FACTORS INFLUENCING THE PREVALENCE OF DYSMENORRHEA AMONG STUDENTS AGED 18-45YEARS ATTENDING INSTITUTIONS OF HIGHER LEARNING IN KAMPALA CAPITAL CITY

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DECLARATION

I Rose Mary Nakame humbly submit this novel dissertation to International Health Sciences University and affirm that this research paper has not been presented to any other institution of learning for an academic accolade.

Signature: …………………………..

ROSE MARY NAKAME

Date: …...

APPROVAL

I acknowledge my participation into Rose Mary Nakame's research and approve of its submission for the award of a Bachelors of Science in Nursing Degree.

Signature: …..……………………………

AFAYO ROBERT

Date: …..

DEDICATION

I dedicate this dissertation to my parents, brothers, sisters and friends who have diligently supported and guided my academic path. This paper is also dedicated to individuals whose efforts are directed towards empowering the girl child so as to develop the pearl of Africa.

ACKNOWLEDGEMENT

I am grateful to the good Lord who has blessed me with life, health and the gifts of the Holy Spirit.

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ABBREVIATIONS/ACRONYMS

ACOG   -   American College of Obstetricians and Gynecologists

BMI   -   Body Mass Index

CAM   -   Complementary Alternative Medicine

CDC   -   Centers for Disease Control

CI   -   Confidence Interval

KU   -   Kampala University

IASP   -   International Association for the Study of Pain

IHSU   -   International Health Sciences University

MoESTS -   Ministry of Education and Sports Science and Technology, Uganda

MOH   -   Ministry of health, Uganda

NGO'S   -   Non Governmental Organisations

NSAIDS   -   Non- Steroidal Anti Inflammatory Drugs

NSGE   -   National Strategy for Girls Education

SDA   -   Seventh Day Adventists

SOBGC   -   Society of obstetricians and gynecologists of Canada

St   -   Saint

UN   -   United Nations

WASH   -   Water Sanitation and Hygiene

WHO   -   World Health Organization

OPERATIONAL DEFINITIONS

Dysmenorrhea*:* Pain occurring during menstruation.

Academic life*:* It encompasses all the activities the student performs while at school including studying, sports and others.

ABSTRACT

Introduction: Dysmenorrhea is pain associated with menstruation. It's often an issue discussed in privacy yet continues to affect girls and women with grave impact on their education, social activities and work.

General objective: To assess the factors that influence the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala Capital city from July-August 2015.

Methodology: A cross sectional study was employed to collect data on prevalence of dysmenorrhea and associated factors among 351 students of higher learning in Kampala who were selected using convenience sampling method. A self-administered questionnaire was utilized to collect this data with the help of trained research assistants. Data was analyzed using the following software: Epiinfo version 7 and SPSS version 20 for analysis.

Results: The prevalence of dysmenorrhea was 75.8% and associated factors were found to be: having children ($p<0.05$) and daily consumption of chocolate (OR=0.09, p=0.011) or no sugary foods at all (OR=0.344, p=0.032) and no family history of dysmenorrhea (OR=2.583, p=0.001).

Conclusion: The prevalence of dysmenorrhea was high which was influenced mainly by the number of children, no family history of dysmenorrhea and daily consumption of sugary foods.

Recommendations: The high prevalence of dysmenorrhea among students requires health education about it, its causes, management, schools to stock analgesics in the school clinics and further research on its effect on academic life of the students.

CHAPTER ONE

1.0 Introduction

This chapter entails the background to the study topic, description of the problem, objectives of the study, research questions, justification of the study and a conceptual framework.

1.1 Background

Menstruation is a natural phenomenon in females and a determinant of the reproductive life (Amaza et al, 2012). Management of menstruation and its disorders among students is crucial in maintaining a girl child in school fully participating in school activities, to achieve excellence in her academics and later on engage in developing of the nation. Menstruation disorders like dysmenorrhea frequently affect the life of adolescents and young women yet they can be signs of serious underlying gynecological problems (WHO,2014).

Dysmenorrhea is described as pain that is associated with menstruation. Dysmenorrhea is of two types that is primary and secondary dysmenorrhea. Primary dysmenorrhea is caused by the production of prostaglandins into menstrual blood while secondary dysmenorrhea could be due to an underlying gynecological problem (ACOG, 2015). Dysmenorrhea usually lasts 1-3 days and it could either occur before or at the onset of menses. The prevalence of dysmenorrhea has been reported at 40%-90% among women (Iasp, 2007) and 52.4% to 84% worldwide among students.

Giovanni, G et al, 2012, in a cross sectional study reported the prevalence of dysmenorrhea at 84.1% among 408 young women and was associated with an earlier menarche (P-value = 0.0002), longer menstrual flow (P-value = 0.006), however there was a negative correlation with age at menarche (CR = 0.225).

Among 283 university students in Egypt, the prevalence of dysmenorrhea was estimated at 65.4%. Severity of dysmenorrhea increased with increase in duration of menses and early menarche was related to the severity of dysmenorrhea. This study however, could not find a statistically significant relationship between menstrual cycle length and dysmenorrhea Nazni (2014).

In Uganda, menstruation is an issue that is discussed in privacy and should not be talked about in public posing a challenge for girls to manage their periods while at school (WaterAid impact,

2015). Eleven percent of the total learning days of school are missed by girls in rural areas because of menstruation (Guardian,2014) and 74% of the girls in a baseline survey in Kasese district believed that pain accompanying a period was a sign of illness (Irise annual report, 2015). Many girls therefore choose to stay at home during their menstruation which affects their education (Plan Uganda, 2015). Despite the above, menstruation disorders are issues that have been under researched in Africa as a whole (Titilayo et al 2009).There is also paucity of data assessing the determinants that are influencing the prevalence of dysmenorrhea among students in Uganda. Ministry of Education and Sports Science and technology Uganda (MoESTS) in its National Strategy for Girls Education (NSGE) 2015-2019, it highlights the need to achieve gender parity in education by focusing on proper management of menstruation as one of the key interventions. This study will be used to inform the implementation of NSGE 2015-2019, menstruation hygiene management charter of 2015, civil society organizations and stakeholders in their efforts to help the girl child manage her menstruation. Therefore, the purpose of this study is to assess the determinants influencing the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July-August 2015.

1.2 Problem statement

Holistic management of dysmenorrhea should be able to keep girls in school during their menses fully participating in their academics and achieving the best grades they can. The girl child's welfare is the responsibility of the family, government and the community where she is in. This implies the parents at home or even the whole family, the school matrons, teachers, school nurses have an important role in the issues occurring in the girls like menstruation. The ministry of education and sports science and technology (MoESTS) has made a National Strategy for Girls Education (NSGE) 2015-2019 in which it highlights the need to tackle menstrual management as a key to ensure girls are kept in schools with quality participation. United Nations Women (UN Women), legislatures from the WASH forum, speaker of the parliament of Uganda and civil society organizations operating in Uganda signed a charter on the 28th May 2015(menstrual hygiene management day) under which they committed to work together to support the rights of girls and women during and after their menstruation.

Despite the above efforts, 74% of the girls in a base line survey in Kasese district in Uganda believe that menstrual cramps is a sign of illness probably indicating a lack of sufficient knowledge (Irise Annual report, 2015). The African tradition also considers issues surrounding menstruation as secretive issues which the girl child should discuss in the privacy with her parents or senior women in the community. This leaves girls at schools continuing to bear the pain "till when they deliver a child" a saying they have been told by their matrons, communities since the first occurrence of dysmenorrhea. The school matrons have made the students believe that one should tolerate dysmenorrhea after all the labor pain is worse.

Students who suffer from severe dysmenorrhea report missing school so as to rest during the pain and if present in class, they are not concentrating but sleeping in class, moving in and out of class so as to gain relief. Dysmenorrhea has been reported to affect the girls' school activities, social life and performance.

1.3 Objectives of the study

1.3.1 General objective
To assess the factors influencing the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July- August 2015.

1.3.2 Specific objectives
1. To determine the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July- August 2015.
2. To identify socio-demographic factors influencing the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July – August 2015.
3. To establish the life style factors influencing the management of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July – August 2015.
4. To assess personal factors influencing the prevalence dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July- August 2015.

1.4 Research questions

1. What is the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July- August 2015?

2. What are the socio-demographic factors that influence the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July – August 2015?

3. What life style factors influence the management of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July – August 2015?

4. What personal factors influence the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July-August 2015?

1.5 **Justification/ Significance of the study**

Menstruation is a natural phenomenon which is an indicator of the endocrine and reproductive state of health. This study therefore aims to contribute to the knowledge base through its quest for the risk factors of the prevalence of dysmenorrhea among students in institutions of higher learning in Kampala capital city. This study seeks to add to the advancing medical and nursing practice of a developing nation by creating awareness of the risk factors of dysmenorrhea and its prevalence to improve preventive treatment.

Different researchers most especially in Nongovernmental organizations (NGO'S) have tackled issues surrounding menstruation like sanitation and availing menstrual pads yet despite dysmenorrhea being noted as a hindrance in good menstrual management practices, it has elicited scanty research. This study will therefore assess the factors influencing the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city. This study is intended to inform MoESTS in the implementation of NSGE (2015-2019), civil society organizations and their development partners in the implementation of the menstrual hygiene charter and all stakeholders towards efficient management of dysmenorrhea so as to maintain the girl child in school, fully participating in her academics and later contribute to the development of the nation.

