# PREVALENCE AND INDIVIDUAL FACTORS ASSOCIATED WITH DYSMENORRHEA AMONG MEDICAL STUDENTS AT FORT PORTAL COLLEGE OF HEALTH SCIENCES, WESTERN UGANDA – A CROSS-SECTIONAL STUDY.

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## ABSTRACT

### Introduction
Dysmenorrhea is a common complaint among women of reproductive age and it affects academic performance among students. This study aimed to determine the prevalence and individual factors associated with dysmenorrhea among female medical students at Fort Portal College of Health Sciences, western Uganda.

### Methods
A cross-sectional study was conducted on 280 participants from the five training programs offered at the college. Participants were selected using stratified random sampling. A self-administered questionnaire was used to collect data on socio-demographic characteristics, prevalence, and individual factors associated with dysmenorrhea. Data was analyzed in SPSS v.21, using mean, frequencies, percentages, chi-square, and logistic regression. Ethical and administrative approvals were sought for the College Research and Scientific Committee and administration, respectively and participants provided written informed consent.

### Results
Data was collected from 280 participants with a mean age of 23.26 years (S=3.58). The prevalence of dysmenorrhea among participants was 94.26%; and participants' age (aOR=2.74; 95% CI: 0.36 – 20.86; p-value = 0.331), duration of menstrual flow (aOR=2.36; 95% CI: 0.66 – 8.39; p-value = 0.184), regular physical exercises (aOR=1.61; 95% CI: 0.85 – 3.05; p-value = 0.142), and daily water consumption (aOR=3.45; 95% CI: 1.15 – 10.37; p-value = 0.068), were not associated with dysmenorrhea.

### Conclusion
The prevalence of dysmenorrhea among female medical students is high and is not associated with individual factors like; age, duration of menstrual flow, physical exercises, or daily water consumption.

### Recommendation
Additional studies are needed to examine the aetiology of dysmenorrhea and inform the development of effective prevention and control strategies.

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## INTRODUCTION

Dysmenorrhea is the pain associated with menstruation. It is one of the most common complaints among women of reproductive age (Nahla Khamis Ibrahim, 2015), estimated at 75.8% among university students in Kampala (Rose Mary Nakame F. K., 2019), and it affects academic performance due to its contribution to inactivity, absenteeism, and reduced concentration (Nayesha Mahwish, 2024).

Much as female medical students are expected to know about the prevention and control of dysmenorrhea, its prevalence, and associated factors in this sub-group are yet to be established. This study was set to determine the prevalence and individual factors associated with dysmenorrhea among female medical students at Fortportal College of Health Science, Western Uganda.

## METHODS

### Study design

This was a cross-sectional study that employed quantitative methods.

### Study setting

This study was conducted at Fortportal College of Health Sciences, Western Uganda. The college is located in the heart of Fortportal City, Plot 9, along Mugurusi Road, adjacent to Fort Portal Regional Referral Hospital and Buhinga Primary School.

### Study population

This study included female medical students pursuing any of the programs trainable at the college from June 15 to July 15, 2023.

### Inclusion criteria

All female medical students at Fort Portal College of Health Sciences, present at the time of data collection, who consented to voluntarily participate in the study.

### Exclusion criteria

Female medical students who had missed periods for more than two cycles (months) at the time of data collection.

### Sample size

A sample size of 280 participants was determined based on the Morgan and Krejcie table about the college population of 1,037 students.

### Sampling technique

A stratified random sampling technique was used, in light of the training program.
Among the participants, some were pursuing; 148 (52.9%) a Diploma in Clinical Medicine and Community Health, 59 (21.1%) a Diploma in Pharmacy, 25 (8.9%) a Higher Diploma in Anaesthesia, 18 (6.4%) a Higher Diploma in Leadership and Management, 14 (5.0%) a Certificate in Theatre Techniques, and 16 (5.7%) a Certificate in Pharmacy.

### Bias

Probability sampling was done to minimize selection bias. Questions were asked about a recent menstrual cycle to minimize the risk of recall bias.

### Data collection

A self-administered, anonymous questionnaire was used for data collection. Its face and content validity were evaluated by two experts in research and reproductive health issues and reliability was determined using Cronbach's alpha and it was found to be 0.82 which is generally acceptable (ref:7.0 – 9.5).

### Study variables

The study variables included participants' socio-demographic characteristics, prevalence, and individual factors like; age, duration of menstrual flow, physical exercises, and daily water consumption. Dysmenorrhea was determined as "A self-report of two or more days of pain during menstrual bleeding". Participants who reported pain were asked about its severity using the "Visual Analog Scale for Pain (VAS) measured on a scale of 10 cm, with no pain scoring 0 and severe unbearable pain scoring 10. A score of 1 – 3 was categorized as mild, 4 -6 as moderate and 7 – 10 as severe.

