UNIVERSITY OF CAPE COAST

DYSMENORRHOEA AND ITS IMPACT ON THE QUALITY OF LIFE AND COPING MECHANISM OF UNIVERSITY OF CAPE COAST FEMALE STUDENTS

MAXWELL SAKYI

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BY

MAXWELL SAKYI

Thesis submitted to the Department of Education and Psychology of the College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy degree in Clinical Health Psychology

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:..... Date:.....

Name: ……

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature:..... Date:.....

Name: ……..

Co-Supervisor's Signature: ..... Date:.....

Name: ……

ABSTRACT

The purpose of the study was to investigate dysmenorrhoea and its impact on quality of life among UCC students. Survey was used for the study. Descriptive and inferential statistics were used to analyse research questions and hypothesis. Three hundred and fifty two students were purposively and conveniently sampled for the study. Early age of menstruation ($p<0.05$) and waist pain ($p<0.05$) were the risk factors. Pain killer ($M= 4.22$, $SD= 0.79$) was the most utilized coping mechanism. The study revealed that quality of life of students was impacted negatively. There was a weak positive correlation between headache and painkiller use ($r= 0.19$, $p< 0.01$). There was a strong negative correlation between overall symptoms score and overall quality of life score ($r= -0.53$, $p < 0.01$). There was a weak negative correlation between dysmenorrhoea and quality of life ($r= -0.12$, $p<0.05$). There was a strong positive correlation between physical and psychological health of students with dysmenorrhoea ($r = 0.63$, $p < 0.05$). This finding suggests that health professionals in collaboration with school administrators should initiate health educational programmes to create awareness about dysmenorrhoea and teach students how to cope in order to enhance their quality of life. Medical doctors should be involved to educate students on the appropriate medicine for dysmenorrhoea. Clinical psychologist should be involved to teach about ways to deal with anxiety, depression, and anger associated with dysmenorrhoea. Additional findings, implications and further studies are discussed.

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Finally, I thank my colleague who supported me with her kind gestures. I thank Miss Nana Akua Twumwaah Oduro for helping me with data collection. I also thank her for reading through my work from time to time and making enormous contributions to the study.

DEDICATION

To my family,

Richard, Dilys, Theophilus, Theodora,

Perpetual

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CHAPTER ONE

INTRODUCTION

A female friend of mine, paid me a visit, we were happy together and all of a sudden she complained of an extreme abdominal pain. From the look on her face, I could tell that the pain was really unbearable. I was stuck and did not know what to do. She was weak, immobile and suddenly incapacitated. She said that she was having her menstrual period and it was painful. In addition to this experience and observation, I have two sisters, whom anytime their menstruation is due, they experienced unbearable pain. I noticed that their daily activities were impeded. They became sluggish and complained of headache. It was a period where they would not like to go to school. In fact their normal daily functioning was affected. Even if they came back from school, the energy to complete their assignment was impeded by the menstrual pain.

Background of the Study

The onset of menstruation is the most striking event in the whole process of female puberty. Menstruation is a physiological process that occurs in females, which involves periodic and cyclical shedding of endometrium accompanied by loss of blood. This monthly experience by females add a powerful tool to the assessment of normal development and the exclusion of pathological conditions among them, and it is one of the determinants of a woman's reproductive health (Olowokere, Oginni, Olajubu, William & Irinoye, 2014). According to Olowokere et al, (2014), as important as menstruation is to human reproduction, it may be accompanied with varying disorders which can affect the quality of life of

adolescents and young adult, and can also be indicators of serious underlying problems. Howard (1999) notes that disorders of menstruation include menstrual cycle irregularities (of duration or length), hyper-or hypomenorrhoea, poly-or oligomenorrhoea, dysmenorrhoea, amenorrhoea, menorrhagia and premenstrual syndrome (PMS).

Dysmenorrhoea is defined as painful menstrual cramps of uterine origin. Dysmenorrhoea can be grouped into two. There is primary dysmenorrhoea and secondary dysmenorrhoea. Primary dysmenorrhoea is characterised by cramp pelvic pain beginning shortly before or at the onset of menses and lasting 1 to 3 days. Primary dysmenorrhea is painful menstrual cramps without any evident pathology to account for them (Tortora & Grabowski, 2003). Primary dysmenorrhoea is due to the contraction of the myometrium without ovarian or cervical lesions; it appears either immediately before or after menstruation and continues for one to three days. This primary type is closely related to ovulatory menstruation; dysmenorrhea rarely occurs during the temporary anovulatory menstrual periods of menarche (Jang, Kim, Lee, Jeong, Chung, 2013). On the other hand, secondary dysmenorrhoea is characterised with an evidence of pathology. Jang et al. (2013) explained secondary dysmenorrhoea as, "a type of dysmenorrhea caused by a gynecological disorder and may also occur during anovulatory menstrual cycles" (p.243). The causes of secondary dysmenorrhea include endometriosis (and adenomyosis), uterine fibroids (myomas), congenital uterine anomalies, endometrial polyps, use of an intrauterine contraceptive device, ectopic

pregnancy, pelvic adhesions, pelvic abscess, pelvic inflammatory disease, ovarian cysts, and, rarely, uterine or ovarian neoplasm.

The incidence of dysmenorrhea among women ranges from 40% to 80%, in many countries including, Ghana (Gumanga & Kwame-Aryee, 2012). Approximately 15% of women missed work or school because the clinical manifestations were so severe to disrupt activities of daily living (Lemone & Burke, 2004). The percentage of women who missed work or school as high as 52% in the populations of both Western and Asian countries (Ng, Tan & Wansaicheong, 1992; Burnett, Antao, Black, Feldman, Grenville, Lea, Lefebvre, Pinsonneault, & Robert, 2005). This leads to around three hundred million dollars lost per day (Gordley, Lemasters, Simpson & Yiin, 2000). In Hong Kong, 52.1% of female population was in the workforce between March 2006 to May 2006 (Heywood, Ho, & Wei, 1999). This means that women formed a large part of their work force and since dysmenorrhoea is capable of affecting women to some extent, their work performance may reduce hence affecting productivity. Women physically slow down during their menses and this resulted in a decrease in their work performance (Tempel, 2001). It has been reported that women performance is at its lowest on the first day of menses (Jarret, Heitkemper & Shaver, 1995). Mahvash, Eidy, Mehdi, Zahra, Mani & Shahla (2012) reported that dysmenorrhoea can cause psychological problems like loneliness, and inactive participation in social activities. They further indicated that in many countries including Ghana, the detrimental impact of dysmenorrhoea on most women or adolescents was short-term school and work absenteeism. This also supports Gumanga and Kwame-Aryee

(2012) finding that female students with severe dysmenorrhea sometimes absent themselves from school and are unable to cope with activities of daily living.

Regardless of whether dysmenorrhea occurs with each menstrual cycle or only with occasional cycles, the pain associated with menstruation can be a source of significant physical distress as well as inconvenience and activity limitations (Durain, 2004). It is a common problem affecting most women at some stage in their lives, yet its incidence is difficult to estimate because many women despite considerable distress and inconvenience never seek professional help. In Ghana for instance, the only studies on dysmenorrhoea was done by Gumanga & Kwame-Aryee (2012). These researchers investigated the coping mechanisms students used when suffering from dysmenorrhea. However, Gumanga & Kwame-Aryee (2012) did not look at other aspects of dysmenorrhoea including risk factors, symptoms and quality of life of sufferers of the disorder. There may be preponderance of cases not yet documented and this may be that they are exclusively a female problem and are benign.

Also, whether treated or not, dysmenorrhoea has transient effects, leaving no lasting disability on patients. Victims may know about this phenomenon with predictable regularity. Students may have learnt to organise their everyday activities around the calendar and the need to do so may persist into adult life (Gould, 1998), however, I am interested in what students perceived to be risk factors, symptoms and coping mechanism used by these students as well as the impact it has on their quality of life during their stay on campus since dysmenorrhoea can cause absenteeism and low productivity in women.

Statement of the Problem

Female students are on a programme of study with a stipulated duration and if the pain associated with dysmenorrhoea starts to incapacitate them to the extent of affecting their physical, psychological and social aspect of life, then it becomes a problem. Dysmenorrhoea is very common among women but it is not clear as to the extent to which female students are affected each month due to the severity of dysmenorrhoea. Also, dysmenorrhoea is a common problem yet poorly understood, poorly researched and is rarely taken into consideration when assessing women health and life experiences in Ghana (McPherson & Korfine, 2004).

For instance, lots of researches carried out on dysmenorrhoea were solely focused on the western population. The prevalence of dysmenorrhea reported in Western countries ranged from 31.2% to 90% including those from Sweden (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990), New Zealand (Pullon, Reinken & Sparrow, 1988), United States (Jarret, Heitkemper & Shaver, 1995; Jamieson & Steege, 1996; Harlow & Park, 1996; Gordley, Lemasters, Simpson & Yiin, 2000), Australia (Hillen, Grbavac, Johnston, Straton & Keogh, 1999) and Canada (Burnett, Antoa, Black, Feldman, Grenville, Lea & Robert, 2005). Among the Asian countries, the prevalence of dysmenorrhea was found to be 44.4% to 70% from Singapore (Ng, Tan & Wansaicheong, 1992), Taiwan (Chung, Yao & Wan, 2005) and China (Wang, Wang, Wang, Chen, Ronnennberg, Guang, & Xu, 2004). In Ghana, much is not known about how dysmenorrhoea affects female students in the universities. The only identified study was done by Aziato et al. (2014). Their study reported some of experiences associated with

dysmenorrhoea. Some experiences reported were diarrhea, headache and vomiting. In 2015, Aziato and her colleagues further explored dysmenorrhoea and its coping mechanism—she used 16 students (eight secondary school students and eight university students). She found out that students employed both pharmacologic and nonpharmacologic approaches. Nonetheless, her sample size is very small for generalization. Therefore, to add to the existing body of researches about dysmenorrhoea, it is necessary to conduct a study looking at the dysmenorrhoea and its impact on the quality of life and coping mechanism of University of Cape Coast (UCC) students—this time with a larger sample size.

Purpose of the Study

The purpose of the study was to investigate the:

a. severity of dysmenorrhoea experienced by students.
b. perceived risk factors associated with dysmenorrhoea among female students of UCC.
c. perceived symptoms associated with dysmenorrhoea among female students of UCC.
d. impact of dysmenorrhoea on the quality of life of female students in UCC.
e. coping mechanisms used by female students when they have dysmenorrhoea

Research Questions

The following research questions were set to guide the study;

1. What is the distribution of the severity of dysmenorrhoea experienced by students?

2. What do students perceive to be the associated risk factors of dysmenorrhoea?
3. What do students perceive to be the symptoms of dysmenorrhoea?
4. What is the impact of dysmenorrhoea on the quality of life of UCC students?
5. How do UCC students cope with dysmenorrhoea?

Hypothesis

The hypothesis tested for the study are:

1. H1: Students with mild, moderate and severe dysmenorrhoea differ in terms of their physical, psychological and social wellbeing.
2. H1: There is a positive correlation between physical health and psychological health of students with dysmenorrhoea.
3. H1: There is a positive correlation between headache and pain killer use among female students with dysmenorrhoea in UCC
4. H1: There is negative correlation between overall symptoms score of dysmenorrhoea and quality of life.
5. H1: There is a positive correlation between dysmenorrhoea and quality of life.
6. H1: Females with moderate dysmenorrhoea have better overall quality of life than females with severe dysmenorrhoea.
7. H1: There is no significant relationship between demographic variables and dysmenorrhoea.

Significance of the Study

Apart from adding to existing knowledge of researches about dysmenorrhoea among students, the study will help; medical and other health professionals in the Ministry of Health (MOH) to better understand and provide best coping mechanism for female students suffering from this disorder. It would also help women to understand the phenomenology of dysmenorrhoea and what they should do if they have the disorder.

Delimitation of the Study

The study was focused only on female regular students in the UCC. The study was delimited to students who had experienced primary dysmenorrhoea and those who are presently experiencing primary dysmenorrhoea at the time the study was carried out. The study was focused on the distribution of severity of dysmenorrhoea, perceived risk factors, perceived symptoms, coping mechanism and the impact of the disorder on the quality of life of female students of the UCC.

Limitation of the Study

The use of survey to collect data from females with dysmenorrhoea was a limitation to the study. This is because constructs such as dysmenorrhoea, quality of life and coping mechanisms can be better explained using qualitative approach for data collection through personal in-depth interviews and focus group discussion. It will help me obtain insight about participants' non-verbal and verbal behaviour as they respond to the interview. The non-generalizability of the results is also a limitation to the study. I adopted a non-probability sampling technique to sample respondents for the study. Convenience sampling technique and

purposive sampling technique used to select participants for the study weaken the generalizability of the results of the study. These sampling techniques were used because it is practically difficult to randomly sample students with dysmenorrhoea for study due to sociocultural discrimination on the part of such respondents.

Some participants felt uncomfortable providing answers to some questions due to the sensitive nature of the study. This may affect validity of the questionnaire. Certain answer options may be interpreted differently by respondents especially where there are five options to choose from.

Definition of Terms

The following terms have been operationally defined as follows:

Primary dysmenorrhea: this is defined as pain that is related to menstruation for which there is no detectable organic disease (Tortora & Grabowski, 2003). In this study, the researcher operationally defined primary dysmenorrhea simply as perception of menstrual pain in the lower or middle abdomen. Menstrual pain can radiate to the hips, thighs, and back. Weakness may be felt and spasms of the leg and abdominal muscles occur with severe cramps (Miller & Layzer, 2005). Automatic responses such as headache, nausea, diarrhea and vomiting may contribute to the symptoms of dysmenorrhoea (Dawood, 1981). Therefore, the researcher regarded dysmenorrhoea simply as women perception of pain in their abdomen.

Risk Factors: these are the factors that are likely to cause primary dysmenorrhoea. Example, age of menarche, body mass index, smoking, and alcohol consumptions among others.

