

## The knowledge and health seeking behavior regarding menstrual health among nursing students: an intervention study.

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### Abstract

**Background:** In many poor nations, menstruation and the issues it causes are taboo topics. As a result, many young girls lack sufficient and crucial knowledge about menstruation health. **Aim of the study:** This study aimed to evaluate the effectiveness of educational intervention on knowledge and health-seeking behavior regarding menstrual health among nursing students. **Subjects and Methods: Research design:** Quasi-experimental study design was used. **Setting:** The study was conducted in the technical institute of nursing at Zagazig University, El-Sharkia governorate, Egypt. **Subjects:** A multistage cluster random sample of 116 female nursing students was used. **Tools of data collection:** Three tools were used for data collection. Tool (I): A structured interviewing questionnaire. Tool (II): Knowledge Assessment Tool. Tool (III): menstrual problems and health-seeking behavior assessment tool. **Results:** Following the implementation of the educational intervention, there was a highly significant statistical difference in the overall knowledge of students regarding menstrual health. Furthermore, there was a highly statistically significant difference in the overall health-seeking behavior of students with reference to menstrual health. **Conclusion:** There was a highly statistically significant correlation between total knowledge and total health-seeking behavior about menstrual health at pre- and post-intervention. **Recommendations:** Create an instructional program and a thorough pamphlet for all schoolchildren regarding menstruation health and adolescents before menarche. Increased efforts are required on the part of the health care system, educational institutions, and the public media to assist women in closing the awareness gap on menstrual health and adjusting to irregularities.

**Key words:** Health seeking behaviour, Knowledge, Menstrual health, Nursing students.

### Introduction:

The menstrual cycle, which occurs naturally in females during adolescence, is a monthly cycle that allows for fertilization and conception. It begins at menarche, or the first menstrual bleed, and ends at menopause. The average cycle lasts 28 days, beginning on the first day of menstruation and terminating the day before the next bleeding onset. However, the duration of healthy cycles varies from 21 days (if shorter, a possible diagnosis of polymenorrhoea) to 37 days (possible diagnostic of oligomenorrhoea) (Critchley et al., 2020).

Menstrual health is defined as whole well-being about the menstrual cycle, including mental, physical, and social aspects. This definition captures the complexity of menstruation and the

various ways that an individual's capacity to appropriately manage their menstrual health might impact their life. Ensuring access to menstruation products is not the only factor in achieving good menstrual health; people also need to have the tools necessary to engage fully in all aspects of life during their menstrual cycle. A few examples of these resources would be knowledge, materials, hygienic settings, sensitive educators and managers, and easily accessible medical professionals with training in menstrual health issues (Sommer et al., 2017).

Menstrual health treatment is essential to achieving the sustainable development goals by 2030 since many of these human rights have influenced the development framework

of these objectives, which include gender equality, water and sanitation, education, health and poverty (Mishra et al, 2020).

Improving menstrual health is essential to enhancing population health worldwide and fulfilling the sustainable development goals and advancing human rights and gender equality (UN Women, 2019). Despite the fact that knowledge of menstruation-related issues has grown over the past ten years, more multi-sectoral funding is required to fully address the needs of all menstruates (Bobel, 2019).

The idea, conduct, and behaviors of individuals who feel ill, exhibit signs of specific diseases (even if they are not painful), perceive a possible risk of illness, and seek medical attention are collectively referred to as engaging in health-seeking activity (Huang et al., 2019). The ability to make educated decisions, ease discomfort, and maintain bodily autonomy is enhanced for individuals who menstruate when they possess practical knowledge about hygiene, nutrition, and self-care (Hennegan et al., 2021).

Furthermore truthful information helps dispel myths and social stigmas that jeopardize menstrual health (Bobel, 2019). In order to promote mental health and enable individuals who go through a menstrual cycle to distinguish between changes that are normal and those that may need medical treatment, this information needs to be made available as soon as possible.

#### **Significance of the Study:**

In a lot of undeveloped nations, talking about menstruation and the related issues is frowned upon. Consequently, a lot of young girls lack sufficient and crucial knowledge on menstruation health. There is a significant lack of knowledge among teenage girls about menstruation (Khatoun et al., 2023). Despite

growing social and political pressure to enhance reproductive health education, there are still misconceptions about reproductive and fertility health as well as a reluctance to seek medical attention for certain health issues (UN Women, 2019).

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

The aim of the study was to evaluate the effectiveness of educational intervention on knowledge and health seeking behavior regarding menstrual health among nursing students.

#### **Research hypothesis:**

Knowledge and health seeking behavior regarding menstrual health significantly improved after implementation of the educational intervention among nursing students.

#### **Subjects and Methods:**

##### **Research design:**

Quasi experimental study design was adopted to carry out this study.

##### **Study setting:**

The study was carried out at the Zagazig University's Technical Institute of Nursing in the El-Sharkia Governorate in Egypt. It was completed during a six-month period, starting on October 1, 2023, and ending on March 31, 2024.

