dysmenorrhea as a baseline data. In addition all students in both groups were assessed for severity of dysmenorrhea and pain intensity was measured using Visual Analog Scale (VAS). Based on the VAS scale, those students with pain intensity less than 4 were considered to be mild pain. The students with pain intensity of 4 to 7 were classified as the moderate pain. While the students with a pain score between 7 and 10 were considered to be a severe form of dysmenorrhea. The questionnaire took about 20-25 minutes to be completed.

**Results**

**Table 1. Distribution of the students by their socio-demographic characteristics**

Items	Experimental (n=50)		Control (n=50)		X2	P. value
	No	%	No	%		
Age (years )						
17- 20 year	29	58	34	68		
> 20	21	42	16	32	1.073	.300
Education level						
Second year	18	36	16	32	.178	.673
Third year	32	64	34	68		
Place of residency						
Urban	27	54	32	64	1.033	.309
Rural	23	46	18	36		

Table 1, shows that, more than one half of the students (58%) their age ranged between 17 to 20 years in experimental group as compared to (68%) in control group. As regards the level of education more than one third (36%) of the students experimental group were in second year as compared to (32%) in control group and around two third from both groups were in third year, As regarding to place of residency more than half (54%, 64%) live in urban area among intervention and control group respectively.

**Table 2. Distribution of the students by their menstruation characteristics**

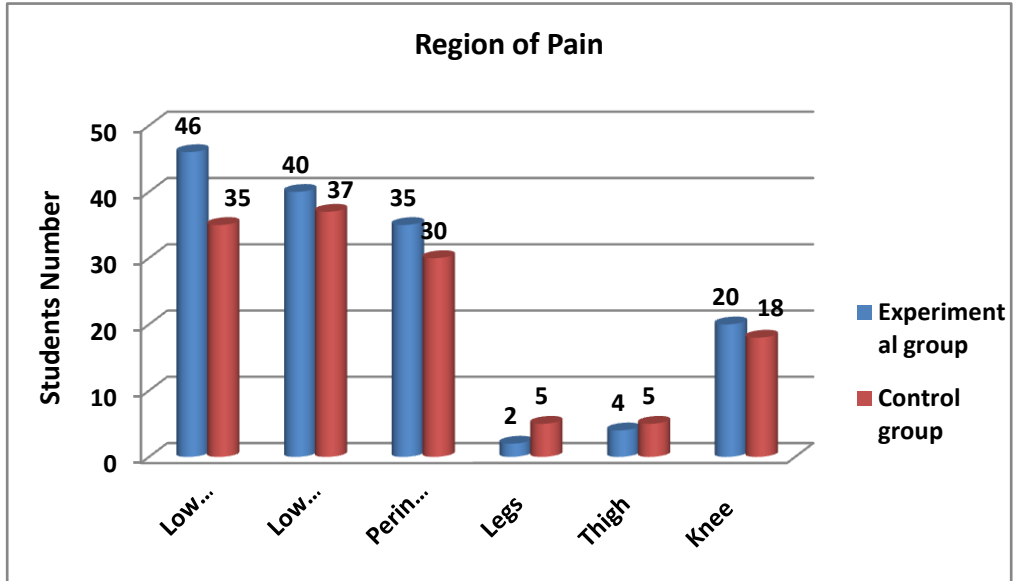
Menstrual characteristics	Experimental (n=50)		Control (n=50)		X2	P. value
	NO	%	NO	%		
Age of Menarche						
9-11	10	20	8	16	1.174	.556
12-15	33	66	31	62		
>15	7	14	11	22		
Menstrual cycle duration (days)						
<20	5	10	8	16	1.984	.371
20-30	41	82	35	70		
>30	4	8	7	14		
Menstrual flow duration (days)						
2-4	16	32	12	24	.794	.373
5-7	32	64	38	76		
More than 7 days	2	4	-	-		
Cycle pattern						
Regular	41	82	37	74	.932	.334
Irregular	9	18	13	26		

As regarding menstruation characteristics Table 2. shows that, two third of the student (66%) in experimental group age at menarche ranged from 12 to 15 years, as compared to (62%) in control group.

