

Effect of Electronic Booklet use on Self Care For premenstrual syndrome among Students in Banha University

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Abstract

Background: PMS is very common among female university students that may cause in physical and psychological problems. The most important ways that can help females in self-care to manage PMS symptoms is to increase full awareness to alleviate PMS. **The study aimed to:** Evaluate the effect of electronic booklet use on self-care among university students regarding premenstrual syndrome in Banha University. **Research design:** A Quasi experimental research design was used to conduct the study. **Setting:** study was conducted at faculty of Education and faculty of Arts Banha University, **Sample:** A multi stage sample technique was used to recruit students suffering from PMS according to certain criteria **and only** 300 students out of 405 met the research criteria from the selected faculties. **Tools:** **1)** Structured interviewing questionnaire sheet **2)** questionnaire sheet about premenstrual syndrome experience among study sample **3)** students Management of premenstrual syndrome. **Results:** Findings of the present study showed that about 66% of the studied females had unhealthy habits pre intervention compared to 10.7% had unhealthy habits after using electronic booklet. There was highly statistically significant difference between total physical changes, total behavioral changes, and total psychological changes after using electronic booklet ($p < 0.001$). **Recommendation:** Health education programs regarding PMS and other menstrual problems could be included in the curriculum of secondary schools Further study: A similar study can be replicated on large sample size of populations and wider geographic scope to emphasize conclusion.

Keywords: Premenstrual syndrome (PMS), Self-care, Electronic Booklet.

Introduction:

Female university students have a high risk of making unhealthy lifestyle choices that could affect their health and wellbeing. This is the result and influence of a variety of popular cultures among this age group, and the typical peer pressure encountered during these years. Uninformed, university and college students could formulate inaccurate and incomplete notions regarding health, lifestyle, physical activity and fitness (*Niekerk et al., 2018*).

female students usually face an array of challenges that affect health, including diet behaviors, stress, and sleep issues, weight gain, and changes in exercise behavior. They tend to adopt unhealthy behaviors such as gain weight, have altered sleep behaviors, reduce their

physical activity, have a pervasive feeling of being “stressed” and have poor dietary habits. These unhealthy behaviors formed during young adulthood may have a sustaining impact on health and psychological well-being across later life. Egyptian female's university students receive insufficient reproductive health education through the formal education in schools & university system (*Hanafy et al., 2018*).

Menstruation is a part of women's physiology starting of which is associated with a number of physical, hormonal, and psychological changes in the body of adolescent girls. These changes mostly results in a lot of stress and physical problems in the girls. Menstruation is dealt with secrecy in most of

the underdeveloped and developing countries. Discussion on menstruation and menstrual problems is regarded as taboo especially among rural communities (*Adhikari, 2017*).

Many studies revealed that young girls are generally told nothing about menstruation. Hence, knowledge and information about reproductive functioning and reproductive health problems amongst the young female is poor. In Egypt as well as in other developing and underdeveloped country, menstruation being dealt with secrecy, the young female hesitates to discuss these problems even with their parents. No wonder that menses is associated with many complaints in girls. These complaints are mostly related to either flow of blood or physical symptom of pain or mood changes like anxiety irritability etc. (*Martins, 2018 and Lane, 2021*).

Teaching performance skills and helping student gain knowledge, to make them follow self-care behaviors, accept and cooperate with inappropriate health behavior, will lead to recovery from illness and control of complications (*Crow & Nelson, 2018*). Therefore, through this study, the researcher seeks to increase the awareness of the female university student regarding premenstrual syndrome self-care by enriching them with an electronic booklet about premenstrual syndrome self.

An e-book (short for electronic book), is a book that its publication made available in digital form, consisting of text, images, or both, readable on the flat-panel display of computers or other electronic devices. Although sometimes defined as "an electronic version of a printed book", some e-books exist without a printed equivalent (*Gardiner et al., 2020*).

E-book contributes to transforming the role of the educator from a source of information into a facilitator and a guide of knowledge and information. Thus, the learner becomes a positive learner rather than playing the role of the passive recipient of information and knowledge. The learner's achievement also increases with the motivation to participate in

the educational process (*Ebid & Abdul Rahman, 2018*).