##### **Subjects:**

A multistage cluster random sample was employed to gather data from female nursing institute students enrolled in the program, specifically those in the first and second academic grades. The study's total sample size was 116.

##### **Tools of data collection:**

To achieve the study's objectives, three instruments were employed to gather the requisite data:

**Tool (I): A Structured Interviewing Questionnaire:** it was designed by the researchers after reviewing the related literature. It was included two parts:

Part (I): Demographic characteristics (8 items) Part (II): Menstrual history (6 items)

**Tool (II): knowledge assessment tool:** The researcher created an Arabic self-administered questionnaire, drawing inspiration from prior studies in the field (**Mansour et al., 2020**). It was aimed to evaluate students' knowledge about menstrual health (24 items).

#### **Scoring system:**

Responses to those questions received a score of 1 for correct answers and 0 for incorrect answers. The grading scheme was as follows: excellent when the overall score was greater than 75%, average when it was between 50 and 75%, and poor when it was less than 50%

**Tool (III): menstrual problems and health seeking behavior assessment tool.** It was adapted from (**Igbokwe & John-Akinola, 2021**) and adjusted by the investigator. Through everyday actions and lifestyle choices, it was intended to assess health-seeking behavior during menstruation. (22 items).

#### **Scoring system:**

Answers to such questions were graded on a scale of 1 for correct answers and 0 for incorrect answers. The following was the scoring methodology. If the entire behavior score is up to 60%, it will be deemed healthy behavior; if less than 60% it will be deemed unhealthy behavior.

#### **Content validity and reliability:**

Alpha Cronbach was used to evaluate the instruments' content validity by a panel of three experts from Zagazig University's Faculty of Nursing. Tool (II) reliability was 0.778, while Tool (III) reliability was 0.73.

#### **Field work:**

Through self-administered questionnaires, data were gathered. The phases that were chosen were assessment, planning, implementation, and evaluation in

order to achieve the study's goal. These stages took place over the course of six months, from October 1, 2023, to March 31, 2024.

The study's objectives were met by implementing the following phases: planning, assessment, implementation, and evaluation.

#### **1- Assessment phase:**

This phase involved conducting the initial interviews with the studied students in order to gather baseline data. The interviews took place in the technical institute of nursing lecture hall at Zagazig University during the students' free time. The researcher greeted each student and provided an explanation of the study's objectives, duration, and instructions for completing the questionnaire. They are aware that their participation is completely voluntary and that they can end it whenever they choose. All students gave their spoken consent. A self-administered questionnaire was distributed to each student in order to evaluate their knowledge, health-seeking behavior, and demographic variables related to menstrual health. In order to prevent being influenced by others, they were instructed to do it on their own. Participation in the study was entirely voluntary. The self-administered questionnaires were completed by the studied students on average in between thirty and sixty minutes.

#### **2-Planning phase:**

The researcher created the intervention program and its contents based on the findings of the assessment phase and a pertinent literature study. The pretest questions sheet was used to gauge the students' knowledge and behavior around menstrual health seeking. The investigator produced corroborating documentation:

#### **Instructions Booklet:**

The researcher created it in English, had it translated into Arabic, had a scientific committee evaluate its contents, and it was then scheduled to be given to students as a manual for

self-study to improve their understanding of menstrual health and health-seeking behavior.

The researcher's goal was to make teaching easier before implementing program sessions as a means of instruction. In order to facilitate their attendance at the session, the students were divided into two groups, one for each academic grade. The distribution of the students was based on their availability and free time (51, 65 students from 1st and 2nd academic grade). Over the course of eighteen weeks, the material was broken down into five interactive sessions, lasting between thirty and sixty minutes for each group of students.

### **3-Implementation phase:**

It took sixteen weeks to implement the educational sessions. Moreover, there were eight weeks designated for students who did not show up at the appointed time for every academic grade. Data were gathered three times every week. Ten subgroups of the students were created, four of which were from the first academic grade and six from the second. There are ten to twelve pupils in each of them. A set number of pupils is taken by each group in order to streamline the explanation process. This allocation based on their leisure time, theoretical lectures, and practical parts will make it easier for them to attend the sessions and complete their homework.

These classes were held in Zagazig these classes were held in Zagazig University's Technical Institute of Nursing's instructional lecture hall. There were five scheduled sessions covering the material. Ten groups-three days per week for each group complete the first, second, and third sessions over the course of ten weeks. Each group has its fourth session one month following the third. Later on, the fourth and fifth sessions were finished. Every session lasted between thirty and sixty minutes, during which a power point presentation was completed and bolstered by visual aids

such as videos and illustrations. This was followed by a group discussion. In order to help students understand and grab their attention, simple explanation language, recent teaching strategies, media, instructional booklets, and pencils and notes were given to the students. All of the most recent information about the menstrual cycle is included in the informative brochure. To ensure that the students understood the material and to clarify any unclear points, feedback was given at the conclusion of each session and at the start of the next one.