Menstrual cycle duration of 20-30 days was reported by (82%) of the students in experimental group as compared to (70%) in control group, Menstrual flow duration of 5-7 days was reported by (64%) of the students in experimental group as compared to (76%) in control group, regular menstrual cycle were reported by (82%) of the students in experimental group as compared to (74%) in control group.

**Table 3. Distribution of the students by their characteristics of dysmenorrhea**

Items	Experimental (n=50)		Control (n=50)	
	No	%	No	%
Presence of pain in every cycle				
Yes	47	94	45	90
No	3	6	5	10
Beginning of menstrual pain				
1-2 day before menses	29	58	24	48
First day of menstruation	21	42	26	52
Duration of menstrual pain during one cycle (days)				
<1	5	10	8	16
1 -2	41	82	35	70
> 2	4	8	7	14
Severity of dysmenorrhea				
Moderate	21	42	27	54
Severe	29	58	23	46

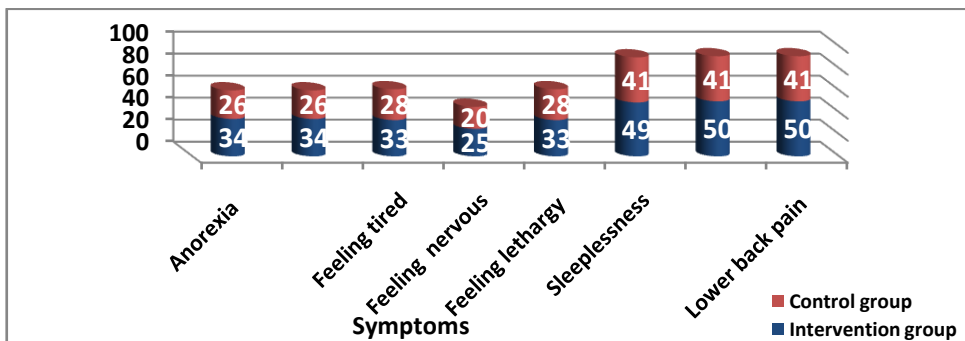


# Not mutually exclusive

Figure 1. Distribution of the students by their region of pain

As shown in Table 3 majority of the student (94%) in experimental group as compared to (90%) in control group had experienced dysmenorrhea in every cycle. More than half (58 %) of the students in experimental group as compared (48%) in control group were reported menstrual pain primarily began at 1 to 2 days before menstrual flows. Regarding to duration of menstrual pain during one cycle, more than two third of the student in both groups had menstrual pain duration ranged between (1 to 2 days).

Degree of pain severity was assessed, (58%) described their pain severity in experimental group as compared to (46%) in control group. Regarding region of pain, figure (1) shows revealed that the pain location was mostly in the lower abdomen (46%) followed by lower back (40%) then perineal area (35%) in experimental group as compared to lower back (37%) followed by lower abdomen and perineal area (35%) in control group.



Not mutually exclusive

Figure 2. Distribution of the students by their menstruation associated symptoms among two groups

Figure 2. Shows that half of the students (50%) reported symptoms tenderness of breast, lower back pain, sleepiness in experimental group as compared to (41%) in control group. The other symptoms reported by around one third of students were nausea and vomiting, anorexia, feeling tired and lethargy reported by the students in both groups.

**Table 4. Distribution of the students by their reaction to dysmenorrhea**

Items	Experimental (n=50)		Control (n=50)		X <sup>2</sup>	P. value
	No	%	No.	%		
Pain relieve methods used					.920	.631
Pharmacological	27	54	29	58		
Non Pharmacological	7	14	4	8		
Both	16	32	17	34		
Timing of analgesic medication taking before pain start					1.786	1.81
when pain start	13	26	11	22		
when pain become unbearable	33	66	39	78		
	4	8	-	-		
Total number of analgesic taking during one cycle					1.348	.510
1 < 2	5	10	9	18		
2 - 3	16	32	14	28		
More than 3	29	58	27	54		

Table 4. Shows students reaction to dysmenorrhea, more than half of the student (54% and 58%) chose pharmacological methods for pain relieve in experimental and control group respectively. While around one third used both medication and none pharmacological pain relieve in both groups. Two third of them (66% and 78%) take medications when pain start and more than half of them (58% and 54%) usually taken more than 3 tablets during menstrual cycle in intervention group and control group respectively.

