

The Effect of Maya Abdominal Massage on Dysmenorrhea Symptoms among Female Nursing Students

Asmaa Mohammed Ahmed Mostafa

B.Sc. in Nursing

Entesar Fatouh Abd-Elmoneim

Professor of Maternal and Newborn Health Nursing- Faculty of Nursing, Helwan University, Egypt

Hanan Fawzy El-Sayed

Assistant Professor of Maternal and Newborn Health Nursing- Faculty of Nursing, Helwan University, Egypt

Abstract

Background: Dysmenorrhea is a common problem affect a large percentage of women regardless of age or race and has an adverse effect on school absenteeism and faculty performance. Maya abdominal massage is kind of Complementary and alternative medicine relief many common reproductive and digestive disorder.**Aim:** To evaluate the effect of maya abdominal on dysmenorrhea symptoms among female nursing students. **Research design:** A quasi-experimental design (one group pre – posttest) was used in the study. **Setting:** The study was conducted in the Faculty of Nursing at Helwan University. **sample:** A purposive sample for total of 110 female students in third academic year divided into two departments (obstetrics & pediatric). **Tools:** Five Tools for data collection. **1st tool:** A structured interviewing questionnaire divided into three parts which used to assess demographic data, menstrual history, Dysmenorrhea pain characteristics and Faculty performance. **2nd Tool:** Modified McGill Pain Questionnaire Short form (MPQ-SF): (pre & post) applying maya abdominal massage. **3rd tool:** physiological and behavioral responses to menstrual pain (pre & post) applying maya abdominal. **4th tool:** Student' Knowledge related to maya abdominal massage (Pre/post) used to assess female student' knowledge related to maya abdominal massage. **5th tool:** Assessment dysmenorrhea regarding maya abdominal massage (pre & post). **Result:** highly significant relation between dysmenorrhea symptoms and maya abdominal massage, menstrual pain deceased after applying maya abdominal massage compared to before maya abdominal massage. Also, found significant relation between female student's Body Mass Index and dysmenorrhea pain. **Conclusion:** Maya abdominal massage relief dysmenorrhea pain among female nursing Students with dysmenorrhea. **Recommendations:** Conducting awareness sessions on maya abdominal massage importance and its effect on relieving dysmenorrhea symptoms and menstrual pain in society. Development of educational program on maya abdominal massage benefits for students in all schools and faculties curriculums.

Keywords: *Relationship, maya abdominal massage, dysmenorrhea symptoms.*

INTRODUCTION

Dysmenorrhea is a menstrual cycle pain and uterine cramps. Dysmenorrhea divided to two types of primary and secondary dysmenorrhea. Primary dysmenorrhea is a common gynecological problem that can cause menstrual pain and affect women lives in reproductive age without a pathological reason. Dysmnorrhea associated with some symptoms as Headache, nausea, vomiting, constipation or diarrhea, lower back pain, lower abdomen pain and Frequent urination. (Hannah.,2021)

The Arvigo Techniques of Maya Abdominal Massage are kind of complementary therapy developed by Dr. Rosita Arvigo. Maya Abdominal Therapy is a gentle, non-invasive form of massage on the abdomen, low back, sacrum and reproductive organs. These techniques help reposition organs that have shifted and disrupt the flow of blood, lymph, nerves and energy. Maya Abdominal Massage is the best known for the correction of prolapsed, fallen uterus and for the prevention and relief of many common digestive and reproductive disorders. (Shirley.,2022).

The role of the maternity nurse is to provide professional counseling and caring for young women who have painful periods to relief pain, improves usual activities, quality of life, and decreases academic and work absenteeism. Maternity nurse must encourage and support non-pharmacological, complementary and alternative therapies for managing primary dysmenorrhea such as Massage, Yoga, Acupuncture and acupressure, Relaxation or breathing exercises. Hot patches, Exercise, Warm bath, Supplements and Hydration. (Itani, et al., 2022).

Significance of the study:

Dysmenorrhea, or menstrual pain, is the most common menstrual symptom among adolescent girls and young women. affects up to 50% to 90% of adolescent girls and women

of reproductive age in united states. (KATHRYN.,2021). The prevalence of dysmenorrhea among female university students was high (85.1%) in developed countries. the variable rates of dysmenorrhea ranging from 34% in Egypt, in Australia 80%, 85% among Hispanic female adolescents, and 94% in Oman. (Abu Helwa., 2018).

Aim of study:

The aim of study was to evaluate the effect of maya abdominal on dysmenorrhea symptoms among female nursing students.

Research design:

A quasi-experimental design (one group pre – posttest) was used in the study.