### Statistical analysis

Collected data was entered into Microsoft Excel, cleaned, and then imported into the Statistical Package Social Science (SPSS) version 21 for analysis. Descriptive analysis was done using mean and standard deviation for continuous variables and frequencies and proportions for the categorical variables. Chi-square (X2) and logistic regression were used to establish the relation between dysmenorrhea and individual factors with a 95% confidence interval. The significance level was thus set at a p-value < 0.05.

### Ethical considerations

Ethical clearance was obtained from the College Research and Scientific Committee and administrative approval was obtained from the Dean of Students and the College Principal. Study participants provided written informed consent. Anonymity was maintained for participants' responses.

## RESULTS

This study aimed to determine the prevalence and individual factors associated with dysmenorrhea among female medical students at Fortportal College of Health Sciences, Western Uganda. The study enrolled 280 participants, with a mean age of 23.26 years (S=3.58). 159 (56.8%) were single, 84 (30.0%) were in a sexual relationship, and 37 (13.2%) were married.

### Prevalence of Dysmenorrhea

The prevalence of dysmenorrhea among participants was 264 (94.29%) with 56 (21.21%) describing the pain as severe, 130 (49.24%) as moderate, and 78 (29.55%) as mild. This implies that more than 9 out of every 10 participants experience some degree of dysmenorrhea during a menstrual cycle.

### Factors Associated with Dysmenorrhea

### Table 1: Description of Individual Factors Associated with Dysmenorrhea

| Variable | Measure | Number | Percentage |
|---|---|---|---|
| Age (Years) | 18 – 25 | 225 | 80.4 |
| | 26 – 35 | 55 | 19.6 |
| Duration of Menstrual flow (days) | 2 – 3 | 101 | 36.1 |
| | 4 – 5 | 155 | 55.4 |
| | 6 – 7 | 24 | 8.5 |
| Regular Physical Exercises | Yes | 182 | 65.0 |
| | No | 98 | 35.0 |
| Daily water consumption (250 ml glasses) | 0 – 2 | 163 | 58.2 |
| | 3 – 4 | 74 | 26.4 |
| | 5 – 6 | 27 | 9.6 |
| | 7 – 8 | 16 | 5.8 |

The majority of the respondents 225 (80.4%) were aged 18 – 25 years, 155 (55.4%) reported a monthly menstrual flow of 4 – 5 days, 182 (65.0%) had regular physical exercises and 163 (58.2%) consumed less than two (2) glasses of water daily.

### Table 2: Individual Factors Associated with Dysmenorrhea

| Variable | Measure | OR (95% CI) | p-value | AOR (95% CI) | p-value |
|---|---|---|---|---|---|
| Age (Years) | 18 – 25 | 1 | | | |
| | 26 – 35 | 3.77 (0.52 – 27.45) | 0.191 | 2.74(0.36 – 20.86) | 0.331 |
| Duration of menstrual flow (Days) | 2 – 3 | 1 | | | |
| | 4 – 5 | 1.86 (0.77 – 4.49) | 0.168 | 1.90 (0.77 – 4.69) | 0.162 |
| | 6 – 7 | 2.17 (0.64 – 7.39) | 0.216 | 2.36 (0.66 – 8.39) | 0.184 |
| Regular physical exercises | Yes | 1 | | | |
| | No | 1.61 (0.85 – 3.05) | 0.142 | 1.61 (0.85 – 3.05) | 0.142 |
| Daily water consumption (250ml glasses) | 0 – 2 | 1 | | | |
| | 3 – 4 | 1.09 (0.54 – 2.17) | 0.816 | 1.18 (0.59 – 2.39) | 0.642 |
| | 5 – 6 | 3.00 (1.02 – 8.80) | 0.045 | 3.45 (1.15 – 10.37) | 0.068 |
| | 7 – 8 | 2.14 (0.37 – 12.49) | 0.397 | 2.48 (0.42 – 14.79) | 0.320 |

Participants' age (aOR=2.74; 95% CI: 0.36 – 20.86; p-value = 0.331), duration of menstrual flow (aOR=2.36; 95% CI: 0.66 – 8.39; p-value = 0.184), and regular physical exercises (aOR=1.61; 95% CI: 0.85 – 3.05; p-value = 0.142) were not associated with dysmenorrhea. Daily water consumption of 5 – 6 glasses (250 ml capacity) was threefold more associated with dysmenorrhea than consumption of 0 – 2 glasses (OR=3.00; 95% CI: 1.02 – 8.80; p-value = 0.045). However, this association was not significant when adjusted for other variables (aOR=3.45; 95% CI: 1.15 – 10.37; p-value = 0.068).

### Summary

Results from this study show that the prevalence of dysmenorrhea among medical students is 94.26% and that participants' age, duration of menstrual flow, regular physical exercises, and daily water consumption are not associated with dysmenorrhea.

