



**St. Paul's Hospital
Millennium Medical College**
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School of Public Health

**St. Paul's Hospital Millennium Medical College
Undergraduate Study Program**

**The Link of Menstrual Disturbances to Work Performance: A
Cross-Sectional among Medical Interns in Addis Ababa**

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March, 2026 G.C.

Addis Ababa, Ethiopia

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**A Thesis Submitted To Undergraduate Studies Coordinating Office
And St.Paul's Hospital Millennium College School Of Public Health, In
Partial Fulfillment Of Requirements For Bachelor Degree Of Medicine**

March, 2026 G.C.

Addis Ababa, Ethiopia

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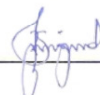
Declaration

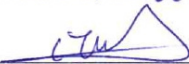
I, the undersigned student, declare that this research project is my original work in partial fulfillment of the requirement for the **Degree of Doctor in Medicine**, MD. I also declare that it has never been presented in this or any other higher institution and that all resources and materials used in the research work have been duly acknowledged.

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Approval of Advisors

This research work has been submitted for examination with my approval.

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Abbreviations

AUB: Abnormal Uterine Bleeding

DRIFS: Dysmenorrhea-Related Impact on Functioning Scale

MD: Medical Doctor

PD: Primary Dysmenorrhea

PG: Prostaglandin

SPHMMC: St. Paul's Hospital Millennium Medical College

SPSS: Statistical Package for the Social Sciences

WPAI: Work performance and Activity Impairment Questionnaire

Abstract

Background: Menstrual disturbances, particularly primary dysmenorrhea, are common issues affecting women of reproductive age when it comes to their daily functioning but more specifically their work performance. Medical interns are no exception to this reality. In spite of the high prevalence of this condition, there are limited studies done when it comes to the relation of menstrual disturbances and work performance.

Objective: To assess the relation between menstrual disturbances and work performance among female medical interns at medical colleges in Addis Ababa, Ethiopia, in 2026.

Methods: An institution-based cross-sectional study was conducted among 165 female medical interns selected using quota sampling from medical colleges in Addis Ababa. Data were collected using a structured, self-administered questionnaire that included the Menstrual Distress Questionnaire (MEDI-Q), the Dysmenorrhea-Related Impact on Functioning Scale (DRIFS), and the Work Productivity and Activity Impairment (WPAI) questionnaire. Dysmenorrhea was defined as a MEDI-Q score ≥ 8 , and functional impairment as a DRIFS score ≥ 44 . Data were analyzed using SPSS version 25. Descriptive statistics were used to summarize participants characteristics and binary logistic regression was employed to assess associations, with a p-value ≤ 0.05 considered statistically significant.

Results: Results: A total of 165 female medical interns participated in the study. The prevalence of dysmenorrhea was 75.2% (n=124), and functional impairment was observed in 26.7% (n=44) of participants. Among those with dysmenorrhea, 31.5% (n=39) experienced functional impairment compared to 12.2% (n=5) of those without. Dysmenorrhea was significantly associated with functional impairment (p=0.020), with affected interns having 3.3 times higher odds of impairment (OR=3.304; 95% CI not provided). The WAI revealed substantial work impairment: mean absenteeism was 4.4% (SD+10.3), presenteeism was 62.5% (SD+21.8), overall work productivity loss was 63.3% (SD+22.3), and activity impairment was 56.4% (SD+23.1). All WPAI components were significantly higher among interns with dysmenorrhea (p<0.001 for all). 89.7% of participants reported no institutional support for managing menstrual symptoms at work. Commonly cited barriers included lack of time (75.2%), no private space (59.4%), and lack

of supplies (58.2%). The most desired accommodations were one-day leave (86.7%), short breaks (70.9%), and female-only rest areas (58.2%).

Conclusion: Primary dysmenorrhea is highly prevalent among female medical interns in Addis Ababa and is significantly associated with reduced work performance and functional impairment. Although absenteeism was relatively low, high levels of presenteeism and productivity loss were observed. The lack of institutional support highlights the need for workplace policies that address menstrual health and provide supportive measures for affected interns.

Keywords: menstrual disturbances, medical interns, work performance

1. Introduction

Menstrual disturbance is an umbrella term that encompasses any deviation from the 'typical' menstrual cycle of a woman (1). This includes a host of diseases from abnormal uterine bleeding (AUB), which in of by itself encompasses various causes to pain during the menstruation phase to mood changes and much more (2). In this study, we will be focusing on the latter of the two.

Pain during menstruation i.e dysmenorrhea is defined as 'the presence of recurrent, crampy, lower abdominal pain occurring during menses'. It can be either primary, in the case of absence of demonstrable disease, or secondary, in the case of clinically identifiable underlying pathology (3). Here, our focus will be on primary dysmenorrhea as it encompasses the larger share of women affected worldwide.

In the pathogenesis of primary dysmenorrhea, prostaglandins (PG) released from the sloughing of the inner most layer of the uterus induce contractions of the muscular layer of the uterus. These contractions began with a basal tone of around 10 mmHg and can reach up to 150-180 mmHg. When this pressure increases the tone of the arteries found in the uterus, it blocks the transportation of oxygenated blood to the uterus. Hence, the cells find other ways of manufacturing energy without the use of oxygen which eventually leads to the release of metabolites that activate the pain receptors located around that area, leading to dysmenorrhea (4-6).