1.6 Conceptual framework

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┌────────────────────────────┐          ┌────────────────────────────┐
│ Socio-demographic factors  │          │ Personal factors           │
│                            │          │                            │
│   • Age                    │          │      • Menstruation history │
│   • Religion               │          │      • Family history       │
│   • Marital status         │          │      • Stress               │
│   • Parity                 │          │      • Drug use             │
└────────────────────────────┘          └────────────────────────────┘
              \                                    /
               \                                  /
            ┌────────────────────────┐
            │ Prevalence of          │
            │ dysmenorrhea           │
            │                        │
            │                        │
            └────────────────────────┘
                        │
                        ▼
            ┌────────────────────────┐
            │ Life style factors     │
            │                        │
            │    • Alcohol consumption │
            │    • Coffee consumption  │
            │    • Sugar intake        │
            │    • Smoking             │
            │    • Physical activity   │
            └────────────────────────┘
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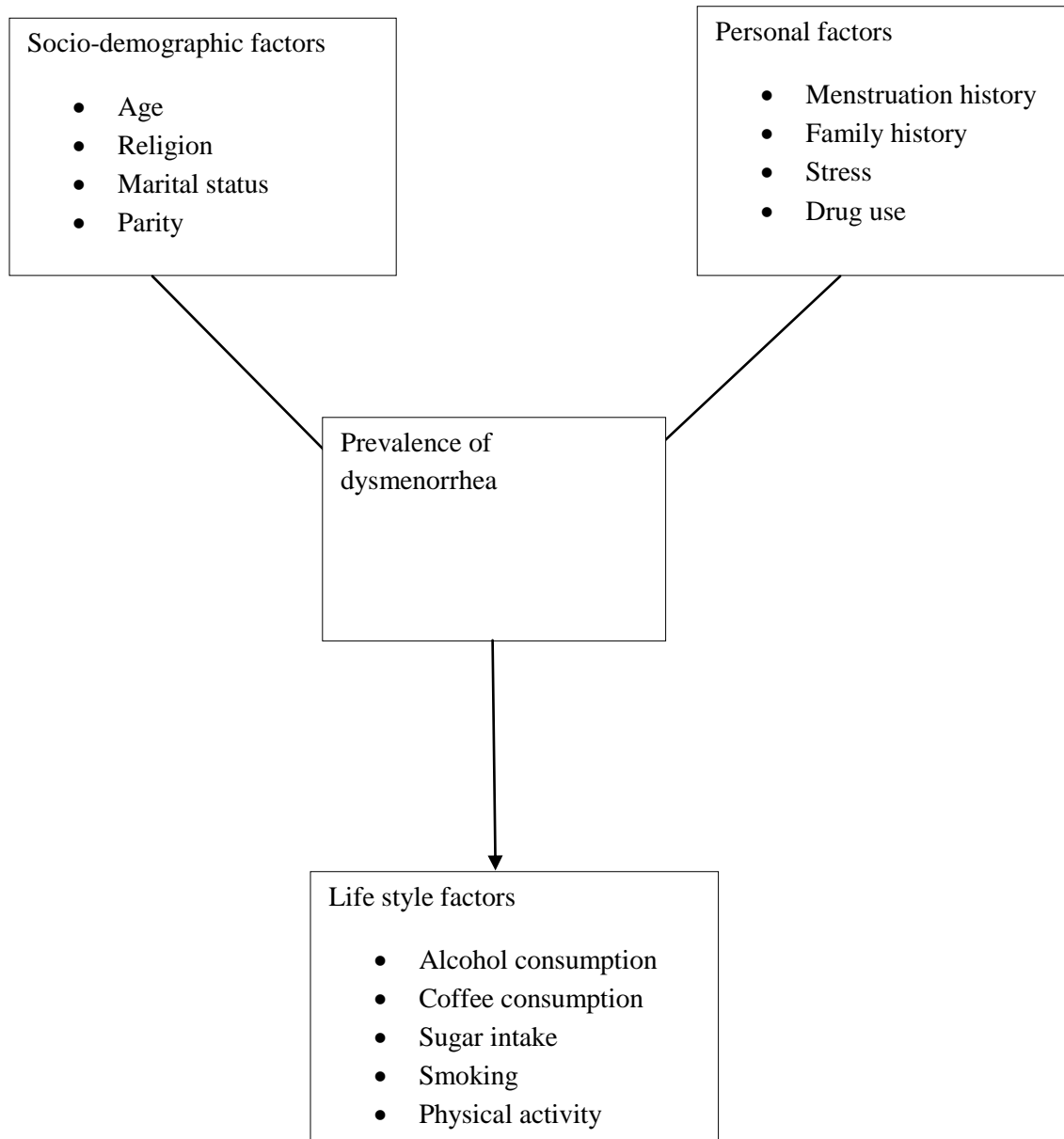
The independent variables are socio-demographic factors, personal factors and life style factors while the dependent variable is the prevalence of dysmenorrhea. Personal factors are biological, physical and psychological factors of the human being. Life style factors are related to the individual's way of life. The above conceptual framework attempts to describe the risk factors that would influence the prevalence of dysmenorrhea among university students.

CHAPTER TWO: LITERATURE REVIEW

2.0. Introduction

Researchers globally have sought to understand the determinants of the prevalence of dysmenorrhea. This attempt is possibly driven by the negative impact dysmenorrhea has on the academic, work and social life. In Africa, the quest is vividly seen by the research work available from North and West Africa yet there is scanty of research available from East Africa of which Uganda is embedded. This study seeks to study the socio-demographic, personal and life style factors that could influence the prevalence of dysmenorrhea. The key words which were used in the search of literature are; risk factors, dysmenorrhea, menstrual pain, stress, exercise, prevalence, drug use, alcohol consumption and smoking. The following data bases were searched; PubMed, Google scholar, science direct, Wiley online, SAGE publications and research gate. Literature from 2005 – 2015 was salvaged and utilized in this literature review.

2.1. Prevalence of dysmenorrhea

The prevalence of dysmenorrhea is reported to be 50-90% worldwide (Smith, R., Kaunitz, A., 2015). In Europe and America, the prevalence of dysmenorrheal has been reported to range from 52.4%-85.7% (Potur et al, 2014, Zuluaga et al, 2012, Oritz, MI, 2010). Among young Australian women aged 18-23 years, a 60% prevalence of dysmenorrhea was reported after carrying out a prospective cohort study Jones, M., et al (2014). Tinatin, G., et al, 2012, reported similar findings after carrying out a cross sectional study about the prevalence and risk factors among an adolescent population of Tibilisi, Georgia

 The prevalence in Asia ranges from 58.8% to 84.9% (Tusharie et al, 2013, Chan et al, 2009, In Ae Jung et al, 2013). In Ae Jung et al, 2013, learning the factors that are linked to dysmenorrhea among Vietnamese plus Vietnamese marriage immigrant women in South Korea reported the dysmenorrhea prevalence at 58.8% after a cohort study. Similar findings with a prevalence of 63.3% were reported by Kordi, M., et al, 2013, after a positive correlational study about the association between occupational stress and dysmenorrhea among 150 midwives working in public and private hospitals and health centers in Iran. A higher prevalence of 84.9% among 380 Turkish nursing students was found after assessing dysmenorrhea Memnum, S., et al (2014). Sashikamat , G., et al, 2015 while assessing the link between dysmenorrhea and body mass index

among 100 rural adolescents and its effect on quality of existence found that 38% had mild, 44% experienced moderate and 18% experienced severe dysmenorrhea.

The prevalence of dysmenorrhea in Africa has been reported by different researchers as ranging from 58% to 85.1% (Shiferaw, M., et al, 2013, Ahmed, N, 2014, Ogufowokan et al, 2010). Among 283 students in Egypt, 65.4% prevalence was stated in a study about menstrual sicknesses Ahmed, M (2014). A higher prevalence of 85.1% has been reported among 491 female students in Ethiopia after a cross sectional study about menstrual difficulties and related factors which employed stratified sampling techniques Shiferaw, M., et al (2014). Fatai, M., et al, 2013, found similar findings to Shiferaw et al, recording the prevalence at 85.4% among 1383 school adolescents in Nnewi, Nigeria while studying about the physical activity level and adiposity and its relation to dysmenorrhea.

There is however paucity of data available about the prevalence of dysmenorrhea in East Africa under which Uganda is mapped. The similarity in ranges of the prevalence of dysmenorrhea worldwide may be explained by Mc Caffrey's definition of pain "Pain is whatever the experiencing person says it is, existing whenever the experiencing person says it does (Clarke, K.A., Iphofen, R., 2008)

2.2. Socio-demographic factors associated with dysmenorrhea
The socio-demographic factors are; age, marital status, parity and body mass index.

2.2.1. Age
Badria, K., et al, 2014, performed a cross sectional study whose aim was to assess the prevalence of dysmenorrhea among university students in the eastern province of Saudi Arabia. They found no association between dysmenorrhea and age among 924 students aged 18-33 years. However, this study was conducted in only one institution. Our study will assess this relationship by covering three institutions of higher learning.

Chung, F., et al, 2005 after a prospective study whose aim was to assess the association between menstrual function and lifestyle or working conditions among 200 nurses in Taiwan aged 18-45 years reported that a younger age increased the risk of dysmenorrhea at $P<0.01$.

2.2.2. Parity

Nnaemeka, R. et al, 2013, performed a cross sectional study whose aim was to evaluate the factors that increased the severity of dysmenorrhea among 320 female university students in Maiduguri, north-eastern Nigeria. This study revealed that nulli parity influenced the severity of dysmenorrhea

Patel, V., et al, 2006, had similar findings to Nnaemeka's study reporting that nulli parity was associated with dysmenorrhea after a multivariate analysis. This community based cross sectional study whose aim was to assess the prevalence and determinants of dysmenorrhea was conducted among 2494 women aged 18-45 years in Goa, India.

In a cross sectional study to assess the prevalence of dysmenorrhea among 634 students undertaking undergraduate studies in Caruaru, Pemambuco had 68.9% of the respondents revealing that experiencing child birth improved cramping. This improvement in cramps was more apparent in women who had multiple child birth (Samara, B., et al, 2012). In view of the above cross sectional studies that arrived at similar findings that parity influenced dysmenorrhea, our research will assess this association in institutions in Uganda.

2.2.3 Marital status

A cross sectional study among 651 female workers from three factories in Tiajin, China whose aim was to approximate the prevalence, demographic and occupational factors associated with the three types of gynecological pain found a positive association between dysmenorrhea and not being married Kristin, K., et al (2014).

Liong, Chi ki and Jackie, 2006, carried out a descriptive cross sectional study among 292 nurses in 5 hospitals in Hong Kong whose aim was to find the association of primary dysmenorrhea with the perception of pain, work stress and life style of nurses. This study reported that marital status and dysmenorrhea were not significantly related. Our study population is students in higher institutions of learning quite different from Liong's study whose study population were nurses in hospitals.

After random sampling women in Goa, India which resulted into 2494 women aged 18-45 years, a cross sectional study about the burden and determinants of dysmenorrhea was carried out. Patel, V., et al, 2006, arrived at a relationship between being single and dysmenorrhea. This

relationship is one where having a deprived socioeconomic status yet single exposes you to a greater risk of complaining of moderate to severe dysmenorrhea.

The above studies have attempted to study the association between marital status and dysmenorrhea among nurses and women. We will therefore scrutinize for the type of association among the student population aged 18-45 years in the pearl of Africa.

