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A Study to Assess the Effectiveness of a Structured Teaching Plan on Knowledge Regarding Premenstrual Symptoms Among Early Adolescent Girls in Selected Schools of Agra

Tanuja Singh[1], Manisha Gond[1], Himanshi Kukreti[1], Deepanjali Bagla[1], Ankita Maurya[1], Rakesh Kumar Yadav[1], Seema Yadav[2]

Abstract

Premenstrual symptoms are commonly experienced by many women and can have a considerable impact on their everyday functioning and overall well-being. These symptoms involve physical, emotional, and behavioral changes that occur during the luteal phase of the menstrual cycle, with different levels of severity. The present study was conducted to evaluate the effectiveness of a structured teaching plan on knowledge regarding premenstrual symptoms among early adolescent girls in selected schools of Agra. The study aimed to assess knowledge levels before and after the intervention, determine the effectiveness of the teaching programme, and examine the relationship between pretest knowledge scores and selected demographic factors. The study was carried out at St. Vincent's Girls Higher Secondary School, Agra, using a sample of 40 early adolescent girls selected from the accessible population. The findings showed that in the pretest, 15% of participants had poor knowledge, 77.5% had average knowledge, and 7.5% had good knowledge. Following the structured teaching plan, improvement was observed in the posttest, where 7.5% had poor knowledge, 70% had average knowledge, and 22.5% had good knowledge. The posttest mean knowledge score was higher than the pretest score, indicating the effectiveness of the intervention. Statistical analysis using the chi-square test revealed a significant association between awareness of premenstrual symptoms and pretest knowledge scores, whereas other demographic variables did not show any significant association. Overall, the study concluded that the structured teaching plan was effective in enhancing knowledge regarding premenstrual symptoms among early adolescent girls.

Keywords: Premenstrual symptoms, adolescent girls, structured teaching plan, knowledge, health education

***Author for Correspondence**
Seema Yadav
E-mail: seemakishan22@gmail.com

[1]Student, Department of nursing, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India.
[2]Principal, Department of nursing, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India.

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INTRODUCTION

Premenstrual symptoms are defined as noticeable physical and psychological changes that occur during the luteal phase of the menstrual cycle and may lead to distress and reduced daily functioning. These symptoms are generally resolved within a few days after the onset of menstruation [1]. These symptoms are experienced by women across different countries and cultures, with nearly 80% of women reporting at least one emotional or physical symptom before menstruation [2]. The exact cause of premenstrual symptoms remains unclear. However, they are believed to be closely linked to hormonal changes during the menstrual cycle, particularly an imbalance, such as increased

estrogen and decreased progesterone levels. Neurotransmitters, particularly serotonin, also play important roles. Molecular studies suggest that reduced estrogen levels may stimulate the hypothalamus to release norepinephrine, which subsequently lowers the levels of acetylcholine, dopamine, and serotonin. This imbalance can result in symptoms such as fatigue, insomnia, and depression, which are commonly seen in premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) [3].

Typically, premenstrual symptoms appear during the luteal phase, approximately one week before menstruation begins, and disappear shortly after menstruation starts, with no symptoms present during the postmenstrual phase [4, 5]. PMS generally includes mild to moderate physical and emotional symptoms and affects approximately 20% of women. In contrast, PMDD represents a more severe form, affecting approximately 3–8% of women [4–7].

PMDD has been officially classified as a psychiatric disorder in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [8].

Globally, the combined prevalence of PMS among women of reproductive age is estimated to be 47.8% [9]. Premenstrual symptoms can occur at any stage of the reproductive life cycle, from menarche to menopause. Although they may begin during adolescence, they are more commonly reported in women in their 20s and tend to reach peak severity at approximately 35 years of age [10–12].

The most common premenstrual symptoms reported were fatigue (55.2%), general body pain (71.9%), irritability (76.9%), poor concentration, mood swings (75.9%), loss of interest (64%), back pain (77.8%), difficulty in making decisions, short temper (61.9%), abdominal cramps (68.3%), anxiety (65.7%), and headache (53.8%), anger (73%), food craving (55.9%), and uncontrollable anger (55.2%) [13].

NEED OF THE STUDY

Adolescence is an important stage of development, characterized by major physical, emotional, and psychological transformations. The beginning of menstruation is a key biological milestone for adolescent girls. However, many girls experience premenstrual symptoms, a set of emotional, physical, and behavioral changes occurring in the luteal phase of the menstrual cycle, which can severely impact their quality of life, academic performance, and social functioning.

Despite the high prevalence of premenstrual symptoms, they often go unrecognized, undiagnosed, and unmanaged, particularly in adolescent populations. This is due to cultural taboos, a lack of menstrual health education, and limited access to reproductive health resources.

According to the World Health Organization (WHO), over 90% of menstruating individuals experience some form of premenstrual symptoms [14].

The Royal College of Obstetricians and Gynaecologists in the UK reports that 70–90% of adolescent girls suffer from PMS, many with moderate to severe symptoms [15].

In India, a study published in the Journal of Family Medicine and Primary Care found that 78.2% of adolescent girls reported at least one PMS symptom, while only 28% had adequate PMS knowledge [16].

The NFHS-5 shows that only 36% of adolescent girls in India receive menstrual health education in schools, highlighting the gap in awareness and school-based interventions [17].

Regional studies, such as one conducted in Uttar Pradesh, show that 60% of adolescent girls experience moderate to severe PMS, with only 15% seeking assistance [18]. A study in Maharashtra revealed that 73% of schoolgirls reported PMS-related symptoms, but less than 20% recognized them as such [18, 19].

These findings underscore the urgent need for structured health education programs that focus on menstrual health and specifically address premenstrual symptoms. Early identification and intervention can not only reduce discomfort and absenteeism in schools but also promote emotional resilience and self-care among adolescent girls.

Furthermore, the National Adolescent Health Programme (Rashtriya Kishor Swasthya Kaaryakram), under India's Ministry of Health and Family Welfare, emphasizes the importance of adolescent reproductive health education, including menstrual hygiene and premenstrual health. School-based interventions are a strategic way to reach adolescents early and ensure long-term behavioral change [20].

Therefore, this study aimed to assess the prevalence, knowledge, and coping strategies related to premenstrual symptoms among adolescent girls and to evaluate the effectiveness of structured teaching interventions in improving awareness and self-management.

OBJECTIVES

- To determine the level of knowledge about premenstrual symptoms among early adolescent girls before the intervention.
- To assess the level of knowledge about premenstrual symptoms among early adolescent girls after the intervention.
- The effectiveness of the structured teaching plan was measured by comparing the pretest and posttest knowledge scores.
- To examine the relationship between pretest knowledge scores and selected demographic variables.

OPERATIONAL DEFINITIONS

Effectiveness

Effectiveness refers to the ability to achieve the desired or intended results (Oxford Dictionary). This study indicates how well a structured teaching plan enhances the knowledge of adolescent girls about premenstrual symptoms.