Primary dysmenorrhea typically begins during the age of adolescence and is said to improve with the advancement of age (7). The pain is typically described as to start one to two days before the onset of menses and gradually diminishes over 12-72 hrs, located around lower abdomen but sometimes back and thighs. There are also additional symptoms including diarrhea, fatigue and headache (8).

Unfortunately, dysmenorrhea not only affects the physical well being of a woman but also her social and economical standings as well (9). It is shown to impact school attendance and work performance in a significant manner. A recent systematic review established the relationship between dysmenorrhea and academic impairment such as absenteeism, lesser participation in classroom activities, lack of concentration, and degrading academic

performance (10). Hence, it is a reasonable deduction that this would also be the case with both a physically and mentally demanding job as being a medical intern at a hospital.

Medical interns in Addis Ababa's medical colleges are final-year medical students completing supervised clinical training. They rotate through core departments, conduct patient assessments, perform basic procedures, assist in surgeries and deliveries, and manage emergencies. Interns typically work around 70 hours per week, including two 24-hour duty shifts, balancing clinical responsibilities with academic activities. And are then evaluated based on their performance by senior doctors.

Pain during menstruation affects nearly 50-90 % of women in the reproductive age worldwide (1). In studies done in various countries, the prevalence reiterates nearly a similar range. A study done among Hispanic female adolescents found 85% of the adolescents reported experiencing dysmenorrhea (12). And according to a study done among Nigerian college students, the prevalence was 62.5% (13). In a study that hits closer to home, one done at Dabat and Kola Diba showed 72% prevalence of dysmenorrhea in secondary school students (14).

The physical and mental symptoms associated with dysmenorrhea then have a far reaching affect than the individual. Female students can have their academic performance (15) affected as well as the working woman's work performance with absenteeism and loss of work days to mention only the obvious (16). These can ultimately affect the socioeconomic state of a given province, if not state.

The study on primary dysmenorrhea and it's relation to medical interns' work performance helps to bridge the gap on the relative lack of knowledge in this area which has the potential to affect nearly half of the work force. This research will be focused on medical interns working at medical college in Addis Ababa and the results obtained can help medical interns gain the awareness of their condition and subsequently seek treatment which will bring about a better quality of life in both health and work related areas of life. It will also improve the overall care of patients during their hospital stay. This will in general lead to higher quality of health provision leading to an increased in socio-economic standing as a society.

2. Literature Review

The prevalence of pain during menstruation, globally, has been mentioned in the above texts. However, when it comes to the specifics of the prevalence among medical professional, a few studies have yielded results. In a study that included a meta analysis of 13 studies with a total of 2,487 female medical students showed a pull estimate of 72.7% (95%CI:0.634–0.804) with the highest report of dysmenorrhea being from Iran, and the lowest was from Turkey (17). In a cross-sectional and descriptive study done among 574 nurses in Turkey, the prevalence of PD was 9.9%, and 86.0% of the nurses suffered from moderate and severe dysmenorrhea (18).

A study by Mexican university students found that dysmenorrhea affects 65% of students' daily activities while the main characteristics that limit students' daily activities were cramping pain in the lower abdomen (93%), swollen abdomen (67%), irritability (50%), depression (48%), painful or tender breasts (45%), backache (43%), gastrointestinal disturbances (26%), headache (24%), and swelling legs (19%) (19).

Another study done among Hispanic female adolescents showed a loss of class concentration (59%), limited sport participation (51%), loss of class participation (50%), homework (35%), and test taking skill (36%) with 46% with a half to 1 day of school absence, 36% 2 to 3 days school absence, and 18% more than four school days' absence (12).

In a cross-sectional survey conducted in the Netherlands from July to October 2017 study of 32,748 women, a total of 4514 (13.8%) women reported absenteeism with 1108 women (3.4%) reported absenteeism in every or almost every cycle subsequently accounting for an average of 22% of the total absenteeism. In regards to presenteeism, a total of 80% reported this during their period. This is approximately 7 folds greater than the mean number of lost productive days due to presenteeism. In the same study, the strongest relationship was found for scores of 7 and higher of abdominal pain intensity where the ORs were 5.6 for absenteeism (95% CI 5.0 to 6.2) and 8.8 for presenteeism (95% CI 8.1 to 9.5). The study also show cases the reasoning women gave for their absent days. 20.1% (n=908) told their employer or school menstrual symptoms were the reason, 46.4% (n=2092) only mentioned the presenting symptom. No reason was given by 27.7%

(n=1250), while 5.8% (n=260) made up another reason. Comparing this numbers with women aged 21 or less, it was shown they were less likely to mention menstrual symptoms as their reason for absenteeism (12%v vs 27%) (20).

In a cross-sectional study done in Ethiopia with a total of 440 student participants, the prevalence of PD was 368 (85.4%)with 123 (28.5%) having mild, 164 (38.1%) moderate, and 81 (18.8%) severe primary dysmenorrheal pain. Common symptoms mentioned in this study for PD were back pain or abdominal pain (88.3%), mood change – irritability and depression (57.8%), menstrual irregularity (49.5%), headache (29.3%), pain at the groin (27.2%), and sleeplessness (17.3%). Among students with PD, 88.3% reported a negative effect on their academic performance. Of these, 80% reported school absence, 66.8% loss of class concentration, 56.3% class absence, 47.4% loss of class participation and 21% reported inability to do homework. In addition, 47% reported 1 day school absence, 23.4% reported 2 days school absence, and 5.7% of students reported 3 days school absence (21).