**The content of session was as following:**

#### **First session:**

It involved: understanding of menstrual health, such as the definition, phases, and hormonal regulation of the menstrual cycle, as well as the anatomy of the female reproductive system. Also, identifying the day of ovulation, ovulatory signs, and menstrual symptoms was discussed.

#### **Second session:**

It included: methods of menstrual monitoring, menstrual monitoring assessment chart and importance of monitoring.

#### **Third session was included:**

Menstrual disorders and health seeking behavior during menstruation e.g. (diet, exercise, sleeping, bathing / hygiene and pain control)

#### **Fourth session was included:**

Filling out menstrual monitoring assessment chart.

#### **Fifth session was included:**

Students filled pretest at first session before explanation while posttest filled after end of all sessions.

Group	Time of session
G1	Week 1 - Week 7
G2	Week 2- Week 8
G3	Week 3 - Week 9
G4	Week 4 -Week 10
G5	Week 5 - Week 11

G6	Week 6 - Week 12
G7	Week 7 - Week 13
G8	Week 8 - Week 14
G9	Week 9 - Week 15
G10	Week 10 - Week 16
From -17 to 24 weeks For absent students	

The remaining 6 weeks spent in collection off missed data through meeting of students who were absent from previous sessions to accomplish the whole process of evaluation.

#### 4- Evaluation phase:

The influence of the educational sessions on improving student's knowledge and health seeking behavior about menstrual health monitoring was achieved through the researcher asked the students to apply post-test at the end of 3<sup>rd</sup> session by using the same format used in pretest to compare their knowledge and health seeking behavior before and after the educational sessions. Follow up was done by filling out menstrual monitoring assessment chart for 2 months after posttest.

#### Pilot study:

A pilot research was carried out on a sample of 10% of the sample total—12 students who met the predetermined criteria. To ensure the tool's clarity and comprehensiveness, those were excluded from the overall sample size.

#### Administration and ethical consideration:

- By submitting an official letter to the relevant authorities in the study setting and outlining the goal of the investigation, the manager of Zagazig University's Technical Institute of Nursing granted official approval for data collecting.

- The study was affirmed by the Zagazig University- Faculty of nursing ethical committee with the ethical code M.D.ZU.NUR/178/9/5/2023.

- Following oral consent, nursing students were enrolled voluntarily. The participant's anonymity was protected.

- Confidentiality of all information gathered was guaranteed, and the study approach had no negative effects on the nursing students who are taking part.

- Nursing students were advised that the information gathered would only be used for research and that they might withdraw from the study at any moment, for any reason.

#### Statistical analysis:

The Statistical Package for Social Science (SPSS) version 25 and the Microsoft Excel Program were used to perform the statistical analysis of the data. For all categorical data, frequencies and percentages were used in the presentation of the data, while for quantitative data, the arithmetic mean (X) and standard deviation (SD) were utilized. To compare qualitative variables, the chi square test (X<sup>2</sup>) was employed. The paired t test was used to evaluate the group differences over the two visits. Furthermore, the R-test was employed to determine the association among the variables under investigation.

#### Results:

**Table (1):** Demographic characteristics of studied students (n116): showed that, 37.1% of the studied students were aged 19 years old with mean age 18.92±0.793 years. Also, 56% of them at the second academic year, More ever 81% of the studied students' residence from rural areas.

**Table (2):** menstrual history of studied students (n=116) revealed that, 81.0% of the studied students had their age of menarche between 11 to 14 years old with a mean of 13.53±1.21 years. Also 78.4 % of them had regular menstruation, While 78.4 % of them had menstruation every 21 to 35 days. As regards duration of menstruation

mean  $\pm$  SD was  $5.14 \pm 1.14$  days. Furthermore 44.8% of the studied students used 3 to 4 pads per day and 76.7% of them have no offensive odor during menstruation

**Table (3):** reveals that, there was a statistical significant improvement in all items of the studied students' knowledge about menstruation after implementing educational intervention. With a highly statistically significant difference in the majority of items between pre /post intervention ( $P < 0.001$ ). As evidence (13.8% and 17.2% respectively) of studied students had correct knowledge about meaning of menstruation and danger signs of menstrual blood pre implementing the educational intervention, while improved to (82.8% and 87.9% respectively) after implementing the educational intervention.

**Figure (1):** shows that, 19.8% of the studied students had good level of knowledge at pre intervention and this percentage increased to 72.4% at post intervention.

**Table (4):** detects that, 63.8% of the studied students asked help for menstrual disorder, from them 48.6% suffered from premenstrual syndrome, 36.5% received non-medical home remedies, and 51.0% took herbal medication. In addition 77.6% of the studied students didn't take any medication to postpone period.

**Table (5A):** shows that there was a marked improvement in the above items of studied students health seeking behavior regarding menstrual health with a highly statistically significant difference ( $P < 0.001$ ). As evidence, (34.5% and 25.0% respectively) of the studied students had correct response regarding practicing exercise during menstruation and allowed exercise respectively at pre intervention which improved to (93.1% and 81.4% respectively) at post intervention.

