

Original Article

The Relationship Between Menstrual Health and Absenteeism in College Students at a Mid-Sized University

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Received: 23 December 2022

Revised: 23 January 2023

Accepted: 03 February 2023

Published: 15 February 2023

Abstract - Menstruation is an event that signifies females' official entry into puberty. An alarming number of females experience pain and other uncomfortable symptoms. Most females do not report their symptoms, as most believe this is an expected part of menstruation. This study examined whether menstrual distress contributed to absenteeism in females at a mid-sized university, the average number of class days missed due to dysmenorrhea, and the specific type of symptoms experienced. The Menstrual Distress Questionnaire (MDQ)-Form C was utilized to obtain information regarding symptoms experienced during the menstrual cycle at three intervals: most recent flow, four days before, and for the remainder of the cycle. Findings revealed a statistically significant small positive correlation between class absence and four days for the most recent flow and a small positive correlation between class absence for the beginning of the cycle and for the remainder of the cycle.

Keywords - Menstruation, Dysmenorrhea, Absenteeism, College female student, Reproductive health.

1. Introduction

Most females experience menstruation as a naturally occurring event, although there is a high incidence of significant pain along with other uncomfortable symptoms (Ferries-Rowe et al., 2020). Many adolescents experience what is termed "primary dysmenorrhea," which is menstrual pain that occurs in the absence of any underlying disease processes (ACOG Committee Opinion Number 760, 2018). "Secondary dysmenorrhea" occurs when menstrual pain is related to underlying pathology or other disease processes (ACOG Committee Opinion Number 70, 2018).

According to Ferries-Rowe et al., 2020, the incidence of dysmenorrhea is very common. Reported rates of the occurrence of dysmenorrhea are quite significant (ACOG Committee Opinion Number 760, 2018). Even more alarming is the reluctance of females to report this pain to healthcare professionals (Dharshini et al., 2021). Evidence has been shown to demonstrate that menstrual symptoms can affect females' rate of absenteeism and ability to perform work tasks (Schoep et al., 2019; Hardy and Hunter, 2021). In a large cross-sectional study, results revealed that women suffering from menstrual-related pain or discomfort experienced a loss of productivity in job performance (Schoep et al., 2019).

Academic performance can be negatively affected when individuals suffer from dysmenorrhea, as evidenced by

Dharshini et al., 2021. This study concluded that there was a high rate of dysmenorrhea in this population, and there were negative impacts on academic work, normal activities, and participation in sports or social events (Dharshini et al., 2021). Specific populations have been studied, and similar findings were demonstrated. An example is a study of medical students and the effect of dysmenorrhea on their normal activities and ability to perform in their academic studies, which concluded there was a disruption in their quality of life (Gangwar et al., 2014).

Some individuals may conclude that living with menstrual pain is normal (Martinez et al., 2020). In this qualitative study, females described how their quality of life was affected due to interference with normal activities, such as classes, events, exercise, and other social functions (Martinez et al., 2020).

This study was conducted to explore if menstrual health affects the rate of absenteeism in female college students.

The objectives of the study were as follows:

1. To determine if menstruation causes absenteeism in college females.
2. To determine the underlying reasons related to menstrual pain using a validated (Moos, 2010) Menstrual Distress Questionnaire (MDQ).



3. To determine the average number of class days missed.

2. Materials and Methods

2.1. Study Design

This study utilized a descriptive correlational cross-sectional study design with quota sampling.

2.2. Study Setting

This study was conducted on a university campus in Warrensburg, Missouri.

2.3. Study Duration

July to September 2022

2.4. Sample Size

296 students

2.5. Sample Size Calculation

The target population was 200; however, there was a total of 296 participants.

2.6. Study Participants & Selection Criteria

Enrolled students were recruited for the study. To participate, students had to:

- (a) be at least 18 years of age.
- (b) be currently enrolled as a student in any program.
- (c) self-identify as a female.
- (d) experience menstruation.
- (e) must consent to participate.

Data was collected via an online survey platform in a location of the participant's choosing. The University's Institutional Review Board approved this study and this

The manuscript was prepared following the Strengthening the Reporting of Observational Studies in epidemiology (STROBE) Statement: guidelines for observational studies (Von Elm et al., 2008).

2.7. Variables and Measurement

Outcomes included sociodemographic information, age of menarche, whether menstruation is regular or irregular, presence of reproductive health disorders, the presence of family history of reproductive disorders, number of times menstrual material is changed on heavy days, whether financial hardship is associated with the purchase of menstrual products, the frequency of missed events and/or classes due to menstruation, and the total number of average days missed per month for classes and/or events.