3. Objectives

3.1. General objective

To assess the relation between menstrual disturbances and medical interns' work performance in all medical colleges in Addis Ababa, Ethiopia with medical interns, in 2025 G.C.

3.2 Specific Objectives

- To identify the prevalence of menstrual disturbances among medical interns in all medical colleges in Addis Ababa, Ethiopia with medical interns, in 2025 G.C.
- To assess the level of work performance disturbances among medical interns all medical colleges in Addis Ababa, Ethiopia with medical interns, in 2025 G.C.
- To determine the relation of menstrual disturbances with work performance among medical interns in all medical colleges in Addis Ababa, Ethiopia with medical interns, in 2025 G.C.

4. Methodology

4.1 Study setting/area and period

The study was conducted at all medical colleges in Addis Ababa that have medical interns. They are namely TASH (Tikur Anbessa Specialized Hospital), SPHMMC (St. Paul's Hospital Millennium Medical College), MMC (Myungsung Medical College), BMC (Bethel Medical College, Sante Medical College, Ecusta Medical College, Yekatit 12 Medical College, Hayat Medical College and Africa Medical College.

The study was conducted from September to December 2025 G.C.

4.2 Study design

An institution based cross-sectional study was conducted to assess relation between menstrual disturbances and medical interns' work performance at all medical colleges in Addis Ababa, Ethiopia.

4.3. Population

4.3.1 Source population

The source population for this study were female medical interns working at all medical colleges in Addis Ababa, Ethiopia.

4.3.2 Study population

The study population for this study were female medical interns at all medical colleges in Addis Ababa in all departments in 2025 G.C. that satisfy the inclusion criteria.

4.4. Eligibility Criteria

4.4.1. Inclusion Criteria

Female medical interns who were attending medical colleges in Addis Ababa, Ethiopia.

4.4.2 Exclusion Criteria

- Female medical interns not available during study time (on sick leave, week off) or unwilling to participate

4.5 Sample size determination and sampling procedure

The required sample size of the study was calculated using comparing 2 proportions formula, by considering a research done in Uganda titled 'menstrual health challenges in the workplace and consequences for women work and wellbeing', the sample size is as follows:

$$n_0 = ((Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)))/(p_1-p_2)^2$$

$$\alpha = 0.05 \text{ (two-tailed)} \rightarrow Z_{\alpha/2} = 1.96$$

$$\text{Power} = 80\% \rightarrow Z_{\beta} = 0.84$$

So, $(Z_{\alpha/2} + Z_{\beta})^2 = 7.84$

p_1 = proportion of poor work efficacy among females with dysmenorrhea from a similar study = 18%

p_2 = proportion of poor work efficacy among females without dysmenorrhea from a similar study = 4%

$n_0 = ((1.96 + 0.84)^2 * ((0.18)(1-0.18) + 0.04(1-0.04)))/(0.18-0.04)^2 \sim 150$

And with 10% non-respondent rate ~ 165 interns

The study participants were selected by quota sampling.

4.6 Variables of the study

4.6.1 Dependent variables

Work performance

4.6.2 Independent variables

Age

Sex

Marital status

Place of work

Educational background

Dysmenorrhea

4.7 Operational Definitions

Age: a subject-report of the number of years since birth

Sex: a subject-report of the assigned gender at birth

Marital status: a subject-report of being legally married to another individual

Place of work: a subject-report of the university one attends

Educational background: a subject-reporting of the most currently held educational status

Menstrual cycle: a term to describe the sequence of events that occur in your body as it prepares for the possibility of pregnancy each month.

Pain during menstruation: the presence of recurrent, crampy, lower abdominal pain occurring during menses measured with a with a numeric pain rating scale, of subject-report taking ≥ 5 as equating with disturbance based on Dworkin et al., 2005 paper. However to be us a more precise screening tool, we used a MEDI-Q (menstrual distress questionnaire) which is a 25 item questionnaire that assesses menstrual distress and its impact on psychological well-being. It indicates the number of symptoms that cause greater distress during the menstrual period. Primary dysmenorrhea was hence defined as Dysmenorrhea Screening Score (DSS ≥ 8) which is calculated using the items of the questionnaire as $(\text{Item A} * \text{Item B}) + (\text{Associated Count}) + (\text{Avg B} * 2)$

Work performance : the effectiveness of a person in performing their tasks such as how well they can carry out duties, sustain focus, and achieve expected performance. This is objectively measured using DRIFS (Dysmenorrhea-Related Impact on Functioning Scale). This is a 15 item subject-reported outcome measures divided into 'bodily functions' (the first 6 questions) and 'daily activities and social participation' (the latter 9 questions) and 'functioning' ($I=0.62$, $p \leq .05$) as a general factor with each question ranging from 0-4. The total score ranges from 0-88 with a value of ≥ 44 points considered the cut-off point for person with significant relation of dysmenorrhea on functioning. The WPAI tool will also be used to measure work performance. It is a self-administered six item questionnaire with each item being rated from a scale of 0 up-to 10 measuring absenteeism, presenteeism, work productivity loss, and activity impairment calculated as $(Q2 / (Q2 + Q4)) * 100$, $(Q5/10)*100$, Absenteeism + $[(1 - \text{Absenteeism}/100) * \text{Presenteeism}]$ and $(Q6/10) * 100$ respectively.

