Prevalence of Premenstrual Syndromes, Dysmenorrhea and their Impact on Quality of Life among a Group of Female Students in Zagazig University

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Abstract: Premenstrual syndrome (PMS) and dysmenorrhea are common menstrual problems, having unfavorable effects on the health regarding quality of life between university female students. THE AIM was to estimate the predominance of PMS, dysmenorrhea and determine their effect on students QoL. **SUBJECTS and METHODS**: This cross-sectional study was conducted between the first of January and 30 June 2017 at the Faculty of Nursing Zagazig University-Egypt. The study group included 380 female students. A self-administered reconnaissance was advanced for the aim of this research. It had contained the following differences: socio-demographic characteristics, menstrual history, PMS and dysmenorrhea. The sharpness of dysmenorrhea was determined with a 10-point apparent analog scale. The Short Form-36 (SF-36) form was applied to estimate HRQoL. **RESULTS:** The mean age of menarche was 13.2 ± 1.3and the majority had normal frequency and duration of the menstrual cycle. The most common problems were PMS and dysmenorrhea with a prevalence of 78.1% and 59.9 % respectively. Moderate pain was mostly encountered (62.3%) and sever PMS (≥3) was present in 60.4%. Extreme limitation in QoL was mostly evident in the educational domain followed by the physical one and significant relation was found between the severe PMS and poor QoL. **CONCLUSION:** dysmenorrhea and PMS were the most common problems among student who suffer from POOR QoL. **Recommendations:** suitable support should be as long as for these people especially who suffer from more sharp premenstrual trouble and dysmenorrheal.

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1. Introduction

Menstrual cycle is an important indicator of normal sexual and reproductive health; it is the cyclic shedding of secretory endometrium associated by blood loss. Its duration is 3-7 days; the inter-menstrual period is 3-5 weeks with an average of 4 weeks and the average total blood loss ranges between 50-160 ml. **(1)**. Female's first menstruation is called menarche, its median age is 12.5 years and it is one of the indicators of maturity and can be used as a developmental landmark of a pubertal female **(2)**.

Premenstrual disorders namely premenstrual syndrome (PMS) is a group of cognitive, physical, influential, and relating to symptoms that happen cyclically through the luteal stage of the menstrual cycle and firm determination to do something at or within a few days of the onset of menstruation **(3)**. The popular symptoms of PMS involved; tumefaction, breast gentleness and kindness, headache, pain, cramp pelvic pain, back pain, bloating, sleep disorder, especially for food change, poor concentration, lower benefit, social recession, irritability, mood swings, anxiety or tension, depression, and feeling out of control **(4)**.

Definition of dysmenorrhea is difficult menstrual flow or affected with pain menstruation. About 50-75.0% of young female complains of this. This is one of the leading causes of loss school days **(5)**. High prevalence of dysmenorrhea among adolescents especially in the first years of their reproductive life influences their daily activities and can lead to high rates of school absenteeism and is thus a major health problem. Dysmenorrhea is described by a painful pelvic pain beginning shortly before or at the start of menses and lasting 1–3 days **(6)**.

Lee et al. (7) study in Malasia found that abnormal cycle length (from ≤ 20 days to ≥ 35 days) or irregular style was popular and affected 37.2% of the subjects. The majority (74.6%) of the participants having knowledge premenstrual syndrome and 69.4% had dysmenorrhea. Moreover, about 18.0% showed that excessive menstrual use two pads at a time to prohibit blood from soaking through or sure by doctor to be anemic due to heavy menstrual flow.

Priya et al. (8) reported that 62.2% were exposed to PMS and excessive bleeding or menorrhagia is found in 35.0% of girls**.** Recently, **Nazeema et al. (9)** found that the majority of girls (84.8%) have one or other menstrual problems. Of

those, 33.0% of girls suffer from dysmenorrhea.**Prabin et al. (10)** study in Nepal found that more than two thirds of the students (67.3%) complained of PMS and more than one half (53.8%) of study population reported incidence of dysmenorrhea**.**