Structured Teaching Plan

A structured teaching plan is a carefully organized instructional program that uses appropriate teaching aids to deliver information systematically. In this study, it refers to a planned educational approach designed to provide information on premenstrual symptoms.

Knowledge

Knowledge is defined as information, understanding, and skills acquired through learning and experience (Oxford Dictionary). In the context of this study, it refers to the understanding of premenstrual symptoms obtained through education.

Premenstrual Symptoms

Premenstrual symptoms include a range of physical, emotional, and behavioral changes experienced by many women before menstruation. These symptoms usually begin 1 to 2 weeks prior to menstruation and reduce within a few days after the onset of bleeding. In this study, mood swings, irritability, anxiety, fatigue, breast tenderness, bloating, and headaches were included.

Early Adolescent Girls

According to the WHO, adolescent girls are females aged between 10 and 19 years. In this study, early adolescent girls refer to those in this age group.

Hypothesis

- H_0: There is no significant relationship between the selected demographic variables and pretest knowledge scores.

- *H_1:* There is a significant relationship between selected demographic variables and pretest knowledge scores regarding premenstrual symptoms among adolescent girls.

Delimitations

- The study was limited to early adolescent girls aged 10–19 years.
- It was carried out only in selected schools of Agra.
- The focus of this study was restricted to assessing knowledge and awareness and did not include aspects of management or practice.

Data Collection Procedure

The data collection was carried out systematically as follows:

- Approval was obtained from the relevant authorities prior to conducting the study.
- Participants were informed about the purpose of the study, and their consent was obtained while ensuring confidentiality.
- A pretest was administered using a structured questionnaire to evaluate participants' initial knowledge levels.
- A structured teaching plan was then delivered using suitable teaching methods and audio-visual aids.
- After the intervention, a posttest was conducted using the same questionnaire to assess knowledge improvement.
- All collected data were carefully recorded and securely maintained.

REVIEW OF LITERATURE

Literature review is an essential step in the research process. It involves collecting and examining information related to a particular topic to develop a clear understanding of the existing body of knowledge. A well-written literature review provides background information, highlights what is already known, and explains the importance of the current study.

A literature review also includes an organized examination of scholarly sources on specific subjects. It presents an overview of existing knowledge, helping identify relevant theories, research methods, and gaps that require further investigation.

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In addition, it serves as a critical analysis of previous research, enabling the researcher to place the current problem in context and recognize limitations or weaknesses in earlier studies, thereby justifying the need for further studies.

The literature review is arranged under the following sections:

1. Studies related to the knowledge of premenstrual symptoms among adolescent girls.
2. Studies related to structured teaching plans and their effectiveness.

STUDIES RELATED TO KNOWLEDGE REGARDING PREMENSTRUAL SYMPTOMS AMONG EARLY ADOLESCENT GIRLS

Sharma P.R. et al. (2021) conducted a descriptive cross-sectional study involving 120 adolescent girls in Jaipur to assess the prevalence, awareness, and patterns of premenstrual symptoms. Data was collected using a self-designed questionnaire. The results showed that only 37% of participants had adequate PMS knowledge. The most reported symptoms were abdominal cramps (72%), mood swings (65%), and fatigue (58%). This study highlighted the urgent need for school-based health education programs to enhance awareness among adolescents [21]. Thomas and Priya (2020) conducted a quantitative study on the knowledge and experience of PMS among 200 high school girls in Kerala. The results showed that the majority (68%) had poor knowledge of PMS, and only 15% had ever discussed menstrual issues with a healthcare provider. A significant association was found between maternal education and girls' awareness. The study recommended that mothers and school nurses play a stronger role in reproductive health education [22].

Patil R., Naik M., and Deshpande M. (2019) conducted a cross-sectional study in rural Maharashtra among 150 adolescent girls aimed to assess physical and emotional premenstrual symptoms [23].

Over 75% of the participants experienced symptoms such as back pain, irritability, and food cravings. However, only 28% of the participants recognized these symptoms as part of PMS. It noted a lack of school-based reproductive health interventions and called for structured educational programs [24].

Rijal and Shreshtha (July 2025) conducted a cross-sectional study to identify factors associated with premenstrual symptoms among postgraduate students at the Institute of Science and Technology, Tribhuvan University. Data were collected from female students, and 285 participants were included. The most frequently reported physical symptoms were joint or muscle pain (56.49%), breast tenderness (45.26%), abdominal pain (44.91%), acne flare-ups (40.35%), and fatigue (35.09%). The findings highlight the need for women's health education programs, psychological support, and better access to counselling services in academic settings [25].

Aksha Sharen M.P., Brunda, Palati Sinduja, and R. Priyadarshini (2021) conducted a cross-sectional online survey among college students in Chennai, India, to evaluate awareness and knowledge of premenstrual symptoms. A 16-item questionnaire was developed and distributed to dental students through Google Forms. The commonly reported symptoms, regardless of severity, included skin problems, irritability, fatigue, mood swings, general body aches, reduced academic or work performance, back pain, breast tenderness, weight gain, and swelling. The study also found that 90% of participants were aware of premenstrual symptoms, while 10% lacked awareness, indicating the need for improved educational interventions [26].

Funnell et al. (January 2025) conducted a descriptive cross-sectional study in the United Kingdom to examine healthcare experiences related to premenstrual symptoms and disorders and identify areas for improvement. The study included 339 participants who reported experiencing symptoms in consecutive cycles and sought medical assistance, with a 97% completion rate of the survey. The findings revealed that negative care experiences were often linked to dismissive attitudes and limited understanding among healthcare providers, indicating gaps in service quality [27].

STUDIES RELATED TO THE STRUCTURED TEACHING PLAN AND ITS EFFECTIVENESS

A pre-experimental study conducted in Tamil Nadu evaluated the effect of a structured teaching program on knowledge regarding PMS among 60 adolescent girls. Using a validated questionnaire, the pretest and posttest results showed a significant increase in the mean knowledge scores from 8.4 before the intervention to 16.2 after the intervention ($p<0.001$). The findings concluded that structured teaching programmes are effective in improving menstrual health awareness among school-going girls.

Another study conducted in a rural school assessed the effectiveness of a structured teaching programme in enhancing PMS-related knowledge using a quasi-experimental one-group pretest and posttest design with 70 participants. Post-intervention findings demonstrated a substantial increase in knowledge scores, and feedback indicated that the sessions were both engaging and beneficial.

A structured teaching program implemented in a coeducational school in Delhi among 100 adolescent girls covered PMS physiology, symptoms, and coping mechanisms. Significant improvements were observed in both knowledge (from 38% to 82% adequate knowledge) and positive attitudes toward menstrual health. The study recommends integrating such programs into the school curriculum.