Setting:

The study was conducted in the Faculty of Nursing at Helwan University on Female students in third academic year departments of (obstetrics & pediatric).

Sampling: A purposive sample for total of 110 of female nursing students in third academic year.

Inclusion criteria

- ☐ Age from 17- 22 year.
- ☐ Single female.

Exclusion criteria

- ☐ Pregnant female students.
- ☐ Students who had recently abdominal surgery.
- ☐ Students have umbilical hernia.

Tools for data collection:

The data was collected by using five tools:

Tool (I): A structured Interviewing questionnaire:

It was designed by the researcher based on reviewing related literatures and consisted of 23 questions. it was divided into 3parts:

Part (1): Demographic characteristics of female students:

It was designed by researcher to assess the female students' characteristics such as age, residence, height, weight, and body mass index. It included questions from 1-6. Body Mass Index was calculated as follows:

$BMI = \text{Weight (kg)} / \text{height (m}^2\text{)}$. was adopted from Wikipedia., (2022).

Body Mass Index was categorized as follow:

- ☐ Underweight 15– 18.4
- ☐ Normal weight 18.5 – 24.9
- ☐ overweight 25 – 29.9
- ☐ obesity more than 30

Part (2): Menstrual history:

It was designed by researcher to assess the student's menstrual history such as age at menarche, menstrual interval, duration of blood flow, amount of menstrual bleeding by counting number of saturated pads per day, rhythm of menstruation, sources of information. It included questions from 7-12.

Part (3): Dysmenorrhea pain assessment:

It was designed by researcher to assess the student's dysmenorrhea pain characteristics such as time of first menstrual pain, duration of menstrual pain , degree of pain, sites of pain, site of menstrual pain radiation, the same pain degree every menstrual cycle, the pattern of pain difference, associated symptoms and the methods for relieving menstrual pain used such as warm fluid, analgesics, bed rest, warming, massage over abdomen, taking warm shower, diet regimen and others regarding to menstrual pain .It included questions from 13-21.

Tool (2) - Modified McGill Pain Questionnaire Short form (MPQ-SF) (pre-post): This tool was adopted from Abdelhaleem,2013. It was used to measure characteristics of pain before and after applying maya abdominal massage and consisted of two parts:

Part 1: Sensory pain descriptors: descriptors 1-11 represented the sensory pain experience, included: throbbing, shooting, stabbing, sharp, cramping, gnawing, hot/ burning, aching, heavy, tender, and splitting.

Part 2: Affective pain descriptors: descriptors12-15 represented the affective pain dimension included tiring/exhausting, sickening, fearful, and cruel/punishing. Each descriptor was ranked on an intensity scale of 0=none, 1=mild, 2= moderate, 3= severe.

The total score was calculated by summation of scores from sensory and affective domains and the maximum value was 45 score which indicate the worst pain and the minimum value was 15 score which indicate mild pain. The total score was sub classified as follow:

- No Pain =0
- Mild Pain =1: 15
- Moderate Pain =16: 30
- Severe Pain =31: 45

Tool (3): Physiological and behavioral responses to menstrual pain(pre-post):

This tool adopted from Belal., (2006). It was used to measure physiological and behavioral responses to menstrual pain before and after applying maya abdominal massage and, it consisted of two parts:

Part (1): Physiological responses:Gastrointestinal tract responses: it includes (1-5) responses as nausea, vomiting, diarrhea, constipation, and lack of appetite. Skinresponse: it includes (6) responses as acne. Nervous system response:it includes (7-

8) responses as headache and fatigue. Musculoskeletal responses: it includes (9-11) responses as: Breast tenderness, abdominal pain, and muscle pain.

Part (2): Behavioral Responses: 12-14 responses included: depression, anxiety, and sleep disturbance.

Tool (4)- Female Student's Knowledge (Pre/post):

It was designed by the researcher to assess female student's knowledge related to Maya abdominal massage which includes 12 questions regarding the student's knowledge such as: meaning of Maya abdominal massage, benefits of Maya abdominal massage, indication, contraindication, side effects, the suitable place to apply the Maya abdominal self-care massage, the suitable time to apply the Maya abdominal massage, suitable time to stop the Maya abdominal massage, the duration of time to apply the Maya abdominal massage, benefits of castor oil, the steps after the session and the steps of self-care massage during menstrual bleeding.

Knowledge Scoring system:

It composed of 12 questions to assess knowledge about Maya abdominal massage, which a complete correct answer was scored (2). An incomplete correct answer was scored (1). Incorrect answer or don't know was scored (0).