2.2.4 Religion

Min Yeoung, K., et al, 2013, performed a cohort study on the factors associated with dysmenorrhea among 3,017 Vietnamese women aged 17-42 years where they found a higher prevalence of dysmenorrhea among religious women than those who weren't ($p<0.001$). Among the religious women, they reported a higher prevalence (61.5%) of dysmenorrhea among Catholics than other religious sects.

2.3. Personal factors associated with the prevalence of dysmenorrhea.

The personal factors include menstruation history, family history, stress and drug use.

2.3.1. Menstruation history

SOBGC, 2005, has guidelines to follow while eliciting menstrual history. These have been put in mind while reviewing literature in this section and what other researchers have found.

2.3.1.1. Pain experience during menses

Dysmenorrhea is a Greek word literally meaning a menstrual flow that's difficult SOBGGC (2005). It could be primary or secondary. Primary dysmenorrhea has been described as chronic, cramp like pain associated with menses in absence of any pelvic disease. Primary dysmenorrhea has been blamed on the myometrium contraction and an ischemic uterus though other factors like prostaglandins work on the myometrium, vasopressin and cervical obstruction have been cited. Secondary dysmenorrhea is painful menstruation associated with underlying pelvic disease occurring several years after experiencing painful periods. Certain symptoms have been described to be associated with dysmenorrhea which include; diarrhea, nausea, vomiting, fatigue, headache, dizziness and fever. These symptoms have been postulated to be a result of prostaglandin release. Different therapeutic options have been described including; those one would call conservative, pharmacological, surgery and complementary alternative medicine.

Conservative therapies include; an exercise schedule of about 3 times a week, Trans cutaneous electrical nerve stimulation or acupuncture, relaxation and use of heat to warm the abdomen. Pharmacological regimen includes; acetaminophen, NSAIDS likes acetylsalicylic acid, ibuprophen, naproxen and Aspirin. The above pharmacological therapy has known to be effective if taken at the onset of menses and described as unnecessary after 2-3 days. Other pharmacological regimen like glycerol trinitate have been known to create a relaxing effect on the myometrium, combined oral contraceptives and levonogesterol intrauterine system have been used. Surgical interventions that could be used are; Laparoscopy, hysterectomy, presacral neurectomy, laparoscopic uterosacral nerve ablation. Complementary Alternative Medicine (CAM) has been utilized like vitamins B6, B12, E, Magnesium, omega 3 fatty acids and herbs SOBGC (2005).

Ga Eul, J et al, 2014, described methods that school going adolescents in South Korea were using to cope with dysmenorrhea including enduring the pain, sleeping, warming the abdomen, taking analgesics, herbal medicine and hand acupuncture.

2.3.1.2. Duration of menses

Nooh, A., 2014, examined the menstrual disorders among 283 randomly selected university students in Zagazig, Egypt. He found out that an increase in duration of menses increased the severity of dysmenorrhea. This study was conducted in only one institution therefore we will assess whether this association exists among 3 institutions of higher learning.

In a cross sectional study involving 360 medical students of Babol University to investigate the association of psychologic and non psychologic factors with primary dysmenorrhea, multiple logistic regression analysis arrived at a statistically significant relationship between dysmenorrhea and a menstrual bleeding duration of less than 7 days ($p<0.000$) Mahbobeh, F., (2014).

Another cross sectional study about the prevalence of menstrual pain among 408 young women at the university of Modena and Reggio Emilia, Italy, found that the severity of dysmenorrhea had a lot to do about the length of menstrual flow Giovanni G., et al (2012).

The above studies were conducted among institutions of higher learning with a range of 283-408 student population which is quite similar to our proposed study.

2.3.1.3. Menstrual cycle duration

Menstrual cycle duration of 21-35 days is related with 84% reduction in dysmenorrhea probably indicating a correlation between dysmenorrhea and one's menstrual cycle length. It was a cross sectional study at Bahir Dar university in Ethiopia that arrived to the above findings which had been done to assess the menstrual problems and their associated factors Shiferaw, M., et al (2014).

2.3.1.4. Menstrual Regularity

Badria, K., et al, 2014, described the relationship between dysmenorrhea and menstrual regularity as one which was not significant after carrying out a cross sectional study about the risk factors of dysmenorrhea among 924 university students in Saudi Arabia.

A cross sectional study among 651 female workers from three factories in Tiajin, China found irregular periods to increase the occurrence of dysmenorrhea Kristin, K., et al (2014). The difference in findings could be attributed to the study population characteristics, geographical location between the two studies.

2.3.1.5 Age at menarche

Nooh, A ,2014, after carrying out an observational study that sought to assess the nature and prevalence of menstrual disorders utilizing random sampling among 297 young students at Zagazig university, Zagazig, Egypt reported the average age at menarche at 12.1± 1.6 years, a range of 11-16 years and its relationship with dysmenorrhea being statistically significant (p<0.05)

In an attempt to find factors associated with dysmenorrhea among 3,017 Vietnamese women who were aged 17-42 years, a cohort study was done. Min Yeoung, K.,et al,2013, reported that an association between younger age at menarche and the severity of dysmenorrhea. The choice by these researchers to utilize a cohort study was a good one since it could reveal whether exposure to the risk factors would result into dysmenorrhea or increase its severity. In our cross sectional study, we will assess whether this finding holds among students aged 18-45 years.

2.3.2. Family history

Mahkam, T., et al, 2011, whose aim was to extrapolate the prevalence of dysmenorrhea among 381 Iranian women aged 16-56 years and find associated risk factors reported that women with a positive family history were 3.8 times more likely to experience dysmenorrhea after a cross sectional study. This study was conducted among women, our study will assess whether such association exists among students.

Another cross sectional study whose aim was to determine the prevalence and risk factors among 2561 adolescent population in Georgia, Tibilisi reported that one would be 6 times more likely to have dysmenorrhea if she had a positive family history for dysmenorrhea Tinatin, G., et al (2012). This study used a wider population in which it employed a probability proportional to size sampling which enhances generalizability of results.

Memnum, S., et al, 2014, whose aim was to assess dysmenorrhea among 380 Turkish nursing students arrived at a relationship where the risk of having dysmenorrhea increased when one had a sister with dysmenorrhea at $p<0.05$ after a univariate analysis.

Shiferaw, M., et al, 2014, studied the menstrual problems and associated factors among 491 randomly selected students of Bahir Dar University in Ethiopia. This cross sectional study found out that participants with family history of dysmenorrhea were 4 times more likely to experience dysmenorrhea.

2.3.3. Stress

High job strain and dysmenorrhea were found to be significantly associated (OR = 3.49). This was after a cross sectional study whose aim was to estimate the prevalence, demographic and occupational factors associated with the three types of gynecological pain among 651 factory workers in Tiajin, China, Kristin, K., et al (2014).

Kordi, M., et al, 2013, whose aim was to assess the link between occupational stress and dysmenorrhea among 150 midwives working in private, public hospitals and health centers in Iran. This prospective correlational study found a significant positive correlation between occupational stress and the severity of dysmenorrhea ($p=0.002$).

Liong et al, 2006, described the relationship between dysmenorrhea and stress as one where increased amounts of stress would increase the severity of dysmenorrhea. This relationship was arrived at after a descriptive cross sectional study involving 292 nurses working in 5 hospitals in Hong Kong.

While reviewing these studies which have established a correlation between stress and dysmenorrhea in working populations, we kept struggling looking for this association among students like in Uganda where you find that some are juggling books and work.

2.3.4. Drug use

Badria, K., et al, 2014, whose aim was to assess the magnitude of dysmenorrhea and related risk factors among 880 university students aged 18-33 years in a descriptive cross sectional study found out that 50.8% of the students utilizing medications for irregular periods experienced severe dysmenorrhea(p=0.007). Our research will only hold associations at a statistical significance of p<0.005 therefore we will investigate whether this association between dysmenorrhea and drug use still holds.

An educational intervention carried out to assess the effectiveness of an education intervention on proper analgesic use for dysmenorrhea among 98 female Korean university students reported that the severity of dysmenorrhea decreased, medication rate increased among participants who had received the education Hyun-Suk, J., et al (2013). This study perhaps explains how the utilization of analgesics could impact on the prevalence of dysmenorrhea based on the choice of study design.

Cathi Dennehy, 2006, carried out an evidence based review about the use of herbs and dietary supplements which described the utilization of herbs and supplements like Vitamin B1, Vitamin E, Vitamin B3, Magnesium, Omega 3 fatty acids, black cohosh, chaste tree, dong quai, black haw, cramp bark by women experiencing chronic gynecological conditions for example dysmenorrhea. The women choose these herbs and supplements rather than tolerating the side effects of drugs. This study highlighted the utilization of herbs which is similar to the management of dysmenorrhea employing medicinal plants described in Kasese, Uganda by Kamatenesi et al (2014).

2.4. Lifestyle factors associated with dysmenorrhea

These include alcohol consumption, coffee consumption, sugar intake, smoking and physical activity.

2.4.1. Alcohol consumption

A retrospective case control study carried out among 2561 women of Tibilisi, Georgia to identify the risk factors associated with primary dysmenorrhea found out that a negative correlation existed between alcohol and dysmenorrhea Tinatin, G., et al(2012).

Mahkam, T., et al, 2011, carried out a cross sectional study whose aim was to estimate the prevalence of dysmenorrhea and related risk factors among 381 women in Iran. This study reported that women experienced less pain after having 1-7 servings of alcohol per week contradicting the results of Tinatin et al (2012).

2.4.2. Coffee consumption

Memnum, S., et al, 2014, whose aim was to evaluate dysmenorrhea among 380 Turkish nursing students reported that coffee consumption could influence dysmenorrhea after a multivariate logistic regression analysis.

A descriptive cross sectional study among 880 students whose aim was to assess the prevalence and related factors to dysmenorrhea in the eastern province of Saudi Arabia found no significant association between dysmenorrhea and coffee consumption Badria, K., et al (2014).

Mahkam, T., et al, 2011, found similar findings to Badria after a cross sectional study whose aim was to approximate the prevalence and related risk factors among 381 Iranian women therefore reported a non-significant relationship between dysmenorrhea and caffeine consumption.

2.4.3. Sugar intake

Food customs have been reported to induce gynecological disorders Nazni (2014). There is an increase in adoption of the western diet amongst the population in the developing countries. This western diet entails foods like red meat, sugary desserts, high fatty foods and refined grains Allison (2007). A cross sectional study among 2561 women of Tibilisi, Georgia to assess the prevalence and associated factors of dysmenorrhea found out that women with an increased

sugar intake had a marked increase in the severity of dysmenorrhea in comparison with other women with no daily sugar intake Tinatin, G., et al (2012).