A pre-experimental study conducted in Gujarat, India, evaluated the effectiveness of an information booklet on knowledge regarding premenstrual symptoms and their management among 100 adolescent college girls. Using a one-group pretest and posttest design with purposive sampling, the results showed

a notable improvement in knowledge levels, with the proportion of participants with good knowledge increasing from 42% in the pretest to 58% in the posttest.

A pre-experimental study conducted in Agra, Uttar Pradesh, India, assessed the effectiveness of a structured teaching program on knowledge related to premenstrual symptoms among 60 adolescent girls selected through convenience sampling. The results showed a significant improvement in mean knowledge scores from 8.2 to 16.5 after the intervention ($p = 0.001$), indicating the effectiveness of the program.

Another pre-experimental study conducted in a higher secondary school in Kerala evaluated the effectiveness of a structured teaching programme among 60 adolescent girls selected through convenience sampling. The pretest and posttest assessments revealed a significant increase in the mean knowledge scores from 9.1 to 18.4 after the intervention ($p = 0.001$), demonstrating that the program significantly enhanced knowledge levels [28].

METHODOLOGY

Research Methodology

Research methodology refers to a systematic and scientific approach to solving research problems. It serves as a structured plan or framework that guides researchers in designing, conducting, and completing a study. In simple terms, it explains how research is conducted scientifically.

Every research study begins with a problem or question that requires an answer. To address this effectively, the researcher follows a series of well-organized steps. The research methodology provides these steps and techniques to ensure that the results obtained are valid, reliable, and applicable (Figure 1).

This article explains the methodological approach used in the present study to evaluate the effectiveness of a structured teaching plan on knowledge of premenstrual symptoms among early adolescent girls in selected schools in Agra.

Research Approach: Quantitative Research

A research approach refers to the overall plan or strategy adopted to conduct the study. It defines the direction of the research, the type of data to be collected, and the methods used for the analysis. This ensures a systematic investigation of the research problem, making the findings more reliable and meaningful. In this study, a quantitative research approach was adopted to assess the level of knowledge of premenstrual symptoms among early adolescent girls in selected schools in Agra.

Research Design: Pre-Experimental Design

The research design is the overall plan or blueprint of a study that outlines how data will be collected, measured, and analyzed. It provides a structured framework for conducting research systematically and helps ensure that the findings are valid and free from bias. Based on the objectives of the study, a pre-experimental design was used to determine the effectiveness of a structured teaching plan on knowledge of premenstrual symptoms among early adolescent girls in selected schools in Agra.

Research Setting

The research setting refers to the place, environment, or context in which the study was conducted. It describes where the study will take place and the conditions under which the data will be collected. It is an essential component of the methodology as the setting can influence participants' responses, data collection, and ultimately the validity of the study. The present study was conducted at St. Vincent's Girls Higher Secondary School, Agra. The setting was chosen based on the feasibility and availability of early adolescent girls.

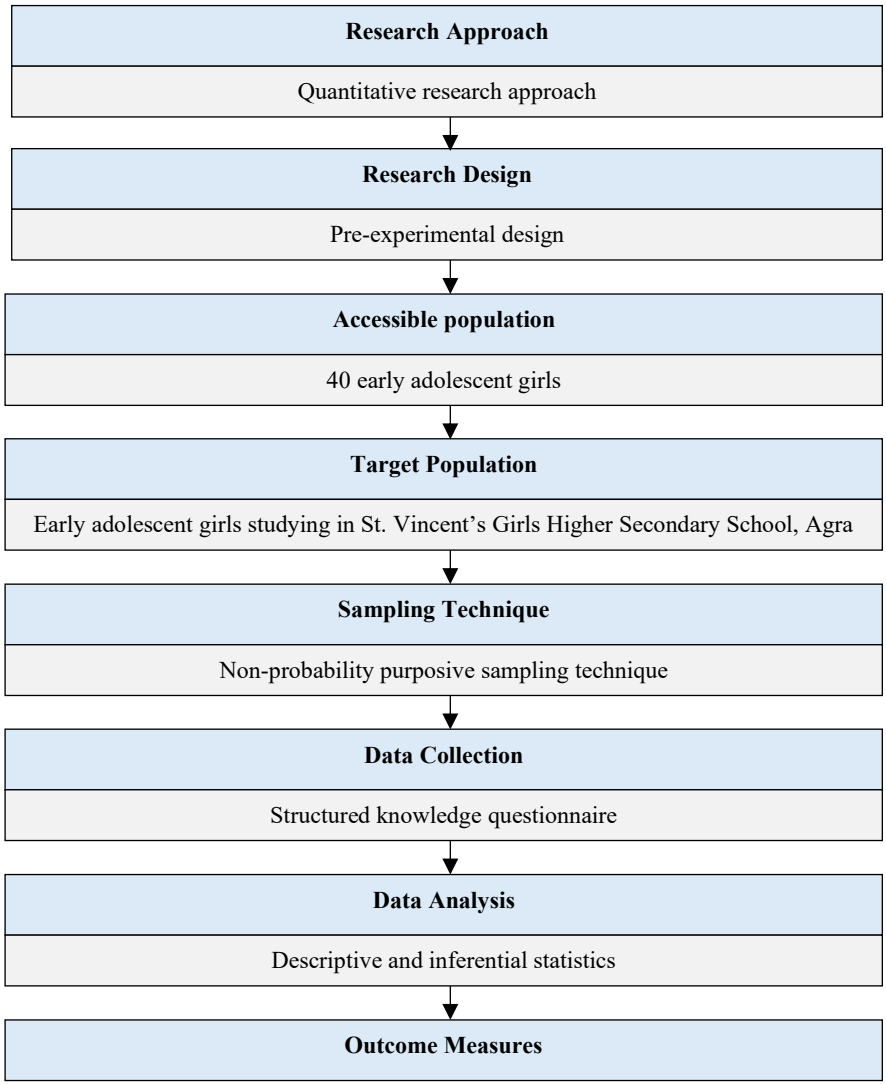

Figure 1. Research methodology.

POPULATION OF THE STUDY

In research, the population refers to the entire group of individuals, objects, or events that the researcher studies and about whom the researcher wishes to conclude. Because studying an entire population is usually not possible, researchers select a sample from that population.

The research population is based on the research objectives and specific parameters or attributes under investigation. The target population of this study was early adolescent girls.

Target Population

The target population was early adolescent girls from St. Vincent`s Girls Higher Secondary School, Agra.

Accessible Population

The accessible population consisted of 40 early adolescent girls aged 10–19 years.

Sample

A sample is a smaller group drawn from a larger population selected to participate in a research study. In the present study, the sample consisted of early adolescent girls studying at St. Vincent's Girls Higher Secondary School, Agra.

Sample Size

The sample size refers to the total number of participants selected from the population for inclusion in a study. The sample size was 40 early adolescent girls.