**Table 5. Mean value of pain duration, and menstrual flow duration among two groups before and after intervention**

Items	Groups	Before intervention		After intervention			
		X	+S.D	First cycle		Second cycle	
				X	+S.D	X	+S.D
Pain Intensity	Experimental (n=50)	8.02	.820	6	.000	4.12	.328
	Control (n=50)	7.76	.916	7.26	.723	7.12	.112
t. test		.416		-12.322		-24.558	
p. value		.138		<.0001		<.0001	
Pain duration (h)	Experimental (n=50)	5.88	.798	3.04	1.142	2.740	1.735
	Control (n=50)	5.66	1.135	5.840	1.299	5.04	1.603
t. test		1.120		-11.445		-6.883	
p. value		.265		<.000		<.000	
Menstrual flow duration (days)	Experimental (n=50)	5.28	.701	4.70	.462	4.04	.197
	Control (n=50)	5.16	.817	5.06	.793	5.00	.832
t. test		.788		-2.772		-7.928	
p. value		.433		<.007		<.000	



**Effect of Practicing Pelvicrocking Exercises on Primary Dysmenorrhea among Adolescent Girls: A Randomized Controlled Trial**

**Table 6. Mean of analgesics tablets consumption during one menstrual cycle among two groups before and after intervention**

Item	Groups	Before intervention		After intervention			
				First cycle		Second cycle	
		X	+S.D	X	+S.D	X	+S.D
Analgesics tablets consumption	Experimental (n=50)	3.140	.857	1.40	.606	.640	.226
	Control (n=50)	3.320	.551	2.64	1.064	2.800	1.324
t. test		-1.249		-7.158		-11.364	
p. value		.215		.000		.000	

Pain intensity among two groups before and after intervention are presented in Table 5. It was found that following the intervention during the first and second cycle, pain intensity scores decreased significantly ( $p < 0.0001$ ) in the experimental group as compared to control group. As regarding pain duration and menstrual flow duration before and after intervention Table 5 showed statistically significance reduction in pain duration and menstrual flow duration ( $p < 0.000$ ) between groups first and second cycle after intervention. Table 6 showed statistically significance decrease ( $p < 0.000$ ) in the number of analgesic tablets consumption during first and second menstrual cycle after intervention between groups.

**Table 7. Distribution of the students by their life activity among two groups before and second cycle after intervention**

Life activity	Experimental group (n=50)				Control group (n=50)			
	Before		After		Before		After	
	No	%	No	%	No	%	No	%
Attending school	18	36	35	70	34	68	41	82
Completing study activities	15	30	38	76	43	86	42	84
Social activities	10	20	23	46	34	68	26	32
Relationship with friends	22	44	42	84	48	96	40	80
Relationship with family	25	50	40	80	39	78	43	86

# not mutually exclusive

Regarding student's life activity before and second cycle after intervention, Table 7. showed that student school attendance improvement from 36 % to 70% , students ability to completing their study activities from 30% to 76%, and more than three quarters 80% of them have a good relationship with friends and family among experimental group compared to control group.

**Discussion**

Primary dysmenorrhea is pain that begins with the onset of menstruation and is experienced as severe cramping and discomfort in the lower abdomen and back. It

also refers to a syndrome or symptoms of complex that may encompass nausea, vomiting, headache, nervousness, fatigue, diarrhea, syncope, backache, lower abdomen cramping, bloating, breast tenderness, mood changing and dizziness. These symptoms mostly occur before 24-48 hours or at the onset of menstruation [Renuka1, and Jeyagowri. 2015]. The aim of the current study was to investigate the effect of pelvic exercises on primary dysmenorrhea of female university students

Results of the current study indicated that, more than one half of the students in experimental group as compared to more than two third from control group were age

ranged between 17 to 20 years, during this age we can encourage and learn the students pelvic exercises. This results is consistent with. Alaettin (Alaettin U. et al. 2010) who reported that the average age of the participants was  $20.8 \pm 1.8$  years (range 17–30 years). More than 45.4% of the students were in the age group of 20 and below. As regarding to place of residency more than half of the students in both groups live in urban area.