Dysmenorrhea and PMS can negative affect the quality of the adolescents' lives; therefore, are often the source of feeling of worry for them and their families **(11, 12)**. The most found common causes of regular absenteeism of young women from schools and work places and inability to meet up with some social functions. It was found two disorders have economic consequences and have non- health problems. The first trouble is economic consequences may be caused terms of health care costs due to the consumption of expensive hormonal drugs, menstrual pads and laboratory tests **(12, 13)**. The second trouble is non- health problems as well as limitations on attendance at work and school /college which hinder academic achievements and employment prospects. **Sharma et al. (14)** reported that in India the activities could be affected by dysmenorrhea include reduction in class concentration, sports, class participation, socialization, homework, test‑taking skills, and grades. Therefore, the most common effect of menstrual problems on daily routine was in the form of prolonged resting hours (54.0%) followed by inability to study (50.0%).

Increased knowledge of the highest prevalence of menstrual problems especially dysmenorrhea and PMS by the nurse midwife is extremely important for soon diagnosis and saving of suitable treatment without any delay. Careful knowledge of the effect of these menstrual problems on HRQOL and their adequate assessment help to better understanding the impact of the health problem and also to ensure the optimal delivery of patient-centered care, individualize treatment and estimate the volume of changes in HRQoL**(15).** This study, therefore, assessed the prevalence of dysmenorrhea and PMS and their impact on the quality of life among university students in Zagazig.

Objectives

1. To estimate the propagation of premenstrual syndrome (PMS) and dysmenorrhea among University Nursing Students.
2. To evaluate the seriousness of each problem.
3. To estimate the impact of PMS and dysmenorrhea on students of life QoL.

2. Subjects and Methods

Design:

A cross-sectional descriptive study was conducted in this study

Research Setting:

This study was conducted on 380 undergraduate females students enrolled on 1st, 2nd, grade in the Faculty of Nursing –Zagazig University during the academic year 2016-2017 between 1 January and 30 June 2017.

Sample:

Based on data from literature, with precision/absolute error of 5% and type 1 error of 5%, the sample size is calculated as follows: **(12)**

Sample size = $[(Z_{1-\alpha/2})^2.P (1-P)]/d^2$Where,

$Z_{1-\alpha/2}$ = is the standard normal variant, at 5% type 1 error ($p<0.05$) it is 1.96.

P = the expected proportion in population based on previous studies.

d = absolute error or precision.So,

Sample size = $[(1.96)^2. (0.5). (1-0.5)]/ (0.05)^2$ =379.16

Based on the above formula, the sample size required for the study was 380.

Tools of data collection

A purposive-designed questionnaire was filled anonymously. For every participant, the questionnaire was distributed and collected on the same day to ensure confidentiality and prevent information contamination. The questionnaire covered information about the following demographic and menstrual characteristics of the study sample; age, age at menarche, the cycle length (<21, 21–35, >35 days or irregular), duration of menses (<3, 3–7 or >7 days), amount of blood loss as reflected by the number of vulval pads/sanitary towels changed per day during menstruation (one, 2–4 or P5). Pain during menstruation (dysmenorrhea) was assessed by the verbal multidimensional scoring system **(14).**

This system grades pain as none, mild, moderate or severe. It also takes into account the effect on daily activity, symptoms perception and the need for analgesia. The respondents were then questioned about symptoms of pre-menstrual syndrome (PMS), and whether they consulted any physician, pharmacist, nurse, relative or friend regarding their menstrual problems.

The QoL tool contains 16 questions divided into 4 components; the physical (6 questions), educational (4 questions), psychological and mental health (3 questions) and economic (3 questions). For each question, the response of the patient is either: No limitation, little limitation and extreme limitation. The score of each component is the algebraic sum of its questions. The total score of the QOL is the algebraic sum of the 4 domains. The higher score is the better quality of life. The QOL is dichotomized into poor QOL (scores <65%) or good (>65%).

Field study

All students surveyed at the Faculty and completed the questionnaires during a class period.

After distributing the questionnaires to students, they were informed of how the questionnaires were to be filled in and then were requested to make a choice applicable to themselves. The students completed the questionnaires in the presence of the investigator. The data collected was self-reported by the students. All subjects were told that participation in the investigation was strictly voluntary, and that the data collected would not be used for anything except for this research study, and they were given the questionnaire to complete. The duration for completing the questionnaire was between 10 and 15 minutes per subject.

