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Educational Research and Reviews

Full Length Research Paper

Training program on knowledge and attitude of students regarding premenstrual syndromes and the effects on absenteeism

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The study aimed to assess the consequences of an academic educational program on the scholars' knowledge and attitude regarding premenstrual syndromes and, its effect on the absenteeism of scholars in Sabya University College. A quasi-experimental study of 0.97 students recruited study group; data were collected then recollected after the tutorial program session was provided. Data were interred into spss version 26, organized, tabularized, and analyzed using descriptive and inferential statistics. Mean knowledge changed from 3814 pre- to 0.9081 post intervention, good knowledge score was 20.6% changed to 72.2% post intervention, while inadequate knowledge score was 79.4 pre was changed to 27.8 post, which supports the tutorial program. Positive attitude 56.6% pre was changed to 61.9% post. In contrast, the negative attitude was changed from 47.7% to 38% post intervention. Pearson correlation test showed a direct correlation between absenteeism and knowledge score pre and post-intervention. PMS was significantly associated with several problems related to educational activities. The tutorial program resulted in a significant change of data from pre to post-intervention for the study group, also changed attitude, and there's a direct correlation between premenstrual symptoms and absenteeism, premenstrual symptoms were significant effects on educational activities.

Key word: Educational program, knowledge, attitude, premenstrual and absenteeism.

INTRODUCTION

Premenstrual syndrome (PMS) is described as a cyclical process that starts within the secretory phase and ends approximately four days after menstruation; this manifests itself in physical, cognitive, emotional, and behavioral changes those symptoms disappear by themselves with the start of menstruation. It's been noted that PMS is seen in 75% of girls who menstruate, and it occurs at a better rate in young women (Acikgoz et al., 2017; Arslantaş et al., 2018).

The American College of Obstetrics and Gynecology ACOG) was revealed during a previous study on (particular criteria for identifying PMS symptoms. It

divided them into emotional or affective symptoms (social withdrawal, depression, anxiety, irritability, confusion, and angry outbursts) and physical or somatic symptoms (headache, breast tenderness, swelling of extremities, and abdominal bloating) (Arslantaş et al., 2018).

These symptoms appear five days before the menstrual period within the previous three onsets of menses cycles. They spontaneously disappear within four days of menstruation and even after the cycle's Twelfth day (Kalsoom et al., 2018). These symptoms do not pose a threat to a woman's life, but can affect her physical and psychological health and consequently negatively and seriously affect and reduce the lifetime of many ladies and their productivity.

Most of the ladies suffer only some of those symptoms. However, 70 to 90% of girls complain of recurrent PMS symptoms (Sarkar et al., 2016), they are experienced by up to 90% of girls of childbearing age, and fewer than 10% of them are diagnosed as having premenstrual dysphoric disorder (PMDD) (Garg et al., 2015).

In this study, Sarkar et al. (2016) showed that 75% of girls with regular menstrual cycles report severe or unusual physical and psychological symptoms before menstruation. But these symptoms are mild and acceptable to the bulk of them. Nonetheless, these symptoms cause significant disturbances within the lives of some other women (Garg et al., 2015). It was estimated through epidemiological studies that 80 to 90% of Pre-menstrual Symptoms (PMS) are experienced by women, which interfered with their everyday activities (Kalsoom et al., 2018). Prevalence was higher among the ladies who reported four or more symptoms because the diagnostic criteria were less rigid (Kalsoom et al., 2018). Spreads of symptoms include premenstrual dysphoric disorder (PMDD), starting from mild to severe (Kalsoom et al., 2018). Mild symptoms do not interfere with everyday activities while moderate do, whereas severe symptoms hinder activities (Kalsoom et al., 2018).