**Table (5B):** shows there was a marked improvement in the above items of studied students health seeking behavior regarding menstrual health with a highly statistically significant difference ( $P < 0.001$ ). As evidence, (19.8% and 34.5% respectively) of studied students had healthy behavior about number of times of changing absorbent materials / day and number of sleeping hours /day respectively at pre intervention. The percentage improved to (87.1% and 56.9% respectively) at post intervention.

**Figure (2):** It reveals that total health-seeking behavior of studied students regarding menstrual problems improved from (24.1%) at pre-implementing the educational intervention to (91.4%) after implementing the educational intervention.

**Table (6):** illustrates that there was a high statistically significant positive correlation between total knowledge and total health seeking behavior regarding menstrual health among the studied students at pre and post implementation of the educational intervention ( $P < 0.001$ ).

**Table (7):** obvious that there was a highly statistically significant relation between total health seeking behavior regarding menstrual health and demographic characteristics as age and academic year at pre intervention phase ( $P \leq 0.001$ ). Additionally, there was no statistically significant relationship found between residence at the pre-intervention phase ( $P > 0.05$ ) and total health seeking behavior related to menstrual problems and demographic characteristics (age, academic year, and residence) at the post-intervention phase ( $P > 0.05$ ).

#### Discussion:

Approximately 26% of the world's population is of reproductive age, and menstruation is a normal aspect of the reproductive cycle for women. Many girls in low- and middle-income countries are ill-prepared for

puberty, have misunderstandings about menstruation, and are unclear of where and when to get support when they reach puberty. Because the adults in their immediate environment—parents, teachers, and other adults—are uneducated and won't talk to them about topics related to sex, reproduction, and menstruation, which are frequently perceived as being filled with filthy, contaminated, and disgusting ideas (Sakhi et al., 2023). In terms of demographics (age and residency), the current study found that the majority of the students were from rural areas, with over one-third of them being above the age of 19, and their mean age being  $18.92 \pm 0.793$  years.

These results agreed with (Abreu-Sánchez, et al., 2020) in Spain who found that mean age of studied students was  $20.63 \pm 1.78$  years old. This is congruent with (Theresia, Samaria & Doralita, 2022), study in Indonesia, they discovered that one-third of the participants were 19 years old, with a mean age of  $19.25 \pm 1.21$ . More ever agreed with (Said & Mettwaly, 2017) study at Benha University, Egypt about improving life style among nursing students regarding menstrual disorders through an educational training program who found that thirds of the studied students from rural areas.

In addition to the study agreed with (Belayneh & Mekuriaw, 2019) study in southern Ethiopia who found that more than two thirds were living in rural areas. It also agreed with (Mittiku et al, 2022), study in Ethiopia, who found that nearly two thirds of students are normal weight.

On the other hand, this result disagreed with (Yang & Chen, 2023) study in Uganda who found that mean age was  $13.95 \pm 0.79$  years old, Also in contrast to study done by (Michael, et al., 2020) in Pakistan who found that mean age of the respondents was 15

years. Majority of the respondents had the age of 17 years.

Also in the contrary with (Abreu-Sánchez et al., 2022) study in Spain who found that the majority of studied students were from urban areas. The difference may be due to variation in socio demographic characteristics, study setting and sample.

Concerning the menstrual history of the students under study, the results of the current study showed that over two-thirds of the students used three to four pads per day, over three-quarters had regular menstruation, over three-quarters had menstruation every 21 to 35 days, and over one-third had a menstrual period lasting five days with a mean duration of  $5.14 \pm 1.141$  days. Nearly three-quarters of the students had no offensive odor during menstruation.

These results in harmony with (Theresia, Samaria & Doralita, 2022) study in Andonesia, who discovered that the majority of students experienced regular menstruation, lasting between three and seven days with an average duration of  $5.48 \pm 1.715$  days, and that the majority of students had menarche between the ages of twelve and fourteen, with a mean age at menarche of  $12.8 \pm 1.341$  years..

Also in the same line with (Belayneh & Mekuriaw, 2019) study in southern Ethiopia, who found that the majority of students had menarche at the age of 12-15 years old. More ever consistent with (Igbokwe & John-Akinola, 2021) study in Nigeria, who found that two thirds of students had menstruation every 24-38 days.

On the contrary, a study done by Alshaikh, El-esrigy & Al-Kelany, 2020 in Menoufia, Egypt, which mentioned that two thirds of studied students had irregular menstruation, It also in contrast to (Gustina & Djannah, 2017) study in Yogyakarta, Indonesia, who found that

the majority of students had menstruation lasting more than 7 days ,The difference may be due to variation of anthropometric measures of study sample .

Dissimilarly **Kpodo et al. (2022)** study in Ghana, Who found that less than half of students had menstruation every 21-35 days, the difference may be due to variation in socio demographic characteristics of the study sample.