In relation to menstruation characteristics the results of the current study revealed that about two third of the students their age of menarche was ranged from 12-15 years. This results go on line with the finding of the study done by Mohamed [Mohamed H.,E., and Mansour S.A. 2013] they reported that the age of menarche were  $11.06 \pm 1.299$  and this also contract with the findings of the study done by [Eman M. 2012 & Gulsen E et al. 2010]. they showed that mean age of menarche  $13.4 \pm 1.12$  years. In addition menstrual cycle duration of 20-30 days and menstrual flow duration of 5-7 days were reported by more than tow third of the students in both group, this results was similar to finding of the study done by Alaettin, [Alaettin U. et al. 2010] who reported that the average menstrual cycle duration of the students in the study group was  $28.73 \pm 7.25$  days and many students' menstrual cycle duration was between 21 and 34 days (87.5%). In addition their average menstrual bleeding duration was  $5.73 \pm 1.34$  days, ranging between 3 and 10. Most students' menstrual bleeding duration was less than 7 days (68.7%). Mohamed [Mohamed H.,E., and Mansour S.A. 2013] reported that the irregularity of cycles occurring in 46.9% of the sample is nearly similar of the results of an Egyptian study who stated that 33.2% of sample had irregular cycle [AnjuVerma. 2014]. These results are contradicted with the finding of the present study which indicated that regular menstrual cycles were reported by nearly three quarters of the students.

Dysmenorrhea was the commonest menstrual problem noted among adolescence girls. Regarding characteristics of dysmenorrhea, results of the current study revealed that the majority of the students in both groups had experienced dysmenorrhea in every cycle and around half of them were reported menstrual pain primarily began at 1 to 2 days before menstrual flows and more than two third of the student in both groups had menstrual pain duration ranged between (1 to 2 days). These supported with the finding of the study done by Brown [Brown J., & Brown S. 2010] and agree with the findings of the study done by Mohamed [Gulsen E et al. 2010] they showed a high prevalence of dysmenorrhea, that is, 78.8% among technical secondary schools girls and pain was common in every menstruation and mostly begins on the same day of the menstrual flow. Also Mario [Mario I. et al. 2009]. stated that the menstrual pain duration was 1 to 5 hours for more than half of the women with dysmenorrhea, and only 13.1% experienced pain for more than 48 hours. While results of the study done by Gulsen [Gulsen E et al. 2010] revealed that nearly half of the technical secondary schools girls experienced dysmenorrhea in the past one to three year. In addition a systematic review of studies in developing countries stated that three quarters of adolescents experienced dysmenorrhea [AnjuVerma. 2014]. These differences may be related to different pain perception and students culture

The prevalence of menstrual disorders has been recorded as high as 87% [Chan SS, et al. 2009]. Among the menstrual disorders, dysmenorrhea is the most common one being reported in half of the women of child bearing age and of these 10% experience incapacitating pain for 1-3 days, every month. Alaettin, [Alaettin U. et al. 2010] reported that the high prevalence of dysmenorrhea (72.7%) reported by female students; this results is consistent with [Velasco-Rodríguez R et al. 2006]. they reporting rates between 28% and 89.5%.

Similarly, previous studies results conducted in Turkey showed that the prevalence of dysmenorrhea among the same age group of women ranged between 23.4% and 89.5% [Chen SS, et al. 2009].