Significance of the Study:

Approximately 80–90% of female all over the world experience some symptoms in the premenstrual period at some point in their reproductive years. In Egypt High rates of PMS (86.3%) among university students (*Arafa et al., 2018*) which symptoms over 200 different premenstrual symptoms have been reported and up to 90% of women in their reproductive age experience at least one symptom of Female university students are among those most affected by PMS. The rate of PMS is known to be high among this group, and adversely affects their quality of life and academic performance (*Hussein et al., 2017*).

Self-care practices are major and very effective in managing of morbidity and other complications among this age group. It's important to focus on assessing university students regarding premenstrual symptoms, self-care and lifestyle interventions to relieve their discomfort and decreasing the severity symptoms of PMS (*Shukla et al., 2016*).

So the current study was done to assess the effect of electronic booklet use on Self Care For premenstrual syndrome among Students in Banha University

Aim of the study:

This study aims to evaluate the effect of electronic booklet use on self-care among university students regarding premenstrual syndrome.

Research Hypothesis:

Application of electronic book will improve self-care among female university

Subjects and Methods:

The study was portrayed under four main designs as the follow:

Technical design:

It was used for the study covers the following four main headings.

Research design:

1) Quasi experimental research design used to conduct the study

2) Setting:

The current study was conducted at faculty of education and faculty of arts Banha University

Subjects:**Sample type:**

A multi stage sample technique used to conduct the study.

Sample Size:

The current study was conducted at Banha university with (A total of 405 female students in the first year 211 from faculty of Education and 194 from faculty of Arts are involved in this study were selected through simple random sampling technique and only 300 of them met the research criteria.

Tools of data collection:**Tool (I)**

A **semi-structured questionnaire**: It was designed by the researcher after reviewing the related literature. and consist of two part: (*Kumari & Sac deva, 2016*)

Part (I): General characteristics of the study sample:

It was designed to assess student's socio-demographic data.

Student's characteristics as (name, age, residence, method of communication, height, weight) it included questions from 1-6 included open end question (name, height & weight) and MCQ questions (age, residence, method of communication & marital status) and it took 5 minutes.

Tool (II): students' self-reported self-care sheet

Was designed to assess students' self-care practice before and after implementation of electronic booklet, included 10 closed end questions (yes/no) that was divided into: nutritional habits (4 questions), activity and exercises (3 questions) personal hygiene during

menstruation (1 question), using medication (2 questions). it took 10 minutes.

❖ Scoring system:

It was scored as 3 scores for a healthy habits practice or answer yes, and 2 score for un healthy habits practice or answer no and 1 score for not answer

The total reported practice was

Classified into:

Healthy: 60 % or more

Un healthy: less than 60%

This assessment was done pre-intervention, and after three months post-intervention.

Supportive material: electronic booklet regarding management of premenstrual syndrome used as supportive material was designed by the researcher guided by supervisors and divided as following

- Introduction about premenstrual syndrome
 - Concept of premenstrual syndrome.
 - Causes of premenstrual syndrome.
 - Physiology of premenstrual syndrome. (*Mendiratta & Lentz, 2017*)
 - Physical symptoms of premenstrual syndrome.
 - Psychological symptoms of premenstrual syndrome. (*Mike et al., 2019*)
- How to deal with this symptom?
- Self-care & practices regarding premenstrual syndrome. (*Jafarirad et al., 2016*)

Validity:

The content validity of the study tools was assessed by a jury consisted of three experts in maternity and gynecological nursing department of faculty of nursing, Ain shams university for comprehensiveness, accuracy clarity in language according to their opinion some modifications were considered.

Reliability:

Internal consistency reliability was assessed in the present study tools via cronbachs alpha reliability analysis to indicate how the items in instrument will fit together conceptually; alpha cronbachs test scores

were.88 and.92 for the questionnaire about student's knowledge and habits regarding self-care during premenstrual syndrome

I. Ethical considerations:

- Informed consent was obtained from each female adolescent after explaining the purpose of the study.
- Tools of data collections were not touching moral, religious, ethical and culture aspect of the female adolescent.
- Each female adolescent had the right to withdraw from the study at any time.
- Human rights were considered. Data was confidential and using a coding system for data management.

II. Administrative design:

An official permission was issued from the Dean of the Faculty of Nursing at Ain Shams University, to the Deans of the Faculty of Education and faculty of literature at Banha University to apply the study.