The Menstrual Distress Questionnaire (MDQ), Form C, was utilized as a validated screening tool in the study (Moos,

2010). This instrument was chosen to identify specific characteristics associated with the menstrual cycle.

2.8. Statistical Analysis

IBM SPSS was utilized for data analysis. Raw data was collected, coded, and transferred to SPSS. All data generated or analysed during this study are included in this published article, except for the individual items on the MDQ (Moos, 2010), as they are copyright protected.

3. Results

3.1. Participants and Descriptive Data

During the Fall 2022 semester, students were recruited via email. Demographic characteristics of these 296 participants are shown in *Table 1*.

Table 1. Demographic Characteristics of Participants (N=296)

Characteristic	n	%
Age (in years)		
18	34	11.5
19	44	14.9
20	38	12.8
21	45	15.2
22	44	14.9
23	11	3.7
24	12	4.1
25	15	5.1
26	14	4.7
27	10	3.4
28	6	2.0
29	7	2.4
30	7	2.4
31	3	1.0
33	1	0.3
34	1	0.3
35	1	0.3
36	3	1.0
Race		
African American/Black	12	4.1
American Indian	3	1.0
Asian	7	2.4
Caucasian	238	80.4
Chinese	2	0.7
Hispanic	10	3.4
Indian	17	5.7
Native Hawaiian	1	0.3
Undisclosed	6	2.0
Relationship status		
Divorced	3	1.0
Married/Partnered	113	38.2
Single	178	60.1

3.2. Statistics and Data Analysis

Participants were asked the following questions regarding menstruation:

- Age of menarche.
- If the menstrual cycle is regular or irregular.
- If they have any menstrual or reproductive disorder.
- If participants answered “yes” to a menstrual or reproductive disorder, they were asked to provide that information.

The ages of 12, *n*=94 and 13, *n*=77, were the two most common ages of menarche for this study sample. The majority indicated that they had regular menstrual cycles, *n*=186, with the absence of a menstrual problem diagnosis, *n*= 249. The most common diagnosis for this group was Polycystic Ovary Syndrome (PCOS), *n*= 26.

Table 2 shows the characteristics of the study sample’s menstruation.

Table 2. Characteristics of Menstruation (N=296)

Characteristic	n	%
Age at first menarche (in years)		
7	1	0.3
8	1	0.3
9	8	2.7
10	22	7.4
11	59	19.9
12	94	31.8
13	77	26.0
14	20	6.8
15	10	3.4
16	2	0.7
17	1	0.3
18	1	0.3
Consistency/Regularity	n	%
Regular Cycle	186	62.8
Irregular Cycle	102	34.5
Menstrual problem diagnosis	n	%
No	249	84.1
Yes	47	15.9
Participant Diagnoses	n	%
No diagnosis	249	84.1
PCOS	26	8.8
Endometriosis	6	2.0
Fibroids	2	0.7
Factor V Leiden	1	0.3
Myomectomy	1	0.3
Metrorrhagia	1	0.3
Unexplained infertility	1	0.3
High prolactin	1	0.3

Participants were asked the following about certain characteristics of menstruation:

- If there is a family history of menstrual problems.
- If family history exists, what is the relationship of the affected individual to you?
- What is the family member’s diagnosis?

Most participants indicated that there was no family history of menstrual problems, *n*=161. When there was the presence of menstrual family problems, participants indicated their mother, *n*=23, or 2 female relatives, *n*=30. The most common family diagnoses indicated were endometriosis, *n*= 16, and PCOS, *n*=12. There were participants who indicated that two or more disorders were present, *n*=18. There was a small number who could not identify the diagnosis, *n*=15.

Table 3 shows the study participants’ family history as related to menstruation.

Table 3. Characteristics of Family Menstruation (N=296)

Characteristic	n	%
Family history of menstrual problems		
Yes	77	26.0
No	161	54.4
Relationship to family member diagnosed with the menstrual problem(s)	n	%
Mother	23	7.8
Aunt	5	1.7
Sister	3	1.0
Grandmother	2	0.7
Other	1	0.3
2 relatives	30	10.1
3 relatives	11	3.7
4 relatives	1	0.3
Undisclosed	1	0.3
Family member diagnosis	n	%
No diagnosis	219	74.0
PCOS	12	4.1
Endometriosis	16	5.4
Fibroids	1	0.3
Interstitial cystitis	1	0.3
Unknown	4	1.4
Endometrial cancer	1	0.3
Ovarian cancer	2	0.7
Breast cancer	1	0.3
Cervical cancer	1	0.3
2 diagnoses	18	6.1
3 diagnoses	4	1.4
6 diagnoses	1	0.3
Undisclosed	15	5.1