Sampling Technique

The sampling technique is used to choose participants from a population to form a representative sample. In the present study, purposive sampling was used to select the participants.

Sampling Criteria

The sampling criteria are predefined conditions that determine who can be included in or excluded from a study. These criteria helped the researcher select appropriate participants for the study.

Inclusion Criteria

- Adolescent girls aged 10 to 19 years.
- Adolescent girls who are able to understand English.
- Adolescent girls studying in selected schools of Agra city.
- Adolescent girls who were willing to participate and provided consent for the study.

Exclusion Criteria

- Adolescent girls who were absent during the intervention.
- Adolescent girls who were not willing to participate or did not provide consent.
- Adolescent girls outside the age group of 10 to 19 years.
- Adolescent girls who were unable to understand English.

DEVELOPMENT AND SELECTION OF THE TOOL

In any research, the tool (or instrument) is the medium through which data are collected. The accuracy and credibility of research findings depend largely on the quality of the tools used. Therefore, the development and selection of the tool is one of the most crucial steps in research methodology. This section explains how the researcher identified, created, validated, and chose the appropriate instruments to collect data for the study. The developed tool was refined and validated by subject experts and guides. The tool consists of two sections.

Section A: Demographic Variables

It consisted of items for obtaining information about the selected sociodemographic data, such as age, class/grade, type of family, age at menarche, history of menstrual cycle, family history, and source of information.

Section B: Structured Knowledge Questionnaire

The structured knowledge questionnaire consists of 30 multiple-choice type questions.

Validity of the Tool

Validity refers to the extent to which a research instrument measures what it is intended to measure. A tool is considered valid when it accurately represents the concept or variable being studied and produces meaningful results.

In this study, the tool was prepared after an extensive review of the relevant literature and with guidance from experts in nursing and research methodology. The validity of the instrument was established by obtaining feedback from four subject-matter experts. Necessary modifications were made based on their suggestions, and the final version of the tool was prepared with the assistance of a research guide.

DESCRIPTION OF TOOL

The developed tool was organized into two sections.

Section A

A set of demographic variables, including age, class/grade, type of family, age at menarche, history of menstrual cycle, family history, and source of information, was collected.

Section B

A structured knowledge questionnaire was used to assess the knowledge of early adolescent girls aged 10–19 years.

ETHICAL CONSIDERATION

- The study will be conducted only after approval by the college's ethical committee.
- The permission was obtained from the concerned authorities of the school.
- Informed consent will be taken from all the participants.
- The data collected from all the subjects will remain confidential.
- The data generated during the research process will be extensively used for research purposes only.

Section A: Frequency and Percentage Distribution of Demographic Variables

This section presents the distribution of the participants based on the selected demographic characteristics. The data were organized under the following categories: age in years, class/grade, type of family, age at menarche, duration of the menstrual cycle, duration of menstrual bleeding, regularity of the menstrual cycle, family history of premenstrual symptoms, awareness of premenstrual symptoms, and sources of information. The data were analyzed using differential statistics and are summarized in terms of Frequency and Percentage.

Table 1 presents the distribution of participants by age. It shows that the majority of the respondents (55%) were in the age group of 12–13 years, followed by 42.5% in the age group of 14–15 years of age. A small proportion (2.5%) belonged to the age group of 16–17 years, while no participants were found in the 10–11 years age group.

Of the 40 samples, 22 (55%) were distributed in the age group of 12–13 years, 17 (42.5%) were distributed in the age group of 14–15 years, and 1 (2.5%) was distributed in the age group of 16–17 years (Figure 2).

Table 2 shows the distribution of participants based on their classes. This indicates that the majority of the respondents (70%) were studying in Class A, while the remaining 30% were from Class B.

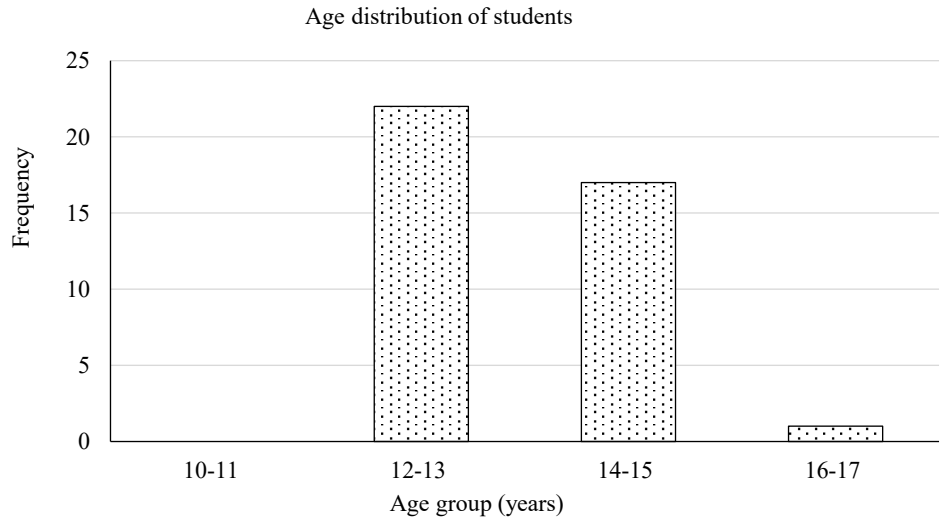

Figure 2. The distribution of participants is based on age.

Table 1. Distribution of early adolescent girls according to age.

Age	Frequency	Percentage
10–11 years	00	0%
12–13 years	22	55%
14–15 years	17	42.5%
16–17 years	01	2.5%

Table 2. Distribution of early adolescent girls according to class.

Class	Frequency	Percentage
A	28	70%
B	12	30%

Table 3. Distribution of early adolescent girls according to the type of family.

Type of family	Frequency	Percentage
Joint	31	77.5%
Nuclear	09	22.5%

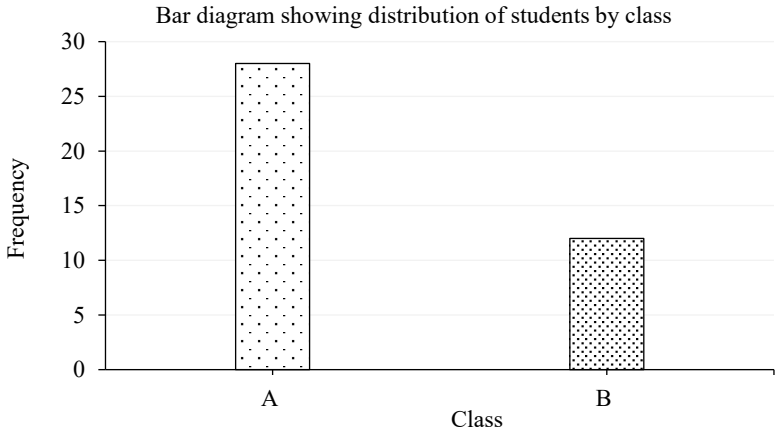

Figure 3. The distribution of participants based on their class.