Across the world, menstruation is considered a symbol of sexual health during the adolescent and fertility age of girls. Many communities celebrate it as a present of fertility. Puberty is the result of alteration within the hormones within the hypothalamus-pituitary- gonad axis. The placental hormones stimulate this axis within the female fetus, resulting in the secretion of gonadotropin-releasing hormones (GnRH). Therefore the level of those hormones is kept minimal until menarche (Bakhsh et al., (2020)).

Causes of PMS are still not exact (Kalsoom et al., 2018; Garg et al., 2015; Bakhsh et al., 2020). Aside from pharmaceutical treatment, educating women to practice self-care measures effectively reduces the severity of the symptoms (Bakhsh et al., 2020). Many studies have shown that educational interventions have improved the result measures. Studies conducted globally show that PMS's severity is above that of expected in highly educated women than non-educational women; studies also show a direct correlation PMS and stress (Bakhsh et al. (2020).

Many studies mentioned the multi-factorial of pre-menstrual symptoms, and despite scientific and international diagnoses to clarify it, the explanation for the cycle remains unknown (Kumari and Sachdeva, 2016; Balaha et al., 2010; Rabiepour and Yas, 2018; Cheng et al., 2015). Generally, menstrual symptoms are classified as dysmenorrhea or PMS (Albsoul-Younes et al., 2018; Heinemann et al., 2012). In this context, the foremost suffering was addressed from these symptoms, which are university students. The university period may be transitional and sensitive as students cannot deal with psychological and social changes and manage the stresses of their daily lives (Öksüz and Guvenc, 2018); their primary goal is to realize higher academic achievement to secure better jobs and meet their particular needs; this makes them look for positive psychological and physical energy. However, their psychological and social situations may interfere with their ability to manage university requirements, which results in increased exposure to health and psychological pressures that negatively affects their academic performance and academic achievement (Öksüz and Guvenc, 2018). Reports showed that from 1.8 to 5.8% of females complain of a severe sort of premenstrual symptoms (PMDD or PMS [PMS]), which restricts their social and occupational functioning (Öksüz and Guvenc, 2018; Watted et al., 2014).

This study aimed to assess the consequences of an academic educational program on the scholars' knowledge and attitude regarding premenstrual syndromes, and therefore the effects of it on the absenteeism of scholars in Sabya University College.

MATERIALS AND METHODS

Research design and approach

This research was done to study the effect of an educational training program on female students of Jazan University, Sabya University College. A quasi-Experimental design was used; the one group pre and post-test design were selected to evaluate the training program's effect. The study group received the educational program about the students' knowledge and attitude regarding premenstrual syndromes and their impact on absenteeism. In the end, the evaluation was done for the study group to know the results of the intervention. Firstly, the researchers collected the baseline data, then offered the program, and managed the second data after one month—the study was conducted at Jazan University Sabya University College.

The exclusion criteria for the study participants who are not willing to participate in the study are not present during data collection and the students in other departments rather than nursing. Inclusion criteria are to be nursing students. The students who participate in the study were 97.

Methods of data collection

Data were collected by the researchers using a structured closed-

ended questionnaire to assess the students' knowledge and attitude of nursing students regarding premenstrual syndromes and its effects on the absenteeism.

Data collection techniques and tools

The two stages of data collection is pre-intervention and post-intervention, using the same questionnaire.

Structured knowledge questionnaire

The researchers have developed the questionnaire from reference, original research articles, and literature. The questionnaire consists of five parts.
Section i: Consist of demographic variables such as age, class levels, residence, and marital status
Section ii: general information about premenstrual symptoms
Section iii: consist of knowledge and attitude question regarding premenstrual syndromes and its effect on the absentees
Section iv: consist of diagnostic criteria of premenstrual syndrome
Section v: consist of consequences of premenstrual symptoms on educational activity.
The data collection tools were pretested in the study population before use

The program

- The general objective of the program:

The intervention program's overall aim was to improve students' awareness of premenstrual syndromes and their effect on the absentees. It was composed of three-phase.