And Scientific Research Ethical Committee in the Faculty of Nursing as an approval to conducted this study.

The purpose of the study and its procedures were explained to them to gate their consent and co-operation

III. Operational Design:

The operational design includes:

- 1.Preparatory phase
- 2.Pilot study
- 3.Field work

Preparatory phase:

This phase was started with a review of current and past national related literature concerning the subjects of the study, using textbooks, articles, journals,and websites. This review was helpful to the researcher in reviewing and developing the data collection tools. Then the researcher tested the validity of the tool through jury of expertise to test the content, knowledge, accuracy and relevance of tool questions Then the researcher was viewed of the related literature, the electronic booklet was developed by the researcher in the form of

soft Arabic booklet to satisfy the student's deficit knowledge regarding PMS. The booklet was viewed through WhatsApp group designed by the researcher to contact with the students through it The booklet was viewed through this Application.

Pilot study:

The pilot It was carried out for a to evaluate the content validity of the tools used for data collection to find the possible obstacles that might be faced during data collection. Also, it is used to evaluate time needed for students to fill tools of the study. It involved 40 students (10% from total sample size). Students include in the pilot study excluded from the sample.

Field work:

Data collection of this study was started from beginning of October 2020, till the end of March 2021, covering a period of six months for data collection. The field work of this study was carried out through assessment, planning, implementation and evaluation phases

The study was conducted according to the following steps:

An approval from Scientific Research Ethical Committee in the Faculty of Nursing as an approval was obtained to conduct this study. Research Ethical Committee in the Faculty of Nursing as an approval to conduct this study. The tool used in the study was developed by the researcher after reviewing the relevant and related literature. All the students (n= 405) were invited to participate in the study as a target sample to select the study sample with the required criteria (300 students).Data collection of this study was started from beginning of October 2020, till the end of March 2021, covering a period of six months for data collection. The field work of this study was carried out through assessment, planning, implementation and evaluation phases.

Phase I. Assessment phase (pre-test):

- The previously mentioned settings were attended by the researchers with official letter from clarifying the purpose of the present study from the Faculty of Nursing at Ain Shams University, to the Dean of the faculty of Education and faculty of Arts at Banha

University. The sample was collected through random selection of 2 faculties from 12 non-medical colleges (to avoid contamination of data of the study sample) of Banha university by toss technique. The data was collected two days/week (Sunday and Thursday) from 10.00 a.m. to 12 p.m. during the first term for year 2020/2021.

- The researcher went to student's affairs office to get socio-demographic data of students as (numbers, names, telephone numbers)
- All students (n= 405) were invited to participate in this study. The researcher interviewed the subjects to introduce her-self and briefly explained the nature and the purpose of the study. They were informed that participation in this study was voluntary and they had the right to withdraw at any time without giving any reason. Oral consent of the students was obtained.
- The researcher provided an overview and clarification about the assessment tools questions to the students. Then, the semi-structured questionnaire was distributed to each student to assess student's general characteristics and their reported symptoms regarding PMS. The questionnaire took about 20-30 minutes to be completed.
- The second meeting was conducted after analysis of the first semi-structured questionnaire that was distributed in the first meeting to select only the students who involved in the study according to sample criteria. The researcher distributed the semi-structured questionnaire to assess student's general characteristics, knowledge regarding premenstrual syndrome, physical and psychological symptoms regarding PMS and the healthy habits during this period. It was filled in by the student in a time ranged from 20 to 30 minutes to be completed. The data obtained during this phase constituted the baseline for further comparisons to evaluate the effect of the electronic booklet.
- Then; assembled student's numbers mobile phone to worked WhatsApp group to connect with the students and viewed the electronic booklet through it.

Planning phase:

Based on the data analysis which obtained from the assessment phase from the participated students, and in view of the related literature, the electronic booklet was developed by the researcher to the students through the WhatsApp application.

● Phase Implementation phase:

After assessing the student's data only 300 students had the research criteria were included in the study. They were divided into 6 groups on WhatsApp each WhatsApp group consisted of 50 students to facilitate the connection with the students. The electronic booklet was uploaded to Groups WhatsApp to read and benefit from it, and the researcher started following the students after 3 months(after 3 menses) of using the booklet to measure the extent of its effect on student's knowledge, to measure the prevalence of symptoms that occur with them during this period and in improving self-care towards them to measure the prevalence of symptoms that occur with them during this period This was done by interviewing them during the third meeting by the semi-structured questionnaire was distributed to each student for the second time (post- test) after using booklet and measuring the extent of its effect on them.