In the distribution of class/grade, 28 (70%) were distributed in 8th A, and 12 (30%) were distributed in 8th B (Figure 3).

Table 3 presents the distribution of participants based on their family type. It shows that most of the respondents (77.5%) belonged to joint families, while 22.5% belonged to nuclear families.

In terms of family type, 31 (77.5%) were from joint families, and 9 (22.5%) were from nuclear families (Figure 4).

Table 4 shows the distribution of participants based on their age at menarche. The highest proportion of respondents (40%) experienced menarche at 13 years, followed by 37.5% at 12 years and 22.5% at 11 years.

Regarding age at menarche, 9 (22.5%) samples were from the age group 11 years, 15 (37.5%) samples were from the age group 12 years, and 16 (40%) samples were from the age group 13 years (Figure 5).

As shown in Table 5, half of the respondents (50%) reported a 28-day cycle, while 40% reported more than 28 days. A smaller proportion had cycles of less than 28 days (7.5%) and 45 days (2.5%), respectively.

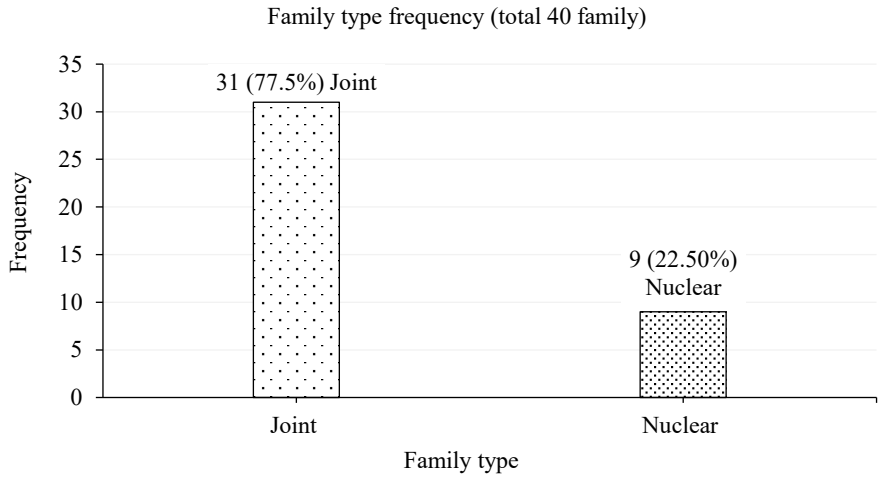

Figure 4. The distribution of participants is based on their type of family.

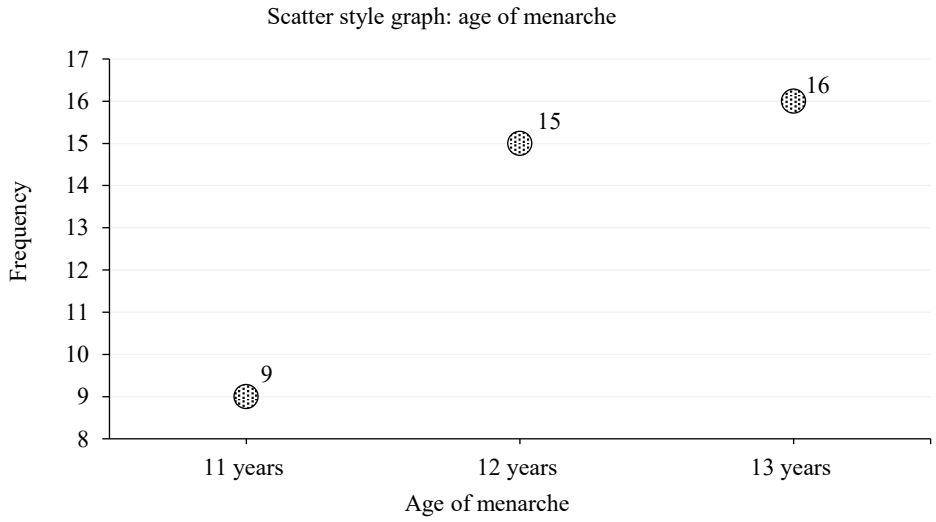

Figure 5. The distribution of participants is based on age at menarche.

Table 4. Distribution of early adolescent girls according to age at menarche.

Age at menarche	Frequency	Percentage
11 years	09	22.5%
12 years	15	37.5%
13 years	16	40%

Table 5. Distribution of participants according to duration of menstrual cycle.

Duration of menstrual cycle	Frequency	Percentage
Less than 28 days	03	7.5%
28 days	20	50%
More than 28 days	16	40%
45 days	01	2.5%

Regarding the duration of the menstrual cycle, 3 (7.5%) samples had a duration of less than 28 days, 20 (50%) samples had a duration of 28 days, 16 (40%) samples had a duration of more than 28 days, and 1 (2.5%) sample had a duration of 45 days (Figure 6).

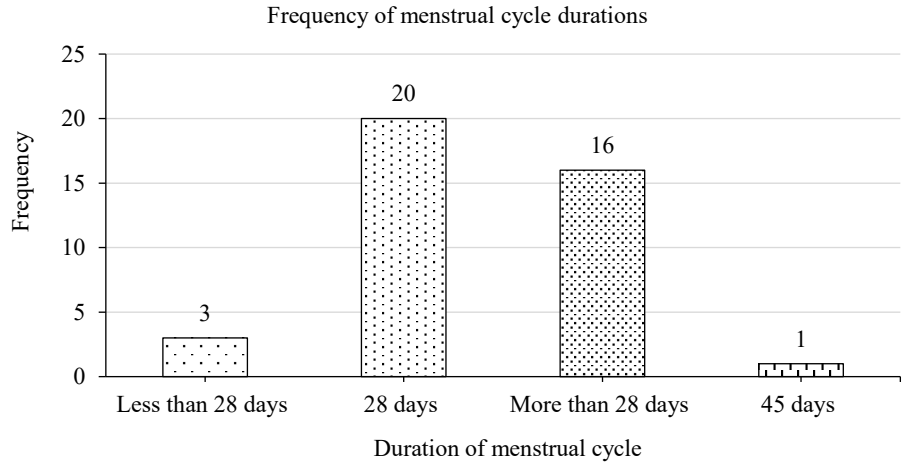

Figure 6. Graph showing the duration of the menstrual cycle.