In the first part of the questionnaire, students were asked to state their socio-demographic menstrual characteristics, premenstrual symptoms and dysmenorrheal status. The second part of the questionnaires included visual analogue scale (VAS) questions and multidimensional scoring system (MSS) to assess the severity of dysmenorrhea, and the last part included the questions of the outcomes Study Short Form-36 (SF-36) Health Survey Questionnaire to determine toQoL of the students.

Tools content validity was tested by a jury of five experts in the related field. The required corrections and modifications were carried out accordingly. Reliability of the tools was done using Cronbach's Alpha coefficient test and the result was statistically acceptable (Alpha 0.846).

Pilot study:

Pilot study was conducted to test the applicability of the tools, feasibility of the study and estimate the time needed for data collection. It was conducted on 10%of total number. Modification, omission and addition were followed as needed according to the results of pilot study.

Ethical considerations:

Ethical approval was obtained from the research ethical committee of the Faculty of Nursing, Zagazig University. An official permission was obtained from the responsible administration of the Faculty of Nursing. Written informed consent was obtained from the students after explaining the aim of the study. The students were reassured about anonymity, privacy and confidentiality of the collected data and were informed about their rights to withdraw from the study at any time.

Statistical analysis:

All statistical analyses were performed using SPSS for windows version 20.0 (SPSS, Chicago, IL). All data were categorical and were expressed in number and percentage. The comparisons for variables containing categorical data were done using the chi-square test. Statistical significance was set at $p<0.05$.

3. Results

Table 1 shows that more than one fourth (28.1%) of the students had their menarche between 10-12 years of age, and almost two thirds (61.1%) experience it between 13-14 years of age. The majority of the students had normal length of their cycle (86.3%), but 6.6% of them complained of polymenorrhea, their period lasted 7 days and more in 2.1% and the number of sanitary pads used reached 5 and more in 7.9% of the studied sample.

Table 1: Number and percent distribution of the studied students according to their socio-demographic characteristics and menstrual history (n= 380).

	No.	%
Age		
<20 years	76	20.0
20 – 25	304	80.0
Age at menarche		
10 - 12	107	28.1
13 - 14	232	61.1
15 or more	41	10.8
Mean and stander deviation: 13.2 ± 1.3		
The cycle length		
Poly menorrhea	25	6.6
Normal	328	86.3
Oligomenorrhea	19	5.0
Irregular menstruation	8	2.1
Duration of menses		
<2 days	10	2.6
3- days	362	95.3
≥7 days	8	2.1
Number pad/sanitary towels changed per day		
One pad (hypo-menorrhea)	20	5.3
2 - 4 (normal)	330	86.8
5 or more (hyper-menorrhea)	30	7.9

Table 2 demonstrates that more than three fourths (78.1%) of the students suffered from dysmenorrhea, pain was severe in 19.4%, moderate in 62.3% and in the rest (18.3%) it was mild. Almost two thirds (59.8%) of the students reported this menstrual problem to their family or friends and more than two thirds (62.6%) of them consider pain during menstruation as normal finding and 16.6% did not seek medical advice because of fear and anxiety of long-term side effects.

complained of PMS (59.9%) the score was severe (≥3) in 60.4% and mild (≤3) in 39.6% of the sample.

Table 2: Number and percent distribution of the studied students according to the prevalence of dysmenorrhea and the source of advice (n=380)

Variables	No.	%
Dysmenorrhea: 300 (78.1%)		
Mild pain	55	18.3
Moderate	187	62.3
Severe	58	19.4
To whom did she report when she experience these menstrual problems?	70	18.4
- Physician	38	10.0
- Pharmacist	19	5.0
- Nurse	227	59.8
- Friends and family	26	6.8
- Others		
The reasons cited for avoiding medical advice (n=139)		
- It is normal problem		
- Search on internet how to overcome problem	87	62.6
- I had no enough money for medical advice	5	3.6
	3	2.2
- Fear and anxiety of long-term side effects	23	16.6
	7	5.0
- No obvious problem and relieved spontaneously without interference	14	10.0
- Shyness or embarrassment		