Evaluation phase:

This tool was used to evaluate

students' self-reported self-care sheet

was designed to assess students' self-care practice after implementation of electronic booklet

The effect of electronic booklet was measured through:

a. Two evaluations were done for students. The first one was at the beginning of the study as a baseline data (pre-test). The second evaluation was conducted after three months from the electronic booklet implementation in order to detect the effect of electronic booklet on self-care regarding premenstrual.

b. Comparing between the pre-test and post-test to assess student's knowledge and habits regarding premenstrual syndrome.

Statistical analysis:

Data were collected, coded and entered to a personal computer. They were analyzed using Statistical Package for Social Science (SPSS), under windows version 20. Figures were performed using Microsoft office 2010. The collected data were organized, revised, analyzed, tabulated using number and percent distribution. Proper statistical tests were used to determine whether there were statistically significant differences between variables of the study. The statistical tests used in this study were:

1. Chi-square test (X^2) for qualitative variables.
 2. Correlation coefficients (r) to find correlations between quantitative data.
 3. Spearman rank correlation to find correlations between categorized data.
- $P > 0.05$ there is a statistical insignificant difference
 - $P < 0.05$ there is a statistical significant difference
 - $P < 0.00$ there is a statistical highly significant difference.

Results:

Table (1): shows the age of the studied students, their age ranged from (< 17- 19 + years) with the mean age (18.49±0.63). Regarding residence, more than half of them

were from rural areas (55.7%). While the body mass index, (79.7 %) of them are normal range. In addition, the method of communication (100%) used WhatsApp application.

Table (2): shows that (77%) reported that they didn't eating balanced diet during menses while (66.7%) reported that they didn't decrease un healthy diet during menses. Finally (40%) stop consuming certain drinks in the period before menstruation.

Table (3): shows self-care before using electronic booklet ,23% of the students didn't take any medications before menses while (75.6%) of them didn't take these drugs under the supervision of a doctor.

Table (4): shows that (91.3%) didn't do any exercise during premenstrual syndrome while (59.6%) didn't have shower during premenstrual syndrome before using the electronic booklet.

Table (5): shows that after using electronic booklet regarding nutritional habits (91%) reported that they eat balanced diet during menses while (4%) stop consuming certain water, juice in the period after menstruation. .

Figure (1): presents that, (66%) of the studied students had unhealthy habits before using electronic booklet about PMS, compared with (10.7%) had unhealthy habits after using electronic booklet about PMS.

Table (1): Distribution of the studied sample according to their general characteristics (n=300).

Items	Total number (300)	
	No	%
Age (in years)		
< 17	12	4
17 -< 18	140	46.7
18 -< 19	138	46
19 +	10	3.3
Mean ± SD 18.49: 0.63		
Residence		
Rural	167	55.7
Urban	133	44.3
Weight		
50	75	25
60	138	46
70	51	17
80 or more	36	12
Height		
150	156	52
160	120	40
170	24	8
BMI		
Underweight	46	15.3
Normal weight	239	79.7
Overweight	15	5
Method of communication		
WhatsApp	300	100
Face book	-	-

Table (2): Distribution of the studied students' self-care before using electronic booklet regarding nutritional habits

Items	Pre	
	No	%
Eating balanced diet during menses		
Yes	69	23.0
No	231	77.0
If yes, what kind of this food	=102N	
fruit and vegetables	21	20.6
meat and fish	26	25.5
Eggs and cheese	9	8.8
Other	46	45.1
Do you decrease un healthy diet		
Yes	100	33.3
No	200	66.7
If yes, what kind of this food	=205N	
salty and sour food	54	25.1
Fats	52	24.2
Sweets	86	40.0
Other	23	10.7
Do you drink plenty of fluids (herbal medications)		
Yes	258	86
No	42	14
If yes, what kind of herbal medication	=327N	
Helba	35	10.7
Lison	67	20.5
Cinnamon	105	32.1
Other	120	36.7
Do you stop consuming certain drinks (water and juice in the period before menstruation?)		
Yes	120	40
no	180	60
If yes, what are the drinks?	=141N	
Coca Cola	52	36.9
Coffee	64	45.4
Tea	25	17.7
Other	-	-

Table (3): Distribution of the studied students' self-care after using electronic booklet regarding nutritional habits.