Phase 1: (Assessment phase)

Data were collected from a study group using a structured questionnaire, which considers as baseline data before the program regarding premenstrual syndromes and its effect on the absentees.

Phase 2: (implement the plan)

In which educational training program about knowledge and attitude of premenstrual symptoms and its impact on absenteeism, the researcher developed the material based on available resources and reviewed relevant literature, including helping the participants receive the message. And the program activities were implemented through two sessions; each session's period was one hour for the study group. The program was presented concisely and focused on the points to know, using different lectures, brochures, and discussion.

Phase 3: (evaluation phase)

The program's evaluation was done four weeks immediately after implementing the plan; data were collected using the same data collection method used in phase one.

Data analysis method

The collected data were interred into SPSS version 26. The data were organized, tabulated, and analyzed by using descriptive statistics. The inferential statistics (chi-square test and parson correlation test) were used to determine the differences in knowledge and attitude between pre and post-test and find out the association between demographic variables with post-test knowledge scores. The data was presented in the form of tables and figures.

RESULTS

The interventional study was conducted in Jazan University and Sabya University College, data were collected from participants. Data were statistically analyzed and the research has shown the subsequent findings. Figure 1 showed the participants' age, majority of them were about age 20 years, and most of the participants were single, Figure 2. There was a significant difference in general information of the participants about family history and contraceptive used.

Experiences of premenstrual symptoms and it appeared altogether in most of the participants. These are determined in Table 1. Table 2 showed the participants' knowledge and attitude score, pre, and post-intervention, and therefore, the mean knowing was changed from pre to post-intervention attitude.

Using the diagnostic criteria of PMS, the score was categorized into mild, moderate, and severe. Premenstrual symptoms were presented in Table **3**. Regarding their presentation on the study participant's majority of the study group, their complaints were mild to moderate. Table 4 showed the consequences of premenstrual symptoms on educational activities; more than half the student's concentration on the category was moderately suffering from 53.6 and 38.1% severely affected. Table 5 has shown a significant correlation between knowledge pre and post-intervention with absenteeism.

DISCUSSION

An interventional study was conducted to review the educational tutorial program's consequences on the scholars' knowledge and attitude in Sabya University College regarding premenstrual syndromes, therefore, the effects of it on the absenteeism of the scholars. 15.5% of what the participants have as a family history of premenstrual syndromes, and 84.5% have no family history. Allihabi (2019) showed 42% of family history and 58% had no family history of premenstrual symptoms (Allihabi, 2019). In this study, 93.8% of the study population experienced premenstrual symptoms with their period, and 6,2 % did not have any premenstrual symptoms; a study wiped out (2017) found 48.4% has premenstrual symptoms and 18.3%, has no PMS (Derseh et al., 2017). Regarding marital status, 82.5% were single while the married were 17.5% and this supported by a study done by Hussein and Hamdan-Mansour (2018).

In this study, the mean knowledge changed from 0.3814 pre-intervention to 0.9081 posts. The research was done by (Bhausaheb PS, 2013) showed the mean 6.12 pre was altered to 19.3 post-intervention (Bhausaheb, 2013)
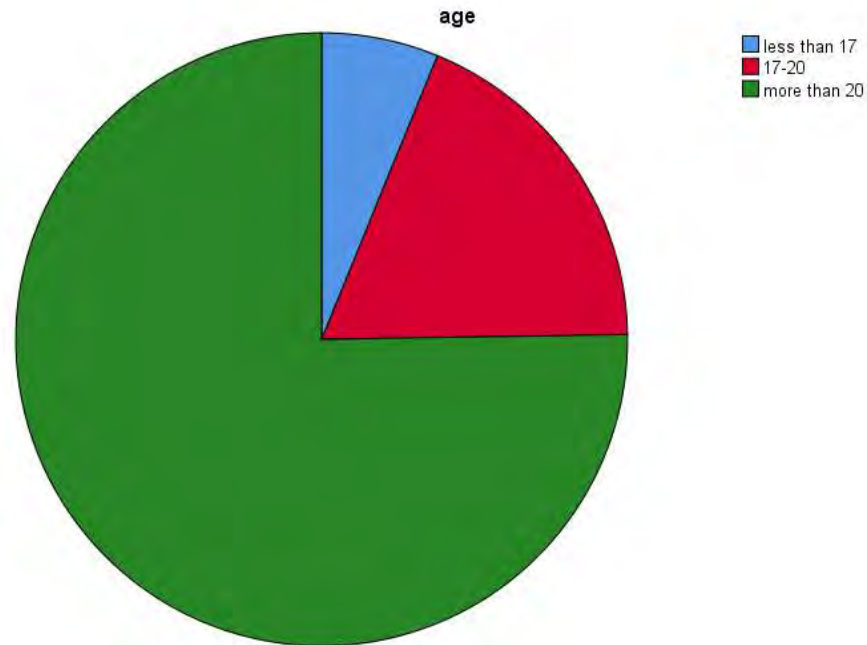
age