4.8 Data collection tool, methods and procedures

The data that was utilized in this research is primary data, a standard questionnaire will be utilized in the collection of data using the English language. It was obtained from medical

interns, who are candidates to fill standard questionnaires, which is designed to assess relation of work performance to menstrual disturbances among interns in medical colleges in Addis Ababa. The tools used for the questionnaire are WPAI, DRIFS, and MEDI-Q. The questionnaire, via a Google form link were distributed physically to the medical interns located in the various hospitals as well as using moderators that went around the hospital compounds to help fill in the forms.

4.9 Data quality control

To ensure the quality of data, the would be designed carefully and would be pretested. Proper training were given to data collectors, and there was close supervision of the data collecting procedure. After data collection, each information was checked for completeness and consistency. After checking for consistency and completeness, the filled questionnaire was entered to software.

4.10 Data processing and analysis

Data was cleaned, collected and cleared, checked for completeness, coded and exported to an excel sheet and imported to SPSS V25 to be analyzed. Descriptive statistics was done, and results presented with frequency tables, graphs and pie. Simple binary regression was used to see the association of work performance with menstrual disturbances. A p-value less than or equal to 0.05 means that our result is statistically significant, and we can trust that the difference is not due to chance alone.

4.11 Ethical consideration

Ethical clearances was obtained from St. Paul's Hospital Millennium Medical College Institutional Review Board. Informed verbal consent was taken from the participants. They were informed that the study is voluntary based, and they have full right to withdraw from the study or skip any question they feel uncomfortable during the time of the data collection, information they give will remain confidential, it will not contain identifying information, thus ensuring the secrecy of the participants and will be used only for this study purpose. The privacy, secrecy and well being of participants was protected.

4.12 Dissemination of the Result

The result of the research will be presented to the advisors and thoroughly discussed, then disseminated as a printed material to the SPHMMC community through the college's library and released to the internet to be accessible for other people in-need of the data. In addition, it will be published passing all the requirements and presented in different scientific conferences.

5. Results

In this study, a total of 165 consent encounters were documented.

5.1. Demographic Characteristics

Out of the total of the 165 participants, 53.9% were 26 years old, 34.5% were 25 years old, 7.9% were 24 years old, 3% were 27 years old, and 0.6% were 23 years old.

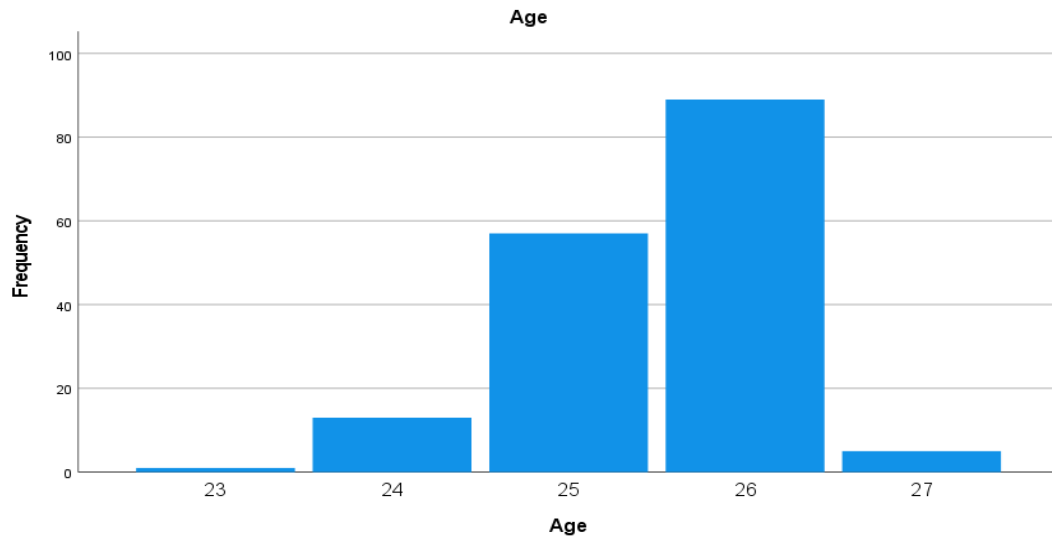


Figure 5.1. Description of age demographic of participants

164 of the participants were single, with 1 being married.

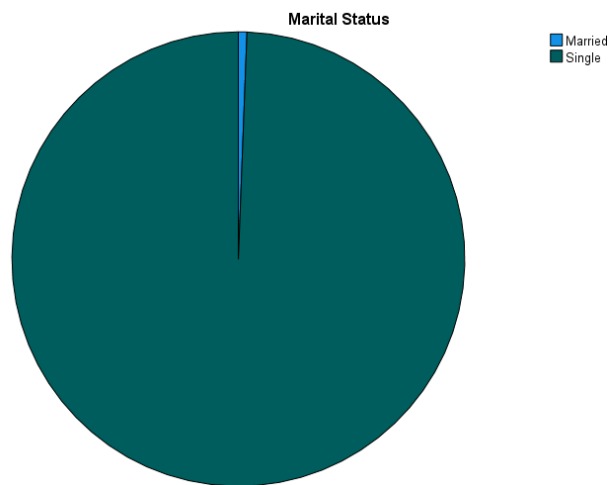


Figure 5.2. Description of marital status demographic of participants

29.7% were attending TASH, 18.2% were attending SPHMMC, 17% were attending Sante Medical College, 7.9% were attending Bethel Medical College, 7.3% were attending ECUSTA, 6.7% were attending MMC, 4.8% were attending Hayat Medical College, 4.2% were attending Yekatit 12, and 4.2% were attending Africa Medical College.