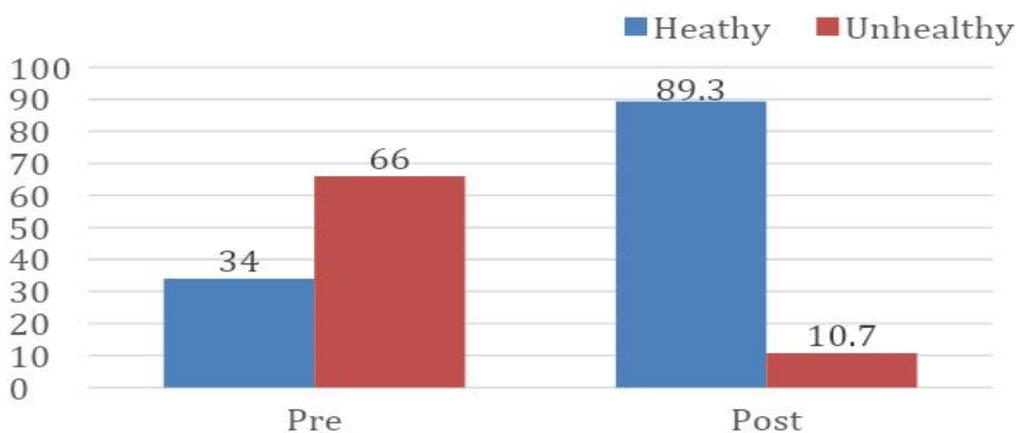
Items	Post	
	No	%
Eating balanced diet during menses		
Yes	273	91
No	27	9
If yes, what kind of this food	N=313	
fruit and vegetables	80	25.6
meat and fish	73	23.3
Eggs and cheese	68	21.7
Other	92	29.4
Do you decrease un healthy diet		
Yes	34	11.3
No	266	88.7
If yes, what kind of this food	=43N	
salty and sour food	15	34.9
Fats	11	25.6
Sweets	9	20.9
Other	8	18.6
do you have drink plenty of fluid		
Yes	281	93.7
No	19	6.3
If yes, what kind of this drinks (herbal medication)	N=446	
Helba	154	34.5
Lison	162	36.3
Cinnamon	118	26.5
Other	12	2.7
Do you stop consuming water, juice in the period before menstruation?		
Yes	12	4
no	288	96
If yes, what are the drinks?	=26N	
Coca Cola	5	19.2
Coffee	9	34.6
Tea	12	46.2
Other	-	-

Table (4): Distribution of the studied students self-care after using electronic booklet regarding using medication

Items	Post	
	No	%
Do you take any medications before your period?		
Yes	41	13.7
no	259	86.3
If yes, then what are these drugs?		
antispasmodic	14	34.1
Pain reliever	20	48.8
hypnotic	7	17.1
another little	-	-
Do you take these drugs under the supervision of a doctor?		
Yes	23	7.7
No	277	92.3

Table (5):Distribution of the studied students' self-care after electronic booklet regarding activity and exercises.

Items	Post	
	No	%
Do you do any exercise?		
Yes	265	88.3
No	35	11.7
If the answer is yes, then what are these exercises?	N=525	
Walking	229	43.6
yoga	115	21.9
Abdominal Exercises	108	20.6
another little	73	13.9
If the answer is no, what is the reason?	=54N	
fatigue	23	42.6
Inability to earn	16	29.6
laziness	15	27.8
Premenstrual symptoms affect your activity when they occur		
Yes	28	9.3
No	272	90.7
If the answer is yes, what is the effect?	=53N	
lack of focus	17	32.1
Inability to perform daily duties	24	45.3
anxiety and agitation	12	22.6
How long have you been experiencing premenstrual symptoms?		
less than two days	12	4
From 2 to 6 days	273	91
more than 6 days	15	5
Do you shower during these symptoms?		
Yes	267	89
No	33	11

**Figure (1):**Distribution of the Studied Students according to their total habits (management) before and after using electronic booklet

Discussion:

Premenstrual syndrome (PMS) is a cyclical late luteal phase disorder of the menstrual cycle whereby the daily functioning of women is affected by emotional and physical symptoms substantially interfering their quality of life. This syndrome is presented in a combination of symptoms that are characterized by physical, behavioral, and psychological changes, which some women experience from a week before to a few days into menstruation. The intensity of PMS varies among women according to hormonal, psychosocial, and physiological factors (Meers & Nowakowski, 2020).