Figure 1. Age of the participants.
Source: Author

marital status

Figure 2. Marital status of the participants.
Source: Author

In the current study, the adequate knowledge score was 20.6% pre-intervention and converted to 72.2% post-intervention. In comparison, the inadequate knowledge score was 79.4 % pre-intervention changed to 27.8% post-intervention, which supports the tutorial program. A study done by Jasmine and Vijayarani found that a knowledge score of premenstrual symptoms was 3.3, 83.4% had moderate knowledge,13.3% had inadequate knowledge (Sharmila and Prince, 2017).

In the study, attitude was changed for study group pre and post, positive attitude 56,6% were change to 61.9%, while the negative attitude changed from 47.7% to

Table 1. General information about premenstrual syndromes of the participants n= (97).

Items	Yes		No	
	No	%	No	%
Family history of premenstrual syndromes	15	15.5	82	84.5
Are you currently taking Oral Contraceptives	39	40.2	58	59.8
Do you usually have a period/menstruation once a month	88	90.7	9	9.3
Do you usually experience premenstrual symptoms with your periods	91	93.8	6	6.2
Have you ever sought medical care for your premenstrual symptoms	56	57.7	41	42.3

Source: Author

Table 2. Distribution of subjects in terms of knowledge and attitude towards PMS (N=97.

Knowledge items	Pre intervention		Post intervention	
	No	%	No	%
General knowledge about premenstrual symptoms				
Un Adequate knowledge	77	79.4	27	27.8
Adequate knowledge	20	20.6	70	72.2
Mean±SD	0.3814±. 0.07063		9081±.16264	
Attitude items				
Positive attitude	51	56,6	60	61.9
Negative attitude	46	47,7	37	38.1
Mean±SD	0.5034±.22045		0.8299±.14825	

Source: Author

38.1, a study of Pakistan showed the positive attitude of the participants (Mohib et al., 2018). A review of the study was done by Suaidi et al. (2020), represented a positive attitude of 78,5% of premenstrual (Suaidi et al., 2020).

In this study, premenstrual symptoms, diagnostic criteria score assigned as not present, mild to moderate and severe, the frequency of somatic symptoms was abdominal pain (76.3%), headache (40.2%), and breast tenderness (78.4%) the majority of these symptoms fell under mild to moderate grade. Where the distributions of significant (psychological) symptoms were confusion, irritability and depression were (49.5%) (42%.3), and (80.4%), falling under mild to moderate grade also and all remaining symptoms under the mild to moderate, it nearly almost like what had been reported by Sonia and Mittal (2015). And also supported by a study done by ANISH V. A and it showed that most premenstrual symptoms of study participants were mild to moderate (Nursing MH, 2016).

In this study, depression and backache were the foremost premenstrual symptoms during which participants were complaining. These results were complimentary to review wiped out 2018, by Shenuka and Kumar (2018).