Ozerdogan, N., et al, 2009, determined the prevalence and effects of socio-demographic characteristics on dysmenorrhea among 857 university students in Turkey. This cross sectional study reported that women with excessive sugar intake were 1.8 times likely to suffer from dysmenorrhea.

2.4.4. Smoking

Jones, M., et al, 2014, whose aim was to find out the association of cigarette smoking and trajectories of dysmenorrhea at baseline among 9067 young Australian women aged 18-23 years sampled from the national medicine database. This 12 years prospective cohort study found out that smokers had a 40% chance of experiencing pain and this distressing pain is likely to occur in women who smoke throughout their reproductive life.

Memnum, S., et al, 2014, whose aim was to evaluate dysmenorrhea among 380 Turkish nursing students reported that one's smoking status could influence dysmenorrhea after a multi variate logistic regression analysis.

A cross sectional study carried out to examine the factors that increased the severity of dysmenorrhea among 320 female university students in Maiduguri, Nigeria reported a non-significant relationship between dysmenorrhea and cigarette smoking Nnaemeka, R., et al(2013).

The above studies therefore seem to imply that there is a positive correlation between smoking and dysmenorrhea.

2.4.5. Physical activity

Fatai, M., et al, 2013, carried out a cross sectional study about the association of physical activity level and adiposity with dysmenorrhea among 1383 school going adolescents in Nigeria. This study found no association between physical activity level and primary dysmenorrhea. However this study contradicts its self when it reported that higher physical activity was associated with primary dysmenorrhea occurrence. It blames this contradiction on the respondents who might have confused primary dysmenorrhea occurrence with primary dysmenorrhea pain.

Perissinoto, E., et al, 2014, after carrying out a cross sectional study about the onset of menstrual cycle and menses features among 3,783 secondary school girls in Italy reported a negative relationship between dysmenorrhea and physical activity.

A random clinical trial was employed among 105 students whose aim was to compare the effects of aerobic and stretching exercises on the intensity of primary dysmenorrhea in Bushehr universities of Iran found out that the severity of dysmenorrhea decreased with aerobic and stretching exercises Vaziri, F.,et al (2015). This association between dysmenorrhea and exercises could probably be explained by the benefits of a randomized clinical trial to avert selection and accidental bias allowing the infiltration of the probability theorem even in the study outcome.

2.5. Consequences

Li Ping Wong, Ee Ming Khoo, 2010, embarked on a cross sectional study to determine the prevalence of dysmenorrhea, its effect and treatment seeking behavior among 1092 Malyasian secondary school girls who had been chosen into a sampling frame after random sampling. Their results showed that 51.7% of the respondents stated that their concentration in the class room was affected by menstrual pain, 50.2 % reporting a limit on social and recreational activities due to menstrual pain, 21.5 % blaming menstrual pain for their nonattendance of class and 16.4% citing dysmenorrhea as a cause for their low grades. This highlights the burden dysmenorrhea has on the academics of females.

Aziato,L., et al,2014, carried out a descriptive study about the experience of dysmenorrhea, pain characteristics and effects utilizing purposive and snowballing sampling techniques among 16 Ghanaian senior high and university students who cited activity intolerance, absenteeism, changed emotion and sleep pattern, and inattentiveness while experiencing dysmenorrhea,

Conclusion

The above review of literature has provided a foundation for the proposed study of the factors that influence the prevalence of dysmenorrhea.

CHAPTER THREE: METHODOLOGY

3.0. Introduction

This chapter delineates the methodology that will be utilized in the study of the factors influencing the prevalence of dysmenorrhea among students in higher institutions of learning aged 18-35 years in Kampala.

3.1. Study design

A descriptive cross sectional study was employed to provide a snapshot of the prevalence and predictors of dysmenorrhea at one point in time on all the study population. A cross sectional study was chosen due to its ability to provide quantitative data.

3.2. Sources of data

Primary data was gotten from students in the following institutions; International health Sciences University, Kampala University and Mulago School of nursing utilizing structured questionnaires. Conducting the study in more than one institution was anticipated to enhance generalizability of results.

3.3 Study areas

The study was conducted in three institutions of higher learning namely Kampala university (KU) Mutundwe campus, International health sciences university (IHSU) main campus and Mulago School of nursing. These institutions were selected because they had a substantial population depicting life in private and public institutions of higher learning.

Kampala University (KU) Mutundwe campus is one of the five campuses of the main branch of KU. It's a private university located in Mutundwe, Lubaga division. It's located 6.5Km, southwest of Kampala capital city. It's where the school of nursing and health sciences of KU is located.

Mulago School of nursing is public institution offering diploma in nursing and midwifery and has 53 years of existence. The school is located inside Mulago hospital, a national referral hospital of Uganda. It's located on Mulago hill in the northern part of Kampala city. It's approximately 5km from the main post office in Kampala city. Its coordinates are 0°20¹16.0N, 32°34¹32.0E.

IHSU main campus is a private university at plot 4686, st. Barnabus road, Namuwongo in south eastern of Kampala. It's approximately 6 km from the main post office in Kampala city. Its coordinates are 0°18ʹ19.0N, 32°36ʹ38.0E. It has been in existence for 7 years. It has the following schools and institutes; institute of health policy and management, school of nursing, school of allied health sciences and a school of medicine in development.

3.4. Population

3.4.1. Target population

This comprised of all female students in institutions of higher learning in Kampala capital city.

3.4.2. Accessible population

This comprised of female students of International health Sciences University, Kampala University (Mutundwe campus) and Mulago School of nursing.

3.4.3. Study population

This comprised of all students aged 18-45 years in International health Sciences University, Kampala University and Mulago School of nursing who will be part of the sampling frame, eligible to participate in this study.

3.5 Eligibility criteria

3.5.1. Inclusion criteria

- Female students who were aged 18-45 years in IHSU, KIU and Mulago nursing school.
- Female students who consented to participate in the study.

3.5.2. Exclusion criteria

- Female students who couldn't read and understand English.
- Female students who were blind.

3.6 Sample size determination

We used Kish and Leslie's formula to calculate the sample size.

$$N = \left[\frac{Z^2 P (1-P)}{d^2} \right] \times 2\, Deff$$

N is the sample size required

Z is the standard normal deviate at 95% (CI =1.96)

P is the expected proportion in the population that experience dysmenorrhea. This has been adapted based on a study done in Nnewi, Nigeria where the P = 85.4 % (Fatai, A., et al, 2013).

1-P is the chance of the student not having dysmenorrhea.

d-is the absolute precision or error. We will take it to be 0.05

Deff- It's the design effect (*Deff*≥1) for cluster sampling since the students in each institution or class are similar.

$$N = \left[\frac{1.96^2 \times 0.854 \quad (1-0.854)}{0.05^2} \right] \times 2$$

$$N = \left[\frac{3.8416 \times 0.854 \quad \times \quad 0.146}{0.0025} \right] \times 2$$

N = 191.594 x 2

N = 383.188

N~ 383

N = 383 female students aged 18-45 years.

20

3.7 Sampling technique

3.7.1. Selection of institutions

Convenience sampling was used to select the institutions that would participate in the study. Carrying out a study in International health Sciences University (IHSU), Kampala University (KU) and Mulago school of nursing was very feasible because of the ease of accessibility of these institutions to the researchers.

3.7.2. Selection of participants

A letter was taken to the administration of the selected institutions to seek permission to carry out the study. Convenience sampling was done to obtain participating institutions and students. Calculations will be done to obtain a sample that is proportional to the size of the institution. Females aged 18-45 years were enrolled conveniently until the required sample size was attained. English being an official language for Uganda, all communication was maintained in English

3.8. Study variables

3.8.1. Dependent variable

This is the prevalence of dysmenorrhea among female students of institutions of higher learning in KU, IHSU and Mulago School of nursing which was measured by asking participants whether they experience pain during their menses or not.

3.8.2. Independent variables

The factors that can influence the prevalence of dysmenorrhea were classified under socio-demographic, personal and life style factors. The socio-demographic factors are; age, marital status and parity. The personal factors are menstrual history, family history, stress and drug use. The lifestyle factors are alcohol consumption, coffee consumption, sugar intake, smoking and physical activity.

3.9. Data collection method

3.9.1 Instrument

A structured questionnaire was the choice of research instrument which was used to collect data from respondents. The instrument was developed by the researchers entailing both open and closed ended questions in English. The instrument collected information which included; demographic data, prevalence of dysmenorrhea, personal factors and life style factors from participants. SOBGC, 2005, guidelines were utilized to illicit menstrual history.

3.9.2 Research assistants

A minimum of a diploma was a prerequisite for any research assistant. Students or lecturers from participating institutions had an added advantage for selection as research assistants. The lead investigator explained the aim of the research and the instrument. This two day training entailed the data collection process from the participants and details of their role like how to crosscheck a filled questionnaire for completeness. Four research assistants were then selected from the six according to the level of understanding of role displayed during the training.

3.9.3 Pretesting of the instrument

The questionnaire was pretested among 15 students of Makerere University in order to check the reliability, validity, identify and resolve ambiguous questions in order to improve clarity. It took 6-15 minutes to fill the questionnaire; inappropriate wording was detected and corrected.

3.9.4 Measurement of scale

Question	Variable names	Possible values
Age in years	Age	Age
Marital Status	Marital Status	Single Widowed Married/ Cohabiting Divorced/Separated
How many children do you have?	Number of children	0 ≤ 4 >4
Employment status	Employment	Employed Un employed
Religion	Religion	Protestant Muslim SDA Catholic Pentecostal Other
At what age did you start your menstrual cycle?	Age at menarche	……………….