Physical health simply looks at the physical components of the Quality of life that's been affected due to dysmenorrhoea such as tiredness, lethargy etc.

Psychological Health simply talks about the psychological components of student's quality of life that's been affected due to dysmenorrhoea such as thinking and concentration, focus, anxiety, anger, emotional instability etc.

Quality of Life: this is defined operationally by the researcher as a balance among these domains: physical health, psychological health, social relationship and environment.

Coping Mechanisms: they are the strategies UCC students use to deal with pain during their menstrual period.

Organisation of Rest of the Study

The chapter two covered both theoretical and empirical literature related to the study. Chapter three present the methodology of the study which comprise the research design, population, sample and sampling procedures, instruments, data collection method and data analysis. In chapter four, the result and discussion of the research findings was clearly and vividly presented. Chapter five gave a general overview of the research study and methodology as well as a summary of the key findings of the study. Conclusion and recommendations are also included in this chapter.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The purpose of the study is to investigate dysmenorrhoea and its impact on quality of life and coping mechanisms of UCC female students. This chapter discusses concept of dysmenorrhoea, diagnoses of dysmenorrhoea, distribution of severity of dysmenorrhoea, its risk factors, symptoms, impacts and coping strategies used by students. This chapter also presents theories related to dysmenorrhoea and the summary of empirical literature reviewed underpinning the study.

Concept and Pathophysiology of Dysmenorrhoea

"Dysmenorrhoea" is derived from a Greek root which means difficult menstrual flow (Trivedi & Sijo, 2016). It may start within six months after menarche, because it occurs only during ovulatory cycles, which may not always be evident at menarche. Although, it may occur as late as a year after menarche, it is less likely to do so later when it should raise suspicion of secondary dysmenorrhea. Dysmenorrhoea comes with symptoms such as nausea, vomiting, headache, diarrhea and dizziness (Ju, Jones & Mishra, 2013). It is characterised by fluctuating, spasmodic menstrual cramps, sometimes referred to as "labor-like" pains that begin only a few hours before or with the onset of menstrual flow, the symptoms of primary dysmenorrhea lasts only 2–3 days. The pains are most intense on the first or second day of the menstrual flow, or more precisely the first 24–36 hours, consistent with the time of maximal prostaglandin release into the menstrual fluid (vide infra). The pains are suprapubic in location with radiation into the inner

aspects of the thighs. The cramps are frequently accompanied by backache, nausea, vomiting, and diarrhea in a high percentage of cases (Hillen, Grbavac, Johnson, Straton, & Keogh, 1999). With severe pains, the sufferers may be absent from school or work for a day or two. In the severe forms, the pain may present as an intense acute abdominal episode and may mimic the presentation of an acute ectopic pregnancy and other urinary tract infections (Hillard & Deitch, 2005).

Primary dysmenorrhea is distinguished from secondary dysmenorrhea by the absence of a macroscopically demonstrable pelvic pathology. Primary dysmenorrhea has been attributed to a variety of organic, psychologic, and sociocultural factors (Golomb, Solidum & Warren, 1998). The pain is related to excessive prostaglandin secreted by the endometrium after ovulation, which stimulates the contraction of vascular and uterine smooth muscle (McEvoy, Chang & Coupey, 2004). Prostaglandins are synthesized from phospholipids present in cell membranes primarily in response to tissue injury or trauma. At the end of the luteal phase in non-pregnant women, the corpus luteum regresses, with a consequent decline in the progesterone level, favors the production of prostaglandin precursor, arachidonic acid. Arachidonic acid then enters the cyclooxygenase pathway that leads to the production of prostaglandins. Consequently, there is increased production and release of prostaglandins causing excessive uterine contractions that constrict small endometrial blood vessels (Golomb, Solidum & Warren, 1998). The vasoconstriction causes ischemia of contraction helps to expel the menstrual effluent from the uterine cavity. Both the

ischemia and the myometrial contraction explain the cramping of ovulatory menstrual cycles (Slap, 2003). This brings about pain during menstruation

Diagnoses of Dysmenorrhoea

Lefebvre, Pinsonneault, Antoa, Black, Burnett, Feldman and Robert (2005) explains that primary dysmenorrhoea is characterised by a crampy suprapubic pain that begins somewhere between several hours before and a few hours after the onset of the menstrual bleeding. Symptoms peak with maximum blood flow and usually last less than one day, but the pain may persist up to 2 to 3 days. Lefebvre et al, (2005) reported that symptoms are more or less reproducible from one menstrual period to the other. In addition, the pain is characteristically colicky and located in the midline of the lower abdomen but may also be described as dull and may extend to both lower quadrants, the lumbar area, and the thighs. Frequently associated symptoms include diarrhea, nausea and vomiting, fatigue, light-headedness, headache, dizziness and, rarely, syncope and fever (Coco, 1999). These associated symptoms have been attributed to prostaglandin release (Akerlund, 1979).

Onset of dysmenorrhea soon after menarche or in a patient who is clearly anovulatory should alert the physician to the possibility of an obstructing malformation of the genital tract. Occasionally adolescents may experience menstrual pain with their first periods without any demonstrable underlying cause, especially when the bleeding is heavy and accompanied by clots (Banikarim & Middleman, 2004). Menstrual pain appearing after several years of painless periods is suggestive of secondary dysmenorrhea (Lefebvre et al, 2005).

Distribution of Dysmenorrhoea

Primary dysmenorrhea is estimated to be present in 50–60% of young women (Alonso & Ceo, 2001). Severe forms giving rise to work or school absenteeism in 15% of cases and the mild forms requiring no medication or occasional over-the-counter (OTC) analgesics in about 30% reported cases (Cho, & Hwang, 2010). In Singapore, Taiwan and China, dysmenorrhoea was found to be 44.4% to 70% (Ng, Tan & Wansaicheong, 1992; Chung, Yao & Wan, 2005; Wang et al, 2004). The percentage of women reporting severe pain was even high up to 60% in the United States and Australian population (Jamieson & Steege, 1996; Harlow & Park, 1996; Hillen, Grbavac, Johnston, Straton & Keogh, 1999).

A study done among young women by George, Priyadarshini & Shetty (2014) found that out of their 233 samples, 28 (12%), 77 (33%) and 41(17.6%) respondents had mild, moderate and severe dysmenorrhoea respectively. Similarly, a study done by Bano, Alshammari and Aldeabani (2013) among University Students of Hail City shows the percentage distribution for the various degrees of severity of dysmenorrhoea to be 20%, 43%, and 37% for mild, moderate and severe dysmenorrhoea respectively. This emphasizes how common dysmenorrhoea is found among women. However, estimation of prevalence and distribution of the severity of dysmenorrhoea is difficult because of the wide range of definitions and prevalence of dysmenorrhoea from different areas or population. The study will help us to know how dysmenorrhoea is distributed according to severity among the UCC female students.

Risk factors Associated with Dysmenorrhoea

Pejcic and Jankovic (2016) reported some studies on risk factors that may be associated with dysmenorrhoea. They reported that some studies showed that increased severity of menstrual pain could be associated with age, longer length of menstruation and positive family history of dysmenorrhea. They reported that factors such as alcohol consumption, coffee consumption and smoking associating with dysmenorrhea show mostly conflicting or inconclusive result. They reported that several studies revealed that smokers are more likely to experience dysmenorrhea. Similar result was shown by Sundell, Milsom and Andersch (1990). However, the effects of smoking on primary dysmenorrhoea have not been elucidated clearly in past studies (Hornsby, Wilcox & Weinberg, 1998).

Lifestyle of some women may have a link with the prevalence and severity of menstrual pain. Our lifestyles are referred to habits like smoking, drinking and exercise. A study done in New Zealand showed that smoking increase the prevalence and severity of dysmenorrhoea. The heavy smokers were found to have the highest prevalence and the highest severity of period pain (Pullon, Reinken & Sparrow, 1988). It has been suggested that smoking cessation and removal from contact with second-hand smoke might be beneficial for the health of women (Durain, 2004). Longitudinal study has found a positive association of primary dysmenorrhea with duration of menstrual flow, younger age at menarche, increased BMI and cigarette smoking (Sundell, Milsom & Andersch, 1990). However, studies done in USA and Taiwan reported that there was no relationship between smoking and dysmenorrhea (Chung, Yao & Wan, 2005; Harlow & Park, 1996; Jarret,

Heitkemper & Shaver, 1995 & Wang et al., 2005). There is inconsistency among different studies. These inconsistencies might be due to the improper way of investigation the relationship between smoking and menstrual pain. In Ghana, the habit of smoking among women might not be on a rise and the rules and regulations in our schools may make it very difficult to establish a link between smoking and dysmenorrhoea.

There are mechanism that may cause pain or dysmenorrhoea among smokers and non-smokers. The amelioration in severity of menstrual cramps was explained through nicotine causing a very short stimulation of autonomic ganglia. This stimulation is immediately reversed, and a continuous inhibition of the autonomic ganglia occurs as a result of the action of nicotine. Nicotine exhibits a similar mode of action on the neuromuscular junction. The inhibition of the autonomic ganglia and the neuromuscular junction by nicotine may reduce uterine contractility and increase uterine perfusion. A persistent depression of the autonomic ganglia and the neuromuscular junction by nicotine may illustrate the reduced frequency and severity of dysmenorrhea found in smokers (Andersch & Milsom, 1982). To add to it, vasoconstriction may be caused by cigarette smoking which affects the uterine blood flow that increase the severity of dysmenorrhea. This make the exact mechanism cumbersome and unclear. Sundell, Milsom & Andersch (1990) reported that psychological differences between smokers and non-smokers may influence the subjective experience of pain.

Pejcic & Jankovic (2016) reported that coffee or caffeine consumption was not an important risk factor for dysmenorrhea. However, a study from Iran

confirmed that prevalence and risk of dysmenorrhea was higher among students who had higher intakes of caffeine or coffee (Faramazi & Salmalian, 2014). Since both studies have divergent views, it makes the result about relationship between dysmenorrhoea and coffee consumption inconclusive and unclear. Pejcic & Jankovic (2016) reported that consumption of alcohol more than once a week decreased the odds of having dysmenorrhea, but in women with existing dysmenorrhea it increased the odds of having severe pain and pain lasting more than two days. In contrast, a study showed that there was no association between alcohol consumptions and that dysmenorrhoea (Kritz-Silverstein, Wingard & Garland, 1999).

Studies conducted in the USA and Taiwan consistently showed no association between alcohol consumption and dysmenorrhea (Jarret, Heitkemper & Shaver, 1995; Chung, Yao & Wan, 2005). However, there may be an association between alcohol consumption and dysmenorrhoea, just that no studies have been conducted to bring out the linkage or association. There is also an inconclusive result about whether alcohol consumption and dysmenorrhoea have association. Also, to my knowledge, there has not been any research conducted in Ghana to find the association between alcohol intake and dysmenorrhoea. Pejcic and Jankovic (2016) found out that the factors related to dysmenorrhoea were, earlier age of menarche, family history, longer duration of menstrual flow and smoking at least one cigarette a day. According Pejcic & Jankovic (2016), the factors were not interacting with each other. They further reported that students who reached menarche earlier were more likely to experience dysmenorrhea. Their finding was

consistent with a study conducted among Nigerian, Hong Kong, Bangladesh and Japanese university students (Farotimi, Esike, Nwozichi, Ojediran, & Ojewole, 2015).

Kumbhar, Reddy, Sujana, Reddy, Bhargavi and Balkrishna (2011) conducted a study at Kadapa District—Kadapa district is one of the 13 districts in the Indian state of Andhra Pradesh—which established an association between family history and dysmenorrhoea. The researchers' finding showed that dysmenorrhea was significantly more among the girls with family history of dysmenorrhea. However, it is statistically not significant because the data was analysed using percentages. They further reported that participants in their study with the history of early age of menarche had more prevalence of dysmenorrhea. Kumbhar et al, (2011) asked participants about their history of menstrual cycle in relation with dysmenorrhea, 11.8% gets irregular cycles and 14.3% experiences heavy flow with duration of menses more than five days. This is an indication that both irregular cycle and heavy flow of blood have association with dysmenorrhoea. Menarche marks the onset of menses and cyclic changes in hormone levels and is an important hormonal milestone of the normal female life cycle (Silberstein & Merriam, 2000). From previous studies, early menarche was shown consistently related to an increase in the prevalence and severity of dysmenorrhea between the Western and Asian women (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990; Ng, Tan & Wansaicheong, 1992; Harlow & Park, 1996).

Duration of menstruation is very important with respect to risk factors that may contribute to dysmenorrhoea. Many studies have shown a link between longer menstrual flow and dysmenorrhoea. This was reported Pejcic and Jankovic (2016). A study conducted by Milson and Andersch (1990) in a local University in the United State of America found that having a menstrual period longer than a week increased the occurrence of dysmenorrhoea by 90 percent. This is to say that severity of dysmenorrhoea increase with increasing duration of menstruation (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990). However, psychological factors may contribute more to the explanation of whether severity of dysmenorrhoea increase with increasing durations or not (Andersch & Milsom, 1982).

The length of menstrual cycle may have an association with dysmenorrhoea. Jang, Kim, Lee, Jeong and Chung (2013) conducted a study among Vietnamese marriage immigrant women in South Korea. They found that menstrual period was significantly longer in the dysmenorrhea group, but the correlation of menstrual cycle length and dysmenorrhea was not significant. However, it did not match up with the study that found women with irregular menstrual cycles, massive menstrual volumes and long menstrual cycles showed high incidences of dysmenorrhea (Vercellini, Giorgi, Aimi, Panazza, Uglietti, & Crosignani, 1997). Inconsistency was found in the link between dysmenorrhoea and the length of menstrual cycle. Women with shorter menstrual cycles reported more dysmenorrhea than those with average or long cycles in a US population of women who attended general practice surgeries (Pullon, Reinken & Sparrow,

1988). Women with long menstrual cycle working at a textile mill in China were found to be having dysmenorrhoea (Wang et al., 2004). On the other hand, a follow-up study after 5 years of the original study done in Sweden showed that the severity and prevalence of dysmenorrhea were unaffected by the length of the menstrual cycle (Sundell, Milsom & Andersch, 1990). The inconsistency may be due to the fact that the study populations were from different geographic locality and of different occupations over the world.