The total score for the student's knowledge regarding the Maya abdominal massage was 24 points, which divided into two levels as the following:

- Satisfactory $\geq 60\%$ (≥ 14.5 points).
- Unsatisfactory < 60 (< 14.5 points).

Tool (5)- Assessment of student's self-care practice: (pre & post)

This tool is adopted from Arvigo., (2001) and modified by researcher to test student's

practice before and after Maya abdominal self-care massage. It included 19 steps, which consisted of three parts such as (Getting ready for Maya abdominal self-care massage composed of 5 steps, Maya abdominal self-care massage composed of 11 steps., post Maya abdominal self-care massage, composed of 3 steps.

Practice scoring system:

It composed of 19 steps (total optimal score was 19 points). the practice has been scored as done = 1 and not done = 0. The total scores for the student's practice regarding Maya abdominal self-care massage classified into two levels as the following:

- Satisfactory practice $\geq 60\%$ (≥ 11.5 points).
- Unsatisfactory practice $< 60\%$ (< 11.5 points).

Validity:

Revision of the tools for clarity, relevance, comprehensiveness, understanding, and applicability was done by a panel of expertise composed of 5 professors of obstetrics and gynecological nursing to measure the content validity of the tools and the necessary modification was done accordingly.

Reliability:

Test-retest reliability was applied by the researcher for testing the internal consistency of the tool. it refers to administration of the same tool to the same subjects under similar conditions on two or more occasions.

Ethical considerations:

The research was obtained from the Scientific Research Ethics Committee in the Faculty of Nursing Helwan University before starting the study. the researcher clarified the objective of the study to the students included in the study to gain their confidence and trust. The researcher obtained oral consent from student.

the researcher assured maintaining anonymity and confidentiality of subjects' data. The students were informed that they are allowed to choose to Participate or not in the study and that they have the right to withdraw from the study at any time.

Preparatory phase:

A review of current and recent available literature about various aspects of the study using textbooks, articles, magazines, and internet were searched and studied. This was necessary for the researcher to get Acquired with, and to be oriented with aspects of the present research and to develop the tools to be used.

Pilot study:

The pilot study was done on 10% (11 of the students under the study) to test the applicability, clarity and the efficiency of the tools. Students in the pilot study were chosen randomly and then were excluded from the study sample later. there were no major modifications found after the pilot study. the pilot showed very high levels of reliability.

Field work:

- After attaining the approval to conduct the study, sample was collected from the Faculty of Nursing Helwan University, Female students in third academic year, two days weekly from 2.00P.m to 4.00p.m.
- Actual field work was conducted in the period from the beginning of March 2022 up to the end of May 2022.It consists of four phases:
- Preparatory phase:During this phase, the researcher reviewed the current, local and international related literatures of various aspects of the study using books, periodicals journals, magazines, and internet. This helped the researcher to be more acquainted with the study, and with the process of tools' designing.

- Then the tools of data collection and supportive materials were designed by the researcher based on reviewing of the related recent, national, and international literature and theoretical knowledge of various aspect of the study using books, articles, scientific journal, and internet with the aim of acquiring in-depth knowledge about the study. Then tools were designed and evaluated for being valid and reliable.

- Assessment phase: This phase involved the pre-intervention data collection for baseline assessment. At the beginning, the researcher spent 10-15 minutes with each group to introduce herself and explain the purpose of study to students to gain their confidence and trust to convince them to participate in the study, then the verbal consent was obtained from them and started the assessment phase (pre test) by asking students to fill questionnaire (pre-intervention).

Planning phase:

- The researcher prepared an educational material about maya abdominal massage theoretical and practical and print it in the form of booklet in Arabic language and the researcher used the different methods of teaching, and instructional media like video film, demonstration audio visual and posters, lectures and group discussion. were utilized to achieve the following:

- General objective: The general objective in this phase was to acquire, the nursing students' knowledge and practice regarding maya abdominal massage.
- Specific objectives: By the end of the session, the students should be able to:
- Identify the definition of maya abdominal massage.
- List the benefits of maya abdominal massage.

- List the indications of maya abdominal massage.
- List the contraindication of maya abdominal massage.
- Recognize side effects of maya abdominal massage.
- Determine the suitable place to apply the maya abdominal self-care massage.
- Determine the suitable time to apply the maya abdominal massage.
- Determine the suitable time to stop the maya abdominal massage.
- Recognize the duration of time to apply the maya abdominal massage.
- List benefits of castor oil.
- Explain the steps after the session.
- Explain the steps of self-care massage during menstrual bleeding.
- Communicate effectively with others female in society to give advice about the maya abdominal massage.
- Implementation phase: The implementation phase was done through a period of 3 months, it conducted in 4 sessions (time allowed 2 hours distributed on 4 sessions, each session took 30 minutes).
- First session included an orientation about the program and its objectives, and the students were informed about the time.
- Second session included information about (dysmenorrhea pain characteristics, degree of pain, association symptoms. The methods for relieving menstrual pain such as warm fluid, analgesics, bed rest, warming, massage over abdomen, taking warm shower, follow special diet regimen and others)
- Third session included information about maya abdominal massage (definition,

benefits, indication, contraindication, side effects and benefits of castor oil). Fourth session about proper practices and steps to applied maya abdominal self-care massage.