Do you experience your periods every month?	Experience monthly period	Yes No
How long is your monthly menstrual period (in days)?	Length of menstrual period	1-2 3-4 5-6 >7
Are you taking any drugs for a chronic illness?	Chronic illness drug use	Yes No
Which drugs are you taking for the chronic illness?	Chronic illness drugs	……………………
Do you experience pain during your menstrual periods?	Experience dysmenorrhea	Yes No
For how long do you experience the menstrual pain?	Duration of menstrual pain	1day 2days 3days >3days
Do you know any of your relatives who experiences pain during menstruation?	Possession of relative with dysmenorrhea	Yes No
Which of your relative experiences pain during menstruation?	Relative with dysmenorrhea	Mother Sister Cousin Other
If you have a child, did the pain improve after giving birth?	Child birth decreases dysmenorrhea	Yes No
In your opinion, do you think that life at the institution / work is stressing?	Work/ institution related stress	Yes No
How would you rate the stress experienced at the institution / work?	Rate of work/institution related stress	Low Moderate Severe/ very severe
Do you drink alcohol?	Alcohol consumption	Yes No
How many servings of alcohol do you have per week?	Alcohol servings per week	1-2 3-4 5-6 >7
Do you drink coffee?	Coffee consumption	Yes No
How many cups of coffee do you take per day?	Cups of coffee consumed per day	1-3 4-6 7-9 >10
Do you take sugar?	Sugar consumption	Yes No
Do you consume the following daily?	Daily consumption of sugary foods	Sugar in tea Ice cream Chocolate Sweets
Do you smoke cigarettes or shisha?	Smoking	Yes No
Do you exercise regularly?	Regular exercise	Yes No
Which type of exercise do you do?	Type of exercise	………………………
How many times per week do you exercise?	Times per week of exercise	1 day 2-3 days 4-5 days 6-7 days
For how long is the exercise?	Duration of exercise	≤30minutes >30minutes

3.9.5 Data collection procedure

After development of the proposal, the research supervisor gave a go ahead to collect the data. A letter of introduction of self was obtained from the dean school of nursing, International health Sciences University which was presented to the administrators of the participating institutions to seek their approval to conduct the research in their premises. The aim of the study was explained to the administrators found at the participating institutions. We then proceed to the classes to find the students in these academic years. Introduction of self and research assistants were done, aim of the study explained and consent sought. We proceeded to administer the questionnaire to females aged 18-45 years.

3.9.6 Data management and analysis plan

Questionnaires filled were cross checked by the research assistants to ensure their completeness in front of the respondents and kept. The lead investigator supervised the research assistants, crosschecked the filled questionnaires for completeness and was the custodian of the data even in the transportation of the questionnaires from the field into the locker with a key for keeping. This was all done to minimize chances of stealing and corrupting the data.

During analysis of data, the anti- virus was continuously updated and only approved members of the research team were allowed to access the data. Questionnaires were coded for easy checking and to prevent repeating of any questionnaire during data entry. Data was entered into Epiinfo version 7 where check codes were utilized to minimize errors that could occur in data entry and to speed up the data entry process. Data was exported to MS Excel to identify any errors so as to do data cleaning in Epiinfo. Epiinfo provided basic statistical analysis of data which was exported to Statistical packages for social scientists (SPSS) version 20.We then validated exported data by learned associates and the research supervisor. Descriptive analysis provided measures of central tendency and measures of dispersion for numerical variables. Data was presented in form of pie charts, tables, bar graphs and frequency polygons illustrating the percentages and frequencies for categorical data.

Bivariate analysis and chi-square were used to measure the association between the independent and dependent variables contrasting the results with those obtained during descriptive analysis. A $p < 0.05$ was considered to be significant and a statistical relationship extrapolated.

All variables with a $p < 0.2$ at bivariate analysis were carried forward for Multivariate analysis using binary logistic regression analysis, enter method while controlling for possible cofounding variables so as to avail a deeper analysis between the dependent and independent variables among students in the participating institutions of higher learning. The effect measure for association at multivariate analysis was odds ratio (OR), 95%Cofidence Interval (CI) to estimate precision of the OR. The level of significance for any association was a $p < 0.05$ to be a risk factor for dysmenorrhea among the students aged 18- 45 years in institutions of higher learning.

Qualitative data obtained from two open ended questions in the questionnaire was analyzed by a team of four and where need aroused, responses were grouped and discussed.

Access to the electronic data was limited by using passwords that were encrypted. Data was backed up on hard drives, Google drive every Saturday to ease the retrieval in case of loss. In case of retrieval, this will be done by the lead investigator. Non electronic data was stripped off any identifiers before archiving.

3.10 Quality control

Instrument; piloting of the questionnaire was done with 15 students from Makerere University prior the commencement of data collection and editing done. Questionnaires that were filled during the study were checked for completeness. All filled questionnaires during the study were kept under lock and key. Questionnaires were coded prior data entry to prevent repetition. The validity of the tool was done by 4 professionals with a bias in menstruation issues and my research supervisor. For each item in the questionnaire, a coefficient of validity interval (CVI) was calculated and an average attained for the entire tool. The CVI was computed and a result of 0.7 and above was desirable;

CVI = <u>Number of items declared valid</u>

.   Total number of items

Inter-rater reliability among 15 students of Makerere University was done to assess for the dependability of tool scores.

Research assistants were trained vigorously prior collection of data. These research assistants checked for completeness of the questionnaire during collection of data. Incoherence in data

collected was minimized by asking for clarity from the respondents at the time of hand in before we could lose the respondents and compliance with the sampling technique was ensured.

3.11 Ethical and legal considerations

Research and ethics committee of international health Sciences University approved the research proposal. The study was conducted under the supervision of an epidemiologist. Further permission was sought from the administrators of KU, IHSU and Mulago School of nursing to carry out the study in their premises. Aim of the study was explained to the participants and written consent form availed before provision of the questionnaires. The lecturers were asked to leave the room, participants were allowed to ask questions and leave the study if they wished so without penalty. Initials were used instead of real names to ensure privacy. Signing of the consent form was considered as acceptance to take part in the study. Anonymity was accepted to encourage the participants to share their private information with us. Participants were informed that individual information would remain confidential and no harm would arise. Considering that the participants were not under any oath to share the truth, consistence of the data was checked prior data entry.

3.12 Plan for dissemination

Soft copies will be sent out to participants who showed interest and to all interested stake holders. Three hard copies will be availed to IHSU as a partial obligation for the award of a Bachelor of Science in Nursing and publications done in journals for the public. The length of storage or even access to this research work at the institutions will follow library guidelines already in place at the institutions. Other researchers outside the parameters of where the research was conducted will contact the lead investigator via email to gain access to the research. We will encourage the acknowledgement of the investigators in case of utilization of this research work. We hope that our dissemination plan will be enabling in providing information about the factors that influence the prevalence of dysmenorrhea.

CHAPTER FOUR: PRESENTATION OF RESULTS

4.0: Introduction

We collected data from 383 respondents and only 351 questionnaires had been filled completely. We entered the data into Epiinfo version 7, exported to excel and SPSS version 20. Epiinfo and excel were utilized to obtain some summary statistics and quality graphs while SPSS provided robust analysis. The study objectives were followed in presenting the results. Frequency tables, graphs and pie-charts have been utilized to present Summary statistics. At bivariate analysis, cross tabulations were used for categorical variables to obtain the level of association and data presented in form of tables. For multivariate analysis, only variables that had a p<0.2 were entered into a binary logistic model, using enter method and any potential association was explored while controlling for confounding variables. Variables with a p<0.05 were considered to be significant.

4.1: Socio-demographic characteristics of female students aged 18-45 years in 3 institutions of higher learning in Kampala.

Majority 287(81.8%) of the respondents' age was ranging from 18 to 24 years with only 1.7% (6) of respondents' age ranging from 39 to 45 years. Most respondents were single 81.8% (287), had not yet given birth to a child 75.8% (266), unemployed 82.1% (288) and Catholic 33.9% (119) shown in table 2 below.

Table 1: Socio-demographic characteristics among female students in 3 institutions of higher learning in Kampala (N=351).

Variable	Category	n (Frequency)	%
Age(in years)	18-24	287	81.8
	25-31	51	14.5
	32-38	7	2.0
	39-45	6	1.7
Marital status	Single	287	81.8
	Married/Cohabiting	51	14.5
	Widowed	7	2.0
	Divorced/Separated	6	1.7
Number of children	0	266	75.8
	≤ 4	79	22.5
	≥ 4	6	1.7
Employment status	Employed	63	17.9
	Unemployed	288	82.1
Religion	Protestant	73	20.8
	Catholic	119	33.9
	Muslim	49	14.0
	Pentecostal	89	25.4
	SDA	16	4.6
	Other	5	1.4

4.2: Prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city.

Most 75.8% (266) of the respondents said that they experience dysmenorrhea with an average duration of menstrual pain being 1.91 (SD=0.793) and 41% experiencing pain for 2 days as shown in figure 1 below.

Figure 1: Prevalence of dysmenorrhea
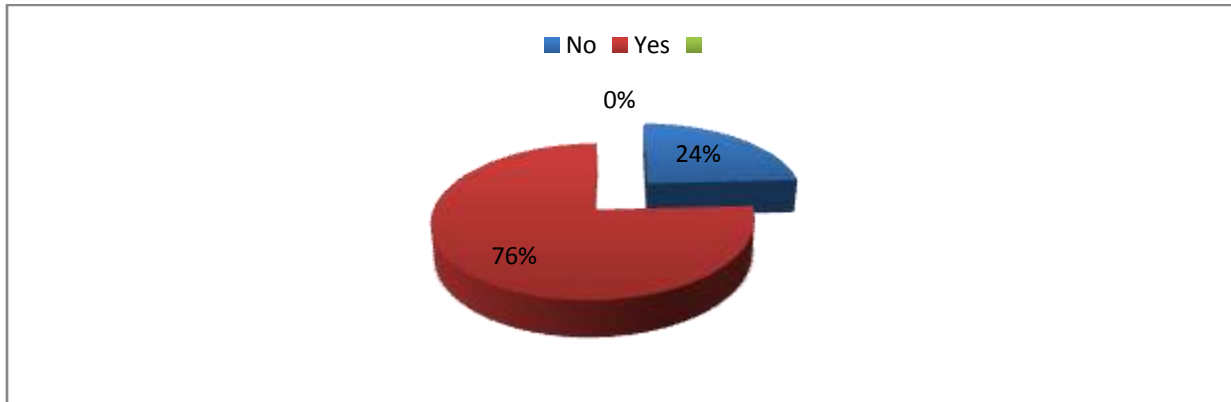
4.3: Life style characteristicsfemale students aged 18-45 years in 3 institutions of higher learning in Kampala capital city.