Figure 1 and table 3 reveal that the most common PMS in the studied sample was abdominal pain with highest percentage (91.8%) followed by back pain, headaches and aches (90.0%, 86.5% & 84.7% respectively). Bloating, sleep disorder, especially for food change, poor concentration, lower benefit, social recession, irritability, mood swings, anxiety or tension and depression were encountered by the rest of the sample (77.8%, 74.8%,72.6% 72.1.%, 68.7%, 62.1% & 59.5% & 57.3% & 54.6 %and 44.3% respectively). The same table demonstrates that of those who

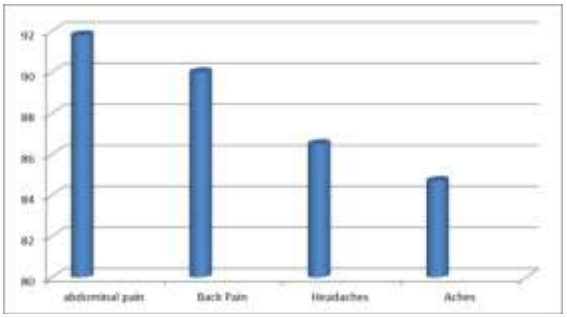

Figure 1: Number and percent distribution of the studied
students according to the prevalence of premenstrual syndrome (n= 230).

Table 3: Number and percent distribution of the studied students according to the prevalence of premenstrual syndrome (n = 230).

Variables	No.	%
The following symptoms starting 10 days before menstruation and disappearing at the beginning of the period		
Bloating	179	77.8
Sleep Disturbances	172	74.8
Appetite Change	167	72.6
Poor Concentration	166	72.1
Decreased Interest	158	68.7
Social Withdrawal	143	62.1
Irritability	137	59.5
Mood Swings	132	57.3
Anxiety/ Tension	126	54.6
Depression **** the total is not exclusive**	102	44.3
Total severity of PMS: 230 (59.9%)		
Mild (<3)	91	39.6
Severe (>3)	139	60.4

Table 4: Number and percent distribution of the students according to the measures used to cope with PMS or dysmenorrhea

Variables	No.	%
Drugs to relief PMS or Sedatives to relief pain "Diclofenac, Paracetamol, Ibuprofen, Aspirin "	170	26.2
Intake of hot drinks	36	5.6
Sleeping	228	35.2
Heating pads	127	19.6
Hot showers	41	6.3
Rest	46	7.1

Table 4 shows that more than one fourth of the students (26.2%) used over the counter medications or sedatives to relief these PMS and pain. Meanwhile, the intake of hot drinks, sleeping, heating pads, hot showers and rest was used by the rest of the sample (Table 5 shows that dysmenorrhea had a negative impact on the physical life of the studied students. Extreme physical limitations was noticed in terms of; doing daily activities, climbing stairs to several roles, walking more than half kilometer in more than two fifth of the studied students (47.3%, 41.0% and 43.7% respectively). Moreover, more than two thirds (64.7%) of the studied sample reported extreme limiting in their educational status by their absence from school classes and a sizable number complained of decrease in the ability of studying or did not participate in school activities (45.3% and 41.3% respectively).

Total is not exclusive

Concerning the impact of dysmenorrhea on the psychological and mental health QoL, Extreme impact was observed in 39.0% of the sample in the form the feeling of anxiety, confusion and depression. As for the economic impact of the QoL this was evident by almost half of the sample (51.3%) who sought medical advice or 43.0% who received pain killers.

Table: 5. the impact of dysmenorrhea on students quality of life (n=300)