As regarding to severity of menstrual pain, finding of the current study indicated that around half of the students in both groups experiencing severe pain and mostly pain present in the lower abdomen, lower back and perineal area. This result agree with Gulsen[Gulsen E et al. 2010]who reported that menstrual pain was mostly felt in the lower abdomen and lumber region among technical secondary school girls. In addition results of the study done by Mario [Mario I. et al. 2009&Velasco-Rodríguez R et al. 2006] indicated that the most common symptoms of menstrual were cramping pain in the lower abdomen, a swollen abdomen , irritability, backache, and waist pain. Also a review of primary dysmenorrhea in adolescents found the prevalence to range from 20% to 90%, with 15% describing their symptoms as severe [Brown J,&Brown S. 2010]. This result goes on line with Alaettin, [Alaettin U. et al. 2010] they reported that the distribution of the severity of dysmenorrhea cases was as follows: mild 33.8% moderate 42.4% and severe 23.8%. This indicates that dysmenorrhea is still an important public health problem and that these female students experience moderate or severe dysmenorrhea, which may have a negative effect on quality health of life, social activities, work, and psychological status. Dysmenorrhea was a significant problem in our study population with 93 % of respondents reporting various degrees of menstrual pain Study conducted in Egypt on assessment of dysmenorrhea and menstrual hygiene in some nursing schools using the verbal multidimensional scoring system have shown that among 160 subjects 94.4% had dysmenorrhea and among them 49.0% had mild pain, 34.4% moderate and 16.6% of severe pain. The useful measures taken by students were hot bath (100%) hot drinks (43%) and physical activity (66.2%) [Abed

El-Hameed et al. 2011].The differences in the degree of pain severity may be related to cultural differences in pain perception, absence of a universally accepted method of defining dysmenorrhea and individual variability in pain threshold.

Dysmenorrhea is characterized by cramping lower abdominal pain that may radiate to the lower back and upper thighs and is commonly associated with nausea, headache, fatigue and diarrhea. Current study indicated that the most menstruation associated symptoms were tenderness of breast, lower back pain, and sleepiness reported by around half of the students, but nausea and vomiting, anorexia, feeling tired and lethargy are reported by around one third of students. While [Mohamed H.,E., and Mansour S.A. 2013]reported that the most commonly reported symptoms were decrease in concentration, headache, dizziness, nausea and vomiting, diarrhea, and fainting. A study conducted on prevalence and severity of dysmenorrhea among female medical students has shown that prevalence of dysmenorrhea was 73.8%.the associated symptoms present were backache (62%), headache (26.5%), fatigue(70.8%), and vomiting/diarrhea(6.3%). It was found that 61.5% in underweight and 91.6% in overweight category of students suffered from dysmenorrhea [Singh.A.et al. 2008].

One likely mechanism for reducing the length of menstruation pain is that physical activity may help a faster transfer of vast products and prostaglandins as a root of menstruation pain from uterine muscle. Regarding pain intensity, pain duration and menstrual flow duration among two groups before and after intervention, results of the current study revealed that, pain intensity scores, pain duration and menstrual flow duration decreased significantly ( $p < 0.0001$ ) in the experimental group as compared to control group during the first and second cycle after intervention.This may be due to the effect of rocking exercise through increase in vasodilatation, release of

endogenous specially beta endorphins and suppression of prostaglandins and shutting of blood flow from viscera resulting in less pelvic congestion and relieving pain in addition physical activity lead to a better hormonal balance so reduce menstrual flow duration.

In one study, 98% of adolescents used non-pharmacological methods such as heat, rest, or distraction with a perceived effectiveness of 40% or less. There is increasing evidence that exercising at home may help reduce the pain and discomfort felt during menstrual cycle. Exercise is an accessible and convenient form of pain relief for women with primary dysmenorrhea [AnjuVerma. 2014]. In addition the results of non-randomized trials by [Brown J,&Brown S. 2010&Kristina S Gamit et al. 2014], they support the use of exercise in reducing the symptoms of dysmenorrhea. This result is in accordance with [Renuka1, and Jeyagowri. 2015], who conclude that stretching exercise reduces aching back, relieving pain, improving flexibility, increasing circulation in the spinal tissues and joints, relaxing tense uterine muscles and maintaining good abdominal tone. Also [AnjuVerma. 2014] study the effect of 8 weeks of stretching exercise on primary dysmenorrhea of high school students. The results demonstrated that after 8 weeks, pain severity had decreased from  $7.65 \pm 1.94$  to  $4.88 \pm 1.92$ , pain duration was decreased from  $7.48 \pm 5.26$  to  $3.86 \pm 2.5$  hours. No significant differences were observed between these parameters in control group ( $P > 0.01$ ). This improvement may be due to the increase in the blood flow and metabolism of the uterus during exercise which may be effective in the reduction of dysmenorrheal symptoms. Another supported evidence that menstrual pain may be resulted from increased contraction of the uterine muscle which is innervated by the sympathetic nervous system. Stress is supposed to increase the sympathetic activity which may lead to the increase of menstrual pain by enhancing the intensity of uterine contraction. So, due to the

fact that exercise reduce and moderate stress, the sympathetic activity may be decreased. Thereby, intensity of menstrual pain and other related symptoms may be reduced as well.