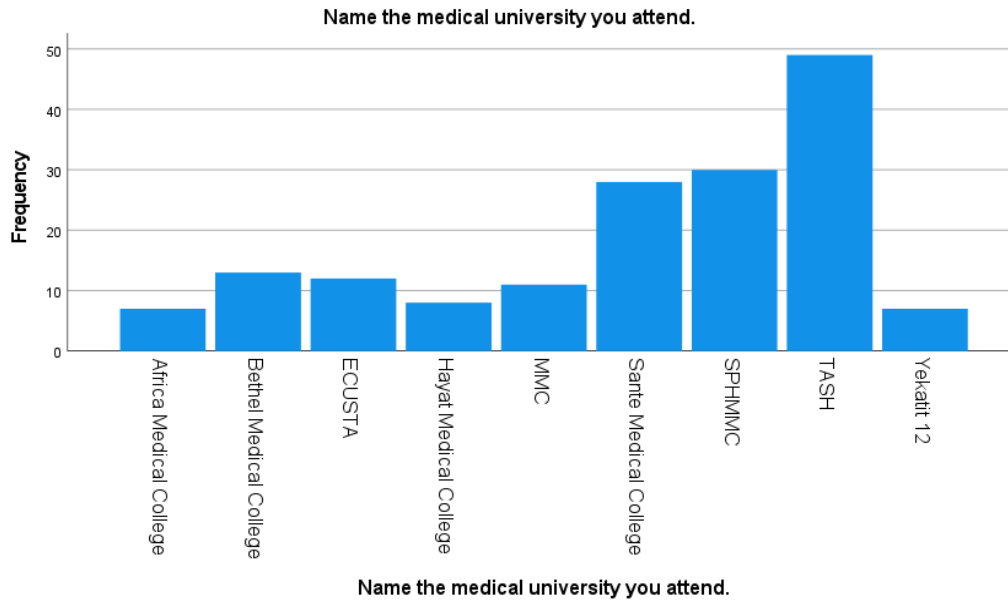


Figure 5.3. Description of medical universities attended by participants

Out of their current rotations, 22.4% were attaching in internal medicine, another 22.4% were attaching in surgery. 21.8% were attaching in pediatrics, 20.6% were attaching in OBGYN, 9.1% were attaching in emergency, while 3.6% were attaching in psychiatry

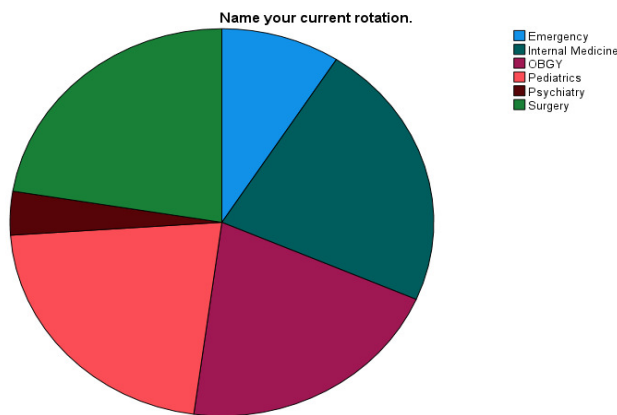


Figure 5.4. Description of clinical rotations of participants

5.2. Correlation of Dysmenorrhea and Functional Impairment

Dysmenorrhea was defined using the MEDI-Q sheet with a score of ≥ 8 attributed as having dysmenorrhea.

Functional impairment is defined using the DRIFS with a score of ≥ 44 attributed as having functional impairment.

Descriptive Analysis

Out of 165 female medical interns, 124 (75.2%) reported dysmenorrhea. Functional impairment based on the DRIFS score was observed in 44 (26.7%) participants. Among interns with dysmenorrhea, 39 (31.5%) had functional impairment compared to 5 (12.2%) among those without dysmenorrhea.

Inferential Analysis

Binary logistic regression analysis was performed to assess the association between dysmenorrhea and work performance. Dysmenorrhea was significantly associated with functional impairment ($p = 0.020$). Interns with dysmenorrhea had 3.3 times higher odds of experiencing functional impairment compared to those without dysmenorrhea ($OR = 3.304$).

		Dysmenorrhea Screening Score		
		Doesn't have dysmenorrhea	Has dysmenorrhea	Total
Dysmenorrhea Related Impact on Functioning Score	No functional impairment	36	85	121
	Functional impairment	5	39	44
Total		41	124	165

Table 5.1 Correlation of dysmenorrhea and functional impairment

5.3. WPAI as a Secondary Outcome

The WPAI has 4 components of measurement.

Absenteeism, presenteeism, productivity loss, and activity impairment

Absenteeism

The mean absenteeism due to menstrual-related problems was 4.4% (SD $\pm$ 10.3).

A Mann–Whitney U test was conducted to compare absenteeism between medical interns with and without dysmenorrhea. Interns with dysmenorrhea had significantly higher absenteeism than those without dysmenorrhea (mean rank = 88.26 vs 65.22). This difference was statistically significant (Mann–Whitney U = 1813.0, Z = -3.423 , $p < 0.001$).

Presenteeism

Presenteeism was substantially higher, with a mean score of 62.5% (SD $\pm$ 21.8).

A Mann–Whitney U test showed that presenteeism was significantly higher among interns with dysmenorrhea than those without dysmenorrhea (mean rank = 95.58 vs 44.94; Mann–Whitney U = 981.5, Z = -5.963 , $p < 0.001$).