Another risk factor to be taken into consideration is weight of women. Weight being a risk factor to dysmenorrhea is a bit contradictory. Jang et al. (2013) revealed that women who were underweight showed a high incidence of dysmenorrhea and another study showed similar findings, that dysmenorrhea of sub-standard weight women was 1.5 times higher than overweight or obese women (Tangchai, Titapant, & Boriboonhirunsarn, 2004; Hirata, Kumabe, & Inoue, 2002). However, a different study reported higher complaints of dysmenorrhea in obese participants (Andersch & Milsom, 1982).

The study of Jang et al. (2013) ultimately found out that Body Mass Index and dysmenorrhoea had no significant correlation. Similar result study was found among young adults (Kim, Lim, Woo & Kim, 2008). In Sweden and New Zealand, it is reported that severity and prevalence of dysmenorrhoea was unaffected by women's weight (Andersch & Milsom, 1982; Pullon, Reinken & Sparrow, 1988; Sundell, Milsom & Andersch, 1990) while in the US found that being overweight was an important risk factor to experiencing menstrual pain (Harlow & Park, 1996). From the above literature, there is contradiction when comparing body masses of

women. To add to it, the proportion of underweight, overweight and normal weight differ from one population to the other (Jang et al., 2013; Kim, Lim, Woo & Kim, 2008; Harlow & Park, 1996 & Chung, Yao & Wan, 2005).

Exercise helps an individual to be physically fit and mentally sound. No association has been found for prevalence and severity of dysmenorrhea, and the frequency of exercise in the US, Sweden, Taiwan and Singapore (Sundell, Milsom & Andersch, 1990; Ng, Tan & Wansaicheong, 1992; Jarret, Heitkemper & Shaver, 1995; Chung, Yao & Wan, 2005). On the contrary, there are some postulations likely to bring about changes in menstrual symptoms. One postulation is a disequilibrium in the hypothalamic-pituitary-ovarian axis resulting from exercise induced stress or weight loss that brings out attenuation of menstrual symptoms. Anytime one exercise, there is an improvement of blood flow at the pelvic area which might influence menstrual pains. There is a hypothesis that during exercise there is the release of endorphins which act as nonspecific analgesics for short-term relief of pain (Golomb, Solidum & Warren, 1998). To explain further, Shavandi, Sadeghizadeh, Zomorodipour and Khajeh (2009) studied the effect of 8 weeks isometric exercise on primary dysmenorrhea and reported that intensity and duration of pain-induced by primary dysmenorrhea are reduced and less medicine is taken, but it has no effect on the amount of bleeding.

Shavandi, Sharjerdi, Sheikh Hoseini and Ghorbani (2010) reported that the severity and length of pain due to primary dysmenorrhea in young girls following 8 weeks stretching exercises are diminished and they take significantly less medicine. However, a number of studies have shown a correlation between life

stress and gynecological symptoms. Similarly, women who train intensively have been found to experience fewer symptoms than women who take part in physical activities occasionally or not at all (Izzo, & Labriola, 1991).

Stress and Anxiety may have an association with dysmenorrhoea. The degree of dysmenorrhea may vary according to general health or mental state. While emotional or psychological factors don't cause the pain, they can worsen it or cause some women to be less responsive to treatment. The factors like nulliparity, obesity, cigarette smoking and positive family history, stress, family history of dysmenorrhea, diet, depression, and abuse are highly associated with the prevalence of primary dysmenorrhea (Ju, Jones & Mishra, 2013). However, Okoro,

Malgwi, & Okoro (2013) study found that there were no significant differences between severity of dysmenorrhoea and anxiety. The available data on dysmenorrhoea and anxiety is contradictory. In a study, 55% of 533 women felt that their menstrual pain was aggravated by stress from a convenient sample waiting outside Obstetrics and Gynaecology clinics in US hospitals (Jamieson & Steege, 1996). To add to this, a study of 388 women from a textile mill in China found that the incidence of dysmenorrhea increased with increasing levels of perceived stress. Also, recent studies have found adolescents with dysmenorrhea to have lower physical functioning compared to young females with other menstrual problems (Azurah et al., 2013), and significantly higher levels of depression and anxiety compared to healthy controls (Gagua,Tkeshelashvili, Gagua & McHedlishvili, 2013). On the other hand, a study done using 151

females in Taiwan revealed that there was no association between life or working stress and menstrual function (Chung, Yao & Wan, 2005).

In Ghana, I did not identify a study that has establish the link between stress, anxiety and dysmenorrhoea. It was suggested that the relation between stress and dysmenorrhea might differ among groups of women (Wang et al., 2004). Women with high job strain such as nurses or students might have their adapted mechanisms to deal with day-to-day job stress so that no effect of menstrual outcomes was found (Gordley, Lemasters, Simpson & Yiin, 2000; Chung, Yao & Wan, 2005). There are mental and emotional factors that have link with menstrual pain. Women with dysmenorrhea have higher levels of anxiety than women suffering no pain during menstruation (Alonso & Coe, 2001). However, the study does not explain emphatically that anxiety causes menstrual pain. Being exposed to stressful or uncomfortable environment was found to be the most important cause of perimenstrual disability (Wood, 1985). Example of such pressures are writing and submission of assignment, waking up early to study as well as relationship issues. Some of the environmental pressures may be having uncordial relationship and this may bring about losing value relationship with people around. It was suggested by Wood (1985) that this can alter both cognitive and emotional state which may influence menstrual symptoms either through a direct effect on physiological processes that cause premenstrual pain or through behavioural patterns that increase the risk of having painful menstruation. Losing a valued personal relationship may even reduce a women's capacity to manage the discomfort of painful symptoms (Alonso & Coe, 2001).

Symptoms of Dysmenorrhoea

Major symptoms of dysmenorrhea, including pain, bloatedness, breast swelling and pain, pelvic pain, head ache, skin disorders and changes in bowel habits and the psychosocial symptoms like irritability, aggressiveness, depression, anxiety, inability to concentrate, hypersomnia or insomnia, change in appetite, specific food craving, change in libido and poor coordination adversely affect daily life and school/work performance (Sule, Umar, & Madugu, 2007; Cronje & Krintzinger, 1991; Khella, 1992; Cenac, Maikibi and Develoux, 1987; Israel, Sutton & O'Brien, 1985)

Mohamed and Neaem, (2013) found that more than two third of participants with dysmenorrhea reported some associated symptoms. The most frequently reported symptoms were loss of appetite, decrease in concentration, headache, and dizziness. Furthermore, 86.8% of participants with dysmenorrhea reported that the pain adversely affected their school performance. Also, 74.1 % of the participants reported that they were unable to focus on their courses. 78.3% reported that they had bad relationships with their families due to dysmenorrhea. Mohamed and Neaem, (2013) reported further that pain or cramping sensations in the lower abdomen may be accompanied by headaches, dizziness, diarrhea, nausea and vomiting, backache and leg pain. These symptoms are reported to be the most common reasons for adolescents visiting gynecologists. The high prevalence of dysmenorrhea among adolescents especially in the first years of their reproductive life influence their daily activities and can lead to high rates of school absenteeism.

Despite its high prevalence and associated negative effects, many women do no seek medical care for this condition (Banikarim, Chacko, & Kelder, 2000).

Nakame (2015) reported that dysmenorrhoea may come with symptoms like muscle stiffness, headache, cramps, backache, fatigue and general aches & pains. He further reported that, dysmenorrhea symptom that women felt most during their last menstruation period was fatigue while the symptom they felt least was headache. Nakame (2015) also reported that symptoms of dysmenorrhoea typically consist of dull or throbbing pain in the lower abdomen that may radiate to the lower back. Additional non-pain related symptoms often include nausea, vomiting, loose stools, sweating and dizziness (French, 2008).

Naeima (2015) reported from his findings that the prevalence of every single symptoms of premenstrual syndrome indicated that, among university students under study, the most common mood symptom (emotional) was fatigue and lethargy "72.6%" and the least common mood symptom was persistent anger or personal clashes "21.9%". Moreover, among somatic symptoms (physical), abdominal pain was the most frequent symptom and gaining weight was the least frequent somatic symptom "17.4%". DSM-V also presents its criteria for diagnosis and it is as follows; At least 5 of 11 premenstrual symptoms must occur to diagnose a person to be having dysmenorrhoea. At least 1 of the following, depressed mood, marked anxiety, marked affective liability, marked irritability and 4 of other possible symptoms: decreased interest in regular activities, difficulty concentrating, lethargy/fatigue, appetite change/food cravings, sleep disturbance, feelings of being overwhelmed, physical symptoms (bloating, weight gain, breast

tenderness, and edema). However, the above symptoms likely to be associated with dysmenorrhoea might be the cause of other disorders such as psychological disorders, drug or substance abuse, endocrine disorders and GI conditions. Therefore such conditions must be ruled out before diagnosing someone as having dysmenorrhoea.

The Impact of Dysmenorrhoea on Quality of Life of Women

World Health Organisation (1998) has defined Quality of Life (QOL) as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, standards, expectations and concerns" Dysmenorrhoea is transient, however, it can impact on the health related quality of life of women. It is unsurprising that numerous studies investigating the impact of dysmenorrhea on health-related quality of life (HRQoL) of young adults found it to have a profound negative impact on various aspects of life (Banikarim et al., 2000; Chaudhuri & Singh, 2012; Gagua, Tkeshelashvili, Gagua, & Mchedlishvili, 2013). Health Related Quality of Life (HRQoL) is a multidimensional construct encompassing physical, social, and psychological functioning, and well-being (Colwell, Mathias, Pasta, Henning & Steege, 1998; Hays, Anderson, & Revicki, 1993).

HRQoL is measured with generic or disease specific instruments which include measures of physical, social and psychological functioning, and many measures require patients to both report their current functioning within those domains and also report how they value their current functioning (Levine, 1987) or their satisfaction with their current finding compared to how participants would

ideally like to be functioning (Levine, 1987). Wilson and Cleary (1995) proposed a model outlining the process by which an individual's physical health status, such as experiencing dysmenorrhea, impacts on their quality of life (QoL). They posited that biological and physiological variables may lead to physical and psychophysical symptoms, which can then affect functioning and overall HRQoL (Wilson & Cleary, 1995).

Based on this multidimensional definition of HRQoL, studies investigating the impact of dysmenorrhea on young adults HRQoL have found limitations in all domains of functioning. Klein and Litt (1981) found that 14% of adolescents or young adults frequently missed school because of dysmenorrhea. Chaudhuri and Singh (2012) reported high rates of sickness absenteeism (25.8%) among students due to menstrual cramps, as well as difficulty concentrating and poor school performance. Recent studies have found adolescents with dysmenorrhea have lower physical functioning compared to young females with other menstrual problems (Azurah, Sanci, Moore, & Grover, 2013), and significantly higher levels of depression and anxiety compared to healthy controls (Gagua, Tkeshelashvili, Gagua & McHedlishvili, 2013).

It should be noted that the data on young adult's dysmenorrhea was collected from a variety of different cultures where attitudes about menstruation differ from one another. Despite this, it appears that dysmenorrhea, with its high prevalence and under-reported, poorly managed symptoms, impacts on every aspect of life of the young females who experience it.

Nagar and Aimol (2010) reported that participants had good awareness regarding hygiene. They found out that respondents (67%) considered having bath twice a day and also thought that readymade sanitary pads should be used. Majority of the girls (76%) thought that it was necessary to change the sanitary pad more than twice a day. They additionally found out that respondents (30 %) were bathing more than twice due to their menstruation. However, there was no empirical evidence to support that women do not bath due to their menstrual pain.

In an unpublished doctoral dissertation "Women's Health and the Workplace: The impact of the Menstrual Cycle," Fitzgerald (2014) explained that the sleep patterns of women are affected at the luteal phase due to changes in melatonin secretion. Also, Parry, Berga, Kripke, Klauber, Laughlin, Yen and Gillin (1990) observed that women with premenstrual syndrome may have chrono-biological abnormalities of melatonin secretion, suggesting that circadian abnormalities may contribute to the development of premenstrual syndrome. Fitzgerald further explained in his article that premenstrual symptoms may have a cyclical impact on activities of daily living and personal relationships as mood fluctuations, anxiety, fatigue, sleep disturbances, appetite changes and feelings of being overwhelmed may be experienced.

Fitzgerald (2014) reported that modified version of the Premenstrual Symptoms Screening Tool (PSST) was used to assess premenstrual symptoms and it was found that 33.6% of the participants reported sleeping difficulties. The author reported that one of the psychological issues associated with premenstrual disorder was excessive sleepiness (34.9 percent were sleeping a lot due to premenstrual

disorder). This was also supported by Aziato, Dedey and Clegg-Lamptey (2014) who from their findings reported that "some participants slept for longer periods and others were unable to sleep during dysmenorrhoea. Also, some fell asleep when crying in pain and they did not want to be disturbed when they slept" (para. 40). However, not all women experience premenstrual disorder or menstrual pain; those who experience the disorder have a change in their sleep patterns.

Ichino and Moretti (2008) identified that higher absenteeism rates in women were linked to 28-day cyclical patterns, suggesting a link to the menstrual cycle compared to men who tended to be absent from work due to shunning of duties. This means women absenteeism from work or school may be due to menstrual cycle issues. According to Aziato et al. (2014), dysmenorrhoea resulted in absenteeism of students from school (the study was done in Accra among University students). A study was done by Chauhan and Kodnani (2016) among adolescents and young adults to ascertain the impact of dysmenorrhoea on their quality of life. It was found that there was significant association between dysmenorrhea and school absenteeism, school performance, daily activities, and social relations ($p<0.05$). Among the Western countries, Canada had the highest percentage with 51% of all subjects reported activities were limited by dysmenorrhea (Burnett et al., 2005).