Regarding analgesics tablets consumption, the current study showed that there is statistically significance decrease ( $p < 0.000$ ) in the number of analgesic tablets consumption during first and second menstrual cycle after intervention. This may be due to the beneficial effect of exercises on pain intensity and duration. Also practicing the pelvic rocking exercise had reduced dysmenorrhea symptoms among students. This finding is supported by previous studies carried out by [Singh.A.et al. 2008 & Kristina S Gamit]. In addition the findings of the study done by [Singh.A.et al. 2008 & Kristina S Gamit et al. 2014], suggest that there is a beneficial impact of physical exercise on menstrual cycle symptoms and decreases the consumption of analgesics drugs in students with moderate- to-severe primary dysmenorrhea during the menstruation cycle. More over the finding of the study done by [Shahr-jerdy S et al. 2012] indicated that physical activity had a positive impact on the most of primary dysmenorrhea symptoms, Volume and rate of bleeding decreased ( $p 0.002$ ,  $p 0.05$ ). Length of menstruation pain reduced ( $p 0.05$ ), number of drugs consumed reduced, and pain intensity reduced ( $p 0.01$ ,  $p 0.05$ ). This finding is not in line with the results obtained from [Shavandi, N. et al. 2009] which indicated that there is no change in the volume of bleeding in post-exercise young girls.

Dysmenorrhea is a major cause for absenteeism from school or restriction of activities of daily living or social interaction with others. Absenteeism has been reported as between one third to one half missing school or work at least once, and 5% to 14% absent more frequently [Brown J,&Brown S. 2010]. Regarding students life activity before and second cycle after intervention,

the current study showed improvement in all life activity variable regarding attending school, social activities and relationship with friends and family. This may be due to pelvic exercise which had a positive effect in the reducing primary dysmenorrhea symptoms. This results go on line with the results of the study done by Onur [Onur O. 2012], who studied the impact of home-based exercise on quality of life of women with primary dysmenorrhea and concluded that there is evidence that exercise has a positive effect in the treatment of dysmenorrhea. In addition finding of survey done by Mario [Mario I. et al. 2009] showed that (63.4%) of the young women with dysmenorrhea reported that it limited their daily activities, and (24.1%) of these reported school absences. .more over results of the study done by Mohamed [Mohamed H.,E., and Mansour S.A. 2013] reveals that nearly half of the girls having problems with their family and most girls unwilling to talk with friends and not being comfortable. Also analysis showed an association between pain duration, pain severity and school performance and friend's relation.

### **Conclusions and Recommendation**

---

According to the finding of the current study it can be concluded that, The application of an educational program for adolescent girls who were suffering from moderate to severe primary dysmenorrhea about pelvic rocking exercise had a positive effect in the reducing pain intensity scores, pain duration and menstrual flow duration and the number of analgesic tablets consumption during first and second menstrual cycle after intervention.. Therefore, pelvic exercise can be used as non-pharmacological methods to alleviate primary dysmenorrhea. Based on the findings, current study recommended that:

- The obstetric nurse can help in supporting the adolescent girls to provide comfort during menstruation by encouraging them to practice exercise.

- Health education program in schools to increase awareness about non-pharmacological methods of pain relief during menstruation and emphasize on exercise to decrease primary dysmenorrhea.
- Mothers and health educators should encourage girls to feel more comfortable with their bodies teaching them to view menstruation as a maturational event, rather than a hygienic crisis.