Productivity Loss

The mean overall work productivity impairment was 63.3% (SD $\pm$ 22.3).

Overall work impairment was significantly higher among medical interns with dysmenorrhea compared to those without dysmenorrhea (mean rank = 95.54 vs 43.38; Mann–Whitney U = 917.5, Z = -6.130 , $p < 0.001$).

Activity Impairment

The mean activity impairment was 56.4% (SD $\pm$ 23.1).

Activity impairment was significantly greater among medical interns with dysmenorrhea than those without dysmenorrhea (mean rank = 92.48 vs 54.34; Mann–Whitney U = 1367.0, Z = -4.473 , $p < 0.001$).

5.4. Recommendations

As part of the questionnaire, the participants were asked about what possible solutions were already in place for this condition, what barriers were present in their current working climate as well as possible solutions to be implemented in the future.

With regard to institutional support measures, the majority of respondents (89.7%) reported that no institutional steps were in place to support individuals experiencing dysmenorrhea. Only a small proportion reported the availability of short breaks (5.5%), rest areas (3.0%), or shift swapping (2.4%).

		Responses		Percent of Cases
		N	Percent	
What institutional steps are present?	Shift swapping	4	2.4%	2.4%
	Short breaks	9	5.4%	5.5%
	Rest area	5	3.0%	3.0%
	None	148	89.2%	89.7%
Total		166	100.0%	100.6%

Table 5.2 Description of current institutional steps in place

Several barriers to implementing workplace support were reported. The most common barrier was lack of time (75.2%), followed by absence of private space (59.4%), lack of supplies (58.2%), and policy constraints (43.6%). Workplace stigma was reported by approximately one quarter of respondents (25.5%).

		Responses		Percent of Cases
		N	Percent	
	Stigma	42	9.7%	25.5%

What barriers are present at work?	Lack of time	124	28.7%	75.2%
	No private space	98	22.7%	59.4%
	No supplies	96	22.2%	58.2%
	Policy constraints	72	16.7%	43.6%
Total		432	100.0%	261.8%

Table 5.3. Description of barriers present to workplace support

Participants identified several accommodations that could improve work functioning during menstruation. The most commonly endorsed accommodation was the provision of a one-day leave (86.7%), followed by short breaks within the workday (70.9%), female-only resting areas (58.2%), flexible shift swapping (57.6%), and free sanitary products (56.4%). Less frequently reported accommodations included awareness workshops (27.3%) and anonymous feedback systems (18.2%).

		Responses		Percent of Cases
		N	Percent	
	Female only resting areas	96	14.0%	58.2%

What accommodations would help most?	Readily available free analgesia in the workplace	68	9.9%	41.2%
	Open anonymous feedback system	30	4.4%	18.2%
	One day leave	143	20.8%	86.7%
	Flexible shift swaps	95	13.8%	57.6%
	Readily available free sanitary products	93	13.5%	56.4%
	Short breaks within the day	117	17.0%	70.9%
	Awareness workshops for all medical personnel on dysmenorrhea	45	6.6%	27.3%
Total		687	100.0%	416.4%

Table 5.4. Description of recommended institutional steps to be taken

6. Discussion

This study aimed to investigate the link between menstrual disturbances and work performance among female medical interns in Addis Ababa. The components of the research included prevalence of dysmenorrhea, as well as its functional impairment subsequently resulting in absenteeism, presenteeism and other work productivity indexes.

It also includes the current status of steps taken by institutions to support the cause and recommendations by the interns themselves.

In the present study done among 165 participants, the prevalence of dysmenorrhea is found to be 75.2%. This number closely aligns with a meta-analysis done among female medical students (17) with a reported prevalence of 72.7%. Another study done here in Ethiopia among female university students (21) shows a prevalence that is a similar but higher of the one reported here (85.4%). This indicates that dysmenorrhea is a common health issue among young women of reproductive age, most especially among students.

This study also demonstrates a strong and statistically significant association between dysmenorrhea (defined as MED-Q score ≥ 8) and functional impairment (defined as DRIFS score ≥ 44). Of the medical interns with dysmenorrhea, 31.5% reported functional impairment, whilst with those without dysmenorrhea, only 12.2% reported impairment. Therefore, interns with dysmenorrhea had 3.3 times higher odds of experiencing functional impairment. These results support previous studies that relate dysmenorrhea negatively with both daily activities as well as work performance.

The WPAI analysis further solidifies the negative impact of dysmenorrhea on work performance specifically. Although the mean absenteeism was relatively low (4.4%), the mean presenteeism of 62.5% indicates that interns do show up to work despite the symptoms they experience, however, their work is severely compromised. This can mean a compromise in their concentration and decision making skills as well as execution. These numbers are consistent with a research done in Netherlands (20) that found presenteeism affected 80% of women and accounted for more lost productive time compared to absenteeism. In the same analysis, the overall productivity loss of 63.3% as well as the activity impairment score of 56.4% show the significant work related impact of dysmenorrhea among medical interns.

When it comes to institutional steps taken to alleviate the burden of impairment related to dysmenorrhea, 89.7% of interns reported a complete absence of institutional support with lack of time, absence of private spaces and lack of menstrual management being reported as the top 3 barriers the most common hindrances at 75.2%, 59.4% and 43.6% respectively. Additionally, only 25.5% of interns felt comfortable disclosing their symptoms to their

higher ups. The interns also proposed several accommodations with the mostly frequently recommended being a one-day menstrual leave at 86.7%, as well as short breaks during shifts (70.9%), female only resting areas (58.2%) and flexible shift swapping (57.6%).