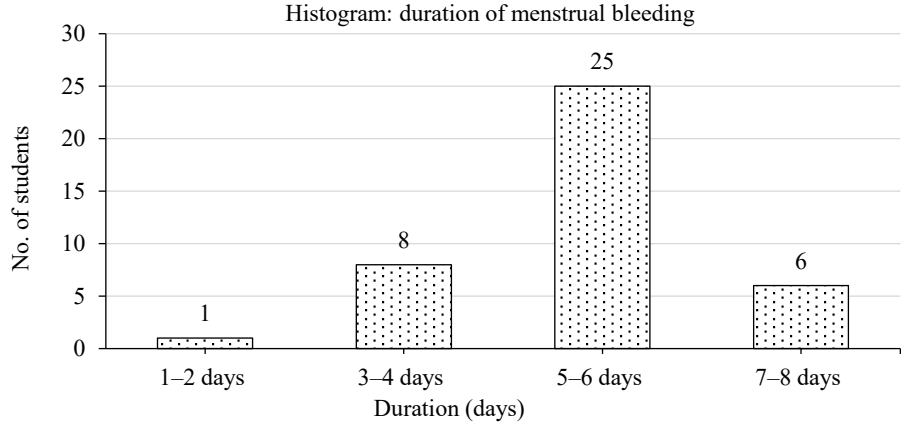

Figure 7. Graph showing duration of menstrual bleeding.

Table 6. Distribution of participants according to duration of menstrual bleeding.

Duration of menstrual bleeding	Frequency	Percentage
1–2 days	01	2.5%
3–4 days	08	20%
5–6 days	25	62.5%
7–8 days	06	15%

Regarding the duration of menstrual bleeding, 1 (2.5%) sample had a duration of 1–2 days, 8 (20%) samples had a duration of 3–4 days, 25 (62.5%) samples had a duration of 5–6 days, and 6 (15%) samples had a duration of 7–8 days (Figure 7).

As shown in Table 6, the majority of participants (62.5%) reported a menstrual bleeding duration of 5–6 days, followed by 3–4 days (20%), and 7–8 days (15%). A very small proportion (2.5%) reported bleeding for 1–2 days.

As shown in Table 7, the majority of participants (85%) reported regular menstrual cycles, while 15% reported irregular cycles.

In regular menstrual cycles, 34 (85%) had regular menstrual cycles, and 6 (15%) had irregular menstrual cycles (Figure 8).

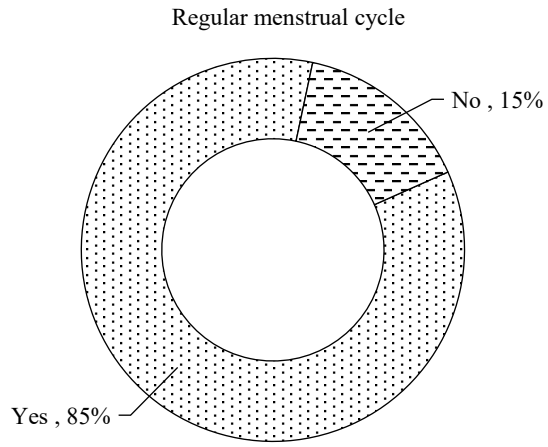

Figure 8. Pattern of menstrual cycle regularity among participants.

Table 7. Distribution of participants according to regularity of menstrual cycle.

Regular menstrual cycle	Frequency	Percentage
Yes	34	85%
No	06	15%

Table 8. Distribution of participants according to family history of premenstrual symptoms.

Family history of premenstrual symptoms	Frequency	Percentage
Yes	19	47.5%
No	21	52.5%

Table 9. Distribution of participants according to awareness of premenstrual symptoms.

Aware of premenstrual symptoms	Frequency	Percentage
Yes	25	62.5%
No	15	37.5%

Table 10. Distribution of participants according to source of information on premenstrual symptoms.

Source of information	Frequency	Percentage
Mother	29	72.5%
Teacher	05	12.5%
Friends	04	10%
Internet	02	5%

As shown in Table 8, slightly more than half of the participants (52.5%) reported no family history of premenstrual symptoms, whereas 47.5% reported a positive family history.

In terms of family history, 19 (47.5%) samples had a family history of premenstrual symptoms, and 21 (52.5%) samples had no family history of premenstrual symptoms (Figure 9).

As shown in Table 9, 62.5% of the participants were aware of premenstrual symptoms, while 37.5% were not.

Regarding awareness of premenstrual symptoms, 25 (62.5%) participants were aware, and 15 (37.5%) were not aware of premenstrual symptoms (Figure 10).

As shown in Table 10, most participants (72.5%) received information from their mothers, followed by teachers (12.5%), friends (10%), and the Internet (5%).

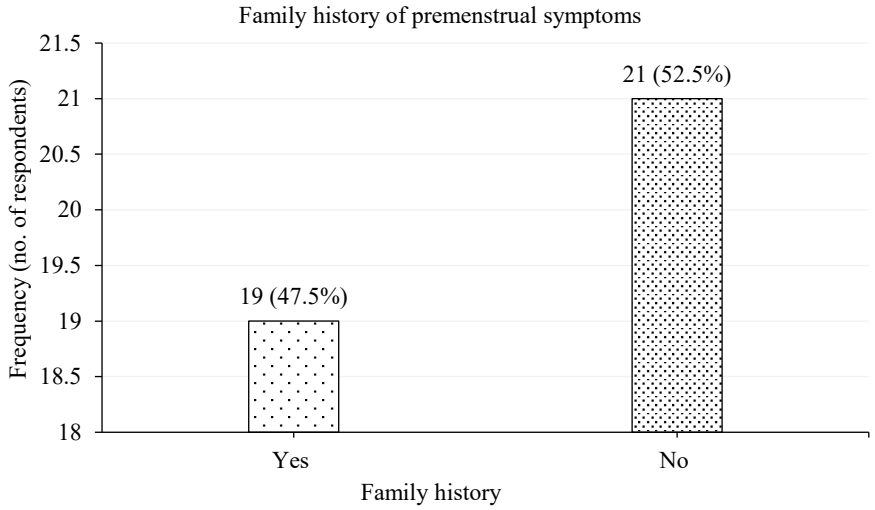

Figure 9. Graph showing the distribution of participants according to family.

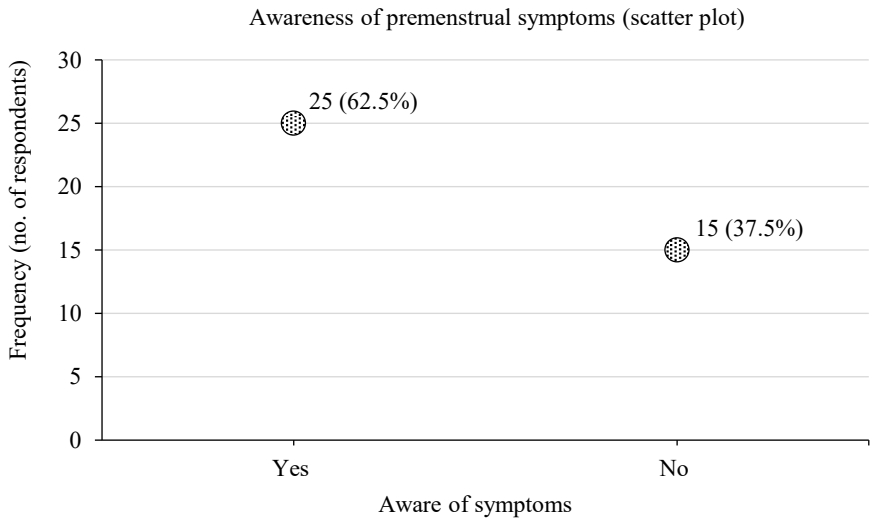

Figure 10. Graph showing participants according to awareness of premenstrual symptoms.