In Australia, 45% reported that their school activities were limited, 48% were restricted in their sporting activities and 46% were limited socially (Hillen, Grbavac, Johnston, Straton & Keogh, 1999). A study in USA showed that 37% of subjects indicated that they had to remain in bed with other measures to relieve the pain (Harlow & Park, 1996). In Asia, a study in Singapore revealed that 52%

students, 41% employed women and 30% housewives reported that their ability to perform work was affected by their menstrual pain (Ng, Tan & Wansaicheong, 1992). In fact, dysmenorrhea is the leading cause of recurrent short-term school or work absenteeism among female adolescents and women (Harel 2008).

Women who missed work or school ranged from 8% to 52% in the populations of both Western and Asian countries including Sweden, New Zealand, Singapore, USA, Australia and Canada. They have been absent from work or school is as a result of dysmenorrhea, leading to lost work and school hours among women (Andersch & Milsom, 1982; Pullon, Reinken & Sparrow, 1988; Sundell, Milsom & Andersch, 1990; Ng, Tan & Wansaicheong, 1992; Jamieson & Steege, 1996; Harlow & Park, 1996; Hillen, Grbavac, Johnston, Straton & Keogh, 1999; Gordley, Lemasters, Simpson & Yjin, 2000; Burnett et al, 2005). It was because the pain associated with menstruation was severe enough to prevent the sufferer from functioning normally for one or more days each cycle (Jones, 2004).

Nevertheless, when considering the impact on activities in daily lives affected by dysmenorrhea, direct comparison of studies is difficult because there are no specific definitions for determining normal ranges. All the findings depended only on the operationally definitions of variables measured in the studies. For example, studies recruited samples from schools or colleges defined impact on daily lives as missing work, school or sports activities (Harlow & Park, 1996; Hillen, Grbavac, Johnston, Straton & Keogh, 1999; Gordley, Lemasters, Simpson & Yiin, 2000) while another study regarded impact on daily lives as limited daily activities (Burnett et al., 2005). Moreover, some of the reviewed studies had small

sample size lower than 100 (Jarret, Heitkemper & Shaver, 1995; Harlow & Park, 1996) and the instrument used to determine the level of impact on women's daily lives was not well pre-tested and validated such as self-developed questionnaires were used.

In a study conducted by Mahvash, Eidy, Mehdi, Zahra, Mani, and Shahla, (2012) found that participants who had dysmenorrhea were 6.6 times more likely to stay in bed all day when compared to women who had normal quality of life with respect to their menstrual cycle and the difference was found to be statistically significant. They also found that participants who had dysmenorrhea were 6.16 times more likely to stay at home all day when compared to women who had normal quality of life with respect to their menstrual cycle and the difference was found to be statistically significant. Dysmenorrhoea is known to cause physical and social disability resulting in school or class absence and inhibiting sports and school activities.

Mahvash, Eidy, Mehdi, Zahra, Mani, and Shahla, (2012) reported that females with severe pain may be absent from school or work for one or two days and it could have negative impact on academic, social and sports activities of young girls. Also, they reported that primary dysmenorrhoea is not a real threat of life, however, it can impact on the quality of life of female and in case of severity, it may lead to disability and inefficiency. They reported that dysmenorrhoea can impact psychologically on females leading to loneliness and inactive participation in different social activities. However, we must also know that other circumstances

can lead to loneliness or inactive participation in social activities which might not be necessarily the cause of dysmenorrhoea.

Aziato, Dedey, & Clegg-Lamptey (2014) reported some effects of dysmenorrhoea on women after their qualitative research. They reported that, pain is debilitating and impairs activities of daily living. They further reported that individual in pain becomes depressed and moody and this interferes with social interaction. According to them, report in the article, some adolescents and women lose their appetite and they may absent themselves from school or work. They reported that in USA, it is estimated that the state loses about two billion dollars a year due to the inability of women in pain to go to work. The huge economic loss and some of the impact aforementioned makes it very imperative to study the phenomenon of dysmenorrhoea in order to come out with the intervention to curb this problem.

Aziato et al (2014) came out with these findings on the effects of dysmenorrhoea on adolescents and women. Their findings revealed that women with dysmenorrhoea had hindered activity level. They reported that some participants could not sit, stand, or walk and had to be supported to the bathroom and assisted to bath. The pain also led to inability to cook and wash and perform other daily activities. Their findings further showed that females with dysmenorrhoea have an altered emotions and interactions. Dysmenorrhoea affected the mood of participants and they were not able to socialise as they used to. They became “irritable”, “quiet”, “sad”, “angry”, and “depressed” when in pain. Some preferred to be alone and when they talked, they felt more pain and became stressed.

They further stressed that some participants did not answer their phones or watch television (TV) and preferred darker environment when they were in pain due to their altered emotions. The authors found out that some women wished they were men due to dysmenorrhoea. Some participants with severe dysmenorrhoea indicated that they wished to get pregnant so that they will be free from pain.

Kumbhar et al. (2011) reported that quality of life is affected where the majority of the females were disgusted (81.5%), irritable (70.6%), emotionally unstable (44.5%), loss of interest in regular work (61.3%), having disturbed sleep (55.5%) and had reduced appetite (52.1%) during menstrual period. Farotimi et al. (2015) reported that their research participants reported absenteeism, restriction in physical activities, poor concentration, and social withdrawal and decreased academic performance due to dysmenorrhoea. Furthermore, they found that dysmenorrhea is a cause of recurrent short-term school and work absenteeism in women of reproductive age. Approximately 10–15% of women experience monthly menstrual pain severe enough to prevent normal daily functions at work, school, or home. Although less than average 46.3% of participants in their study reported increased absenteeism from school due to severe menstrual pain, it can have a tremendous impact in their educational outcomes. However, this finding is higher than the findings from a previous study conducted in Ghana where only 9.2% of young women reported missing classes (Gumanga & Kwame-Aryee, 2012). However, it is similar to the results of a study conducted in Sri Lanka where 44% reported being absent from school because of dysmenorrhea (Wijesiri, & Suresh,

2013). School absenteeism due to dysmenorrhea should be adequately addressed as it can affect students' academic performance in examinations.

Coping Mechanisms of Dysmenorrhoea

Treatments for primary dysmenorrhea include lifestyles modifications, complementary and alternative modalities, over-the counter and prescription analgesics, and hormonal contraceptives (Durain, 2004). There are two main coping mechanisms used to deal with dysmenorrhoea. They are pharmacological agents and non-pharmacological agents. Pharmacologic agents for primary dysmenorrhea include analgesics such as paracetamol, piroxicam, ibuprofen, diclofenac and mefenamic acid (Iliyasu, Galadanci, Abubakar, Ismail, Aliyu, 2012), Deb and Raine-Fenning (2008) combined oral contraceptive agents and herbal preparations. However, the management of dysmenorrhoea presents some challenges because different individual will react differently to these pharmacological agents (Johnson, 2006). Some of the primary dysmenorrhoea sufferers resort to self-medication (O'Connell, Davis, & Westhoff, 2006). Bano, AlShammari, & Aldeabani (2013) found that medication, rest and hot coffee were used in alleviating menstrual pains. However, exercise was not used by females to reduce menstrual pain. In addition, over-the-counter drugs are commonly used for dysmenorrhea (Durain, 2004). Women with dysmenorrhea consumed analgesics, non-steroidal anti-inflammatory drugs (NSAID) or antispasmodics during menstruation as treatment for dysmenorrhea ranged from 33% to 86.8% in the USA, Australia, Sweden, Singapore and Taiwan (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990; Jarret, Heitkemper & Shaver, 1995; Jamieson

& Steege, 1996; Harlow & Park, 1996; Hillen, Grbavac, Johnston, Straton & Keogh, 1999; Gordley, Lemasters, Simpson & Yiin, 2000). The more severe the menstrual distress, the higher the impact on daily activities and analgesic usage (Chen & Chen, 2005). The non-steroidal anti-inflammatory drugs operate by inhibiting the action of an enzyme, cyclooxygenase, essential in the biosynthetic pathway leading from arachidonic acid to prostaglandin formation (Gould, 1998). The NSAID should be started as soon as possible when dysmenorrheic symptoms occur or with the first sign of menstruation. These medications are usually only needed for the first 1 to 3 days of the menstrual cycle (McEvoy, Chang & Coupey, 2004). Examples of commonly used oral NSAID include aspirin, mefenamic acid, naproxen and ibuprofen (French, 2005). The most common side effects noted were gastrointestinal upset and the same findings was revealed by Farotimi et al. (2015). However, there is a newer class of NSAID which provides relief for women with dysmenorrhoea which aids in the metabolism of arachidonic acid to prostaglandins (Durain, 2004). However, if the NSAIDs are not effective, oral contraceptives are then used to reduce the symptoms of dysmenorrhoea. For instance, oral contraceptives decrease symptoms in more than 90% of patients with primary dysmenorrhea (McEvoy, Chang & Coupey, 2004).

The oral contraceptives controls dysmenorrhea by inhibiting ovulation, decreasing endogenous oestrogen secretion and resultant endometrial proliferation, and decreasing endogenous progesterone secretion and resultant prostaglandin production (Slap, 2003). A randomised controlled trial was done in the USA with

76 participants showing that a low-dose oral contraceptive was effective for moderate or severe primary dysmenorrhea (Davis, Westhoff, O'Connell & Gallagher, 2005). The maximum effectiveness of oral contraceptives reached after several menstrual cycles (Jones, 2004). Prevalence of dysmenorrhea decreased with the use of oral contraceptives (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990).

Farotimi et al. (2015) reported that in Nigeria, only 10% of females endured dysmenorrhea. They further reported that results from other studies showed that majority of the participants did nothing about their menstrual pain. In addition to this, only 29.3% of the participants managed themselves with over the counter medications which is not synonymous with the findings of several other studies that showed that majority of females self-medicate with over-the-counter drugs to manage their menstrual pain (Busari, 2012). However, the sufferers may not be aware of the negative side effects of the medication they take.

Farotimi et al. (2015) reported that misuse of NSAIDs such as ibuprofen could result in gastrointestinal bleeding or worsen existing case of peptic ulcer. Drug-to-drug interaction is also another potential danger associated with self-medication. Women on contraindicated medications are at increased risk of morbidity and mortality. The use of over-the-counter medication, however, is not peculiar only to menstrual symptoms. This is a common practice in the middle- and low-income countries where there are no stringent laws prohibiting such practices.

Aziato, et al (2014) conducted a study on females in Ghana found that in Ghana females took various forms of analgesic such as paracetamol, diclofenac,

buscopan (Hyoscine butylbromide), Efpac (An aspirin-Paracetamol compound), ibuprofen, and mefenamic acid to manage their menstrual pain. However, the effectiveness of the medication differed from one person to another depending on their body make up. For example, in their study a student said "I took paracetamol but paracetamol did not work for me; I inserted the diclofenac and it was Ok because I felt no pain afterwards. I was sometimes taking diclofenac or paracetamol but they were not helping me at all." In the same article, other participants said, 'I started reacting to Diclofenac, Brufen and Buscopan because my eyes got swollen. So I stopped taking them. I was asked to start taking paracetamol but the pain will not subside so I stopped taking medication' (respondent 16). 'Paracetamol makes me bleed more' (respondent 7). 'Diclofenac cuts my menses, it does not flow as it used to' (respondent 16). Others reported to have resorted to herbal medicine to help minimize their pain. However, most of the participants did not know the name of the herbs given to them (Aziato et al., 2014, p.6).

Non-Pharmacological agents may be used to reduce menstrual pain. The use of exercise, warm compress, massage and rest (Johnson, 2006; Santer,Wyke & Warner, 2008) and red bean pillow (Aziato, et al, 2015) have been reported. Music has also been found to reduce pain (Nilsson, Rawal, Unosson 2003) and could be useful. Transcutaneous electrical nerve stimulation, acupuncture, and acupressure have also been reported (Deb, & Raine-Fenning, 2008). Women have used complementary and alternative treatments modalities and so-call home remedies for dysmenorrhea with varying degrees of success for centuries (Durain, 2004).

Some of the women also use heating object which they place on their abdomen in order to dwindle the pain they are feeling. Some anecdotal reports indicates that women do use the following: hot water bottles, heating pads, and locally applied heat packs to help reduce the intensity of the pain (Hasegawa, & Leventhal, 2009; Simkin, 1995). A study done in US with 84 women who suffered dysmenorrhoea found that low-level topical heat therapy was effective for the treatment of dysmenorrhea (French, 2005).

Liong, Chi-ki, and Jackie (2006) reported that heat could act as an analgesic through a form of gate control or by altering pain thresholds centrally or through an altered sense of well-being. Heat applied to the anterior abdominal wall has been shown to decrease the activity of the gastrointestinal tract, suggesting the possibility of a feedback mechanism that could have direct uterine relaxing effects. For women who have adverse effects from taking oral analgesics, heat therapy will be useful to relieve menstrual pain (Kutay, Akin, Albek, Akin, Akin, Gilbert, & Wilkes, 2001).

Liong, Chi-ki and Jackie (2006) suggested modification of diet as one of the ways to deal with intense pain. In addition, diet modification such as low-fat vegetarian diet was shown to decrease duration and intensity of dysmenorrhea in women (French, 2005). Aziota et al. (2014) reported that some of his participant responded to diet therapy. They reported that, a few participants modified their diet to manage dysmenorrhea. Some avoided sugar. These were the complaints of the students according to Aziota et al, 'I heard that when you take sugar it makes the pain worse; so, I just restrict sugar …When I take the sugar, I cannot bear the pain'

(UD2). Others also avoided rice and oil. 'It is rice and oil that affect me so I do not take when I am having my menses' (SD7). Dietary changes and supplements may also be helpful, including eliminating caffeine and added salt from the diet prior to menstruation, as well as adding additional supplements of calcium, magnesium, and potassium prior to and at the onset of menses (Durain, 2004).