- Each session started by explaining the objectives of it taking into consideration using simple and clear language. Each session was followed by summary of essential points. In the last of session every student took one of guided brochure and checklist which aimed to provide accurate knowledge and practice regarding maya abdominal self-care massage.

Also, the researcher develops a WhatsApp, group to facilitate the communication with the female students, answer all their questions at any time and uploaded educating videos, PowerPoint, brochure, and checklist. The researcher provided castor oil for the female students to helping them to applied maya abdominal massage application.

- Evaluation phase: Evaluation was applied before the study to assess their knowledge and practice and after 3 months of application of maya abdominal massage to identify differences, similarities, and areas of improvement as well as student's knowledge and practices regarding maya abdominal massage and observe the change in the student's behavior related maya abdominal massage. It contained the same questions of tool: 2 ,3, 4 and 5 as in the pre intervention.

Administrative Design:

An official letter from the responsible authorities at the Faculty of Nursing, Helwan University was directed to the Dean of faculty of nursing, Helwan University to obtain an official approval to carry out the study after explanation of the aim of the study. the permission was obtained before the initiation of the data collection.

Statistical Design:

Upon completion of data collection, data will be computed and analyzed using Statistical Package for the Social Science (SPSS), version 20 for analysis. Descriptive statistics tests as numbers, percentage, mean \pm standard deviation (\pm SD), will be used to describe the results. It was analyzed by Chi-square (X²) test. All statistical tests were evaluated as P-value (≤ 0.05) for significant result and P-value (< 0.01) for high significant result while P-value (> 0.05) for non-significant result.

Results:

Table (1): Distribution of female students according to demographic Characteristics (N = 110).

Item	N	%
Age:		
17- 19	0	0
20 – 22	110	100
Mean \pm SD	21 \pm 0	
Residence:		
Rural	45	40.9
Urban	65	59.1
Height:		
150 – 160	56	50.9
161 – 170	45	40.9
171 – 180	9	8.2
Mean \pm SD	160.97 \pm 3.54	
Weight:		
40 – 50	17	15.5
51 –60	38	34.5
61 –70	34	30.9
71 – 80	18	16.4
81 – 90	3	2.7
Mean \pm SD	61.05 \pm 10.39	
BMI:		
15 - 18.4	8	7.3
18.5 – 24.9	68	61.8
25 – 29.9	27	24.5
≥ 30	7	6.4
Mean \pm SD	23.29 \pm 3.47	

Table (1) showed that the mean age of female students was (21 \pm 0) years. 59.1 % of them were from urban, the mean of Height was (160.97 \pm 3.54) cm, the mean of Weight was

(61.05 \pm 10.39) kg and the mean of BMI was (23.29 \pm 3.47) kg.

Table (2): Distribution of female Students according to menstrual history(N=110)

Item	N	%
Age at menarche (years):		
9 - < 11	9	8.2
11 - < 13	60	54.5
13 - < 15	33	30
15 – 17	8	7.3
Mean ±SD	12.73±1.57	
Menstrual interval (days):		
<21	5	4.5
21 – 27	32	29.1
28 – 35	66	60
>35	7	6.4
Mean ±SD	29.06±3.46	
Duration of blood flow (days):		
<3	4	3.6
3 – 4	52	47.3
5 -7	49	44.5
>7	5	4.6
Mean ±SD	4.75±1.36	
Amount of bleeding, Number of pads/days		
Light (one pad/day)	10	9.1
Moderate (2-3 pads/day)	96	87.3
Sever (4 & more pads/day)	4	3.6
Rhythm of menstruation:		
Regular	85	77.3
Irregular	25	22.7
Source of information:		
Mother	90	81.8
Sister	14	12.7
Grandmother	3	2.7
Peers	5	4.5
Book and Journals	23	20.1
Mass media	32	29.1
Clerics	2	1.8
Others	5	4.5

Table (2): shows the mean of age at menarche was (12.73 \pm 1.57) years, the mean of menstrual interval was (29.06 \pm 3.46)days, the mean of duration of blood flow was (4.75 \pm 1.36) days, (87.3%)of female students have a moderate amount of bleeding (2-3 pads/day), (77.3%) three quarters of them have regular Rhythm of menstruation and (81.8%) of them have their menstrual information from the mother.