Majority 309 (88.0%) of the respondents did not consume alcohol while of the 42 participants who consumed alcohol, more than half 27 (64.3%) consumed 1-2 servings of alcohol per week with an average consumption of 1.74 servings (SD = 1.106). Most 60.4% (212) consumed coffee, out of these 92.9% (197) drunk 1-3 cups of coffee per day. Most 326 (92.9%) female students consumed sugar while 82.3% (289) consumed sugar in tea. Majority 339 (96.6%) did not smoke cigarettes or shisha. A total of 181 (51.6%) female students exercised regularly, of these most of the respondents were walking while others ran, skipped a rope, did jogging, aerobics, sit-ups, jumping up, swimming, volley ball, net ball, pressure ups and running. A total of 34.8% (63) female students exercised 2-3 times per week, an average of 2.59 times (SD = 1.100). A total of 51.9% (94) spent more than 30 minutes while exercising as shown in table 2 below.

Table 2: Life style characteristics of female students aged 18-45 years in 3 institutions of higher learning in Kampala (N= 351)

Variable	Category	n (Frequency)	%
Alcohol Consumption	Yes	42	12.0
	No	309	88.0
Alcohol servings per week	1-2	27	64.3
	3-4	4	9.5
	5-6	6	14.3
	>7	5	11.9
Coffee consumption	Yes	212	60.4
	No	139	39.6
Cups of coffee consumed per day	1-3	197	92.9
	4-6	9	4.2
	7-9	5	2.4
	>10	1	0.5
Sugar consumption	Yes	326	92.9
	No	25	7.1
Daily consumption of sugary foods	Sugar in tea	289	82.3
	Ice cream	11	3.1
	Chocolate	5	1.4
	Sweets	14	4.0
	All of them	12	3.4
	None	20	5.7
Smoking of cigarettes or shisha	Yes	12	3.4
	No	339	96.6
Regular exercise	Yes	181	51.6
	No	170	48.4
Times per week of exercise (days)	1	33	18.2
	2-3	63	34.8
	4-5	31	17.1
	6-7	54	29.8
Duration of exercise (minutes)	≤30	87	48.1
	>30	94	51.9

4.4: Personal characteristics of female students aged 18-45 years in 3 institutions of higher learning in Kampala Capital city

Table 3: Personal characteristics of female students aged 18-45 years in 3 institutions of higher learning in Kampala (N=351)

Variable	Category	n (Frequency)	%
Age at menarche	8-11	12	3.4
	12-15	292	83.2
	16-19	47	13.4
Experience monthly period	Yes	325	92.6
	No	26	7.4
Length of menstrual period (days)	1-2	22	6.3
	3-4	256	72.9
	5-6	61	17.4
	>7	12	3.4
Taking drugs for any chronic illness	Yes	7	2.0
	No	344	98.0
Pain reliever	Painkillers	130	48.9
	Rest	82	30.8
	Mineral supplements	3	1.1
	Warm water	28	10.5
	Contraceptives	2	0.8
	Herbs	2	0.8
	Others	19	7.1
Possession of relatives with dysmenorrhea	Yes	205	58.4
	No	146	41.6
Relative with dysmenorrhea	Mother	18	8.78
	Sister	127	61.95
	Cousin	45	21.95
	Other	15	7.32
Work/ institution related stress	Yes	241	68.7
	No	110	31.3
Rating of work/institution related stress	Low	48	19.9
	Moderate	160	66.4
	Severe/very severe	33	13.7

The average age at menarche for the respondents was 13.83years (SD= 1.498, ranging from 9 to 19 years) with most 83.2% (292) girls' age at menarche falling in between 12-15 years. Majority 92.6% (325) of the respondents experienced their periods per month, 58.4% (205) had a relative with dysmenorrhea, 61.95% (127) of the respondents citing a sister as the person experiencing dysmenorrhea. More than half 241(68.7%) experienced work or institutional related stress, of which 66.4 % (160) reported moderate level of stress. Only 7 (1.99%) participants were taking drugs for a chronic illness and they mentioned anti-hypertensives, contraceptives, antibiotics and broncho-dilators as the drugs being taken while 48.9%(130) used pain killers. Majority 72.9%(256) of the female students had their monthly menstrual period lasting 3-4 days with a mean length of the monthly period lasting 2.18 days (SD = 0.585) as shown in table 3 above.

4.5 Socio-demographic factors associated with the prevalence of dysmenorrhea at bivariate analysis

Number of children (p = 0.001, X^2=4.557), parity (p=0.002, X^2=12.501), employment (p=0.029, X^2=0.029) were found to have a statistically significant relationship with the prevalence of dysmenorrhea. A higher prevalence of dysmenorrhea was noticed among female students aged 18-24 years (84.2%), those who were single (84.2%), did not have a child (80.1%), unemployed (84.6%) as shown in table 4 below.

Table 4: Bivariate analysis of socio-demographic characteristics of female students aged 18-45years in 3 institutions of higher learning in Kampala (N=351)

Variable	Category	Dysmenorrhea		X^2	p-value
		Yes: n (%)	No n (%)		
Age	18-24	224(84.2%)	63(74.1%)	4.557	0.207
	25-31	33(12.4%)	18(21.2%)		
	32-38	5(1.9%)	2(2.4%)		
	39-45	4(1.5%)	2(2.4%)		
Marital status	Single	224(84.2%)	63 (74.1%)	4.557	0.207
	Married/cohabiting	33(12.4%)	18(21.2%)		
	Widowed	5(1.9%)	2(2.4%)		
	Divorced/separated	4(1.5%)	2(2.4%)		
Number of children	0	213(80.1%)	53 (62.4%)	13.987	0.001*
	≤4	51(19.2%)	28 (32.9%)		
	>4	2 (0.8%)	4 (4.7%)		
Parity	Yes	32(60.4%)	23(71.9%)	12.501	**0.002***
	No	21(39.6%)	9(28.1%)		
Employment	Unemployed	225 (84.6%)	63 (74.1%)	4.794	**0.029***
	Employed	41 (15.4%)	22(25.9%)		
Religion	Protestant	55(20.7%)	18(21.2%)	3.767	0.583
	Catholic	94(35.3%)	25(29.4%)		
	Muslim	35(13.2%)	14(16.5%)		
	Pentecostal	64(24.1%)	25(29.4%)		
	SDA	13(4.9%)	3(3.5%)		
	Other	5(1.9%)	0(0%)		

4.6 Lifestyle factors associated with the prevalence of dysmenorrhea at bivariate analysis

Among all life style factors, daily consumption of sugary foods was the only statistically significant variable (p=0.038) at bivariate analysis as shown in table 5 below. A higher prevalence of dysmenorrhea was noticed among those who did not consume alcohol88.7% (236), consumed coffee 164(61.7%), consumed sugar 94.0% (250), did not smoke 256(96.2%) and performed exercise regularly 138(51.9%).

Table 5: Bivariate analysis of life style characteristics in female students aged 18-45 years in 3 institutions of higher learning in Kampala (N=351)

Variable	Category	Dysmenorrhea		X²	p-value
		Yes n (%)	No n (%)		
Alcohol consumption	Yes	30(11.3%)	12(14.1%)	0.493	0.483
	No	236(88.7%)	73(85.9%)		
Alcohol servings per week	1-2	21(70.0%)	6(50.0%)	4.270	0.234
	3-4	2(6.7%)	2(16.7%)		
	5-6	5(16.7%)	1(8.3%)		
	>7	2(6.7%)	3(25.0%)		
Coffee consumption	Yes	164(61.7%)	48(56.5%)	0.724	0.395
	No	102(38.3%)	37(43.5%)		
Cups of coffee consumed per day	1-3	152(92.7%)	45(93.8%)	1.841	0.606
	4-6	8(4.9%)	1(2.1%)		
	7-9	3(1.8%)	2(4.2%)		
	>10	1(0.6%)	0(0%)		
Sugar consumption	Yes	250(94.0%)	76 (89.4%)	2.037	0.154
	No	16(6.0%)	9(10.6%)		
Daily consumption of sugary foods	Sugar in tea	226(85.0%)	63(74.1%)	11.773	**0.038***
	Ice cream	8(3.0%)	3(3.5%)		
	Chocolate	2(0.8%)	3(3.5%)		
	Sweets	11(4.1%)	3(3.5%)		
	All of them	9(3.4%)	3(3.5%)		
	None	10(3.8%)	10(11.8%)		
Smoking of cigarettes and shisha	Yes	10(3.8%)	2(2.4%)	0.386	0.534
	No	256(96.2%)	83(97.6)		
Regular exercise	Yes	138(51.9%)	43(50.6%)	0.043	0.836
	No	128(48.1%)	42(49.4%)		
Times per week of exercise (days)	1	28(20.3%)	5(11.6%)	6.087	0.107
	2-3	51(37.0%)	12(27.9%)		
	4-5	19(13.8%)	12(27.9%)		
	6-7	40(29.0%)	14(32.6%)		
Duration of exercise (minutes)	≤30	68(49.3%)	19(44.2%)	0.340	0.560
	>30	70(50.7%)	24(55.8%)		

4.8 Personal characteristics associated with the prevalence of dysmenorrhea at bivariate analysis

Table 6: Bivariate analysis of personal characteristics of female students aged 18-45 years in 3 institutions of higher learning in Kampala (N=351)

Variable	Category	Dysmenorrhea		X²	p-value
		Yes n (%)	No n (%)		
Age at menarche	8-11	10(3.8%)	2(2.4%)	3.103	0.212
	12-15	225(84.6%)	67(78.8%)		
	16-19	31(11.7%)	16(18.8%)		
Experience monthly period	Yes	249(93.6%)	76(89.4%)	1.655	0.198
	No	17(6.4%)	9(10.6%)		
Length of monthly period(days)	1-2	18(6.8%)	4(4.7%)	5.937	0.115
	3-4	189(71.1%)	67(78.8%)		
	5-6	52(19.55)	9(10.6%)		
	>7	7(2.6%)	5(5.9%)		
Taking drugs for any chronic illness	Yes	6(2.3%)	1(1.2%)	0.384	0.536
	No	260(97.7%)	84(98.8%)		
Possession of relatives with dysmenorrhea	Yes	167(62.8%)	38(47.7%)	8.664	**0.003**
	No	99(37.2%)	47(53.3%)		
Relative with dysmenorrhea	Mother	15(8.9%)	3(7.9%)	9.877	**0.043**
	Sister	105(62.9%)	22(57.9%)		
	Cousin	34(20.4%)	11(28.9%)		
	Other	13(7.8%)	2(5.3%)		
Work/ institution related stress	Yes	181(68.0%)	60(70.6%)	0.194	0.660
	No	85(32.0%)	25(29.4%)		
Rating of work/ institution related stress	Low	36(19.9%)	12(20%)	0.834	0.841
	Moderate	122(67.4%)	38(63.3%)		
	Severe/very severe	23(12.7%)	10(16.7%)		

Possession of a relative with dysmenorrhea (p=0.003) and the type of relative (p=0.043) were the only personal characteristics that were statistically associated with the prevalence of dysmenorrhea. However, a higher prevalence of dysmenorrhea was noticed in respondents who

had their menarche at 12-15 years 225(84.6%), experienced their periods monthly 249(93.6%), experienced their periods for 3-4 days 189 (71.1%), not taking drugs for any chronic illness 97.7% (260), experienced work related stress 181 (68.0%) which was mainly moderate in nature 122 (67.4%) as shown in table 6 above.