Acupressure was suggested to be effective in treating dysmenorrhea (French, 2005). A study done in Taiwan on 69 adolescents with dysmenorrhea suggested that acupressure could be an effective, cost-free intervention for reducing pain and anxiety during dysmenorrhea. The study provided possible explanations for the effectiveness of acupressure in relieving pain include a spinal gate control mechanism, in which somatic stimulation interferes with the transmission of pain stimuli, and activation of the endogenous opioid system. In Chinese traditional medicine, the effectiveness of acupressure is attributed to invigoration of blood circulation and vital energy, which relieves cramping pain in the uterus (Chen & Chen, 2004). However, this kind of treatment for dysmenorrhoea is not common in Ghana. Some students also cope by planning ahead (Aziato et al., 2014) According to them, students will seek health professionals from the schools clinic or hospital to help them cope with dysmenorrhoea. Others will also learn ahead and write assignments ahead of the day of submission if it coincided with the onset of menstruation. Despite that there were many literature reporting the effectiveness of medication treatment and the development of different coping strategies. Advises on determining the coping strategies including the pharmacological and non-pharmacological ways were still given as further direction of research (Jarret,

Heitkemper & Shaver, 1995). It may also be related to women suffering from dysmenorrhea were in silence related to their knowledge and cultural background (Sundell, Milsom & Andersch, 1990; Jones, 2004).

It was discovered that only 6% to 58% of the dysmenorrheic population in Australia, Sweden and Singapore had consulted a doctor or nurse (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990; Ng, Tan & Wansaicheong, 1992; Hillen, Grbavac, Johnston, Straton & Keogh, 1999). The strategies used by the population on relieving menstrual pain involved the subjective feeling of the effectiveness of the strategies they used. Their own practices for example, consulting Chinese herbal medicine or clinics or family believes, also take part in the decision of choosing useful strategies (Shih, 1996). The knowledge about dysmenorrhoea that they acquired from the sources available such as doctors, nurses, friends and advertisement, affect their choices. Improved health promotion strategies are required so that women no longer need to suffer from painful periods (Jones, 2004).

Theoretical Framework

Quality of Life Concept of Dysmenorrhoea (QOL)

World Health Organisation (1998) defines Quality of Life as individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment. Women who

experience severe form of dysmenorrhoea may have their quality of life affected. WHO describes quality of life at four levels physical health, social and relationships, psychological and environment.

There are several discomforts such as backache, constipation, abdominal cramps, nausea and vomiting that may occur during menstruation. A study conducted on university students reported that dysmenorrhea is a common health problem, having negative effects on the Health Related Quality Of Life of women (Wongs, 2010). Also, Arun (1999) reported that dysmenorrhoea impacts on the quality of life by giving a person physical problems such as abdominal pain backache, fatigue, nausea and psychological problems such as desire to remain alone, depression and tension. Wilson and Cleary (1995) proposed a model outlining the process by which an individual's physical health status, such as experiencing dysmenorrhea, impacts on their quality of life (QoL). They posited that biological and physiological variables may lead to physical and psychophysical symptoms, which can then affect functioning and overall Health Related Quality of Life (Wilson & Cleary, 1995).

Biopsychosocial Model of Health

Biopsychosocial Model of Health and Illness is a framework developed by Engel (1977) and was advanced by Anderson and Armstead (1995) that states that the interactions between biological, psychological and social factors determine the cause, manifestation, and outcome of wellness and disease. According to this model, the symptoms of menstruation are not only a result of biological factors such as hormonal disorders and lifestyles (exercise and nutritional status), but they are

also affected by psychological and social factors such as attitudes toward menstruation, anxiety, depression and interactions with friends, family and colleagues as well as psychosocial conditions of working environment (Dorn, Negriff, Huang, Pabst, Hillman & Braverman, 2009).

Summary of Related Literature

This study is relevant based on the research gap identified. Dysmenorrhoea was estimated to be 50-60% among women. It was estimated to be 44.4% to 70% in Singapore, Taiwan and China as well as 60% in Australian and Australian population. George et al. (2014) found severity of distribution of dysmenorrhoea to be mild (12%), moderate (33%0 and severe (43%). Bano et al. (2013) found severity of distribution of dysmenorrhoea among university students to be mild (20%), moderate (43%) and severe (37%). However, in Ghana, I did not identify any data as far as severity of distribution of dysmenorrhoea is concern.

There were preponderance of symptoms experienced by women revealed by other studies (Nakame, 2015; Mohammed & Neaem, 2013; French, 2008; Sule et al., 2007; Cronje & Krintzinger, 1991). However, I am not much aware of the specific symptoms experienced by students due to dysmenorrhoea. Therefore it is very necessary to explore symptoms commonly experienced by students. Before this research, other studies have identified a lot of risk factors that are associated with dysmenorrhoea (Pejcic & Jankovic, 2016; Faramazi & Salmalian, 2014; Jang et al., 2013; Kumbhar et al., 2011; Wang et al., 2004; Sundell, Milsom & Andersch 1990; Pullon, Reinken & Sparrow, 1988). On the other hand, some studies show no

relationship between dysmenorrhoea and its risk factors (Wang et al., 2005; Chung, Yao & Wan, 2005; Kritz-Silverstein, Wingard & Garland, 1999; Hornsby, Wilcox & Weinberg, 1998; Harlow & Park, 1996; Jarret, Heitkemper & Shaver, 1995). This makes interpretation of results inconclusive. Hence, I am interested in finding about the specific risks factors that may be associated with dysmenorrhoea.

Several studies have identified the impact of dysmenorrhoea on Quality of life (Suzan & Hanan, 2015; Chauhan & Kodnani, 2016; Fitzgerald, 2014; Azurah et al., 2013; Gagua et al., 2013; Chaudhuri & Singh, 2012; Banikarim et al., 2000). However, not every female's quality of life is affected due to dysmenorrhoea. In addition to this, a good number of studies conducted did not explore the relationship between the physical health and psychological health of students with dysmenorrhoea. The only identified study in Ghana was Aziato et al. (2014). Hence, I am interested in looking at how the quality of life of students are impacted exploring relationships among variables.

Several ways women used to cope with dysmenorrhoea have been identified by many studies (Busari, 2012; Iliyasu et al., 2012; Deb & Raine- Fenning, 2008; O'Connell, Davis, & Westhoff, 2006; Bano, AlShammari, & Aldeabani, 2013; Chen & Chen, 2005; McEvoy, Chang & Coupey, 2004). However, ways women cope with dysmenorrhoea were not culturally friendly and studies based on western population. Hence, I am exploring the common ways Ghanaian students cope with dysmenorrhoea. This study finally serves as a bridge to connect other researches worldwide with that of Ghanaian setting. Therefore, my research offers a data on Ghanaian sample and serve as a bedrock for other future researches.

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology that the researcher used in carrying out the study. There are eight sub-headings in this chapter. They are Research Design, Population, Sample and Sampling Procedure, Data Collection Instruments, Pre-Testing Procedure, Data Collection Procedures and Data Analyses.

Research Design

The study sought to investigate dysmenorrhoea and its impact on quality of life and coping mechanisms of UCC female students. Survey was used for the study. This was appropriate because it provided a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population (Fowler and Cosenza, 2009). It includes cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection—with the intent of generalising from a sample to a population. Also, survey was appropriate because I collected information from large samples of the population with different characteristics. Survey is well suited to gathering demographic data that describe the composition of the sample (McIntyre, 1999).

In addition, with survey, the researcher was able to collect data at a particular point in time and to describe the nature of existing conditions or identifying standards against which existing conditions can be compared (Cohen, Morrison & Manion, 2004). Leedy and Omrod (2010) suggested that survey is suitable for the purpose of making generalisations from a sample to a population so that inferences

could be made about the characteristics, opinions, attitudes and experiences of the population.

The topic investigated was very sensitive, therefore survey was appropriate to elicit student's experiences that were otherwise difficult to measure using observational or interview techniques (McIntyre, 1999). On the other hand, survey may yield some disadvantages—there may be biases either in the lack of response from intended participants or in the nature and accuracy of the responses received (Bell, 2014). Other sources of error may include intentional misreporting of behaviours by respondents to confound the survey results or to hide inappropriate behaviour. These shortcomings were minimised by ensuring clarity of the items on the questionnaire, avoidance of ambiguity of items and provided a signed consent form to ensure confidentiality which helped to provide a good estimate of the true population (Salant & Dillman, 1994).

Population

The term population refers to the large general group of many cases from which a researcher draws a sample and which is usually stated in theoretical terms (Neuman, 2003). The population for the study was Six thousand, four hundred and fifty eight female students in the UCC (University of Cape Coast, 2017). I used the university population because it possessed all the characteristics that was relevant for the study. The population was made up of females who are likely to possess different lifestyles, different social classes, different level of dysmenorrhoea, different menstrual history, different age of menarche and even with different ways of coping with dysmenorrhea.

Sample Size and Sampling procedure

According to Suen, Huang, & Lee (2014), a sample is a set of individuals selected from a population and usually is intended to represent the population fairly in a research study. The sample size was determined using Berenson, Levine and Krehbiel (2009) population size table. According to Berenson, Levine and Krehbiel, a population size of 5000 to 10000 requires a sample size of 324 (sample size for varying finite with 95 percent confidence level, 2 percent sampling error and standard deviation of 3). I took into consideration, the fact that there may be non-return questionnaire, the sample size must be increased Howitt & Cramer (2011)—therefore the sample size was increased to 352.

Purposive and Convenient sampling procedures were used for selecting participants for the study. It was appropriate because it helped me to recruit individuals who were easy to get and were willing to participant in the study (Gravetter and Forzano, 2009). However, it may lead to sampling bias ((Suen, Huang, & Lee, 2014) and impossible to randomly select from a population for study (Amedahe, 2002). Because of these flaws it is impossible to generalize the findings from a sample conveniently or accidentally selected because members in the population did not have an equal chance of being selected for the study. Purposive sampling procedure was used to select participants who possess the characteristics for the study.

A purposive sampling is a non-probability sampling used in recruiting specified types of people because they have characteristics of interest to the theoretical concerns of the researcher (Howitt & Cramer 2011). Consequently, the

results of a study using purposive and convenient sampling may be misleading. But, because of its low cost and convenience, purposive and convenience sampling has been useful in attitude, experiences and opinion surveys (Ary, Jacobs and Razavieh, 2010).

Additionally, some participants who were conveniently and purposely selected helped identify other participants with menstrual pain and this sampling method is called Snowballing. Snowball sampling is the process of selecting a sample using networks (Browne, 2005). The researcher started with, a few individuals who were conveniently selected. They were then asked to identify other females with dysmenorrhoea. This sampling technique is useful if you know little about the group or organization you wish to study, as you need only to make contact with a few individuals, who can then direct you to the other members of the group as suggested by Browne (2005).

However, snowballing can sometimes present significant ethical problems, especially if the research topic is sensitive or personal. This shortcoming was overcome by profoundly assuring participants of anonymity, confidentiality and participants were informed about the study before the research was carried out.

Inclusion Criteria

Inclusion criteria of the study were those who have had the experience of dysmenorrhea and those who are still experiencing it. The study included females aged 18 and above

Exclusion Criteria

Those who were at the menopausal stage, pregnant, having pathological gynecological problems (secondary dysmenorrhea) as well as those not consented to participate excluded.

Data Collection Instruments

A 64-item questionnaire was used to collect data. The questionnaire had five sections (Section A to F). Section A elicited background information of the students. The level of dysmenorrhea which was part of Section A was determined using a Numeric Pain Rating Scale developed by McCaffery and Pasero (1999). Respondents were asked to rate their pains they experienced during menstruation on Numeric Pain Rating Scale. On the Numeric Pain Scale, Zero (0) represents no pain at all. One to three (1-3) represents mild pain. Four to Six (4-6) represents moderate pain and seven to ten (7-10) represents severe pain. Section B, had seventeen items—this section elicited information on perceived risk factors associated with dysmenorrhoea. This section had options ranged from strongly disagree to strongly agree—strongly disagree represents 1; disagree represents 2; undecided represents 3; agree represents 4 and strongly agree represents 5. Section C, had 10 items which elicited information on perceived symptoms of dysmenorrhoea. This section also had options ranged from strongly disagree to strongly agree strongly disagree represents 1; disagree represents 2; undecided represents 3; agree represents 4 and strongly agree represents 5. The questions were guided by symptoms of dysmenorrhoea checklist (Campagne & Campagne, 2007).

Section D elicited information about how the quality of life of students was impacted across four domains; physical health, psychological, social relationships and environment. This section has had options ranged from strongly disagreed to strongly agree—strongly disagree represents 1; disagree represents 2; undecided represents 3; agree represents 4 and strongly agree represents 5. The development of Quality of Life items were guided by the domains specified in the World Health Organisation Quality of life BREF Scale (1995). WHOQOL-BREF which is currently scored in four domains: Domain 1: Physical health, Domain 2: Psychological, Domain 3: Social relations and Domain 4: Environment, with all facet items scored as part of their hypothesized domain. Domains are not scored where 20% of items or more are missing, and are unacceptable where two or more items are missed (or 1-item in the 3-item social domain). The scores are transformed on a scale from 0 to 100 to enable comparisons to be made between domains composed of unequal numbers of items.

Section E had 11 items. This section elicited information on coping strategies students used to curb dysmenorrhoea. This section had options ranged from strongly disagree to strongly agree—strongly disagree represents 1; disagree represents 2; undecided represents 3; agree represents 4 and strongly agree represents 5.

Pretesting

The researcher used Sixty-two female students from University of Winneba for the pretesting of the questionnaire. I obtained the following Cronbach's alpha coefficients of the sub sections of the questionnaire: Perceived Risk Factor Scale

(0.9), Perceived Symptoms Scale (0.9), Quality of Life Scale (0.9), and Coping Mechanism Scale (0.8). The overall cronbach alpha coefficient of my questionnaire was 0.9. This is deemed reliable because other methodologists have suggested that the minimum alpha coefficient should be 0.7 (Pallant, 2010; Nunnally, 1978). I pretested because it helped me check possible weaknesses, ambiguity and problems with my questionnaire (Oppenheim, 1992).