Table (3): Distribution of female Students according to dysmenorrhea pain characteristics (N=110).

Item	No	%
Times of first menstrual pain:		
With first menstrual period	7	6.4
After 6 months from first menstrual period	40	36.4
After one year from first menstrual period	43	39
After two years from first menstrual period	20	18.2
Times of menstrual pain occurrence:		
Before (1-2) days of menstrual cycle	48	43.6
Directly before menstrual cycle	19	17.3
With menstrual beginning & continuous for 24 hours	22	20
With menstrual beginning & continuous for 48 hours	21	19.1
Degree of pain:		
Mild pain	14	12.7
Moderate pain	65	59.1
Sever pain	31	28.2
Sites of menstrual pain occurrence:		
Lower back	9	8.2
Lower abdomen	19	17.2
Lower extremities	8	7.3
Lower back & abdomen	30	27.3
All the above	44	40
Sites of menstrual pain radiation:		
Lower back	31	28.2
Front & back of the legs	30	27.3
Multiple sites	49	44.5
The same pain pattern of pain difference:		
The same pattern of pain	63	57.3
The pattern of pain is different	47	42.7
what's the pattern of pain difference:		
Little differentiation	11	10
Moderate differentiation	28	25.5
Severe differentiation	8	7.3
Associated symptoms:		
Abdominal pain	104	94.5
Breast tenderness	61	55.5
Headache	60	54.4
Nausea	56	50.9
Vomiting	48	43.6
Lack of appetite	55	50
Acne	65	59.1
Depression	78	70.9
Constipation	50	45.5
Diarrhea	53	48.2
Increase weight	27	24.5

Table(3): reveals that (39%) of female students have the first menstrual pain after one year from first menstrual period, Approximately half of them(43.6%) reported that times of menstrual pain occurrence before(1-2)days of menstrual cycle, More than half of them (59.1%) have moderate pain,(40%)of students have multiple sites of menstrual pain occurrence, Approximately half of them (44.5%) reported that multiple sites of menstrual pain radiation , More than half of the female students (57.3%) have the same pain pattern, the quarter of female students(25.5%) have moderate pain differentiation and more than half of them have associated dysmenorrhea symptoms (nausea, vomiting, diarrhea, constipation, lack of appetite, acne, headache, breast tenderness) except (94.5%)of them have abdominal pain and (24.5%) of them have increase weight.

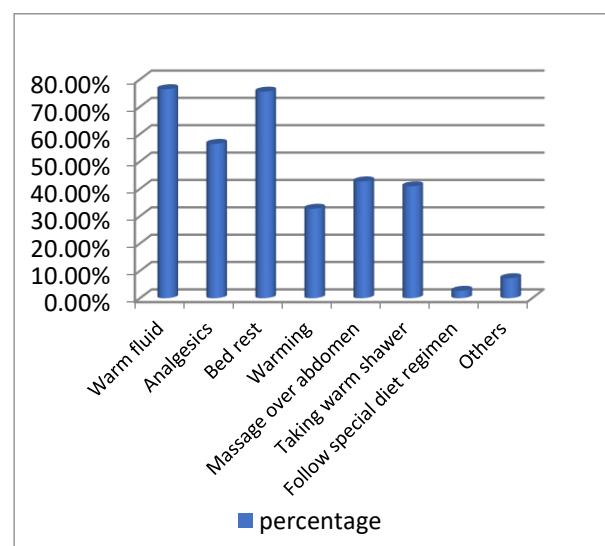
Figure (1): Distribution of female students according to Methods for relieving menstrual pain used before the application of maya abdominal massage (N=110).

Figure (1): shows the methods that used by female students for reliving menstrual pain before applying maya abdominal massage, slightly more than three quarters of them (76.4%) used warm fluid, more than half of them (56.4%) used Analgesics, the three

quarter of female students (75.5%) used Bed rest and (42.7%) of the female students used Massage over Abdomen.

Figure (2): Distribution of female Students according to Total score level of sensory and affective menstrual pain descriptors regarding dysmenorrhea before and after applying Maya Abdominal Massage.