### **References**

---

- Ferri FF. (2015): Dysmenorrhea. In: Ferri FF, ed. Ferri's Clinical Advisor 2015. Philadelphia, PA: Elsevier Mosby; 2015:pages 391-391.
- Saffarieh E., and Pazoki R., (2015): Low Level Laser Therapy in the Relief of Primary Dysmenorrhea, *Advances in Environmental Biology*, 9(3) February 2015, Pages: 871-873
- Brown J, Brown S (2010): Exercise for dysmenorrhea *Cochrane Database of Systematic Reviews* 2010, Issue 2. Art. No.: CD004142. DOI: 10.1002/14651858.CD004142. pub2. Published by John Wiley & Sons, Ltd. 2010, Issue 3 <http://www.thecochranelibrary.com>.
- Ha Ryun Won and Jason (2010): Abbott Optimal management of chronic cyclical pelvic pain: an evidence-based and pragmatic approach
- Abed El-Hameed et al. Assessment of dysmenorrhea & menstrual hygiene practices among adolescent girls in some Nursing schools at El-Mina Governorate, Egypt. *Journal of American Science*, 2011;7(9), <http://www.americanscience.org>. Accessed on 2nd September, 2011.

- Dawood MY. Primary dysmenorrhea rhea: advances in pathogenesis and management. *Obstetric Gynecol.*2006;108:428–441
- Lentz GM. (2012): Primary and secondary dysmenorrhea, premenstrual syndrome, and premenstrual dysphoric disorder: etiology, diagnosis, management. In: Lentz GM, Lobo RA, Gershenson DM, Katz VL, eds. *Comprehensive Gynecology*. 6th ed. Philadelphia, PA: Elsevier Mosby; 2012:chap 36.
- Berek, J., Berek, Novak's *Gynecology*, Lippincott Williams & Wilkins, 2008. (16): 481- 484.
- Parker, Sneddon, and Arbonb (2009): The menstrual disorder of teenagers (MDOT) study: determining typical menstrual patterns and menstrual disturbance in a large population based study of Australian, teenagers *Bjog An International Journal Of Obstetrics &Gynaecology* · October 2009
- El-Gilany A., Badawi K. And El-Fedawy S.: Epidemiology of dysmenorrhea among adolescent students in Mansoura, Egypt. *Eastern Mediterranean Health Journal*, 11: 155-163, 2005.
- Esimai O.A. and Esan G.O.: Awareness of menstrual abnormality amongst college students in urban area of Ile-Ife. *Osun state. Nigeria. Indian Journal of Community Medicine*, 35: 63-66, 2010.
- Chia cf., p.k. Cheung, l.t.Kwong, k.h. Leung and m.t. Leung (2013): Dysmenorrhea among Hong Kong university students: Prevalence, impact, and management, *Hong. Kong. Med. J.*, Vol. 19 No. 3, 2013.
- Thabet.A.et al. Effect of Low Level laser Therapy and Pelvic Rocking Exercise in the Relief of Primary Dysmenorrhea. *Bull. Fac. Ph. The Cairo Univ.* Vol 14 no 2,july 2009.Accessed 2nd Sept 2011.
- Julie.A, Aganoff, Boyle.J.G. Aerobic exercise, mood states and menstrual cycle symptoms.1994  
[.http://epublications.bond.edu.au/hss\\_public/37](http://epublications.bond.edu.au/hss_public/37). Accessed 15th Sept 2011.
- Lakshmi . Pelvic rocking exercise and dysmenorrhea among school girls. *The Nurse*. Aug-Sep 2009;1(2):5-8.
- Roostayi M.M. (2000): Physiotherapy and exercise therapy in women and obstetric. Tehran: Sana Nashr Pub. pp: 25-27. 26.
- Rumball J.S., C.M.Lebrun (2004) Pre-participation physical examination: selected issues for the female athlete. *Clin.J.Sport Med.*, 14:153-160.
- Renuka1, and Jeyagowri (2015): Stretching Exercise Therapy and Primary Dysmenorrhea – Nursing Perspectives, *IOSR Journal of Nursing and Health Science*, Volume 4, Issue 3 Ver. III (May. - Jun. 2015), PP 01-04
- [Alaettin U](#), [UnalAyranci](#), [Mustafa Tozun](#), [GulArslan](#), and [ElifCalik](#) (2010): Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students, *Ups J Med Sci*. 2010 May; 115(2): 138–145.
- Mohamed H.,E., and Mansour S.A., (2013): The Effect of Dysmenorrhea on Quality of Life of Technical Secondary Schools Girls, *Med. J. Cairo Univ.*, Vol. 81, No. 2, December: 83-90, 2013  
[www.medicaljournalofcairouniversity.net](http://www.medicaljournalofcairouniversity.net)
- Eman M. (2012): epidemiology of dysmenorrhea among ado-lescent students in assiut city, egypt, *life science journal*, 9 (1): 348-353, 2012.
- Gulsen E., Funda O. And Turkan P. (2010): Dysmenorrhea prevalence among adolescents in eastern turkey: Its effects