4.9 Factors associated with the prevalence of dysmenorrhea at multivariate analysis

All variables with a p<0.2 at bivariate analysis were entered into a binary logistic model utilizing the backward: conditional method to conduct multivariate analysis. Having children (p<0.05), taking chocolate (OR=0.09, p=0.011) or no sugary foods at all (OR=0.344, P=0.032) were protective against the occurrence of dysmenorrhea while respondents who did not possess a relative with dysmenorrhea were 2.583 times more likely to experience dysmenorrhea (p=0.001) as shown in table 7 below.

Table 7: Factors associated with the prevalence of dysmenorrhea at multivariate analysis

Variable	Category	OR(95% C.I)	P-value
Number of children	None	1	
	1-4	0.35(0.192-0.641)	0.001
	>4	0.128(0.021-0.767)	0.024
Possession of a relative with dysmenorrhea	Yes	1	
	No	2.583(1.509-4.423)	0.001
Daily consumption of sugary foods	Sugar in tea	1	
	Chocolate	0.09(0.014-0.571)	0.011
	None	0.344(0.130-0.911)	0.032

CHAPTER FIVE: DISCUSSION OF RESULTS

5.0. Introduction:

This Chapter avails a discussion of results based on the study objectives, reasons for any disparity and compares them with the findings of other scholars cited in chapter two. The objectives of the study were: determining the prevalence of dysmenorrhea, identifying socio-demographic factors influencing the prevalence of dysmenorrhea, establishing the life style factors influencing the management of dysmenorrhea, assessing the personal factors influencing the prevalence dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city from July- August 2015.

5.1. Prevalence of dysmenorrhea among students aged 18-45 years in 3 institutions of higher learning in Kampala capital city

The prevalence of dysmenorrhea found among the three institutions in Kampala was high with ¾ of students experiencing pain in their periods which was in line with Africa's prevalence reported by different researchers as ranging from 58% to 85.1% (Shiferaw, M., et al, 2013, Nooh, A., 2014, Ogufowokan et al, 2010). This would imply that majority of the female student population in Uganda do suffer from pain during their periods which has effects like: lack of concentration in the classroom, limitation on social and creational activities and class absenteeism (LiPing Wong, Ee Ming Khoo, 2010). Our findings were a little higher than the 65.4% prevalence reported in Egypt by Nooh, A., (2014). This disparity could be attributed to pain being what the experiencing person says it is (Clarke K.A., Iphofen R., 2008) and the lack of a standard method for assessing the prevalence of dysmenorrhea. However, Shiferaw, M et al (2014) reported a higher prevalence of 85.1% among the Egyptian female students. We therefore recommend a study that will assess whether this high prevalence of menstrual pain among students affects their academic performance in Uganda.

5.2. Socio-demographic factors associated with the prevalence of dysmenorrhea in 3 institutions of higher learning in Kampala capital city

Number of children, parity and employment were the statistically significant factors related to the prevalence of dysmenorrhea.

Age was not statistically associated with the occurrence of dysmenorrhea. Eight in ten of the respondents were aged 18-24 years in this study. The findings of our study were in agreement with other scholars in Saudi Arabia among 924 students aged 18-33 years who found no statistical relationship between age and the occurrence of dysmenorrhea, Badria, K, , et al,2014. However, other scholars in Vietnam and Taiwan have reported contradicting results citing a statistically significant relationship between age and the occurrence of dysmenorrhea (Min Yeoung, K et al, 2013 & Chung, F., et al, 2015). This discrepancy in findings could be attributed to the study design and study population that is Min Yeoung, K et al's choice of a cohort based study and Chung, F's choice of nurses as the study population while assessing the relationship between dysmenorrhea and age.

There wasn't a significant relationship between marital status of participants and the prevalence of dysmenorrhea and four-fifth of the respondents were single. Our findings differed from Kristin, K., et al (2014) & Patel, V., et al (2006) who arrived at a relationship between being single and the occurrence or severity. This discrepancy in outcomes may be due to most of the participants being single in the three institutions of higher learning. However, our findings supported Liong, Chi ki and Jackie, 2006's study among 292 nurses where marital status and dysmenorrhea did not have a statistically significant relationship.

This study found that having children protects one from experiencing dysmenorrhea at multivariate analysis and having a term delivery to be strongly associated to the occurrence of menstrual pain. This finding needs to be interpreted cautiously as it could increase the current prevalence of unplanned pregnancies in a developing country. Our results supported what other scholars (Nnaemeka, R., et al 2013, Samara, B., et al, 2012 & Patel, V., et al 2006) established that having a child reduced the occurrence of dysmenorrhea. This could be due to the lower levels of prostaglandins released by the secretory endometrium after delivery which results into reduced pain (Lentz, G., et al, 2012 &Impey, L., et al, 2012).

There wasn't a statistical relationship between one's religious beliefs and the occurrence of dysmenorrhea.

Employment status had a statistically significant relationship with the occurrence of dysmenorrhea at bivariate analysis. A higher prevalence of menstrual pain was noticed among

the unemployed participants. The researcher wanted to see the kind of relationship that existed between employment status and the occurrence of dysmenorrhea. Further research may be needed to find any causal relationship.

5.3. Lifestyle characteristics associated with the prevalence of dysmenorrhea among females aged 18-45years in Kampala capital city

Daily consumption of sugary foods was the only significant lifestyle factor related to the prevalence of dysmenorrhea at bivariate analysis and this relationship did not hold at multivariate analysis.

Consumption of chocolate or no consumption of sugary foods at all was protective against the occurrence of dysmenorrhea. This could be due to the polyphenols in dark chocolate that improve circulation of blood by dilating the arteries and increase nitric oxide (Medscape, 2015). A reduced sugar intake for 7-10 days prior the onset of menses has been linked to a decrease in fluid retention thus decreasing systemic effects related to dysmenorrhea (Lowdermilk, D., et al, 2013).The sugary foods that were asked about were ice cream, chocolate, sweets and sugar in tea. These discoveries were in agreement with what other scholars (Tinatin, G., et al, (2012) & Ozerdogan, N., et al (2009)) found in Georgia and Turkey. This would imply that increase sugar intake has a range of health problems it could predispose one to including dysmenorrhea.

This study didn't find a significant relationship between the consumption of alcohol, the servings one had per week and the occurrence of dysmenorrhea. These study findings were in agreement with Tinatin, G., et al (2012)'s study in Tibilisi, Georgia among 2561 women though differing from Mahkam, T., et al(2011)'s study among 381 women in Iran where having 7 servings of alcohol per week decreased the pain experience. Two of the three institutions that participated in our study provided accommodation for its students yet in Ugandan schools, drinking alcohol on school premises is prohibited and the study population in Iran was women different from our choice of students probably explaining the disparity in results.

This study found no significant relationship between coffee consumption or the amount of coffee consumed per day and dysmenorrhea. These outcomes supported other scholars' results in Saudi Arabia and Iran (Badria, K., et al (2004), Mahkam, T., et al(2011)) though differing from Memnum, S., et al(2014) findings among 380 Turkish nursing students where he found that

one's consumption of coffee could influence the occurrence of dysmenorrhea. This disparity in outcome could be attributed to the difference in location of the study areas and the provision of meals in the two institutions studied.

Our study did not find a link between smoking and dysmenorrhea. This finding was in line with Nnaemeka, R., et al (2013)'s study among 320 university students in Maidugiri, Nigeria. Our results differed from Jones, M., et al, (2014)'s study among 9067 young Australian women and Memnum, S., et al, (2014) study among 380 Turkish nursing students. This disparity could be attributed to the following reason: only 12 respondents out of 351 smoked cigarettes or shisha which may be explained by the prohibition of smoking on public grounds in Uganda, institutions encompassed.

This study didn't find any linkage between exercise, its frequency and duration with dysmenorrhea. These results supported other findings of scholars in Nigeria and Italy (Fatai, M., et al (2013) &Perrisinotto, E., et al (2014)) where no relationship was found between one's level of activity and dysmenorrhea. However, our findings contrasted Vaziri, F., et al (2015)'s randomized clinical trial report of physical activity reducing the severity of dysmenorrhea among 105 students in Iran. This difference in results may be explained by the difference in study designs employed among the study population. We recommend a randomized clinical trial among the female students in Uganda to explore this relationship between physical activity and exercise.

5.4. Personal factors associated with the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city

Family history was the only statistically significant variable of all the personal characteristics studied among respondents.

Three-fifth of the respondents with a relative particularly a sister with dysmenorrhea reported experiencing dysmenorrhea. At multivariate analysis, not possessing a relative with dysmenorrhea exposed one 2.583 times to the occurrence of dysmenorrhea (p=0.001). This outcome is contradictory with previous studies that have found respondents with a relative experiencing dysmenorrhea more susceptible to its occurrence (Mahkam, T., et al, 2011, Tinatin, G., et al, 2012 & Memnum, S., et al, 2014). This disparity in results could be attributed to

menstruation and its related problems being private issues in African society thus making it difficult for relatives to disclose to their relations about the experience of dysmenorrhea which could underscore the reported number of respondents with relatives experiencing dysmenorrhea probably causing the non-significant relationship.

Seven in ten of the respondents experienced their monthly periods for 3-4days which is normal considering that the most females experience menses for 2-7 days Lesley, B., et al, (2006). We did not find any statistical relationship between the duration of menses and the occurrence of dysmenorrhea. This was in disagreement with Nooh, A., (2014), Mahbobeh, F.,(2014) and Giovanni et al(2012) findings in Egypt, Iran and Italy. It's unclear why our study couldn't under cover a relationship between the duration of menses and occurrence of dysmenorrhea though we could attribute the variance by the difference in location of the study areas.