Regarding the source of information, 25 (62.5%) participants received information from their mothers, 5 (12.5%) participants got the information from teachers, 4 (10%) participants got the information from friends, and 2 (5%) from the Internet (Figure 11).

Section B: Level of Knowledge Regarding Premenstrual Symptoms Among Early Adolescent Girls

In the present study, 40 samples were included. A pretest was conducted to assess the baseline level of knowledge regarding premenstrual symptoms among early adolescent girls at St. Vincent's Higher Secondary School, Agra.

Table 11 presents the participants' level of knowledge regarding premenstrual symptoms among participants, indicating that the majority (77.5%) had average knowledge.

The pretest knowledge scores showed that the 15% of the participants had poor knowledge, and 77.5% of the participants had average knowledge, indicating the need for educational intervention regarding premenstrual symptoms (Figure 12).

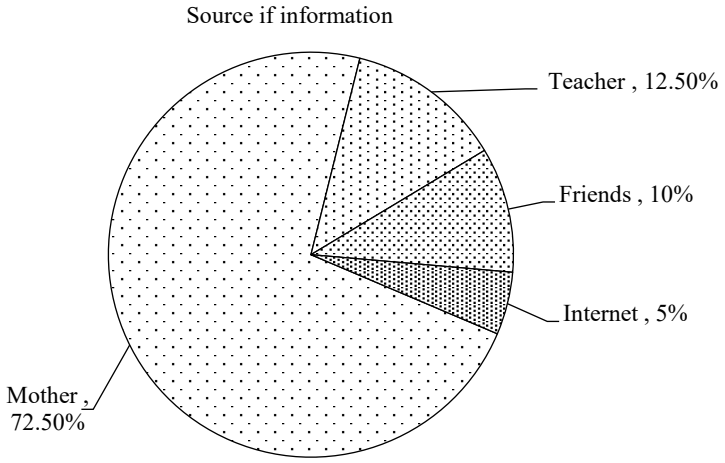

Figure 11. Graph showing participants according to the source of information on premenstrual symptoms.

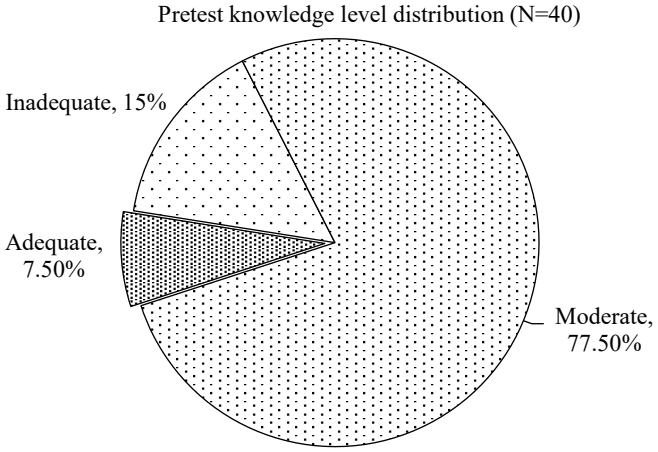

Figure 12. Pie chart showing pretest knowledge scores.

Table 11. Assessment of pretest knowledge scores of early adolescent girls regarding premenstrual symptoms.

S.N.	Level of knowledge	Frequency	Percentage
1	Poor	06	15%
2	Average	31	77.5%
3	Good	3	7.5%

Table 12. Assessment of posttest knowledge scores of early adolescent girls regarding premenstrual symptoms.

S.N.	Level of knowledge	Frequency	Percentage
1	Poor	03	7.5%
2	Average	28	70%
3	Good	09	22.5%

In the present study, after the implementation of a structured teaching plan, a posttest was conducted to assess the effectiveness of the plan.

Table 12 presents the level of knowledge regarding premenstrual symptoms among participants, showing that the majority (70%) had average knowledge.

Table 13. Comparison of pretest and posttest knowledge scores regarding premenstrual symptoms among participants.

Knowledge Score	Mean and SD	Mean difference	t-value	p
Pretest score	14.8 ± 4.03	2.25	3.996	<0.001
Posttest score	17.05 ± 4.23	-	-	-

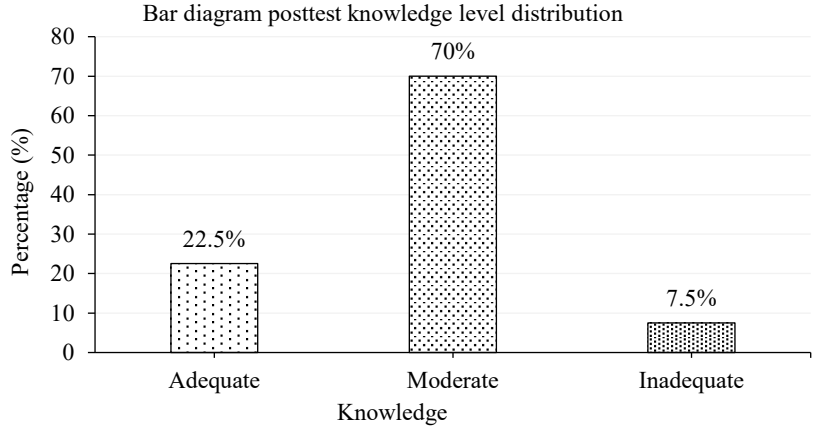

Figure 13. Bar graph showing posttest knowledge scores of early adolescent girls.

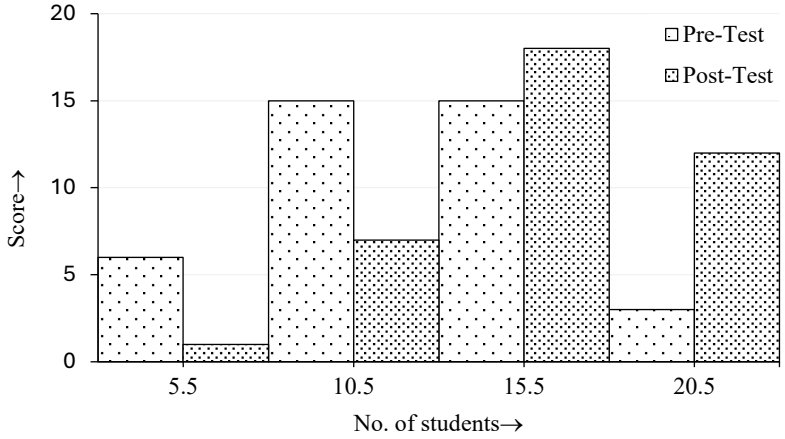

Figure 14. The histogram shows a comparison of pretest knowledge scores and posttest knowledge scores.