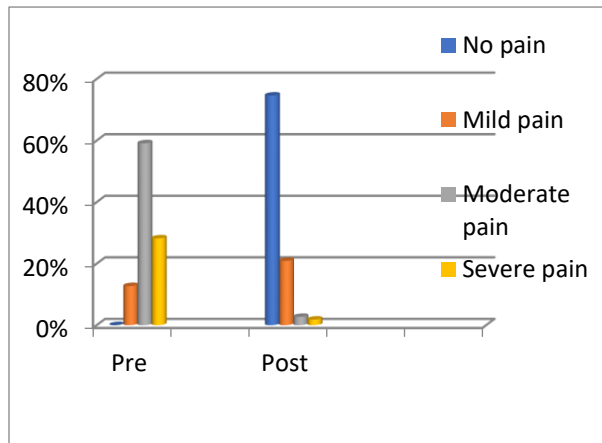


Figure (2): Illustrates the change of Total score level of sensory and affective menstrual pain descriptors regarding to applying maya abdominal massage. Before application of maya abdominal massage Slightly more than half of them (59.1%) have moderate pain and slightly more than one quarter of them (28.2%) have severe pain and No pain was (0%), after applying maya abdominal massage decreased total score level of menstrual pain and increased the rate of no pain to Approximately three quarters of them (74.6%).

Table (4): Distribution of female students according physiological and behavioral responses to menstrual pain before and after applying maya abdominal massage. (N =110).

Items	Before application		Post application		χ^2	P-value
● Physiological responses to menstrual pain						
Nausea	56	50.9	0	0	46.554	0.00*
Vomiting	48	43.6	9	8.2	21.622	0.000*
Diarrhea	53	48.2	3	2.7	36.792	0.00*
Constipation	50	45.5	2	1.8	36.989	0.00*
Lack of appetite	55	50	0	0	45.833	0.00*
Acne	65	59.1	8	7.3	34.733	0.00*
Headache	60	54.4	6	5.5	35.242	0.00*
Breast tenderness	61	55.5	0	0	50.12	0.00*
Abdominal pain	104	94.5	0	0	78.729	0.00*
Muscle pain	54	49.1	0	0	45.11	0.00*
Fatigue	63	57.3	3	2.7	43.89	0.00*
● Behavioral responses to menstrual pain						
Depression	78	70.9	4	3.6	51.756	0.00*
Anxiety	57	51.8	3	2.7	39.661	0.00*
Sleep disturbance	59	53.6	3	2.7	41.08	0.00*

X2 = Chi-Square Test P-value: level of significance $P > 0.05$ (non-significant) $*P \leq 0.05$ (significant) $**P < 0.01$ (Highly significant)

Table (4): Shows half of female students complained of physiological responses to menstrual pain as (Nausea, Vomiting, Diarrhea, constipation, Lack of appetite, Acne,

Headache, Breast tenderness, Muscle pain and Fatigue. except Abdominal pain was (94.5%). After applying maya abdominal massage some physiological responses decreased to (0%) as (Nausea, Lack of appetite, Breast tenderness, Abdominal pain and Muscle pain. while Behavioral responses

before applying maya abdominal massage as Depression (70.9%), Anxiety (51.8%) and Sleep disturbance (53.6%) and became Depression (3.6%), Anxiety (2.7%) and Sleep disturbance (2.7%) after applying maya abdominal massage.

Table (5): Relation between female students' Body Mass Index and dysmenorrhea pain N= 110).

Body Mass Index	Dysmenorrhea pain		χ^2	P-value
	No	%		
15-18.4				
Mild	5	62.5	12.25	0.002*
Moderate	3	37.5		
Severe	0	0		
18.5-24.9				
Mild	8	11.8	106.029	0.00*
Moderate	49	72.1		
Severe	11	16.2		
25-29.9				
Mild	1	12.5	39.852	0.00*
Moderate	11	40.7		
Severe	15	55.6		
≥30				
Mild	0	0	11.143	0.004*
Moderate	2	28.6		
Severe	5	71.4		

X² = Chi-Square Test P-value: level of significance P > 0.05 (non-significant)

*P ≤ 0.05 (significant) **P < 0.01 (Highly significant)

Table (5): shows a highly significant relation between female student's BMI and their dysmenorrhea pain, female students who were overweight (25-29.9) and obese (≥ 30) suffered from severe pain compared to normal weight (18.5-24.9) and underweight (15-18.4).

Discussion:

Regarding demographic characteristics the current study showed that the sample aged from 20 to 22 years old with a mean age 21±0 years. these results were in the same line with (Abdulrasol.,2021) who studied "Assessment of Primary Dysmenorrhea and Its Effect on the Quality of Life among Female Students at University of Babylon" in Iraq and found that the mean age 21.01 ± 1.557 years.