7. Limitations

This study has limitations that should be put into consideration while interpreting the findings.

First of all, the cross-sectional design of the research allows data to be captured at one point in time. While this helps us in observing association, it does not allow us to establish a definitive cause and effect relation. Second, the study relies on self-reported data which introduces possible recall bias as interns may not accurately remember their symptoms and the level of their work impairment as well as the usage of quota sampling as the full list of

the source population could now be acquired given that time may lead to selection bias.. Thirdly, the sample population was limited to be conducted among medical interns in Addis Ababa which hinders the generalization to interns in other regions of the country. Fourthly, the study focuses on primary dysmenorrhea as the primary measure of menstrual disturbance and does not include other components of the spectrum such as premenstrual syndrome which can have similar impact. However, despite these limitations, the study provides valuable insight for an under-recognized health and occupational issues.

8. Conclusion

This study finds that primary dysmenorrhea is highly prevalent among female interns among medical interns in Addis Ababa as well as its significant negative association with their work performance. It mainly expresses itself in high levels of presenteeism, with interns being present at work yet with their productivity compromised due to their discomfort. The study also reveals a major gap in institutional support for the given interns with little accommodation readily available. These findings highlight a critical need for practical workplace interventions given the high prevalence of dysmenorrhea and its measurable relation on productivity.

9. Recommendations

According to the findings of this study, several recommendations can be proposed to minimize the impact of menstrual disturbances on work performance among medical interns.

The first set of recommendations is focused on health institutions and medical colleges. These organizations should give the proper recognition of menstrual health as a component of occupational health issue affecting interns. The recommendations mentioned by the interns themselves, such as allowing short breaks, creating female-only rest areas,

facilitating flexible shift swaps and ensuring access to supplies and analgesia should be implemented. As well as creating a supportive and stigma-free environment where such issues can be comfortably discussed.

Next, there are separate set of recommendations for curriculum planners and health administrators. There ought to be development of guidelines that promote menstrual health awareness and workplace accommodations in an institutional level. As well as incorporating formal lessons on menstrual health on the recognition, impact and management of dysmenorrhea. It should also include establishing a feedback system for interns to suggest improvements or advice without fear of reprisal.

Last, there are given recommendations in similar future research. Those researches should include a broader scope of participants to include other health care workers such as nurses and residents as well broader menstrual disorders such as premenstrual disorders and heavy menstrual bleeding. There should also be longitudinal studies done to establish a possible causal relationship between menstrual disturbances and work performance.

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Annex

Consent Form

Introduction

My name is Mulualet Anteneh and I am a medical intern currently attending SPHMMC. I am currently conducting a study on female medical interns concerning the relations between menstrual disturbances and work performance.

You have been asked to take a survey for research. This survey is completely voluntary. There are no negative consequences if you don't want to take it. If you start the survey, you can always change your mind and stop at any time.

What is the purpose of this study?

To understand the relation between menstrual disturbances among female interns and its relation with work performance prevalence among medical interns at St. Paul's hospital millennium medical college

What will I do?

You will be asked to answer survey questions about your attitude towards working as a resident physician.

Risks:

- There are no anticipated risks associated with participating in this study

Compensation:

There will be no compensation for participation in this study.

Confidentiality:

Your participation in this study will remain confidential and your personal information will not be collected. The use of the information provided in the form will be in line with the purpose of the research and will not be used for any other purpose

Consent:

I understand the information provided to me about this study and know that I can contact the researcher with questions at any time. I am aware that participation is completely voluntary. I know that I can withdraw at any moment. I do not need to provide a reason for doing so. My responses are processed anonymously: no information I provide will be linked back to me in any publication. By filling out this survey, I consent to allowing the

anonymized information I provide to be used for research. If you do not consent, please close this window and do not fill out the survey.

- ☐ I give consent to use my data for the purposes mentioned and I consent to participate in this study
- ☐ I choose not to participate in this study

Section 1: Demographic section

1. Name the medical university you attend.

2. Age

Please insert age here:

3. Marital Status

- ☐ Single
- ☐ Married
- ☐ Divorced
- ☐ Separated
- ☐ Widowed

Section 2: Work/School section

4. What is your current rotation?

- ☐ Internal Medicine
- ☐ Surgery
- ☐ OBGYN
- ☐ Pediatrics
- ☐ Emergency
- ☐ Psychiatry
- ☐ Others; if yes, specify: _____

- ☐ Dentistry
- ☐ Ophthalmology
- ☐ Dermatology
- ☐ Otorhinolaryngology

5. On average, how many hours do you work in a week?
6. How many nights duties do you get per month?
7. Write down your typical shift length per day.

Section 3: Menstrual characteristics section

8. Have you menstruated in the last 3 months?

- ☐ Yes
- ☐ No

9. What was your age at menarche?

10. What is your cycle regularity?

- ☐ Regular (24–38 days)
- ☐ Irregular
- ☐ Unsure

11. What is your typical cycle length?

12. What is your typical bleeding duration?

13. What products do you use during menstruation?

- ☐ Menstrual pads
- ☐ Tampons
- ☐ Menstrual cup
- ☐ Other: _____

14. What are the numbers of pads/tampons used on the heaviest day?

☐ 1–2

☐ 3–4

☐ 5–6

☐ ≥ 7

15. Do you use contraceptives?

☐ None

☐ Yes; if yes, state what and for how long

16. Do you feel abdominal discomfort/pain during menses?

☐ No

☐ Yes

17. If yes to the above question, what number on a 0 to 10 scale would you give your pain when it is the worst that it gets?