Following the implementation of the educational intervention, the majority of nursing students in the current study correctly answered questions about the physiology of menstruation, average age at menarche, frequency of menstrual cycle, and average duration of menstrual flow. This result agreed with **(Ahmed, Mohammed, & Ahmed, 2021)** study in Sudan about Effect of Educational Program on Menstrual Health: An Intervention Study among School Girls in Sudan, which found that the majority of students answered that question correctly after implementation of the educational program.

In relation to organ does the menstrual blood expelled from nearly four fifth of the students answered correctly at pre intervention similar to **(Michael, et al.,2020)** study in Pakistan, which found that nearly two thirds of students answered correctly .

In relation to physiology of menstruation the current study revealed that more than four fifth of students answered correctly at pretest in similarity with **(Mouna et al., 2019)** study in Bengaluru, India who found that the majority of students answered correctly.

On the other hand, regarding to symptoms of menstruation the present study indicated that less than one third of the students answered correctly at pre intervention compared to all number of studied students answered correctly at post

intervention, In contrary with **(Ibrahim & Sabar Ismail, 2019)** study in Egypt who found that no students knew symptoms of menstruation at pre intervention and only half of them answered correctly at post intervention.

Also the current study disagreed with **(Kpodo et al., 2022)** study in Ghana who found that less than half of students answered about organ that menstrual blood expelled from correctly .

The study results demonstrated that, the total score of students' knowledge regarding menstrual health throughout pre and post intervention was highly statistically significant difference. In agreement with the present study **(Theresia, Samaria & Doralita, 2022)** study in Indonesia who mentioned that there was a highly statistically significant difference in the mean score of the total knowledge pre and post program application.

In the same stream **(Arasteh et al., 2019)** study in Iran who showed that after intervention there were a highly statistically significant difference in the mean score of total knowledge at pre and post intervention.

The present results displayed that nearly two thirds of the studied students had poor level of knowledge regarding menstruation at pre intervention, meanwhile nearly three quarters of the studied students had good level of knowledge at post intervention. this reflects the importance of the educational intervention which increased students' knowledge in promoting menstrual health.

Similarly, **Parasuraman et al., (2022)** study in India, reported that two thirds of studied students had poor level of level of knowledge pre the educational intervention compared to more than three quarters of them had good level of knowledge post educational intervention.



More ever, the present study agreed with **(Dwivedi et al., 2020)** study in India which showed that one fifths of the studied students had good level of knowledge pre educational intervention compared to more than half of the studied students had good level of knowledge post educational intervention.

In the same stream with **(Aburshaid et al., 2017)** study in Saudi Arabia, found that more than three fourths of students had poor level of knowledge at pre intervention compared to the majority of students had good level of knowledge at post intervention.

The present study showed that more than three fifth of students asked help for menstrual disorders, more than two fifth of them suffered from dysmenorrhea, more than half of students received help at pharmacy, more than half of students took herbal medication to relieve pain and more than three quarters of students didn't take medications to postpone period.it agreed with **(Igbokwe & John-Akinola, 2021)** study in Nigeria ,who found that more than one third of students suffered from dysmenorrhea,

It also agreed with **(Gustina & Djannah, 2017)** study in Indonesia, who found that more than one third of girls taking herbal medications to treat menstrual pain. On the other hand, it disagreed with **(Siddique et al., 2021)** Study in Pakistan who found that nearly half of the study sample suffered from menorrhagia.

In relation to Using sanitary pads nearly half of students answered correctly at pre intervention , nearly three quarters answered type of absorbent material correctly at pre intervention, more than two fifth of students answered handling used absorbent material correctly at pre intervention and nearly three quarters of them answered place for disposing used material correctly at pre intervention .

Similarly it agrees with **(Michael et al., 2020)** study in Pakistan who found that more than three quarters used sanitary pads , more than two thirds used commercially sanitary pads, more than two thirds discarded pad s after using and three quarters discarded it at dust bin.

It disagreed with **(Chauhan et al., 2021)** study in India who found that less than one fifth of girls suffered from menstrual problems.

The current study revealed that at post intervention more than four fifth of students answered bathing during menstruation correctly, nearly four fifth answered material for cleaning genitalia correctly at posttest , more than four fifth answered number of times of changing absorbent material correctly at posttest and the majority of students answered place for disposing used material correctly at posttest .

It disagreed with **(Dahal & Acharya, 2019)** study in Nepal Who found that nearly one quarter of students answered bathing during menstruation correctly at posttest, nearly one fifth answered material for cleaning genitalia correctly at posttest, almost half of students answered number of times of changing absorbent material correctly at posttest and the majority students answered place for disposing used material correctly at posttest the difference may be due to variation in social and religious factors .

The current study revealed that there was no statistically significant relation between total knowledge and demographic characteristic ( $P>0.05$ ) in contrast to **(Sakhi et al., 2023)** study in Afghanistan who found that there was a statistically significant relation between demographic characteristics (age, academic year) and level of knowledge about menstruation ( $P\leq 0.005$ ).