The current study revealed that, more than one third live at rural area and more than half of female students live in urban. the present study was consistent with (Abed ,et al.,2015) who conducted study entitled "Assessment of knowledge, attitude and practice toward menstruation among adolescent girls at sohag city" in Egypt. found approximately one third live in the rural and more than half of the studied sample lived in urban.

Regarding the body mass index, the present study represents that, more than half of female students was normal weight and one third of female students was in overweight. this result was in agreement with the findings reported by (Abdulrasol.,2021) who studied "Assessment of Primary Dysmenorrhea and Its

Effect on the Quality of Life among Female Students at University of Babylon" in Iraq. Moreover, the mean of BMI was 23.29 ± 3.47 kg in the current study was supported with the study done by (Sánchez, et al., 2020) who conducted study entitled "Interference and Impact of Dysmenorrhea on the Life of Spanish Nursing Students" in Spain, who reported that the mean of BMI was 22.44 ± 3.36 kg.

Regarding to menstrual data of studied female students, the current study revealed that, the half of studied female students start their menarche between 11-13 years and the mean of age at menarche was 12.73 ± 1.57 years, the majority had regular menstrual cycle and moderate quantity of menstrual bleeding. Also, more than half of them had a duration between two cycles of 28-35 days and the mean of menstrual interval was 29.06 ± 3.46 days, the mean of duration of blood flow was 4.75 ± 1.36 days. This results agreement with the study performed by (Zaky, et al., 2018) who conducted study entitled "effect of reflexotherapy on controlling primary dysmenorrhea among faculty nursing students" in Egypt. who revealed that the average menarche age was 12.95 ± 1.90 years in the study group and was 12.73 ± 1.63 years in the control group, interval of menstrual cycle was 29.08 ± 3.80 days, duration of menstrual blood flow was 5.07 ± 1.09 days in the study group and was 4.78 ± 1.38 days in the control group. the majority had moderate amount of menstrual bleeding. in the same field (Abdulrasol, 2021) who studied "Assessment of Primary Dysmenorrhea and Its Effect on the Quality of Life among Female Students at University of Babylon" in Iraq. who reported the majority had regular menstrual cycle.

Related to menstrual data information of studied female students, the current study revealed that, the majority of female students had their information from mother. This result disagreement with the study done by

(Mohamed, et al., 2020) who conducted study entitled "Traditional Practices Self-Reported by Nursing Students to Relieve Dysmenorrhea" in Egypt. Who revealed that less than half of studied sample had information about dysmenorrhea from mother. also, (Awad, et al., 2019) who conducted study entitled "Assessment of knowledge, Attitude and Practice among Adolescent Girls Regarding Dysmenorrhea" in Egypt. who reported that half of studied sample had information about dysmenorrhea from mother. urban.

Regarding to dysmenorrhea pain characteristics of studied female students the time of first menstrual pain was more than one third of female students had first time of menstrual pain after 6 months of first menstrual period and more than third of female students had first menstrual pain after one year of first menstrual period, approximately half of female students had times of menstrual pain occurrence before (1-2) days of menstrual cycle, approximately half of female students had multiple sides of menstrual pain occurrence and multiple sites of menstrual pain radiation. these results agreement with the study performed by (Zaky, et al., 2018).

Related to associated dysmenorrhea symptoms of studied female students the current study revealed that, approximately the total of female students had abdominal pain and approximately of one quarter of them had increase of weight. this result was in the same line with (Abed, et al., 2015) who reported that all studied sample had abdominal pain and approximately of one quarter of studied sample had increase of weight. These finding supported by study done by (Nguyen, et al., 2015) who conducted study entitled "A qualitative study to develop a patient-reported outcome for dysmenorrhea" in American United States. Who reported that

approximately the total of studied sample had lower abdominal pain.

Regarding the associated of dysmenorrhea symptoms, the current study revealed that, approximately half of female students had breast tenderness, muscle pain, headache, nausea, vomiting, lack of appetite, acne constipation, diarrhea, anxiety and sleep disturbance. while approximately three quarters of female students had depression and the majority of studied sample had abdominal pain. The present study was consistent with (Sánchez , et al.,2020) who reported that half of nursing students had associated of dysmenorrhea symptoms as head ache, nausea, vomiting, diarrhea, irritability and insomnia.

Also, the current study reported that approximately three quarters of female students had depression. While the study carried out by (Sánchez , et al.,2020) who reported that half of studied sample had depression. also, (Hannah, et al .,2021)who conducted a study entitled "Prevalence and Impact of Dysmenorrhea Among University Students in Ireland" , who reported the majority of studied sample had mood change.