In these studies, all premenstrual symptoms were falling under mild to moderate grade, showing a statistically significant difference (p<0.05) between mild to moderate

and severe grades of the premenstrual symptoms. And it was similar to a study done in Egypt 2015 (Elmalky and Ebrahem, 2015).

In this study, the chi-square test showed statistical significance between absenteeism and pre and post knowledge. And Pearson correlation test showed a positive correlation between absenteeism and knowledge pre and post-intervention. A study done in Benah university showed that there was a highly statistically significant difference at p-values (p<0.001) in all items of knowledge after application of the evidence-based program as compared with before application of this program (Givshad and Saadoldin, 2016). A study by DadiGivshad et al. (2016) showed a positive correlation between knowledge and perceived severity of premenstrual symptoms (Tadakawa et al., 2016).

Tadakawa et al. (2016) reported the prevalence of absent girls increased based on the severity of PMS, 64 (8.2%), participants with 'no/mild PMS' were classified into the 'absent' group , this revealed that premenstrual symptoms are associated with school absenteeism not only in over-moderate PMS and PMDD groups but also in participants with 'no/mild PMS'(Miiro et al., 2018). Miiro et al. (2018) founded Missing school during the most recent period was associated with physical symptoms (headache (odds ratio (OR) = 2.15, 95%CI:1.20, 3.86), stomach pain (OR = 1.89, 95%CI:0.89, 4.04), back pain (OR = 1.75,

Table 3. Diagnostic criteria of premenstrual syndrome.

	Not present		Mild to moderate		Severe		chi-square	p. value
	N	%	N	%	N	%		
Depression	1	1.0	78	80.4	18	18.6	101.216	0.000
Moodiness (withdrawn)	4	4.1	42	43.3	51	52,6	38.495	0.000
Tension	28	2.9	46	46.4	28	24,7	7.691	0.021
Irritability	46	47.4	12	12.4	39	40,2	19.938	0.000
Anxiousness	39	4.2	48	49.5	10	10.3	24.392	0.000
Weight gain	37	38.1	23	23.7	37	38.1	4.041	0.133
Greasy skin	29	29.9	55	56.7	13	13.4	27.794	0.000
Headache	17	17.5	39	40.2	41	42.3	10.969	0.004
Breast enlargement	15	15.5	76	78.4	6	6.2	89.711	0.000
Fatigue	42	42.3	12	12.4	43	44.3	19.196	0.000
Increase appetite	45	46.4	44	45.4	8	8.2	27.485	0.000
Reduced Appetite	9	9.3	39	40.2	49	50.5	26.804	0.000
Abdominal pain	7	7.2	74	76.3	16	16.5	81.794	0.000
Cramps	11	11.3	37	38.1	49	50.5	23.340	0.000
Backache	10	10.3	66	68.0	21	21.6	54.454	0.000
Thigh pain	10	10.3	72	74.2	15	15.5	73.381	0.000
Nausea/Vomiting	10	10.3	73	75.3	14	14.4	76.969	0.000

Source: Author

Table 4. Effect of premenstrual syndromes on educational activities and interpersonal relationship (N=97).

	Not present		Mild to moderate		Severe		chi-square	p. value
	N	%	N	%	N	%		
Concentration	8	8.2	52	53.6	37	38.1	30.948	0.000
Motivation	1	1.0	82	84.5	14	14.4	117.052	0.000
Individual work performance	32	33.0	61	62.9	4	4.1	50.247	0.000
Collaborative work performance	37	38.1	57	58.8	3	3.1	46.103	0.000
Scores	29	29.9	56	57.7	12	12.4	30.454	0.000
Absenteeism (or attended to the class)	35	36.1	57	58.8	5	5.2	42.144	0.000
Difficulty in working and activities	29	29.9	56	57.7	12	12.4	30.454	0.000
Interpersonal relationship	36	37.1	53	54.6	8	8.2	31.938	0.000
Relationships with friends	30	30.2	61	62.9	6	6.2	47.031	0.000
Relationship with family	31	32.0	53	54.6	13	13.4	24.825	0.000
Social withdrawal	38	39.2	54	55.7	5	5.2	38.619	0.000

Source: Author

Table 5. Statistical test of participant knowledge and absenteeism.