The current study revealed that there was a highly statistically

significant relation between total knowledge and total health seeking behavior ( $p < 0.001$ ) it agrees with (Siabani, Charehjou & Babakhani, 2018) study in Iran who found that A statistically significant correlation ( $p < 0.001$ ) was seen between the pattern of health-seeking behavior for menstrual disorders and the knowledge of menstrual disorders.

#### Conclusion:

The results of this study showed that, both before and after the educational intervention was implemented, there was a highly statistically significant positive correlation between students' knowledge and their behavior of seeking health care related to menstruation health ( $p \leq 0.001$ ).

#### Recommendations:

Based on findings, the study recommended:

- Provide a complete handbook and instructional program regarding menstrual health and puberty to all school students before their menarche.
- Create educational programs on menstrual health and abnormalities for all students (medical and non-medical faculties and institutes) in order to enhance their understanding of menstruation, encourage them to seek health information and help them maintain a healthy lifestyle.
- More needs to be done by obstetric, medical, community, educational institutions, and the media in general to support women in closing the awareness gap about menstrual health and how to deal with irregularities.

**Table (1): frequency distribution of studied students regarding their demographic characteristics (n=116).**

Demographic characteristics	No	%
Age		
18	41	35.3
19	43	37.1
20	32	27.6
Mean $\pm$ SD	<b>18.92<math>\pm</math>0.793</b>	
Academic year		
First	51	44.0
Second	65	56.0
Residence		
Rural	94	81.0
Urban	22	19.0

**Table (2): frequency distribution of studied students regarding their menstrual history (n=116).**

	No	%
<b>Age of menarche</b>		
$\leq 10$	1	0.9
11-14	94	81.0
$> 14$	21	18.1
Mean $\pm$ SD	13.53 $\pm$ 1.21	
<b>Regularity of menstruation</b>		
Regular	91	78.4
Irregular	25	21.6

Frequency of menstruation		
<21	22	19
21-35	91	78.4
>35	3	2.6
Duration of menstruation		
3	5	4.3
4	31	26.7
5	41	35.3
6	24	20.7
7	13	11.2
8	1	0.9
9	1	0.9
Mean $\pm$ SD	5.14 $\pm$ 1.141	
Number of pads/day		
<3	29	25.0
3-4	52	44.8
>4	35	30.2
Presence of offensive Odor		
Yes	27	23.3
No	89	76.7

Table (3): frequency distribution of studied students regarding their knowledge about menstruation pre and post intervention (n=116).

Items	Knowledge								X <sup>2</sup>	P-value
	Pre				Post					
	Correct No	%	Incorrect No	%	Correct No	%	Incorrect No	%		
Anatomy of female internal genitalia	30	25.9	86	74.1	102	87.9	14	12.1	91.11	.000
Anatomy of female external genitalia	24	20.7	92	79.3	94	81.0	22	19.0	84.50	.000
Meaning of menstrual cycle	16	13.8	100	86.2	96	82.8	20	17.2	110.47	.000
Physiology of menstruation	104	89.7	12	10.3	114	98.3	2	1.7	7.60	.006
Average age at menarche	100	86.2	16	13.8	114	98.3	2	1.7	6.33	.012
Organ does the menstrual blood expelled from	96	82.8	20	17.2	111	95.7	5	4.3	3.82	.050
Frequency of menstrual cycle	45	38.8	71	61.2	103	88.8	13	11.2	62.77	.000
Average duration of menstruation flow	28	24.1	88	75.9	106	91.4	10	8.6	107.48	.000
Phases of ovarian cycle	33	28.4	83	71.6	104	89.7	12	10.3	89.85	.000
Phases of uterine cycle	45	38.8	71	61.2	101	87.1	15	12.9	57.94	.000
Time of ovulation	52	44.8	64	55.2	108	93.1	8	6.9	63.15	.000
Symptoms of ovulation	41	35.3	75	64.7	100	86.2	16	13.8	62.94	.000
Symptoms of menstruation	35	30.2	81	69.8	116	100.0	0	0.0	124.45	.000
Meaning of premenstrual tension syndrome	22	19.0	94	81.0	101	87.1	15	12.9	107.99	.000
Methods of monitoring menstrual cycle	42	36.2	74	63.8	102	87.9	14	12.1	65.90	.000
Importance of monitoring menstrual cycle	48	41.4	68	58.6	100	86.2	16	13.8	50.46	.000
Optimal method used for cleaning genitalia	31	26.7	85	73.3	107	92.2	9	7.8	103.30	.000
Precaution with pad use and removal	29	25.0	87	75.0	108	93.1	8	6.9	111.24	.000
Danger signs of menstrual blood	20	17.2	96	82.8	102	87.9	14	12.1	116.24	.000