The posttest knowledge scores showed that 7.5% of the participants had poor knowledge, and 70% of the participants had average knowledge (Figure 13).

Section C

This section includes testing of the hypothesis and assessment of the effectiveness of the structured teaching program by comparing the pretest and posttest mean knowledge scores.

- H_o: There is no significant difference between the pretest and posttest knowledge scores.
- H_1: There is a significant difference between the pretest and posttest knowledge scores.

Table 13 and Figure 14 show that the posttest mean knowledge score (17.05) was higher than the pretest score, along with standard deviations of 14.8 and 4.03. The calculated t-value was significant at the 0.05 level. This indicates that the structured teaching plan was effective in improving knowledge of premenstrual symptoms among early adolescent girls. Therefore, the research hypothesis (H_1) was accepted, and the null hypothesis (H_0) was rejected.

Section D

This section includes the association of pretest knowledge scores and selected demographic variables.

As shown in Table 14, most demographic variables, such as age, class, type of family, age at menarche, duration of menstrual cycle and bleeding, regularity of menstrual cycle, family history, and source of information, showed no statistically significant association with knowledge regarding premenstrual symptoms ($p > 0.05$). However, awareness of premenstrual symptoms was significantly associated with knowledge ($\chi^2 = 7.54$, df = 2, $p < 0.05$).

Table 14. Association of pretest knowledge scores with selected demographic variables using the chi-square test.

S.N.	Demographic value	Frequency	X^2	df	Critical value	Significant/not significant
1	***Age***					
	10–11 years	00	3.585	04	9.488	Not significant
	12–13 years	22				
	14–15 years	17				
	16–17 years	01				
2	***Class***					
	8th A	28	4.56	02	5.99-	Not significant
	8th B	12				
3	***Type of family***					
	Joint	31	0.485	02	5.99	Not significant
	Nuclear	09				
4	***Age Menarche***					
	11 years	09	3.59	04	9.488	Not significant
	12 years	15				
	13 years	16				
5	***Duration of menstrual cycle***					
	Less than 28	3	17.61	06	12.59	Not significant
	28 days	20				
	More than 28	16				
	45 days	1				
6	***Duration of menstrual bleeding***					
	1–2 days	1	1.761	06	12.59	Not significant
	3–4 days	8				
	5–6 days	25				
	7–8 days	6				
7	***Regular menstrual cycle***					
	Yes	34	1.881	02	5.991	Not significant
	No	6				
8	***Family history of premenstrual symptoms***					
	Yes	19	3.608	02	5.99	Not significant
	No	21				
9	***Aware of premenstrual symptoms***					
	Yes	25	7.54	2	5.99	Significant
	No	15				
10	***Source of information***					
	Mother	29	3.822	6	12.59	Not significant
	Teacher	5				
	Friends	4				
	Internet	2				

The chi-square test showed that 'aware of premenstrual symptoms' was associated with the pretest knowledge score, while the other variables, such as age, class/grade, type of family, age at menarche, duration of menstrual cycle, duration of menstrual bleeding, regular menstrual cycle, family history of premenstrual symptoms, and source of information, showed no association with the pretest knowledge score.

DISCUSSION AND CONCLUSION

This study evaluated the effectiveness of a structured teaching plan on knowledge of premenstrual symptoms among early adolescent girls in selected schools in Agra. In this study, 40 early adolescent girls were selected using a non-probability purposive sampling technique.

This study adopted a pre-experimental research approach. A structured knowledge questionnaire was used to assess the pretest and posttest levels of knowledge regarding premenstrual symptoms among the participants, and the collected data were analyzed using appropriate statistical techniques.

The study deals with the following conclusion.

- Regarding age, most early adolescent girls 22 (55%) belonged to the 12–13 years group.
- In terms of class, the majority of early adolescent girls, 28 (70%), were in the 8th A.
- Regarding family type, most early adolescent girls 31 (77.5%) belonged to a joint family.
- Regarding age at menarche, the majority of early adolescent girls 16 (40%) were 13 years old.
- In the duration of the menstrual cycle, the majority of early adolescent girls 20 (50%) had a cycle of 28 days.
- In terms of the duration of menstrual bleeding, most of the early adolescent girls 25 (62.5%) experienced bleeding for 5–6 days.
- Regarding the regularity of the menstrual cycle, the majority of early adolescent girls, 34 (85%), had regular cycles.
- In the family history of premenstrual symptoms, the majority of early adolescent girls 21 (52.5%) had a family history of premenstrual symptoms.
- In terms of awareness of symptoms, the majority of early adolescent girls 25 (62.5%) were aware of premenstrual symptoms.
- Regarding the source of information, 29 (72.5%) of early adolescent girls obtained information from their mothers.
- Regarding the level of knowledge, 31 (77.5%) of early adolescent girls possessed average knowledge.
- The chi-square test results indicated a statistically significant association between the level of knowledge and selected demographic variables, such as awareness of premenstrual symptoms.
- There was no significant association between the level of knowledge and selected demographic variables such as age, class/grade, type of family, age at menarche, duration of menstrual cycle, duration of menstrual bleeding, regularity of menstrual cycle, family history of premenstrual symptoms, and source of information.

NURSING IMPLICATION

The results of the study proved that the assessment of the level of knowledge regarding premenstrual symptoms among early adolescent girls has a significant effect on improving their knowledge, and the knowledge questionnaire motivated them to gain a deeper understanding of premenstrual symptoms.

The findings of the study have scope in the following areas.

NURSING EDUCATION

The present study emphasizes the need to enhance knowledge regarding premenstrual symptoms. To achieve this, nursing curricula should include detailed education on premenstrual symptoms. Nursing

schools and colleges should add various teaching programs focusing on the care of premenstrual symptoms.

NURSING PRACTICE

Nurses are key members of the health team who play a key role in health professions and maintenance, and it is a practicing profession, so the researcher generally integrates findings into the profession.

In-service education regarding premenstrual symptoms will help update the knowledge of obstetrics and gynecology nurses in various obstetrics and gynecology departments.

NURSING ADMINISTRATION

Nursing administrators should enhance the level of knowledge through the implementation of teaching for staff nurses.

Professional interaction between head nurses and staff nurses working in the obstetrics and gynecology department will help improve professional standards.

NURSING RESEARCH

This study helps investigators assess the level of knowledge regarding premenstrual symptoms among young adolescent girls.

This study will serve as a valuable reference for future investigations. Further research can be conducted, including the two domains of attitude and practice.

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