## DISCUSSION

This study aimed to determine the prevalence and individual factors associated with dysmenorrhea among

female medical students at Fortportal College of Health Sciences, Western Uganda. The prevalence of dysmenorrhea among participants was generally high with more than 9 out of every 10 participants reporting some degree of dysmenorrhea. This is higher than a prevalence of 82.9% among female students at the University of Riau – Indonesia (Yulia Irvani Dewi, 2021), 78.4% that was reported among medical students in five universities of Romania (Sima RM, 2022), 79.4% among female university students in Taif City, Saudi Arabia (Amena Ali, 2022) and 80.0% at Hawassa University College of Medicine and Health Sciences, Ethiopia (Wondu Belayneh, 2023).

This prevalence is also higher than the 75.8% reported among female students attending universities in Kampala, Central Uganda (Rose Mary Nakame F. K., 2018), and 68.7% among female medical students at Kampala International University Western Campus, Ishaka (Namawejje, 2024). However, it is closely related to a prevalence of 90.9% reported among students of Lira University, Northern Uganda (Emmanuel Asher Ikwara, 2024). It can therefore be concluded that the prevalence of dysmenorrhea is high among female medical students at Fortportal College of Health Sciences, Western Uganda.

Much as the prevalence of dysmenorrhea was highest (80.4%) among respondents aged 18 – 25 years, this study established no relationship between participant's age and risk of dysmenorrhea (p-value = 0.331). This finding agrees with earlier findings from a study among college-going girls that indicated that the prevalence of dysmenorrhea reaches a peak by the age of 20 years (Mool Raj Kural, 2015). The absence of statistical significance in the relationship between age and risk of dysmenorrhea could be attributed to the narrow age bracket of participants and the large class interval used in categorizing the participants' age.

This study found no relationship between the duration of menstrual flow and the risk of dysmenorrhea (p-value = 0.162). This contradicts earlier findings that indicated that bleeding duration was associated with dysmenorrhea; whereby more than 5 days was reported to be almost twice more likely to be associated with dysmenorrhea (Mool Raj Kural, 2015). The findings also conflict with those of a study on menstrual characteristics and dysmenorrhea among Palestinian adolescent refugees that indicated that longer bleeding durations are associated with a higher prevalence of dysmenorrhea (Rula Ghandour, 2023). In this study, most participants (91.5%) had a monthly menstrual flow of less than 5 days. This would explain the contradiction in the findings as the risk of dysmenorrhea tends to increase with the increase in the duration of menstrual flow beyond 5 days.

There was no significant relationship established between regular physical exercises and the risk of dysmenorrhea (p-value = 0.142). This finding is in contradiction to earlier studies that indicate that physical activity increases the pain threshold through the production of endorphins, thereby reducing dysmenorrhea among physically active young adults (Chua Hui Ning, 2020). This finding further disagrees with a systemic review on the effects of physical exercises on primary dysmenorrhea that indicated that aerobic exercise is an effective method of reducing dysmenorrhea (María Millares Samperio, 2021). This study did not specify the nature and duration of physical exercises which could have contributed to the lack of significance in the relationship between physical activity and risk of dysmenorrhea among participants.

The findings of this study indicated no significant relationship between daily water consumption and the risk of dysmenorrhea (p-value = 0.068). This finding disagrees with a semi-experimental study that showed a considerable decrease in the use of painkillers among participants who regularly drank water as a result of reduced pain intensity (Behnaz Torkan, 2021). However, this demonstrated relationship could be confined to severity rather than the risk of dysmenorrhea which this study sought to examine.

Another study on the association between soft drinks and primary dysmenorrhea showed that carbonated soft drinks increase the severity of dysmenorrhea, while coffee provided relief (Lijiao Wang, 2024), unfortunately, no findings on water intake were reported in this study. It is, therefore, likely that different drinks offer different effects, with a possibility of some offering no effect on the risk of dysmenorrhea.

## GENERALIZABILITY

Findings from this study are generalizable to female medical students mainly experiencing primary dysmenorrhea.

## CONCLUSION

The prevalence of dysmenorrhea among female medical students at Fortportal College of Health Sciences is alarmingly high and there was no demonstrable relationship between individual factors like; age, duration of menstrual flow, regular physical activity, and daily water consumption, and risk of dysmenorrhea.

## RECOMMENDATIONS

There is a need to conduct additional studies to examine the risk factors for dysmenorrhea to inform the development of prevention and control of dysmenorrhea among female medical students.

The college administration should avail effective treatment modalities for dysmenorrhea to mitigate the likely negative effects on students' academic performance.

## ACKNOWLEDGMENT

## ABBREVIATIONS

**aOR:** Adjusted Odds Ratio
**CI:** Confidence Interval
**S:** Standard Deviation
**SPSS:** Statistical Package for Social Science
**VAS:** Visual Analog Scale for pain

## CONFLICT OF INTEREST

The authors declare that there was no conflict of interest in conducting the study.

## SOURCE OF FUNDING

## AUTHOR CONTRIBUTION

**Diplock Ignatius:** Designed and collected data
**Aeron Namaasa Mukirya:** Designed and analyzed data

## DATA AVAILABILITY

The data supporting the findings of this study can be provided by the authors on reasonable request.

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