<b>Meaning of menstrual toxic shock syndrome</b>	22	19.0	94	81.0	93	80.2	23	19.8	86.92	.000
<b>Taking more nutritious diet during menstruation</b>	84	72.4	32	27.6	110	94.8	6	5.2	21.27	.000

\*\* highly statistically significance  $p < 0.001$

\*statistically significance  $p < 0.05$

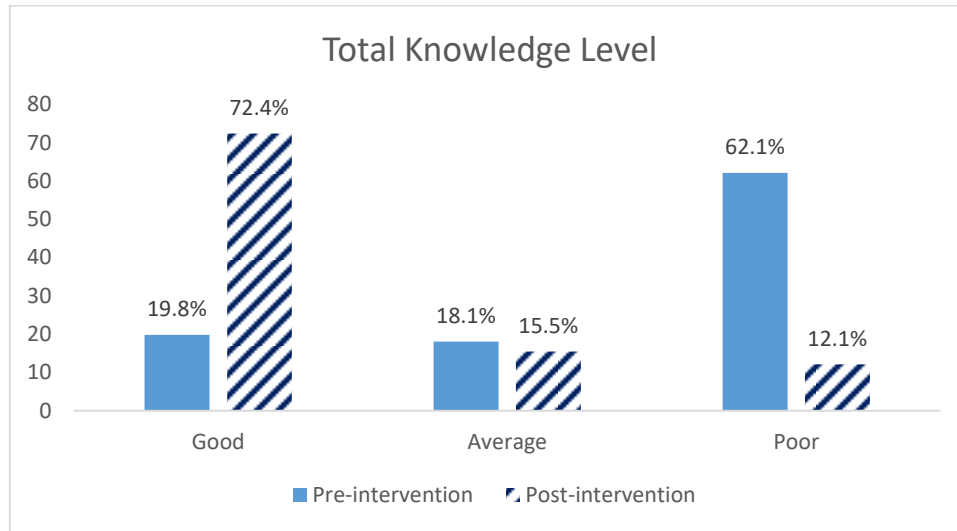


Figure (1): Percentage distribution of studied students regarding their total knowledge at pre and post intervention (n=116).

Table (4): frequency distribution of studied students regarding their health seeking behavior regarding menstrual problems (n=116).

Health seeking	No	%
<b>Seeking help for menstrual disorder</b>		
Yes	74	63.8
No	42	36.2
<b>If yes ,type of menstrual disorder (n=74)</b>		
Dysmenorrhea	32	43.2
Polymenorrhea	12	16.2
Menorrhagia	10	13.5
Metrorrhagia	10	13.5
Premenstrual syndrome.	36	48.6
<b>Place of receiving help (n=74)</b>		
Hospital	9	12.2
Pharmacy	38	51.4
Non-medical home remedies.	27	36.5
<b>Treatment used (n=74)</b>		
Pain relief	31	42
Hormonal drug	5	7
Herbal medication	38	51
<b>Taking Medications to postpone period</b>		
Yes	26	22.4
No	90	77.6

Table (5A): Health seeking behavior regarding menstrual health among studied students (n=116).

Health seeking behavior	Pre		Post		X <sup>2</sup>	P-value
	No	%	No	%		
<b>Coping strategies during menstruation</b>						
Taking medications and a lot of water	4	3.4	1	.9	1.85	.396
Drink hot liquid	84	72.4	87	75.0		
Sleep & rest	28	24.1	28	24.1		
<b>Eating habits during menstruation</b>						
Incorrect	40	34.5	17	14.7	12.30	.000**
Correct	76	65.5	99	85.3		
<b>The amount of food taken during menstruation</b>						
Incorrect	65	56.0	13	11.2	52.22	.000**
Correct	51	44.0	103	88.8		
<b>Food you avoid during menstruation</b>						
Incorrect	51	44.0	22	19.0	16.81	.000**
Correct	65	56.0	94	81.0		
<b>Increasing fluids during menstruation</b>						
Incorrect	44	37.9	6	5.2	36.81	.000**
Correct	72	62.1	110	94.8		
<b>Practicing exercise during menstruation</b>						
In correct	76	65.5	8	6.9	86.29	.000**
Correct	40	34.5	108	93.1		
<b>If yes , duration of exercise</b>						
Incorrect	N=40	62.5	N=108	18.5	26.68	.000**
Correct	15.0	37.5	88.0	81.5		
<b>Allowed exercise (n=40)</b>						
Incorrect	N=40	75.0	N=108	18.6	43.43	.000**
Correct	10.0	25.0	83.0	81.4		

\*\* highly statistically significance  $p < 0.001$

Table (5B): Health seeking behavior regarding menstrual health among studied students (n=116).