Table 4. Response to Menstrual Cycle (N=296)

Response	n	%
Product use	n	%
Disposable pad	67	22.6
Reusable pad	1	0.3
Tampon	49	1.6
Menstrual cup	12	4.1
2 products	127	42.9
3 products	33	11.1
4 products	6	2.0
5 products	1	0.3
Daily frequency of product change	n	%
1x/day	6	2.0
2x/day	47	15.9
3x/day	92	31.1
More than 3x/day	150	50.7
Undisclosed	1	0.3
Financial Hardship	n	%
Yes	22	7.4
No	193	65.2
Sometimes	81	27.4
Frequency of missed class due to menstrual cycle	n	%
Monthly	38	12.8
Occasionally	142	48.0
Never	11	39.2
Average number of days missed due to menstrual cycle	n	%
1	93	31.4
2	59	19.9
3	17	5.7
4	2	0.7
5	3	1.0
6	6	2.0
Undisclosed	116	39.2

Participants were asked questions regarding their menstrual practices and habits:

- Type of product(s) used.
- Daily frequency of product change.
- Financial hardship related to the purchase of feminine hygiene products.
- Frequency of missed class due to menstrual cycle.
- An average number of days missed due to menstrual cycle.

Participants indicated that they occasionally missed class due to their menstrual cycle, $n = 142$, and the number of missed class days was one day, $n=93$, and two days, $n=59$.

Table 4 above shows the needs and behaviors of the participants in response to their menstrual cycles.

The MDQ questionnaire, Form C (Moos, 2010) responses were analyzed. Results are displayed for three menstrual cycle intervals: most recent flow, four days before, and the remainder of the cycle. Collectively, participants demonstrated a strong impact ($M = 88.64$, $SD = 39.51$; $Mdn = 93.00$, $IQR = 46.00-115.00$) during their most recent flow, a moderate impact ($M = 72.03$, $SD = 35.86$; $Mdn = 74.00$, $IQR = 49.00-95.00$) four days before their most recent flow, and a moderate impact ($M = 69.40$, $SD = 33.69$; $Mdn = 70.00$, $IQR = 52.50-90.00$) for the remainder of their most recent flow.

Table 5 shows the means and standard deviations as well as the medians and interquartile ranges for the individual subtests.

Table 5. Subtests for Each Domain

Subtest	Severity	M	SD	Mdn	IQR
First Flow					
Pain	Strong	16.99	6.11	17.00	13.00-21.00
Water Retention	Strong	9.04	3.55	9.00	7.00-11.00
Autonomic Reactions	Moderate	7.35	3.29	7.00	5.00-9.00
Negative Affect	Strong	21.17	8.12	21.00	15.00-27.00
Impaired Concentration	Moderate	13.77	5.91	12.00	9.00-17.00
Behavior Change	Strong	12.97	5.91	12.00	8.00-18.00
Arousal	Moderate	9.22	3.58	9.00	6.00-11.00
Control	Moderate	8.61	3.53	7.00	6.00-10.00
Four Days Before					
Pain	Moderate	12.32	5.77	11.00	8.00-17.00
Water Retention	Moderate	8.44	3.82	8.00	5.00-11.00
Autonomic Reactions	Moderate	5.49	2.35	5.00	4.00-6.50
Negative Affect	Strong	18.21	7.88	17.00	12.00-24.00
Impaired Concentration	Moderate	11.95	5.43	10.00	8.00-14.00
Behavior Change	Moderate	9.59	5.02	8.00	5.00-13.00
Arousal	Moderate	9.36	4.34	9.00	5.00-12.00
Control	Mild-Moderate	8.00	3.25	6.00	6.00-9.00
Remainder of Cycle					
Pain	Moderate	12.04	5.96	11.00	7.00-15.00
Water Retention	Mild	6.86	3.18	6.00	4.00-9.00
Autonomic Reactions	Moderate	5.56	2.21	5.00	4.00-7.00
Negative Affect	Moderate-Strong	15.88	7.88	17.00	12.00-24.00
Impaired Concentration	Moderate	11.80	4.71	10.00	8.00-13.50
Behavior Change	Moderate	9.54	5.02	8.00	6.00-12.00
Arousal	Moderate	9.87	4.63	9.00	6.00-12.00
Control	Mild-Moderate	7.97	3.26	6.00	6.00-8.25