**Effect of Practicing Pelvicrocking Exercises on Primary Dysmenorrhea among Adolescent Girls: A Randomized Controlled Trial**

---

- on school performance and relationships with family and friends. *Journal Pediatric Adolescent Gynecology*, 32: 267-272, 2010.
- El-Gilany A., Badawi K. And El-Fedawy S.: *Epidemiology Of Dysmenorrhea Among Adolescent Students In Mansoura, Egypt. Eastern Mediterranean Health Journal*, 11: 155-163, 2005
- Mario I. Ortiz, Eduardo Rangel-Flores, Lourdes C. Carrillo-Alarcón, and Humberto A. Veras-Godoy (2009): Prevalence and impact of primary dysmenorrhea among Mexican high school students. *International Journal of Gynecology and Obstetrics* 107 (2009) 240–243
- AnjuVerma (2014): A Randomized Control Trial To Assess And Evaluate The Effectiveness Of Pelvic Rocking Exercises In Reducing Dysmenorrhea Among Girls Of Selected Colleges Of Nursing In New Delhi. *Journal of Nursing and Health Science (IOSR-JNHS)* Volume 3, Issue 5 Ver. II (Sep.-Oct. 2014), PP 22-26
- Narayan KA et al. (2011): Puberty Rituals, Reproductive Knowledge and Health of Adolescent Schoolgirls in South India. *Asia Pacific Population Journal*. 2011; 16(2):224-236.
- Polat A, Celik H, Gurates B, Kaya D, Nalbant M, Kavak E, et al. (2009): Prevalence of primary dysmenorrhea in young adult female university students. *Arch Gynecol Obstet*. 2009;279: 527–32
- Chan SS, Yiu KW, Yuen PM, Sahota DS, Chung TK. (2009): Menstrual problems and health-seeking behavior in Hong Kong Chinese girls. *Hong Kong Med J*. 2009;15:18–23
- Velasco-Rodríguez R, Mora-Brambila AB, González-Ortega LE, Bonilla-Gutiérrez OJ. (2006): Clinical characteristics and treatment of dysmenorrhea in nursing students. *Rev Enferm IMSS* 2006;14(1):29–34.
- Singh.A.et al. prevalence and dysmenorrhea among female medical students. *Indian J PhysiolPharmacol*. 2008; 52 (4) : 389–397
- Kristina S Gamit, Megha S Sheth, Neeta J Vyas (2014):the effect of stretching exercises on primary dysmenorrhea in adult girls, *International Journal of Medical Science and Public Health | 2014 | Vol 3 | Issue 5*.
- Shavandi, N., F. Taghian and V. Soltani, (2009):The effect of isometric on primary dysmenorrhea. *Arak Medical University Journal (AMUJ)*, 13(1): 71-77.
- Shahr-jerdi, Sh and R. Sheikh Hoseini, (2010): The effect 34. of 8 weeks stretching exercise on primary dysmenorrhea in 15-17 aged high school students girls in Arak. *Journal of Shahrekord University of 35. Medical Sciences*, 11(4): 84-92.
- Shahr-jerdy S, Hosseini RS. and Maghsoud E., (2012): Effects of stretching exercises on primary dysmenorrhea in adolescent girls, *Biomedical Human Kinetics*, 4, 127 – 132, 2012
- Mahvash, N., Eidy A., Mehdi K., Mehdizadeh T., Mirfaizi M., and Hojat S., (2012): The Effect of Physical Activity on Primary Dysmenorrhea of Female University Students, *World Applied Sciences Journal* 17 (10): 1246-1252, 2012
- Onur O. (2012): Impact of home-based exercise on quality of life of women with primary dysmenorrhea. *SAJOG* 2012;18:15-8.
-