Items	Pre		Post		X <sup>2</sup>	P-value
	N	%	N	%		
<b>Taking bath during menstruation</b>						
Incorrect	56	48.3	14	12.1	36.08	.000**
Correct	60	51.7	102	87.9		
<b>Clean the genitalia</b>						
Incorrect	56	48.3	3	2.6	63.84	.000**
Correct	60	51.7	113	97.4		
<b>If yes, material for cleaning (n=60)</b>						
Incorrect	(n=60)	46.7	(n=113)	20.4	15.22	.000**
Correct	32	53.3	92	79.6		
<b>Using sanitary pad</b>						
Incorrect	62	53.4	7	6.0	62.39	.000**

Correct	54	46.6	109	94.0		
<b>Type of Absorbent material used</b>						
Incorrect	32	27.6	10	8.6	14.07	.000**
Correct	84	72.4	106	91.4		
<b>Number of times of changing absorbent material</b>						
Incorrect	93	80.2	15	12.9	105.39	.000**
Correct	23	19.8	101	87.1		
<b>Handle the used absorbent material</b>						
Incorrect	66	56.9	13	11.2	53.91	.000**
Correct	50	43.1	103	88.8		
<b>Where dispose of used material</b>						
Incorrect	32	27.6	5	4.3	23.44	.000**
Correct	84	72.4	111	95.7		
<b>Number of sleeping hours</b>						
Incorrect	76	65.5	50	43.1	11.74	.001**
Correct	40	34.5	66	56.9		

\*\* highly statistically significance  $p < 0.001$

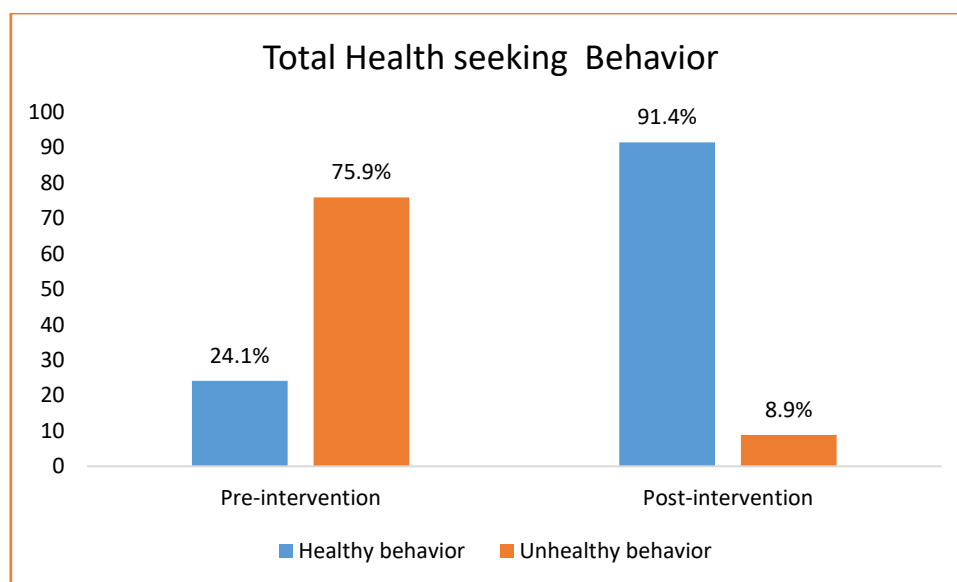


Figure (2) Percentage distribution of studied students total health seeking behavior regarding menstrual problems at pre and post intervention (n=116).

Table (6): correlation between total knowledge and total health seeking behavior regarding menstrual problems among studied students' pre and post intervention

Total Knowledge	Total Health seeking behavior								X <sup>2</sup>	P-value		
	Pre				X <sup>2</sup>	P-value	Post					
	Unhealthy (n=88)		Healthy (n=28)				Unhealthy (n=10)				Healthy (n=106)	
	No	%	No	%	No	%	No	%				
Poor	68	77.3	4	14.3	45.66	.000**	5	50.0	9	8.5	18.67	.000**
Average	14	15.9	7	25.0			3	30.0	15	14.2		
Good	6	6.8	17	60.7			2	20.0	82	77.4		

\*\*highly statistically significance p<0.001

Table (7): Relation between total health seeking behavior regarding menstrual problems and demographic characteristics among studied students' pre and post intervention

Demographic characteristics	Total Health seeking behavior								X <sup>2</sup>	P-value		
	Pre				X <sup>2</sup>	P-value	Post					
	Unhealthy (n=88)		Healthy (n=28)				Unhealthy (n=10)				Healthy (n=106)	
	No	%	No	%	No	%	No	%				
Student age												
18	23	26.1	18	64.3	15.05	.001**	6	60.0	35	33.0	3.25	0.196
19	35	39.8	8	28.6			3	30.0	40	37.7		
20	30	34.1	2	7.1			1	10.0	31	29.2		
Academic year												
First	30	34.1	21	75.0	14.43	.000**	6	60.0	45	42.5	1.14	0.285
Second	58	65.9	7	25.0			4	40.0	61	57.5		
Residence												
Rural	74	84.1	20	71.4	2.216	0.137	10	100.0	84	79.2	2.56	0.11
Urban	14	15.9	8	28.6			0	0.0	22	20.8		

\*\*highly statistically significance p<0.001

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