Nine in ten of the respondents reported that their menstruation was regular. However, we did not find any statistically significant link between dysmenorrhea and menstrual regularity. These results provide backing for Badria, K., et al (2014)'s study among 924 university students in Saudi Arabia though opposing Kristin K., et al (2014) findings among 651 female workers in Tianjin, China. This discrepancy in findings may be explained by the differences in sample size.

This study failed to find a statistically significant relationship between one being stressed, its grade with the occurrence of dysmenorrhea. Three-fifth of the respondents reported stress at work or institution which was moderate in nature. This result was in contrast with other scholars' findings (Kristin, K., et al 2013, Liong et al, 2006 and Kordi, M., et al, 2013) which may be attributed to the differences in study population characteristics since studies reviewed sampled a working study population not students.

Our study failed to find a statistically significant relationship between drug use and dysmenorrhea.

Four-fifth of the participants had their menarche between 12-15 years. The relationship between age at menarche and dysmenorrhea was statistically insignificant. This result was contrary to Nooh, A., 2014, report of a relationship between age at menarche and dysmenorrhea among 297 students in Egypt. This disparity in outcomes may be enlightened by the difference in study location. Our findings also disagreed with Min Yeoung, K., et al, 2013, cohort study report

among 3,017 Vietnamese women aged 17-42 years which may probably be due to the location of the study areas in comparison, study designs employed and sample size investigated.

5.5. Limitations

This study utilized a non-probability sampling method which is convenience sampling method which could have led to a selection bias where students who experienced menstrual pain might have shown interest in the study hoping that it could avail answers to their problems causing the probably high prevalence and hindering the generalizability of the results.

Inherent bias could have occurred because of the utilization of a convenience sampling method which doesn't involve obtaining a sampling frame thus making the sample studied unrepresentative of the study population which hinders the generalizability of results.

There was scanty information available about the factors that could influence the prevalence of dysmenorrhea among females in East Africa of which Uganda is embedded among the searched engines. This limited the information available in the local context to bring the review of literature and discussion home and calls for more research about dysmenorrhea in Uganda and East Africa as a whole.

There could have been an information bias related on the way the question inquiring about the experience of menstrual pain which could have required more scholars to study this under researched issue in Uganda.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

This study sought the factors that could influence the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala capital city. It found a high prevalence of dysmenorrhea among students aged 18-45 in institutions of higher learning in Kampala capital city. The following factors were statistically significantly related to the occurrence of dysmenorrhea; number of children among socio-demographic factors, no family history of dysmenorrhea among personal factors and daily consumption of sugary foods among the life style factors. This implies that except for uncontrollable variables like possessing a relative with dysmenorrhea adjusting one's diet to include taking chocolate daily or not consuming sugary foods would be protective against dysmenorrhea.

6.2. Recommendations

The high prevalence of dysmenorrhea among students requires schools and institutions management to increase the sensitization about dysmenorrhea, its causes and management probably stocking their school clinics with analgesics to reduce its impact on their academic life.

More research is needed about dysmenorrhea and its impact on the academic life of students in Uganda. We recommend that this research be replicated in a randomly selected population from different regions of the country including the central business district to enhance generalizability and a randomized clinical trial may be needed to find a causal relationship between the factors and dysmenorrhea.

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APPENDIX I: CONSENT FORM

I am Rose Mary Nakame, a student at International Health Sciences University pursuing a Bachelor of Science undertaking this research with Afayo Robert holding a Masters in Epidemiology and Biostatistics from Makerere University. We are carrying out a cross sectional study about the factors that influence the prevalence of dysmenorrhea among students aged 18-45 years in institutions of higher learning in Kampala Capital city.

This study aims to bridge the existing gap in literature about the possible factors that could influence the prevalence of dysmenorrhea in Uganda and East Africa thereby contributing to the advancing nursing and medical practice, inform the implementation of the NSGE, menstruation chatter and the development of better policies around menstruation issues.

Your participation in this study is highly appreciated if you fall within our inclusion criteria. As a participant, you have a right to voluntarily participate, withdrawal at any time of the study without any penalty or decline to answer any question in our instrument. This study will not have any monetary benefits and doesn't intend to harm any of its respondents. Any information availed in this study is entirely confidential and identifiers will be stripped of the questionnaires before storage. However, every participant in this study has a right to access its general findings and if you wish to attain them, please visit the library at your institution or contact the lead investigator at email; r.nakame@gmail.com , Tel; +256(0)774494824.

Signature of respondent ……………………………………. Date……………………………

Signature of principal investigator/ Research assistant…………………………………………….

Serial Number ……………   Date of interview ………/…………/………….

__Please tick / circle or answer appropriately each question__

Section A; Demographic data

Age in years

18-24   [   ]

25-31   [   ]

32-38   [   ]

39-45   [   ]

Marital status

   1. Single   [   ]   2. Married / Cohabiting [   ]

   3. Widowed [   ]   4. Divorced / Separated [   ]

How many children do you have?

0   [   ]

≤ 4   [   ]

> 4   [   ]

Employment status

   1. Employed   [   ]   2. Unemployed   [   ]

Religion

   1. Protestant   [   ]   4. Pentecostal   [   ]

   2. Catholic   [   ]   5. SDA   [   ]

   3. Muslim   [   ]   6. Other [   ] specify …………………….

Section B; Personal factors

At what age (In years) did you experience your first menstrual period?

……………………………………………………………………………………………….

Do you experience your periods every month?

1. Yes   [   ]   2. No   [   ]

How long is your monthly menstrual period?

1-2 days [   ]

3-4 days [   ]

5-6 days [   ]

> 7 days [   ]

If you do not experience your periods each month,

Are you taking any drugs for any chronic illness?

Yes   [   ]   2. No   [   ]

If yes, what drugs are you taking?

..………………………………………………………………………………………………………

……………………………………………………………………………………………………..

Do you know any of your relatives who experiences pain during menstruation?

1. Yes   [   ]   2. No   [   ]

If yes, to the above question;

 Who is it?

Mother   [   ]

Sister   [   ]

Cousin   [   ]

Other   [   ]specify …………………………………………………..

In your opinion, do you think that life at the institution / work is stressing?

   1. Yes [   ]   2. No [   ]

If yes, to the above question;

How would you rate the stress experienced at the institution / work?

   1. Low   [   ]
   2. Moderate   [   ]
   3. Severe/ very severe [   ]

Prevalence of dysmenorrhea

Do you experience pain during your periods?

   1. Yes   [ ]   2. No   [   ]

If yes,

What do you use to relieve it?

Use pain killers   [   ]

Rest   [   ]

Take mineral supplements like magnesium, vitamins [   ]

Warm the abdomen with a hot water bottle [   ]

Use contraceptive   [   ]

Herbs like Mumbwa (clay and herb concoction) [   ]

Other [   ] specify …………………………………………

None

If you have a child, did the menstrual pain improve after giving birth?

1. Yes [   ]   2. No [   ]

Section C; life style factors associated with the prevalence of dysmenorrhea.

Do you drink alcohol?

1. Yes   [   ]   2. No [   ]

How many servings of alcohol do you have per week?

1-2 [   ]

3-4 [   ]

5-6 [   ]

> 7 [   ]

Do you drink coffee?

1. Yes [   ]   2. No [   ]

 If yes, how many cups of coffee do you take per day?

1-3 [   ]

4-6 [   ]

7-9 [   ]

>10 [   ]

Do you take sugar?

1. Yes [   ]   2. No [   ]

Do you consume the following daily?

1. Sugar in tea [   ]   4. Sweets   [   ]

2. Ice cream   [   ]   5. All   [   ]

3. Chocolate   [   ]   6.None   [   ]

Do you smoke cigarettes or shisha?

    1.   Yes [   ]   2.   No [   ]

Do you exercise regularly?

    1.   Yes   [   ]   2.   No [   ]

If yes, to the above question;

Which type of exercise do you do?

………………………………………………………………………………………..

……………………………………………………………………………………….

How many times per week do you exercise?

1 day   [   ]

2-3 days   [   ]

4-5 days   [   ]

6-7 days   [   ]

For how long is the exercise?

1. $\leq$ 30 minutes   [   ]

2. > 30 minutes   [   ]

Thank you for taking your precious time to participate in our study

APPENDIX III: MAP OF THE DIVISIONS OF KAMPALA

APPENDIX IV: INTRODUCTORY LETTER

IHSU INTERNATIONAL HEALTH SCIENCES UNIVERSITY
veritas per scientiam
PART OF INTERNATIONAL MEDICAL GROUP

making a difference in health care

Office of the Dean, School of Nursing

Kampala, 7ᵗʰ August 2015

To: 1. Mulago School of Nursing
2. ~~Kampala International International University~~
3. KAMPALA UNIVERSITY.

Dear Sir/Madam,

RE: ASSISTANCE FOR RESEARCH

Greetings from International Health Sciences University.

This is to introduce to you **Nakame Rose Mary** No. **2011-BNS-FT-008** who is a student of our University. As part of the requirements for the award of a Bachelors degree in Nursing of our University, the student is required to carry out research in partial fulfillment of her award.

Her topic of research is: **Factors influencing the prevalence of dysmenorrhea among students aged 18-48 years attending institutions of higher learning in Kampala Capital city**

This therefore is to kindly request you to render the student assistance as may be necessary for her research.

I, and indeed the entire University are grateful in advance for all assistance that will be accorded to our student.

Sincerely Yours,

07 AUG 2015
SCHOOL OF NURSING
P.O. Box 7782 Kampala - Uganda

Mrs. Wafula Elizabeth
Dean

The International Health Sciences University
P.O. Box 7782 Kampala – Uganda
(+256) 0312 307400   email: ewafula@ihsu.ac.ug

APPENDIX V: CORRESPONDENCE

Rose Mary Nakame
International Health
Sciences University.
P.O. Box 7782, Kampala
Tel; 0757417783
Email; r.nakame@gmail

TO: PRINCIPAL

11th - August - 2015.

MULAGO SCHOOL OF NURSING

Permission granted.

14/8/15

Dear Sir / Madam

Re: Assistance for Research

I Nakame Rose Mary a students at international Health Sciences university would wish to conduct a cross sectional study about the factors influencing the prevalence of dysmenorrhoea among students aged 18-45years in Mulago school of nursing on the 14th- August. 2015.

Any assistance rendered to me will be highly appreciated

Yours faithfully

Nakame Rose Mary.