Table 6. Internal Consistency for Subscales

Subtest	Scale		
	Most Recent Flow	Four Days Before	Remainder of Cycle
	α	α	α
Pain	.74	.82	.86
Water Retention	.66	.71	.74
Autonomic Reactions	.59	.59	.54
Negative Affect	.86	.88	.89
Impaired Concentration	.80	.83	.81
Behavior Change	.90	.88	.88
Arousal	.68	.79	.84
Control	.72	.73	.76

Table 6 above demonstrates the internal consistencies of the subscales in the study. There was a statistically significant small positive correlation between class absence and 4 days before menstruation onset, $r(117) = .24, p = .011$, and a moderate positive correlation between class absence and the most recent flow, $r(117) = .37, p < .001$. There was also a small positive correlation between class absence for the remainder of the cycle, $r(117) = .18$, but this was not statistically significantly different $p = .052$.

4. Discussion

The number of females who are suffering from dysmenorrhea in silence is shocking. This study illustrates the positive correlation between menstrual distress and absences from class and other events. Future research is needed to explore this concept further. There may be other considerations, such as financial hardship and access to menstrual materials (Casola et al., 2022). Support for females is an important part of overall physical health and

should be instilled among college campuses and workplaces. An example is the use of paracetamol in a study among college females in Ghana in which pain was greatly reduced (Ameade et al., 2018).

4.1. Study Limitations

The study sample was small in relation to the number of females enrolled at the institution. Minority populations were also underrepresented in the study. It was also noted that participants skipped some questions, which affected the overall statistical significance between menstrual pain and the number of class absences.

5. Conclusion

Interventions aimed at alleviating menstrual distress and increasing the quality of life for affected females should be sought. More common treatments include nonsteroidal anti-inflammatory drugs (NSAIDs) and hormonal medications (Bofill et al., 2019; Oladosu & Hellman, 2018; ACOG Committee Opinion Number 70, 2018).

Research studies have been performed to address other therapeutic strategies to manage menstrual pain and distress. The incorporation of aerobic exercise can greatly reduce the symptoms associated with menstrual distress (Dehnavi et al., 2018; Kannan et al., 2019). Zumba dancing was evaluated, and the results revealed a significant decrease in dysmenorrhea following this intervention (Samy et al., 2019). Females should be informed about the potential benefits of exercise in relation to menstrual pain so that it can be included as part of their lifestyle practices.

Physical therapy has also shown positive results in reducing menstrual pain (Ortiz et al., 2015). In addition to effective pain management, physical therapy has also been shown to minimize the emotional stress that often accompanies physical symptoms (Azim et al., 2022). Yoga has also shown promise for alleviating menstrual pain due to its relaxation techniques coupled with physical exercises and stretching (Sutar et al., 2016; Yonglitthipagon et al., 2017). It is possible that females are unaware that physical therapy may be an option for them to explore to relieve their menstrual pain.

Complementary treatments have also been explored and may be used solo or in conjunction with other conventional treatments. Abubakar et al., 2020 conducted a study

investigating the types of complementary treatments utilized by a select population of undergraduate students. It concluded that “bed rest, hot compress/heating pad, massage, and hydrotherapy were used most frequently.

Limited research exists on the use of transcutaneous electrical nerve stimulation (TENS) in the reduction of menstrual pain when used concurrently with other more traditional pain-reduction methods (Igwea et al., 2016).

Herbal medications have been explored in previous studies. Traditional Chinese medicine in the form of bian zheng lun zhi was explored in a group of study participants with menstrual pain. It was found that they experienced a reduction in pain and other uncomfortable symptoms due to menstruation (Pin-Yi et al., 2014). In conjunction with aromatherapy, Iranian herbs also showed positive results in managing dysmenorrhea (Najafi et al., 2019). Due to limited research studies, more research needs to be conducted on the use of herbal medications.

There is limited research regarding the use of acupuncture as a treatment for dysmenorrhea. Despite these limited findings, studies have demonstrated effective pain management along with an increase in self-care knowledge because of acupuncture treatment (Kiran, et al., 2013; Armour et al., 2016). More information and research are needed on the effect of acupuncture on dysmenorrhea.

Due to the popularity of digital technology, efforts are underway to arm females with electronic tools for coping with menstrual distress. A digital intervention was introduced in the workplace in the form of an app, and researchers concluded that the use of the app armed females with support from other users, as well as management strategies for their monthly menstrual cycles (Ponzo et al., 2022). Nurses can also create patient-specific treatment goals and plans if individuals can track trends and other aspects regarding their menstrual cycle via a Smart Phone app (Sanchez and Maresh, 2021).

Funding Statement

The first author’s university funded the MDQ questionnaire.

Acknowledgments

Both authors contributed equally to this manuscript.

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