☐ 1 (no pain) ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 (worst imaginable)

Section 4: Menstrual Distress Questionnaire

#	Question	A. On average, in the past year on the days you had your period, did you...	B. On days when you were menstruating, to what degree did it interfere with your quality of life, recreational or work activities, or social relationships?
18	...have pain in your lower abdomen?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
19	...have pain when urinating?	☐ Yes, more than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much

#	Question	A. On average, in the past year on the days you had your period, did you...	B. On days when you were menstruating, to what degree did it interfere with your quality of life, recreational or work activities, or social relationships?
		Yes, less than half the times ☐ No	
20	...have pain during bowel movement?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
21	...have muscle/bone/joint pain?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
22	...feel bloated or experience breast tenderness?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
23	...experience nausea?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
24	...have headaches?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
25	...have digestive problems (heartburn, fullness after meals)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
26	...have diarrhea?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much

#	Question	A. On average, in the past year on the days you had your period, did you...	B. On days when you were menstruating, to what degree did it interfere with your quality of life, recreational or work activities, or social relationships?
27	...have constipation?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
28	...have discomfort due to vaginal bleeding (fear of stains, tampon discomfort, etc.)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
29	...have the feeling of being dirty?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
30	...feel excessively sad (e.g., crying easily, loss of interest)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
31	...feel emotionally unstable (e.g., rapid mood changes)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
32	...feel irritable or short-tempered?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
33	...feel impulsive (act without thinking)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
34	...feel anxious (e.g., tense, fearful something bad may happen)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much

#	Question	A. On average, in the past year on the days you had your period, did you...	B. On days when you were menstruating, to what degree did it interfere with your quality of life, recreational or work activities, or social relationships?
		Yes, less than half the times ☐ No	
35	...feel excessively hungry (loss of control over food)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
36	...feel a lack of hunger?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
37	...have insomnia (trouble falling or staying asleep)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
38	...experience excessive sleepiness (e.g., sleeping during the day)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
39	...feel excessively tired (low energy)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
40	...have low sexual desire (reduced drive)?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much
41	...have difficulty concentrating?	☐ Yes, more than half the times ☐ Yes, less than half the times ☐ No	☐ Not at all ☐ A little ☐ Moderately ☐ Very much

Section 5: DRIFS (Dysmenorrhea-Related Impact on Functioning Scale)

Please state to the extent to which your period cramps affect the items stated below by selecting the numbers adjacent to the item with 0 meaning no effect and 5 meaning highly affected

Items	Scale				
	0	1	2	3	4
42. Mood and/or emotions					
43. Sleep					
44. Other body aches					
45. Urinary function					
46. Bowel function					
47. Concentration					
48. Walking					

49. Practical physical activity					
50. Transportation					
51. Shower or get dressed					
52. Do household chores					
53. Social relationships					
54. Work normally					
55. Having recreation and leisure					
56. Having sexual intercourse					

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Section 6: WPAI (Work Productivity and Activity Impairment)

The next questions are about the past seven days, not including today.

57. During the past seven days, how many hours did you miss from work because of problems associated with your PROBLEM? Include hours you missed on sick days, times you went in late, left early, etc., because of your PROBLEM. Do not include time you missed to participate in this study. ____ HOURS

58. During the past seven days, how many hours did you miss from work because of any other reason, such as vacation, holidays, time off to participate in this study? ____ HOURS

59. During the past seven days, how many hours did you actually work? ____HOURS

60. During the past seven days, how much did your PROBLEM affect your productivity while you were working?

Think about days you were limited in the amount or kind of work you could do, days you accomplished less than you would like, or days you could not do your work as carefully as usual. Consider only how much PROBLEM affected productivity while you were working.

PROBLEM had no effect on my work (0)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

PROBLEM completely prevented me from working (10)

61. During the past seven days, how much did your PROBLEM affect your ability to do your regular daily activities, other than work at a job?

By regular activities, think about times you were limited in the amount or kind of activities you could do and times you accomplished less than you would like. Consider only how much PROBLEM affected your ability to do your regular daily activities, other than work at a job.

PROBLEM had no effect on my daily activities (0)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

PROBLEM completely prevented me from doing my daily activities (10)

Section 7: Recommendations

62. How comfortable do you feel to disclose menstrual symptoms

- ☐ Not confident ☐ Somewhat confident ☐ Fairly confident
☐ Very confident

63. If disclosed, were there any institutional steps taken?

- ☐ Yes ☐ No

64. What institutional steps are currently in place?

- ☐ Shift swapping ☐ Short breaks ☐ Rest area ☐ None
☐ Others, specify

65. What barriers are there to manage symptoms at work?

- ☐ Stigma ☐ Lack of time ☐ No private space ☐ No supplies
☐ Policy constraints ☐ Others, specify

66. What accommodation would help most? (Choose all that apply)

- ☐ Female only resting area
☐ One day leave
☐ Readily available free analgesia in the work place
☐ Flexible shift swaps
☐ Open anonymous feedback system
☐ Readily available free sanitary products
☐ Short breaks within the day

- ☐ Awareness workshops for all medical personal on dysmenorrhea