Data collection procedure

I collected an introductory letter from the Department of Education and Psychology (See Appendix A). The letter was sent to the Faculties and Schools to seek permission to carry out the study. I sought approval from the University of Cape Coast Institutional Review Board (UCCIRB), and Graduate School for Ethical Clearance to enable me carry out the research (See Appendix C). Ethical clearance of this study was important because it ensured that the study was ethically sound and will not violate the rights and privacy of the vulnerable participants. I then made the necessary arrangements with three research assistants to assist me in the data collection in lecture theatres during lecture hours. Before sharing of the questionnaires, rapport was established with students. This helped build a cordial relationship with the participants and ensured that they were relaxed before answering the questionnaire. Through rapport establishment, participants were informed about the nature and purpose of the study.

In addition, with the issue of seeking sensitive information from participants, they were given sufficient time to decide if they want to share the information with the researcher, without any major inducement. Each participant

used approximately 30 minutes to complete the questionnaire. The completed questionnaire was collected, packed into sealed envelopes to ensure confidentiality and safe keeping. One month was used for data collection.

A total of three hundred and fifty two females with dysmenorrhoea voluntarily took part in the study within two months period from March to May, 2017. All participants were able to read and write hence facilitated expedient responses to the items of the questionnaire.

Data Analysis

I used descriptive statistics to analyze the background information and research questions (One, three, four & five). I used multiple linear regression to analyse research question two and hypothesis seven. It was appropriate because I explored the predictive abilities of the risk factors as well as demographic variables of dysmenorrhoea (Pallant, 2010). Hypothesis one was analysed using one-way multivariate analysis of variance (one-way MANOVA). It was appropriate because I was comparing the means of three groups on a group of dependent variables (physical, psychological and social wellbeing). It was useful in determining the significant difference between groups on their composite dependent variables (Pallant, 2010).

Hypothesis two, three, four and five were analysed with Pearson Correlation. I used this statistical tool because I explored the strength of the relationship between two continuous variables (Pallant, 2010).

Hypothesis six was analysed using Independent t-Test because I compared females who had mild dysmenorrhoea quality of life to that of females with severe dysmenorrhoea (Pallant, 2010).

Ethics of the Study

Permission was sought from the Institutional Review Board of the School of Graduate Studies (see Appendix B). Participants were assured that participation is not compulsory. In addition, informed consent was sought from participants after explaining the nature and objectives of the study to them (see Appendix A). Participants were assured of anonymity and confidentiality.

Participants were also assured that at any point in time, they could withdraw from the study. On the side of the researcher, issues like bias, inappropriate use of research methodology and incorrect reporting (to report the findings in a way that changes or slants them to serve your own or someone else's interest is unethical) were addressed.

Chapter Summary

This chapter addressed the research methodology used for the study. Survey was used to find out the experiences, attitudes and opinions of UCC female students about dysmenorrhoea and it impacts on their quality of life and the coping mechanisms they used. Statistical differences and correlations were found between groups and their dependent variables. One-way Manova was used to analyze Hypothesis one. Pearson Correlation was used to analyze hypothesis two, three, four and five. Independent T-test was used to analyze hypothesis six.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the results and discussion of the study as it sought to investigate dysmenorrhoea and its impact on the quality of life and coping mechanism of students. The results and discussion cover the demographic characteristics of respondents, testing the study hypothesis and other findings from the study.

Demographic Data

This section presents and discusses preliminary data, which comprise of background information of the participants. These includes marital status, social status, age of menarche, pains at first menstruation, level of dysmenorrhoea, menstrual cycle and duration of menstrual period.

Table 1- Demographic Characteristics of Respondents

VARIABLE	FREQUENCY	PERCENTAGE
Age Range		
19-24	311	88.4
25-29	33	9.4
30-34	5	1.4
35-39	3	.9
Marital Status		
Single	328	93.2
Married	22	6.3
Widow	2	.6

Continued

Table 1-Demographic Characteristics of Respondents

VARIABLE	FREQUENCY	PERCENTAGE
Social Status		
low	22	6.3
medium	247	70.2
high	83	23.6
Age of Menarche		
less than 10	12	3.4
11-13	134	38.1
13+	206	58.5
First time of menstruation		
Yes	137	38.9
No	215	61.1
Level of menstrual pain		
Mild	96	27.3
Moderate	171	48.6
Severe	85	24.1
Menstrual Cycle		
less than 28days	124	35.2
28-30days	195	55.4
31-35days	23	6.5
more than 35days	10	2.8
Duration of menstrual period		
1-2Day	11	3.1
3-5Day	221	62.8
5+	120	34.1

Source: Field Survey, Sakyi (2017).

Table 1 shows the demographic characteristics of respondents. Three hundred and eleven (88.4%) of the respondents were in the age-range of 19-24 while 3 (0.9%) of the respondents were in the age-range of 35-39. It can be seen that respondents in the age-range of 19-24 were the majority. Out of 352 respondents (100%), 328 (93.2%) are single whiles 2 (0.5 %) are widow. therefore it can be seen that majority of the respondents with dysmenorrhoea were single. 247 (70.2 %) out of 352 (100%) respondents have a medium social status. On the

other hand, 22(6.2%) have low social status. From the table it can be concluded that majority of the respondents had medium social status. 206 (58.5 %) out of 352 (100%) respondents had their menarche above 13 years of age. On the other hand, 134 (38.1 %) had their menarche at the age of 11-13 years. From the table, it can be concluded that majority of the respondents age of menarche was above 13 years.

Table shows that 215 (61.1 %) out of 352 (100%) respondents perceive no menstrual cramps during menarche while 137 (38.9 %) experienced menstrual cramps during menarche. From the table, it can be concluded that majority of respondents had no pains during first time of menstruation. 171 (48.6%) respondents have moderate dysmenorrhoea. On the other hand, 96 (27.3%) respondents have mild dysmenorrhoea. From the table it can be concluded that majority of respondents have moderate dysmenorrhoea.

Table shows that 195 (55.4 %) respondents out of 352 (100%) have their menstrual cycle to be 28-30 days while 124 (35.2 %) have their menstrual cycle to be less than 28 days. From the table, it can be concluded that majority of respondents have their menstrual cycle to be 28-30days.221 (62.8 %) out of 352 (100%) respondents have their menstrual duration to be 3-5 days. On the other hand, 120 (34.1%) have their menstrual duration to be above 5 days. The table therefore shows that majority of respondents have duration of their menstrual period to be 3-5 days.

Research Question One: What is the distribution of the severity of dysmenorrhoea experienced by students?

The research sought to investigate the severity of distribution of dysmenorrhoea among UCC female students. This is presented on Table 9.

Table 2- *Severity of Distribution of Dysmenorrhoea*

Levels of Dysmenorrhoea	Frequency	Percentage (%)
Mild	96	27.3
Moderate	171	48.6
Severe	85	24.1

Source: Field Survey, Sakyi (2017).

Table 2 shows that 171 (48.6%) respondents have moderate dysmenorrhoea while 85 (24.1%) have severe dysmenorrhoea. It can therefore be concluded that majority of respondents do experience moderate dysmenorrhoea in UCC. Table 2 revealed the severity distribution of dysmenorrhoea among the UCC students. The result indicated that 48.6% respondents had moderate dysmenorrhoea while 27.3% and 24.1% respondents had mild and severe dysmenorrhoea respectively. A study done among tertiary students in Hail City University found that 20%, 43% and 37% suffered mild, moderate and severe dysmenorrhoea respectively (Bano et al., 2013). Furthermore, George et al. (2014) found that 12%, 33% and 17.6% of students suffered mild, moderate and severe dysmenorrhoea respectively. Kuraji et al. (2015) found that 29.2%, 36.6% and 34.2% of women suffered mild, moderate and severe dysmenorrhoea respectively. Comparing current result to previous studies (Bano et al., 2013; George et al., 2014; Kuraji et al., 2015), it can be concluded that majority of women do experience moderate dysmenorrhoea.

Research Question Two: What do students perceive to be the associated risk factors of dysmenorrhoea?

The researcher sought to find out the risk factors associated with dysmenorrhoea. The analysis of respondents' responses are presented in Table 3.

Table 3- *Multiple Linear Regression of risk factors associated with Dysmenorrhoea*

		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	1.591	.210		7.586	.000
	ages between 18 and 25	-.015	.039	-.025	-.386	.700
	Nulliparty	.075	.039	.126	1.912	.057
	Menses on Time	-.074	.042	-.103	-1.754	.080
	Irregular Menstrual Cycle	-.005	.040	-.008	-.129	.897
	Inherit Menstrual Pain	.015	.034	.025	.429	.668
	Heavy flow	-.019	.044	-.030	-.423	.673
	Early Age menstruation	.102	.046	.148	2.201	.028
	Depressed	-.004	.045	-.006	-.089	.929
	knowledge about menstrual pain	-.036	.037	-.058	-.989	.323

(*Continued)*

Table 3- Multiple Linear Regression of risk factors associated with Dysmenorrhoea (Continues)

Overweight	.010	.052	.014	.188	.851
Contraceptive Use	.001	.043	.002	.030	.976
Smoking	-.060	.055	-.081	-1.079	.281
Alcohol use	-.030	.059	-.040	-.513	.608
Waist pain	.094	.045	.141	2.097	.037
Longer Blood Flow	-.001	.045	-.001	-.012	.990
Exercise	.012	.036	.020	.342	.733
Cervix problem	.030	.039	.048	.770	.442

a. Dependent Variable: Level of Menstrual pain

Table 3 shows multiple linear regression of risk factors of dysmenorrhoea. The significant column of table 3 shows that no risk factors are statistically significant with dysmenorrhoea except early age of menstruation (sig=0.028 which is less than 0.05), waist pain (sig=0.037, less than 0.05). Hence, early age of menstruation and waist pain are significantly associated with dysmenorrhoea. Therefore, early age of menstruation and waist pain have the abilities to predict dysmenorrhoea. The study revealed that there was no statistically significant relationship between dysmenorrhoea and its risk factors except early age of menstruation ($p < 0.05$) and waist pain ($p<0.05$). This is consistent with other studies that found early age of menstruation to be statistically significant with dysmenorrhoea (Pejcic & Jankovic, 2016; Kumbhar, 2011; Balbi et al., 2000; Anderson & Milson, 1982). This study has therefore clarify the link between early age of menstruation and that dysmenorrhoea. In addition to this, the study found statistically significant relationship between waist pain and dysmenorrhoea

($p<0.05$), however, I did not identify any study to confirm a link between waist pain and dysmenorrhoea.

Research Question Three: What do students perceive to be the symptoms of dysmenorrhoea?

Respondents were required to respond to the symptoms experienced prior to dysmenorrhoea. Analysis of their responses is presented in Table 4.

Table 4- Descriptive Data on Perceived Symptoms of Dysmenorrhoea n =352

Symptoms	Mean	Std. Deviation
Tender and Swollen Breast	4.19	.82
Withdrawn	4.14	.82
Irritated	4.06	.86
Depression	3.94	.88
Anger	3.92	.97
Anxiety	3.91	.89
Headaches	3.90	.91
Bloated and painful abdomen	3.81	1.09
Confusion	3.68	.99
Swollen Toes and Hand	3.49	1.09

Source: Field Survey, Sakyi (2017)

Table 4 shows that tender and swollen breast had a mean of 4.19 and SD of 0.82 while swollen toes and hand had a mean of 3.49 and SD of 1.09. From table 4, it can be seen that students do experience all the symptoms prior to dysmenorrhoea, however, tender and swollen breast is the most experienced symptom followed by being withdrawn. Swollen toes and hand is the least experienced symptom. The commonest symptoms of dysmenorrhoea reported by respondents were swollen breast, being withdrawn, irritability, anger, anxiety, depression, headache, bloated and painful abdomen, confusion and swollen hands and toes. Similar symptoms have been reported by other researches (Unsal et al.,

2010; Chauchan & Kodnani, 2016; Mohamed & Neaem, 2013; McHichialami, et al., 2002; Coco, 1999; Khella, 1992; Cronje & Krintzinger, 1991; Dawood, 1981).

The review identified that the most experienced symptoms were irritability, depression and anxiety whilst this study identified tender and swollen breast, being withdrawn, and irritability to be the top three symptoms experienced by women. In addition to this, the review identify headache to be one of the symptoms of dysmenorrhoea, whilst headache ranked eighth among all symptoms experienced by women found by this study. The implication of headache is that students may self-medicate and abuse drug. Being irritable and angry may cause problems between the sufferer and her friends. Having abdominal pains may make the sufferer confine in bed until pain mitigates. Therefore, it can be concluded that women who have dysmenorrhoea may experience any of the symptoms revealed by this study.

Research Question Four: What is the impact of dysmenorrhoea on the quality of life of UCC students?

Respondents were required to indicate the impact of dysmenorrhoea on their quality of life. Analysis of their responses is presented in Table 5.

Table 5- *Descriptive data of Impact of Dysmenorrhoea of Dysmenorrhoea*

Impacts	Mean	Std. Deviation
Bath Twice or more	4.39	.79
Rely on Pain Killer	4.30	.80
Uncomfortable	4.28	.78
Withdraw from social activity	4.24	.82
Sleep or Cannot Sleep	4.24	.82
Confine in Bed	4.14	.82
Reduced Work Capacity	4.13	.85
Hobbies Affected	4.12	.82
Resting Difficulties	4.11	.85
Thinking and Concentration affected	4.03	.91
Spend Money	4.02	.88
Absenteeism	3.99	.92
Tired and Lethargy	3.99	.93
Lose focus	3.97	1.05
assisted by friends	3.95	.92
Wishful thinking	3.94	1.09
Emotionally Unstable	3.94	.97
Cannot Participate in Group Discussion	3.9	.94
Can't have sex	3.86	.97
Scared	2.93	1.29
Do not Bath	1.89	1.16

Source: Field Survey, Sakyi (2017)

Table 5 shows that bathing twice or more had a mean of 4.39 and SD of 0.79 whilst being scared had a mean of 2.93 and SD of 1.29. From table 5, it can be seen that dysmenorrhoea affects students in various ways. However, bathing more than twice is the most impact of dysmenorrhoea followed by dependent on painkiller. The least impact is being scared on not giving birth because of dysmenorrhoea. Similar impacts have been identified by other studies (Nagar & Aimol, 2010; Mohamed & Naeame, 2013; Aziato et al., 2014; Gagua et al., 2012; Agarwal & Agarwal, 2010). The most reported impact was bathing more and changing pads frequently. This is similar to Nagar & Aimol (2010) study. Although,

students do bath a lot and change their pads frequently, it is a way of improving their hygiene. The least impact is being scared dysmenorrhoea may render them childless, however primary dysmenorrhoea is not associated with infertility (Gagua, et al., 2012).