Variables	No limiting		Little limiting		Extreme limiting	
	No.	%	No.	%	No.	%
I. Physical QOL						
Unable to do medium or normal daily activities such as; washing dishes, using vacuum cleaner	98	32.7	60	20.0	142	47.3
Unable to hard activities such as; cleaning heavy things, bending, kneeling or running	110	36.7	100	33.3	90	30.0
Unable to climb stairs to several roles	77	25.7	100	33.3	123	41.0
Unable to walk more than half kilometer	61	20.3	108	36.0	131	43.7
Unable to do difficult work that needs extra efforts	87	29.0	97	32.3	116	38.7
Find it difficult to perform a certain work	82	27.3	104	34.7	114	38.0
II. Educational QOL						
Absent from school classes	40	13.3	66	22.0	194	64.7
Decrease in the ability of studying	81	27.0	83	27.7	136	45.3
Decrease in concentration while studying	109	36.4	97	32.3	94	31.3
Did not participate in school activities	93	31.0	83	27.7	124	41.3
III. Psychological and mental health QOL						
Failure to complete the work or other activities with normal care	58	19.3	102	34.0	140	46.7
Minimize the work or other activities that she wishes to accomplish	52	17.4	151	50.3	97	32.3
Have the feeling of anxiety, apathetic, confusion and depression	100	33.3	83	27.7	117	39.0
VI. Economic impact of the QOL						
Seek medical advice	71	23.7	75	25.0	154	51.3
Receive pain medication	100	33.3	71	23 7	129	43.0
Utilize a lot of disposable pads	90	30.0	93	31.0	117	39.0

Table 6 shows that educational component of QoL was the poorest (72.4%) domain among the studied sample followed by the physical and psychological domain of QoL (66.3% and 62.4% respectively). The least affected domain was that of the economic component (58.9%).

Table 6: The total score of the QOL and the score of each domain among students exposed to dysmenorrhea (n=300)

	Descriptive	Frequency of QOL status			
		Poor (<65%)		Good (>65%)	
	Mean ±SD	n	%	n	%
Physical component	11.9 ±3.6	252	66.3	128	33.7
Educational component	8.0 ±2.5	275	72.4	105	27.6
Psychological component	6.0 ±2.0	237	62.4	143	37.6
Economic component	6.0 ±2.0	224	58.9	156	41.1
Total score	31.8 ±8.0	265	69.7	115	30.3

Statistically significant difference was noticed in table 7 concerning the relation between the severity of PMS and student's QoL (P=<0.001). Thus more than two thirds (67.8%) of the students who had poor QoL were exposed to severe (<3) PMS.

Table 7: The relation between the QoL and the severity of PMS (n=230)

	Poor QOL (n=146)		Good QOL (n=84)		Chi square test	
	No.	%	No.	%	X^2	p
Severity of symptoms						
Mild (<3)	47	32.2	44	52.4		
Severe (<3)	99	67.8	40	47.6	18.550	<0.001

4. Discussion

Menstruation is a natural phenomenon and an important especially a fact of female health reflecting their reproductive function. However data on female experience of common menstrual problems and their impact on QoL in Zagazig are scanty. Therefore, the goal of this investigation was to estimate the prevalence and seriousness of PMS and dysmenorrhea among University students and find out their impact on QoL. The present study revealed that the mean age of menarche was 13.2 ± 1.3 this is matching with **Waghachavare et al.(16);Cakir (17)** study in Sangly district of Maharashtra (13.7 ± 1.2) among college students **(16, 17)** and **Singh** study in Lucknow slum area who found that mean age of menarche was 13.3 ±1.2 **(18).**

Early menarche was noticed by **Joshi et al. (19)** study **(10.8 ±1.3)** in urban area of Mumbai-India and **Nooh(20)** in Zagazig- Egypt (12.2 (±1.6), with a range of 11–16 years**.** In this respect, **Nazeema et al. (9)** reported that the average age at men differents from town to twon and these may be caused different properties involved nutritional status, geographical location, environmental conditions and magnitude of socioeconomic inequalities in a society.

The present study finding indicates that the cycle length and duration was normal in the majority of the students. Polymenorrhea and changing ≥ 5 sanitary pads per day during menstrual periods was reported by less than one tenth of the sample as well as irregular menstruation were reported by few students. These correspond well with **Nooh (20)** who reported that the menstrual period extend for 83.7% ranged among 21 and 35 days and menses lasted for 3– 7 days in 87.6% students. He also found that only 2.1% who suffered from polymenorrhea. In the same line, **Gumanga and Kwame-Aryee(21)**, reported that 86.1% of the students had normal menstrual cycle length with a mean of 27.9 ±0.9 days and the median being 28 days**.** Similar results were also reported by **Zegeye**and **Megabiaw (22).Walraven et al. (23)** study in Gambia and **Esimai and Esan (24)** in Nigeria reported that polymenorrhea was found in 1% and 4% of the students respectively.