	Test statistics		
	absenteeism (or attended to the class)	Knowledge pre	Knowledge post
Chi-square	42.144	28.876	69.959
Df	2	5	4
Asymp. Sig.	0.000	0.000	0.000

Source: Author

95%CI:0.97, 3.14)(28).

This study observed that PMS was significantly

associated with several problems related to educational activities, including lack of concentration, lack of motivation, decreased individual or collaborative work performance, low scores, and its effects on the average score. And this is similar to the study done by KhonKaen (Buddhabunyakan et al., 2017).

Conclusion

The educational program resulted in significant changes of knowledge from pre to post-intervention for the study group, change of attitude, and a positive correlation between premenstrual symptoms and absenteeism; premenstrual symptoms were significant effects on educational activities.

ACKNOWLEDGMENT

Ethical approval

The study was approved by the Research Ethics Committee and deanship of scientific researches, Jazan University. Oral consent was taken from the students and the researcher makes it clear to the participants in the study, and can withdrawal at any time and the right will be protected. High confidentiality was observed during filling questionnaire.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Acikgoz A, Dayi A, Binbay T (2017). Prevalence of premenstrual syndrome and its relationship to depressive symptoms in first-year university students. Saudi medical journal 38(11):1125.

Albsoul-Younes A, Alefishat E, Farha RA, Tashman L, Hijjih E, AlKhatib R (2018). Premenstrual syndrome and premenstrual dysphoric disorders among Jordanian women. Perspectives in psychiatric care 54(3):348-353.

Allihabi A (2019). Premenstrual Syndrome- Prevalence, Severity and Effect on Academic Performance: A Comparative Study Between Students of Medicine and Literature. Journal of Women's Health and Gynecology 6:1-18.

Arslantaş H, Abacigil F, Çinakli Ş (2018). Relationship between premenstrual syndrome and basic personality traits: a cross-sectional study. Sao Paulo Medical Journal 136:339-345.

Bakhsh H, Alghamdi AM, Alyahya MA, Alghamdi SJ, Alonazi A, Algomaishy R, Almalki A (2020). Prevalence of premenstrual syndrome and its impact on life among women in Princess Nourah Bint Abdul Rahman University in Riyadh, Saudi Arabia. Age 4(9):1307-1312

Balaha M, Amr M, Moghannum M, Muhaida N (2010). The phenomenology of premenstrual syndrome in female medical students: a cross sectional study. Pan African Medical Journal 5(1).

Bhausaheb PS (2013). Lifestyle modification in premenstrual syndrome. 3(2):32-36.

Buddhabunyakan N, Kaewrudee S, Chongsomchai C, Soontrapa S, Somboonporn W, Sothornwit J (2017). Premenstrual syndrome (PMS) among high school students. International Journal of women's Health 9:501.

Cheng SH, Sun Z-J, Lee IH, Shih C-C, Chen KC, Lin S-H (2015). Perception of premenstrual syndrome and attitude of evaluations of work performance among incoming university female students. Biomedical Journal 38(2).

Derseh BT, Afessa N, Temesgen M, Semayat YW, Kassaye M, Sieru S (2017). Prevalence of dysmenorrhea and its effects on school performance: a cross-sectional study. Journal of Women's Health Care 6(2):361.

Elmalky ME, Ebrahem SM (2015). Swift Journals 2060-3570 Effectiveness of Psycho-Educational Nursing Intervention on Adolescents' Premenstrual Syndrome and Self-Efficacy. Swift Journal of Nursing and Midwifery 1(1):1-11.