Regarding to methods for relieving menstrual pain the current study revealed that three quarters the female students took warm fluid and bed rest to relieving menstrual pain, half of them took analgesics to relieving menstrual pain and more than third of them used massage over abdomen and taking warm shower to relieving menstrual pain. These results were agreement with a study done by (Zaky, et al.,2018) who revealed that approximately three quarters took warm fluid, more than three quarters took bed rest and half of them took analgesics to relieving menstrual pain. Moreover, these results agreement with (Hannah, et al .,2021) who reported the majority of studied sample used Non pharmacological management strategies, and more than third used shower. But disagreement in using Analgesic more than

three quarters of studied sample and more than half took rest. Also, (Nguyen, et al.,2015)

Who reported that the majority of studied sample took Analgesic to relieve menstrual pain.

The findings of the present study showed that more than half of studied female students had moderate pain and more than one quarter of them had severe pain. this result agreement with the study carried out by (Awad, et al.,2019) Also, (Ameade and Mohammed., 2017)) who conducted study entitled "Menstrual Pain Assessment: Comparing Verbal Rating Scale (VRS)with Numerical Rating Scales (NRS) as Pain Measurement Tools" in Ghana. Who revealed that three quarters of studied sample had moderate pain and more than third had severe pain.

This finding disagrees with (Zaky, et al., 2018) who revealed that, less than one quarter of studied sample had moderate pain and three quarters of them had severe pain. also, (Abdulrasol., 2021) who studied "Assessment of Primary Dysmenorrhea and Its Effect on the Quality of Life among Female Students at University of Babylon" in Iraq. who revealed that one quarter of studied sample had moderate pain and more than half of them had severe pain.

The finding of the present study revealed that maya abdominal massage was significantly reduced the pain intensity score of sensory and affective menstrual pain descriptors in the total score of McGill Pain Questionnaire. This result in the same line with the study done by (Zaky, et al.,2018) who revealed that relation between severity of dysmenorrhea regarding absence from school and decrease in daily activities and high significantly reduced the pain intensity score of sensory and affective menstrual pain descriptors related to reflexotherapy.

Also, this result finding in the study with (Ibrahim, et al.,2018) who conducted study

entitled "Aromatic Abdominal Massage for Alleviating Menstrual Pain in Nursing Students at Suez Canal University" in Egypt. Who revealed that the main findings after intervention found that the total score of McGill Pain Questionnaire decreased in two menstrual cycles after aromatic abdominal massage.

The finding of the current study showed that the application of maya abdominal massage has improved most of the female students' physiological and behavioral responses to menstrual pain. There were statistically significant improvement the female students' physiological and behavioral responses from pre to post application of maya abdominal massage as headache, fatigue, muscle pain, nausea, abdominal pain, breast tenderness, lack of appetite, constipation, diarrhea, acne depression, anxiety and sleep disturbance. also, statistically significant improvement in the female students' physiological and behavioral symptoms. this result consistent with the study done by (Zaky, et al.,2018) who revealed that the application of reflexotherapy has improved most of students' physiological responses to menstrual pain. There was statistically significant improvement in physical symptoms from pre to post application of reflexotherapy group as regard headache, fatigue, muscle pain and nausea.

Also, the same line with (Ibrahim, et al.,2018) who revealed the effects of lavender abdominal massage on dysmenorrhea, Pain, anxiety and depression.

Regarding relation between female students' Body Mass Index and dysmenorrhea pain, the finding of the current study revealed that highly significant relation between female students' BMI and their dysmenorrhea pain. This result wasn't in agreement with (Abdulrasol.,2021) Who reported that there is no significant association between BMI of students with Primary dysmenorrhea related to the intensity of Primary Dysmenorrhea.

On other hand, the current study revealed that female students who were overweight and obese suffered from severe dysmenorrhea pain compared to normal weight and underweight female students. This finding was agreed with the result reported by (Elkosery, et al.,2020) who conducted study entitled "Effect of Body Mass Index on Primary Dysmenorrhea and Daily Activities in Adolescents" in Egypt. Who reported that the difference in body mass index had an effect on primary dysmenorrhea. But disagreement in the finding that showed both obese and underweight subjects suffer from primary dysmenorrhea more than subjects with normal weight and overweight.

Conclusion

Considering the current study, there is a relationship between maya abdominal massage and dysmenorrhea symptoms, suggesting that maya abdominal massage (using castor oil) relieve dysmenorrhea symptoms.

Recommendation

Based on the results of this study, the following recommendations were proposed:

- Conducting awareness sessions on maya abdominal massage benefits and its effect on relieving dysmenorrhea symptoms and menstrual pain.
- Development of educational program on maya abdominal massage benefits for students in all schools and faculties curriculums.

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