An estimated 70–90% of women will experience premenstrual symptoms during their reproductive years and half of these women will meet the criteria for premenstrual syndrome (PMS). The physical, psychological, cognitive and behavioral symptoms appear in the late luteal phase of the menstrual cycle and resolve with the onset of menses or shortly thereafter (Marwah et al., 2021).

The current study aim to evaluate the effect of electronic booklet use on self-care among university students regarding premenstrual syndrome in Banha University.

Regarding general characteristics the current study result showed that regarding the age of the studied students, their age ranged from (< 17- 19 + years) with the mean age (18.49±0.63). Regarding residence, more than half of that was rural. While in relation to the body mass index, most of them are normal weight. In addition, the method of communication all of them used what's App application.

The current study result in the same line with Teotia et al., (2020) who conducted study entitled "A Study on Premenstrual Syndrome among Female Students of a Private University of Delhi NCR" and mentioned that, minority of studied students were obese. Also agree with Hashim et al., (2019) who applied study entitled "Premenstrual syndrome is associated with dietary and lifestyle behaviors among university students" and founded that, The average BMI of

participating studied students was in the normal range.

While disagree with Bhuvanewari, Porkodi, Balaji, (2019) who applied study entitled "Prevalence of premenstrual syndrome and its impact on quality of life among selected college students" and showed that, the majority of female students were between 18 and 22 years of age and less than three quarters of them were from urban areas. This may be due to differences in personal demographic characteristics and methodology of data collection between two studied samples.

Also, Karpagavalli and Raj, (2020) who conducted study entitled "A Study to assess the effect of premenstrual syndrome on quality of life among college students at Chennai" and found that, the majority of the studied students were between 18 and 22 years. This may be as the study was conducted on the students in the first and second grades only. This may be as the study was conducted on the students in the first and second grades only.

Regarding to self-care before using electronic booklet regarding nutritional habits the current study result mentioned that, more than three quarters of the student reported that they didn't eating balanced diet during menses while more than two thirds of them reported that they didn't decrease un healthy diet during menses. Finally two fifths of them stop consuming certain drinks in the period before menstruation.

The present study agree with Suaidi et al., (2020) who applied study entitled " Community pharmacists' knowledge, attitude, and practice in providing self-care recommendations for the management of premenstrual syndrome" and found that, the studied sample avoid caffeine and alcohol during menses. . This accordance may be due to similarly in norms and culture between two Arabian communities.

While disagree in relation to eating healthy diet, three quarters of the respondents eating a healthy and balanced diet was an effective strategy for managing PMS,

Also in the same line with *Aguilar-Aguilar, (2021)* who conducted study entitled "Menstrual disorders: What we know about dietary-nutritional therapy" and demonstrated that, minority of the females with PMS are consume a healthy diet with fresh vegetables and fruits and avoid processed foods, sugar, salt, and caffeine.

While, contrast with *Al-Qazaz & Al-Dabbagh, (2020)* who conducted study entitled "Menstrual disorder: cross-sectional study on prevalence and self-care practice among adolescents student in Iraq" and mentioned that one quarter of the studied student increased in their consumption of tea and coffee during the period

Regarding to self-care before using electronic booklet about using medication the current study result mentioned that, less than one quarter of studied students didn't take any medications before menses while three quarters of them didn't take these drugs under the supervision of a doctor. The current study result in the same line with *Mohib et al., (2018)* who observed that, highly percentage of the student sample take painkillers, and founded that using analgesics is the most common treatments opted by females to relieve PMS symptoms.

While disagree with *Arafa et al., (2018)* who reported that, herbal fluids and having analgesics were highly prevalent among the participating student, less than one quarter of the student studied of girls with PMS visited physician, at least for once, because of gynecological complaints.