Garg S, Mittal S (2015). Knowledge, Attitudes and Severity of Symptoms of Premenstrual Syndrome in a sample of Medical and Nursing Students: A Cross Sectional Study. Research Journal Of Pharmaceutical Biological And Chemical Sciences 6(3):1160-1166.

Givshad RD, Saadoldin SN, Esmaily H (2016). The relationship of perceived severity of premenstrual syndrome with knowledge, attitude and recorded severity of syndrom by a daily calendar among university students in Iran. Journal of Midwifery and Reproductive Health 4(1):522-529.

Heinemann LAJ, Minh T Do, Heinemann K, Lindemann M, Filonenko A (2012). Intercountry assessment of the impact of severe premenstrual disorders on work and daily activities. Health Care for Women International 33(2):109-124.

Hussein SJ, Hamdan-Mansour AM (2018). Prevalence and association of premenstrual syndrome and premenstrual dysphoric disorder with academic performance among female university students. Perspect Psychiatr Care 54(2):176-184.

Kalsoom U, Sultana A, Amjad T, Bairam S (2018). Prevalance of premenstrual syndrome and knowledge assessment regarding it's prevention among medical students of a private medical college of islamabad. Pakistan Armed Forces Medical Journal 68(1):159-64.

Kumari S, Sachdeva A (2016). Patterns and predictors of premenstrual symptoms among females working in a psychiatry hospital. Scientifica (Cairo).

Miiro G, Rutakumwa R, Nakiyingi-Miiro J, Nakuya K, Musoke S, Namakula J (2018). Menstrual health and school absenteeism among adolescent girls in Uganda (MENISCUS): A feasibility study. BMC Womens Health 18(1):1-13.

Mohib A, Zafar A, Najam A, Tanveer H, Rehman R (2018). Premenstrual Syndrome: Existence, Knowledge, and Attitude Among Female University Students in Karachi. Cureus 10(3).

Nursing MH (2016). Explore the Self Care Strategies , Physical and Psychosocial Problems Associated With Premenstrual Dysphoric Disorderwith a View To Develop a Premenstrual Coping Strategy Module Among Adolescent Girls At Adeshwar Nursing 2(2):1-10.

Öksüz E, Guvenc G (2018). Relationship of premenstrual and menstrual symptoms to alexithymia among nursing students. Perspectives in psychiatric care 54(3):391-397.

Rabiepour S, Yas A (2018). Awareness, Attitude and Performance of Men Regarding Premenstrual Syndrome. Practitioner 52:34-37.

Sarkar AP, Mandal R, Ghorai S (2016). Premenstrual syndrome among adolescent girl students in a rural school of West Bengal, India. International Journal of Medical Science and Public Health 5(3):5-8.

Suaidi MT, Wong PK, Tahir NAM, Chua EW (2020). Community pharmacists' knowledge, attitude, and practice in providing self-care recommendations for the management of premenstrual syndrome. Medicina 56(4):181.

Shenuka SRV, Kumar SR (2018). Prevalence, Severity and Coping Behaviour of Premenstrual Syndrome and Premenstrual Dysphoric Disorder Among Female Students in a Private Institution in India. International Research Journal of Pharmacy 9(9):193-197.

Sharmila PJ, Prince V (2017). A Descriptive study to assess the knowledge of Premenstrual Syndrome and its management among I year B.Sc. nursing students in Bishop's College of nursing, Dharapuram. International Journal of Nursing Education and Research 5(4):392-394.

Tadakawa M, Takeda T, Monma Y, Koga S, Yaegashi N (2016). The prevalence and risk factors of school absenteeism due to premenstrual disorders in Japanese high school students-a school-based cross-sectional study. Bio Psychosocial medicine 10(1):1-7.

Watted N, Proff P, Péter B, Muhamad A-H, Stúdió F (2014). Influence of drugs on orthodontic tooth movement. Journal of Research in Medical and Dental Science 2(4):1.