Karout et al. (25) study in Lebanon showed increasing occurrence of polymenorrhea (51.4%) between Nursing University students, in Malaysia study the menstrual irregularities was reported in 37.2%. **(26).** Also **Nazeema et al. (9**) found that 10% have scanty menstruation, 31% have menorrhagia. The difference between the previously mentioned studies and the present on could be attributed to the difference in the culture of the students and the criteria of sample selection.

According to the present study results, the prevalence of dysmenorrhea between female students was increased high amounts more than three-quarters and they mostly graded their pain as moderate. These findings supported previous studies in Egypt **(13),** India, **(14),** Turkey (**17),** Saudi Arabia **(27)** and Nigeria **(28;29)** (65.4%, 76.9%, 72.7%, 96.3% and 56.2%, respectively). Such different may be caused to among etiologies, educational differences in pain understanding and variability in pain beginning. Meanwhile, students perception that both PMS and dysmenorrhea as normal menstrual problems constituted the most commonly reported reason for avoiding medical advice and seeking help from relatives and friends in the form of sedatives, over the counter medications, hot drinks, long resting hours.

Concerning the impact of dysmenorrhea on students QoL the current study results demonstrated that extreme limitation was evident in the educational domain followed by the physical one. This figure have a close similarity well with the figure of 44–50% observed by other investigator **(30, 31, 32).**

Menstruation generlly puts compressio or tension on nearly half of respondents, deactivate home work between 2/5, and school day between a 1/3 overall prohibition going to school for one day at least in the last six months 1. Meanwhile, Banikarim et al., observied that the dysmenorrhea was may be cause of short-term school absenteeism in about 48.8% of the suffering adolescents who reported to be absent from school merely due to pain **(11).** Also **Unniraman et al. (34)** reported that 15.5% of students were absent from schools during menstruation **(34)**. This sickness absenteeism should affect their academic performance also.

The present study finding revealed that PMS was common among almost two thirds of the female students and was mostly severe. In agreement with these**Derman et al. (35)** study in Turkey reported that 61.4% of adolescent female unpleasant from PMS. Lee et al. **(36)** observed that 76.0% of Chinese girls a student at a college reported at least one PMS**.** Also **Wong (37)** cross-sectional study in Malaysia of 1,295 village adolescent female aged 13 to 19 years reported that 63.1% identified themselves as having PMS. However, **Bakhshani et al. (38, 39)** study in Iran revealed that 98.2% of university students aged 18-27 years were experiencing at least one mild to severe PMS. A bring down prevalence of 51% was found in Pakistan among medical students **(40).**

This difference in the prevalence between the previously mentioned studies and the present one may be connected to the variance in the study group and/or the difference in the use reconnaissance to estimate PMS. In this respect, Steiner et al., recommend the use

of similar criteria and a standard measure to assess PMS to avoid the problem of such differences in reporting. This Premenstrual Symptoms Screening Tool for Adolescents (PSST-A) is a rapid, and credible tool to screen for these syndromes in adolescents **(41).**

The current study findings showed that students with PMS reported significantly poorer QoL with the severity of these symptoms (<3). Partially similar observation was reported by **Yang et al., (42)** who found that women either at dangers for PMS were safety more likely to statement limitations than women with no indication of PMS in all HRQoL areas except for two physical functioning items and one mental health item and the general health item**.** Meanwhile, the study of **Taghizadeh et al. (43)** in Iran and **Nisar et al. (40)** in Pakistan found that QoL of life was significantly lower in students with severe PMS group**.** It is argued that girl adolescents with acute PMS may be more stress and thus determination poorer conditions.

Conclusion:

Dysmenorrhea was the most common problem followed by PMS among female students. Pain was almost moderate and PMS was severe in the majority of cases. Educational and physical domain was highly impacted by dysmenorrhea and significant relation was found between the severity of PMS and student's QoL.

Recommendations:

The results suggest that health and educational authorities in the Faculty need to Know the problem and supply suitable, tangible and emotional support for female students with PMS and dysmenorrhea. Moreover, it is essential to establish and become stronger school-based reproductive health information programs to enable female students to know how to deal with these disturbing problems. Meanwhile, future research should focus primarily on implementation and valuation of school-based health education programs on the topic.

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