Other impacts such as not able to partake in group discussions, being confined in bed, being uncomfortable and dependent on friends is similar to a study done by Mohamed and Neaem, (2013). The current result indicates that individuals with dysmenorrhoea loved to be alone and probably want to confine in bed. This is the time family members and friends need to be supportive and should not act harshly towards individuals with dysmenorrhoea especially when they are irritable and unwilling to speak. Students also reported of sleep difficulty, absenteeism, wishful thinking, loss of focus (inattentiveness) and unstable emotion. This is similar to a qualitative study done by Aziato et al. (2014). The implication of this finding is that, it may lead to abysmal performance in school. Dysmenorrhoea can bring about loss of job or loss of scholarship opportunities resulting from poor performance. Therefore, it has been established that dysmenorrhoea do affect students which is similar to findings from other studies (Zhu, Bensoussan, Zhu, Qian, Xu, Zhou, & Chao, 2009).

Research Question Five: How do UCC students cope with dysmenorrhoea?

Respondents were required to indicate coping mechanisms used. Analysis of their responses is presented in Table 6.

Table 6 - *Descriptive Data on the Coping Mechanisms of Dysmenorrhoea n=352*

	Mean	Std. Deviation
Pain Killer	4.22	.79
Reduce Sugar, Salt and Caffeine	4.04	.93
Herbal Medicine	3.95	.89
sleeping	3.85	.90
Exercise	3.79	.97
Warm press Usage	3.68	.98
Massage	3.63	.93
Contraceptive	3.04	1.0476

Source: Field Survey, Sakyi (2017)

Table 6 shows that painkiller had a mean of 4.22 and SD of 0.79 whilst Contraceptive use had a mean of 3.04 and SD of 1.07. From the table, it can be seen that students use many coping mechanism; however, painkiller was the most used, followed by reduced sugar, salt and caffeine. The last coping mechanism was contraceptive use. The study found that pain killer, herbal medicine, reduced salt, sugar and caffeine intake, sleeping, exercise, warm press, massage and oral contraceptive were ways women cope with dysmenorrhoea. Similar ways of coping with dysmenorrhoea have been identified by other researches (Santer, Wyke & Warner, 2008; Aziato et al., 2014; Deb & Raine-Fenning, 2008; Johnson, 2006; Sundell, Milsom & Andersch, 1990). This study identified painkiller as the most used coping mechanism. This is similar to Aziato et al. (2014) study. However, my study was limited in providing specific painkillers used unlike Aziato et al. (2014). Herbal medicine were used by students. It is similar to Aziato et al. (2014) study. However the specific types of herbal medicines were not unveiled. Contraceptive use has been identified as the least way of coping with dysmenorrhoea by the current result. McEvoy et al, (2004) and Davis et al, (2005) also found that women

do use contraceptive to cope with dysmenorrhoea. Therefore it can be concluded that students use both pharmacological and non- pharmacological agents in coping with dysmenorrhoea.

Hypothesis One

Hypothesis one was to explore whether there was statistical difference among mild, moderate and severe dysmenorrhoea groups in terms of physical, social and psychological wellbeing. Analysis of hypothesis one is presented in 7 and 8.

Table 7- *Multivariate Test for Dysmenorrhoea Groups on Quality of Life*

Effect	Value	F	Hypothesis df	Sig
Wilks' Lambda	.947	3.196	6.000	.004

$p < 0.05$ (1-tailed)

Table 8- *Test Between-Subject Effects*

Source	Dependent Variables	Type III Sum of Squares	Df	Mean Square	F	Sig
Pain Groups	Physical Wellbeing	47.651	2	23.826	7.647	.001
	Social wellbeing	4.366	2	2.183	.554	.575
	Psychological wellbeing	18.543	2	9.272	2.206	.112

$p < 0.01$

Table A1-Descriptive Data for Physical Wellbeing, Social wellbeing, psychological wellbeing and their Quality of Life

Level of Menstrual pain		Physical Wellbeing	Social Wellbeing	Psychological Wellbeing	Overall Quality of Life
Mild	Mean	9.21	10.09	12.96	40.20
	N	96	96	96	96
	Std. Deviation	1.74	2.02	2.41	5.72
Moderate	Mean	9.62	10.19	13.40	41.38
	N	171	171	171	171
	Std. Deviation	1.78	2.12	1.89	5.62
Severe	Mean	8.71	9.91	12.93	38.14
	N	85	85	85	85
	Std. Deviation	1.77	1.59	1.90	5.31
Total	Mean	9.29	10.09	13.17	40.28
	N	352	352	352	352
	Std. Deviation	1.80	1.98	2.057	5.71

One-way multivariate analysis was performed to investigate whether there is a significant differences among mild, moderate and severe dysmenorrhoea groups in terms of physical, social and psychological wellbeing. Table 7 indicates that there is significant differences among mild, moderate and severe groups on a linear combination of three dependent variables: F (6, 694) = 3.196, p = .004 is less than 0.05; partial eta square = .027. However, when the results for the dependent variables were considered separately, the only variable to reach statistical significance using Bonferroni adjusted alpha level of 0.017, was physical wellbeing: F(2, 349) = 2.21, p = 0.001. Per this results, the hypothesis which state that there is a significant difference among dysmenorrhoea groups in terms of their physical, psychological and social wellbeing is partially accepted.

Hypothesis one was formulated to show that females who have mild, moderate and severe dysmenorrhoea differ in terms of their physical, psychological and social wellbeing. The study revealed that there was statistically significant differences among mild, moderate and severe dysmenorrhoea groups in terms of their physical, psychological and social wellbeing combined. This is an indication that when the three dependent variables are combined, the three groups differ. However, if the dependent variables were considered separately, the variable to reach statistical significance using Bonferroni adjusted alpha level of 0.017, was physical wellbeing.

This result is consistent with a study by Unsal, Ayranca, Tozen, Arslan, and Calik (2010). They found that working ability of mild, moderate and severe dysmenorrhoea groups were affected rarely, moderately and severely respectively. This means that those who have mild dysmenorrhoea had less impact on their physical wellbeing as compared to both moderate and severe dysmenorrhoea group (see Table A1).

Similar to the result of this study, Alia, Shamssain, and Shahwan (2016) found that females with mild, moderate and severe dysmenorrhoea differed in terms of general health, bodily pain, physical role, physical function and vitality. This confirms that when females have dysmenorrhoea, they have aspects of their quality of life depending on various degree of dysmenorrhoea. Hence, the hypothesis that states that mild, moderate and severe dysmenorrhoea group differ in terms of their physical, psychological and social wellbeing is supported by the data. Therefore it

has been established that women who have varying degree of dysmenorrhoea differ in their quality of lives.

Hypothesis Two

Hypothesis Two states that there is a positive correlation between the physical health and psychological health components of female students with dysmenorrhoea. This hypothesis was to explore the strength of the physical health and psychological health components of UCC students who have dysmenorrhoea. Table 9 shows the analysis of the hypothesis.

Table 9-Pearson *Correlation Matrix of Physical and Psychological Health*

		Physical Health	Psychological Health
Physical health	Pearson Correlation	1	.626**
	sig. (1-tailed)		.000
	N	352	352
Psychological Health	Pearson Correlation	352	
	sig. (1-tailed)	.626**	1
	N	.000	
		352	352

**Correlation is significant at the 0.01 level (1-tailed)

Table 9 indicates that there is a statistically strong positive correlation between physical and psychological health of students with dysmenorrhoea ($r = 0.63$, $n = 352$; $p < 0.01$). These results indicated that the more students' with dysmenorrhoea physical health is affected, the more it affects their psychological health. Hence the hypothesis that stated that there is a significant relationship between physical and psychological health of students with dysmenorrhoea is accepted and this study supports it.

This current study is consistent with Alia et al. (2016); they found out that the scores received from SF-12 domains (physical functioning, role-physical, bodily pain, social functioning, role-emotional, mental health, physical component and mental component) were significantly lower in students with dysmenorrhea. In addition to this, Alia et al. (2016) reported that women with dysmenorrhea and the other menstrual symptoms had lower HRQoL values. This is an indication that as any of the quality of life domains is affected, it will definitely affect other domains.

Similarly, Joshi, Kural, Agrawal, Noor and Patil (2015) found that dysmenorrhoea had impact on females' physical activity thus having negative effect on QoL—leading to absenteeism, reduced physical activity, loss of concentration, and poor social relationship experienced simultaneously. This implies that the domains of the Quality of life scale interacts, therefore if an aspect of the domain is affected, so will be other aspects. For instance, it could be seen from Joshi et al (2015) review that as students physical activity (physical health) was reduced, there was also loss of concentration (psychological health). Similar findings was observed by Unsal et al. (2010). This supports the hypothesis that there is a significant relationship between physical and psychological health of students with dysmenorrhoea. Therefore it is established that there is positive correlation between physical and psychological health of females with dysmenorrhoea.

Hypothesis Three

Hypothesis three seeks to test for the significant relationship that exist between headache as a symptom of dysmenorrhoea and pain killer use among UCC female students. Analysis of this hypothesis is presented in Table 10.

Table 10-*Pearson Correlation Matrix of Headache and Painkiller*

		Headaches	Painkiller
Headaches	Pearson	1	.187**
	Correlation sig.		.000
	(1-tailed)	352	352
	N		
Painkiller	Pearson	352	
	Correlation sig.	.187**	1
	(1-tailed)	.000	
	N	352	352

*Correlation is significant at the 0.01 level (1-tailed)

Table 10 indicates that there is a statistically positive correlation existing between headache (a symptom of dysmenorrhea) and the use of painkiller ($r = 0.19$, $n = 352$, $p < 0.01$). The alternate hypothesis which states that there is a significant relationship between headache and painkiller use has been accepted by the findings of this study. The implication of this result is that when there is an increase in headache which is one symptom of dysmenorrhoea, there will also be an increase in the use of pain killer.

This study is consistent with a study done by Marjoribanks, Ayeleke, Farquhar, and Proctor (2015) who found that between placebo and NSAIDs, most women who had dysmenorrhoea used NSAIDs for their pain relief and headache. However, NSAIDs gave some of the females' side effects. In the US, Australia, Sweden, Singapore and Taiwan study found the prevalence of NSAID among

females with dysmenorrhoea to be 33% to 86.8% (Hillen, Grbavac, Johnston, Straton & Keogh, 1999; Gordley, Lemasters, Simpson & Yiin, 2000). This current result is consistent with a qualitative study done in Ghana by Aziato et al (2014) which established a relationship between dysmenorrhoea and the use of painkiller. McEvoy, Chang & Coupey (2004) also reported that NSAIDs are used as soon as females have symptoms of dysmenorrhoea (which headache was prominent). This has helped to established that there is a significant positive relationship between headache and painkillers and it is in concurrence with the current study.

Hypothesis Four

This hypothesis seeks to test for the significant differences between overall symptoms of dysmenorrhoea and overall quality of life. The analysis of the result is presented in Table 11

Table 11- *Pearson Correlation Matrix of Overall symptoms of Dysmenorrhoea Score (OSD) and Overall Quality of Life Score (QOL)*

		Overall symptoms of Dysmenorrhoea	Quality of Life
Overall symptoms of Dysmenorrhoea	Pearson Correlation	1	-.532**
	Sig. (2-tailed)		.000
	N	352	352
Quality of Life	Pearson Correlation	-.532**	1
	Sig. (2-tailed)	.000	
	N	352	352

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11 shows the correlation between Overall symptoms of dysmenorrhoea and Overall Quality of life. The result shows that there is statistically negative correlation between OSD and OQoL (r =.-532, n = 352, p < 0.01). The results indicates the higher the OSD, the lower their quality of life. The alternate hypothesis that states that there is a significant relationship between OSD

and OQoL is supported by this data. The implication of this present study is that as individuals experience more of the symptoms of dysmenorrhoea, they will have lower quality of life.

This study is consistent with a study done to find the interference of headache (symptom of dysmenorrhoea) on the physical activities (aspect of Quality of Life) of female students. It was found that the prevalence of headache (as a menstrual symptom) in females was high, with a negative impact on activities of daily living (an aspect of quality of life) and school attendance (Lima, Araújo, Gomes, Almeida, Souza, Cunha & Pitangui, 2014).

Emotional and behavioural problems may exacerbate dysmenorrhea. For example, depression and/or anxiety symptoms are reported to have an impact on menstrual cycle function and dysmenorrhea (Unsal et al. 2010). Due to the negative effects of dysmenorrhea on an individual's psychological status, health-related quality of life (HRQoL) may be disrupted among women (Dawood, 1990). This implies that depression and anxiety which are significantly associated with dysmenorrhoea and as females experience them, their quality of life may be affected. Hence, the hypothesis that states that there is a relationship between symptoms of dysmenorrhoea and quality of life is accepted.

Hypothesis Five

Hypothesis Five test the significant relationship between dysmenorrhoea and OQoL. This hypothesis was to explore whether dysmenorrhoea (menstrual cramps) had a relationship with OQoL of UCC females. Analysis of responses is presented in Table 12.