Regarding self-care before using electronic booklet about activity and exercises the current study result illustrated that, the majority of female student didn't do any exercises during premenstrual syndrome while less than two thirds of them didn't have shower during premenstrual syndrome. The current study result in the same line with *Mohib et al., (2018)* who illustrated that, minority of female student doing exercise is also the most common treatments opted by females to relieve their symptoms. While contrast with *Hashim et al., (2019)* who founded that, the majority of the

participants did low intensity exercises while more than two thirds of the participants female student did moderate exercises. Exercise is associated with lower water retention and autonomic reactions that protect from menstrual disorders.

Research also shows that, physical activity increases energy, appetite, and concentration and reduces menstrual cramps, low-back pain, fluid retention, and breast tenderness (*Citil and Kaya 2020& Dilbaz and Aksan 2021*). Additionally *Askari, Behroozi, Abbaspoor in (2018)* at Iran to assess the effect of mindfulness-based cognitive behavioral therapy on PMS symptoms the supported the effect of a mindfulness based cognitive therapy such as meditation and breathing exercise intervention on reducing the severity of symptoms in the ones with premenstrual syndrome.

Regarding self-care after using electronic booklet regarding nutritional habits the present study result reported that, the majority of female student reported that they eat balanced diet during menses while minority of them stop consuming certain water, juice in the period after menstruation. The current study result in the same line with *Abay & Kaplan, (2021)* who conducted study entitled "Evaluation of the effectiveness of a training program for coping with PMS symptoms based on IMB model in university students" and mentioned that, there are improvement in nutritional habits after intervention less than half of the student eat healthy diet pretest become three quarters of them posttest.

Moreover, *Barry, Sonnevile, and Leung, (2021)* who reported that, eating disorders are common in university students. Therefore, nutrition programs can be an effective way to introduce healthy eating habits to them.

Regarding self-care after using electronic booklet regarding using medication the current study result showed that, most of studied students didn't take any medications before menses while the majority of them didn't take these drugs under the supervision of a

doctor. This result disagrees with **Armour et al., (2021)** who applied a study entitled "Using an online intervention to improve menstrual health literacy and self-management in young women" and mentioned that, most of the participants using analgesics, more than two thirds of the participants visited the doctor during the period. The differences between the two studies were due to the different cultures and demographic characteristics or methods of intervention application.

Concerning self-care after using an electronic booklet regarding activity and exercises, the current study result showed that, more than one tenth of female students didn't do any exercise during premenstrual syndrome, also more than one tenth of them didn't have a shower during premenstrual syndrome. The current study supported by **Abay & Kaplan, (2021)** who mentioned that, one fifth of the female students do regular exercise pretest and become more than half doing regular exercise posttest. This may be due to an effective continuing education program regarding PMS.

Regarding total habits (management) before and after using an electronic booklet, the present study result showed that, more than one third of female students participate in healthy habits before using an electronic booklet and become the majority of female students participate in healthy habits after using an electronic booklet. This result is in accordance with **Abay & Kaplan, (2021)** who mentioned that, although habits are hard to break, especially at young ages, the training program helped female university students adopt behaviors to cope with PMS symptoms in many aspects. The similarity between the studied samples may be due to the importance of training pregnant women during an educational program about PMS.

From the researcher's point of view, authorities should take research evidence into account when developing guides and standardized programs. Moreover, universities should establish counseling centers to help students develop strategies and adopt behaviors to cope with PMS symptoms.

This result answered the research hypothesis of the study, which it evidenced that, improve self-care among university students regarding premenstrual syndrome after application of an Electronic Booklet.

Conclusion:

The findings of the present study supported the research hypothesis as regards the effect of electronic booklet use on self-care for premenstrual syndrome among students in Banha University, there are positive effects of electronic booklet use on self-care among university students regarding premenstrual physical, psychological, and emotional syndrome.

Recommendations

- Encouraging the female students to adopt a healthy life style would be essential for those who have troublesome menses with PMS through work shop / porchures.
- Health education programs regarding PMS and other menstrual problems could be included in the curriculum of secondary schools to bring down the prevalence of such problems.

Further study

- A similar study can be undertaken on a sample of populations and wider geographic scope to emphasize the conclusion.
- A similar study may be replicated with a control group.

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