Table 12- *Pearson Correlation Matrix on Dysmenorrhoea and OQoL*

		Overall symptoms of Dysmenorrhoea	Quality of Life
Overall symptoms of Dysmenorrhoea	Pearson Correlation	1	-.121**
	Sig. (2-tailed)		.011
	N	352	352
Quality of Life	Pearson Correlation	-.121**	1
	Sig. (2-tailed)	.011	
	N	352	352

**. Correlation is significant at the 0.05 level (1-tailed).

Table depicts that there is correlation between Dysmenorrhoea and Overall Quality of life ($r = -.12$, $n = 352$, $p < 0.05$). The results suggest that the severe the dysmenorrhoea, the lower their quality of life. Hence the hypothesis that states that there is significant relationship between dysmenorrhoea and the overall quality of life among UCC female student is accepted. This is consistent with a study done by Joshi et al (2015); they found a statistical difference between dysmenorrhoea and quality of life after running Chi Square analysis. Similarly, a study done by Alia et al. (2016) revealed a correlation between dysmenorrhoea and quality of life; they found that as menstrual pain increased, quality of life decreased. Mohammed and Mansour (2013) revealed that there was highly statistical difference between pain duration and school performance and friends relation ($p=0.000$). Although, their findings were about pain duration, school performance and friends relation (which are aspects of Quality of Life), it establishes that as women have pain for some period of time, it affects some aspect of quality of life.

Mohamed and Neaem, (2013) further revealed that there is association between pain severity and school performance and family relation ($p < 0.05$). When their p-value is compared with the currents results ($p < 0.05$), there was consistency.

Hence, the hypothesis that states that there is a significant relationship between dysmenorrhoea and overall quality of life is supported by this data. Therefore, it is established that there is negative correlation between dysmenorrhoea and quality of life.

Hypothesis Six

Hypothesis six explored that females with moderate dysmenorrhoea have less impaired quality of life than females with severe dysmenorrhoea. Analysis of the hypothesis is presented in Tables 13 and 14 .

Table 13-*Group Statistics*

	Dysmenorrhoea	N	Mean	Std. Deviation	Std. Error Mean
QOL	Moderate	171	41.3770	5.61971	.42975
	Severe	85	38.1420	5.31172	.57614

Table 14-*Independent t-Test for Females with Moderate Dysmenorrhoea and Severe dysmenorrhoea*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
QOL	Equal variances assumed	.013	.909	4.416	254	.000	3.23504	.73254	1.79241	4.67767
	Equal variances not assumed			4.501	176.482	.000	3.23504	.71876	1.81656	4.65351

$p < 0.05$ (2-tailed)

An independent t-test was conducted to compare the overall quality of life scores of females who have moderate dysmenorrhoea to females who have severe dysmenorrhoea. Table 13 and 14 reveal that there is a statistically significant difference in the score for females with moderate dysmenorrhoea (M=41.38, SD=5.62) and females with severe dysmenorrhoea [M=38.14, SD= 5.31; t (254) = 4.42, p= 0.00] in terms of their overall quality of life. Hence, the hypothesis that states that females with moderate dysmenorrhoea have better quality of life than females with severe dysmenorrhoea is accepted.

This present study (with p value of 0.00) is in line with Unsal et al. (2010) study. They found that there was a statistical difference between moderate and severe dysmenorrhoea group on based SF-36 domains ($p<0.05$). Unsal et al., (2010) compared the means scores of both moderate dysmenorrhoea group to severe dysmenorrhoea group—they found out that the severe group scored poor on the SF-36 domain compared to moderate group.

From the literature presented and the finding of the current study, it has been established that females with moderate dysmenorrhoea differ from females with severe dysmenorrhoea on the quality of life domains because moderate group scored higher (M= 41.3770, SD= 5.61971) than the severe group (M= 38.1420, SD= 5.31172) on the quality of life scale. Hence, the hypothesis that states that moderate dysmenorrhoea have better quality of life than severe group is accepted. Therefore, it can be concluded that moderate dysmenorrhoea group have better quality of life than severe dysmenorrhoea group.

Hypothesis Seven

Hypothesis seven explored the relationship between demographic variables and dysmenorrhoea. Analysis of hypothesis is presented in Table 15.

Table 15-Multiple Regression Testing Relationship between Demographic Variables and Dysmenorrhoea.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.185	.342		6.386	.000
	Age Range	-.117	.099	-.074	-1.191	.235
	Marital Status	.023	.139	.011	.168	.867
	Social Class	-.048	.074	-.035	-.647	.518
	Age of Menarche	.066	.067	.052	.987	.324
	First Time of Menstruation	-.357	.077	-.243	-4.641	.000
	Menstrual Cycle	.036	.055	.035	.653	.514
	Duration of Menstrual period	.148	.071	.108	2.064	.040

a. Dependent Variable: Level of Menstrual pain

Table 15 shows multiple regression testing for a relationship between demographic variables and dysmenorrhoea. The table shows that no demographic variable was statistically significant with dysmenorrhoea except first time of menstruation (sig= 0.00, which is less than 0.05) and duration of menstrual period (sig=0.04, less than 0.05). From the table, it can be concluded that first time of menstruation and duration of menstrual period may predict dysmenorrhoeaThis finding is consistent with Pejcic & Jankovic (2016) study found a significant relationship between longer flow (duration of blood flow) and dysmenorrhoea.

Similar to this findings, Sundell, Milsom, & Andersch, (1990) in a local university in USA found out having longer duration of menstruation was significantly associated with dysmenorrhoea. This is to say that severity of

dysmenorrhoea increase with increasing duration of menstruation (Andersch & Milsom, 1982; Sundell, Milsom & Andersch, 1990). However, psychological factors may contribute more to the explanation of whether severity of dysmenorrhoea increases with increasing durations or not. (Andersch & Milsom, 1982). Therefore, it has been established that none of the demographic variables was significant except first time of menstruation and duration of menstrual period.

Summary

In this chapter the results of the study was reported and discussed thoroughly in respect to the research questions and hypothesis. The relationships between or among variables were studied and discussed. These relationships range from significant to non-significant ones. At the end of the discussions, it was found that mild, moderate and severe dysmenorrhoea have influence on the quality of life of UCC female students.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

The purpose of the study was to investigate dysmenorrhoea and its impact on quality of life and coping mechanisms of UCC females. A quantitative research (survey) approach was adopted for the study. Research questions (One, three, four & five) including background information were analysed using descriptive statistics. Research Question two and Hypothesis seven were analysed using multiple linear regression. Hypothesis three, four, and five were analysed using Pearson matrix correlation. Hypothesis six was anlysed using independent t-test.

I used purposive and convenient sampling for the study as well as snowballing. I was interested in females who have dysmenorrhoea and are between the ages of 18 to 39. I was not interested in females who were at their menopausal stage, pregnant and had pathological gynecological problems. The sample size of the study was Three hundred and fifty two.

Summary of Key Findings

The study revealed that more of UCC students had moderate dysmenorrhoea, followed by mild and severe dysmenorrhoea.

The study revealed that there were no risk factors predicting dysmenorrhoea except early age of menstruation ($p<0.05$) and waist pain ($p <0.05$).

The current study revealed that tender and swollen breast is the most experienced symptom of UCC female students followed by being withdrawn

irritability, anger, anxiety, depression, headache, bloated and painful abdomen, confusion and swollen hands and toes.

The current study revealed that pain killer was the most utilized coping mechanism followed by reduced salt, sugar and caffeine, herbal medicine, sleeping, exercise, warm press, massage and oral contraceptive.

The study revealed that bathing twice or more and changing pads frequently as the most impact followed by being uncomfortable, reliance on pain killer, being withdrawn from social activities, cannot sleep, hobbies affected, confined in bed, resting difficulties, reduced work capacity, absenteeism, lose or cannot focus, tired and lethargy, spending money, dependent on friends, cannot participate in group discussion, wishful thinking, unstable emotions, sexual restriction, and being scared.

The current study revealed that there is significant differences among mild, moderate and severe dysmenorrhoea groups on their combined dependent variables (physical, psychological and social wellbeing). However, when the dependent variables were considered separately, the only dependent variable reaching a statistically significant difference among three groups using Bonferroni adjusted alpha level of 0.017 was their physical wellbeing.

The current study revealed that there is a positive correlation between physical and psychological health of students with dysmenorrhoea. There is a direct relationship which means that as students' physical health is highly affected, their psychological health is highly affected or as students have better physical health, they will have better psychological health.

The study revealed that there is a positive correlation between headache as a symptom of dysmenorrhoea and the use of painkiller. The relationship is direct, which means that as students have headache due to dysmenorrhoea, they increased the use of painkiller.

The study has established a statistical significant relationship between overall symptoms of dysmenorrhoea (OSD) and overall quality of life (OQOL). The study revealed an inverse relationship between OSD and OQOL. This indicates that the higher the symptoms experienced, the lower females' quality of life or the lower the symptoms experienced, the higher their quality of life.

The study revealed that there is a statistical difference between moderate dysmenorrhoea group and severe dysmenorrhoea group. The study revealed that females in the moderate dysmenorrhoea group had better quality of life than females in the severe dysmenorrhoea group.

The study revealed that there were no demographic variables predicting dysmenorrhoea except first time of menstruation(0.05) and duration of menstrual period ($p<0.05$).

Conclusion

The study investigated dysmenorrhoea and its impact on quality of life and coping mechanism of UCC students. This study provided information on the severity of distribution of dysmenorrhea and its associated risk factors and symptoms among UCC students. The study has made us to understand that dysmenorrhoea poses a challenge for women to the extent of placing limitation on both their physical health and psychological health. Since dysmenorrhoea can

incapacitate students by making them absent from school, it may yield low performance in their examination thereby affecting the quality of graduates being produced. Dysmenorrhea brings about bodily physiological changes which indirectly affect their quality of life. Painkiller was the most utilized coping mechanism. The implication of this is that many of the students may indulge in self-medication which may lead to other problems. Despite the considerable impact of dysmenorrhoea, only few students may consult an expert. They seem to accept dysmenorrhea as part of the physiological process of the transition between adolescence and adulthood, which reflects a lack of information about primary dysmenorrhea. So health education on issues related to reproductive health should be incorporated early enough in the school curriculum with the involvement of the school personnel to prepare women for menstruation and inform them about available treatment options in case they experience dysmenorrhea.

Recommendations

Health professionals are required to initiate educational programmes relating to health to creating awareness in schools by enlightening females about pathophysiology of dysmenorrhoea, its associated risk factors, symptoms and its coping mechanisms.

Clinical Health psychologists should be involved to deal with the psychological uneasiness associated with dysmenorrhoea. Appropriate counselling and psychotherapy services should be rendered to female students to help them cope with the challenges of dysmenorrhea whilst in school. Information, education,

and support combined with clinical management of menstrual problems should be core elements of reproductive health programs.

I recommend that medical professionals should pay attention to students who self-medicate due to the unbearable pains associated with dysmenorrhoea. The study revealed that painkiller was mostly used by students so it will be appropriate if medical doctors advise students on the best painkiller to be used or even other treatment that will help ameliorate the painkiller to boost their quality of life.

More researches should be done on dysmenorrhoea because this current study is one of a kind and it may be the only quantitative study done using tertiary students with dysmenorrhoea in Ghana. However, it cannot be only used to understand fully the concept of dysmenorrhoea and how it impacts on the quality of life of women.

Educational system should have policies that would provide avenues for classes to be given to students who could not attend lectures due to dysmenorrhoea. This is because the study has revealed that students absent themselves and cannot go for group discussion which may adversely affect their academic performance.

Suggestions for Future Research

The study has contributed to the understanding of dysmenorrhoea and its impact on quality of life and coping mechanisms of students. However, there is still the need to further explore on the existing knowledge of the variables studied.

1. The coping mechanisms should be explored qualitatively to provide details about the exact coping mechanism used by students. For example, in this

study, I found that students do rely on painkillers, however, the study did not reveal the specific type of painkiller used. Therefore future research should adopt mixed method approach to help better understand in details ways students cope with dysmenorrhoea.

2. The impact of dysmenorrhoea will be better understood if it was studied with a larger group of females (women in Ghana) with diverse background rather than just focusing on female students in UCC hence making generalization impossible. There should be further studies that will compare dysmenorrhoea group to non dysmenorrhoea group to help establish the real impact on quality of life rather than comparing females based on their severity of the disorder.
3. I propose that further studies should be done to find out about the severity of the distribution of dysmenorrhoea among students in other tertiary institutions in Ghana and how they are impacted negatively. In addition to this, associated symptoms of dysmenorrhoea should be studied in detail rather than just considering reports from the students. For example, if a student is having anxiety or depression prior to dysmenorrhoea, these factors should be carefully measured and studied longitudinally in order to establish that indeed anytime women have dysmenorrhoea, they do have these associated symptoms including its risk factors.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 233-3321-32440/4 & 32480/3
Direct: 033 20 91697
Fax: 03321-30184
Telex: 2552, UCC, GH.
Telegram & Cables: University, Cape Coast
Email: edufound@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

29th March, 2017

Our Ref:

Your Ref:

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION: MR. SAKYI MAXWELL

We introduce to you Mr. Sakyi Maxwell, a student from the University of Cape Coast, Department of Education and Psychology. He is pursuing Master of Philosophy degree in Clinical Health Psychology and is currently at the thesis stage.

Mr. Sakyi is researching on the topic:

"Dysmenorrhea and its impacts on the quality of life and coping mechanisms of the University of Cape Coast Female Students".

We would grateful if he is given all the needed assistance toward this necessary academic exercise. Please any information provided will be treated as strictly confidential.

Thank you.

Yours faithfully,

Theophilus Amuzu Fiadzomor
Senior Administrative Assistant
for: HEAD

APPENDIX B

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATION STUDIES

ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/ucc.edu/17/21

Your Ref: .....

Date: 16.03.2017

.....

.....

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Vice-Chairman, CES-ERB
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Secretary, CES-ERB
Dr. (Mrs.) L. D. Forde
lforde@ucc.edu.gh
0244786680

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

The bearer, Mr. Maxwell Sakyi ..... Reg. No ES/CHP/15/0010. is an M.Phil /Ph.D student in the Department of Education and Psychology ....., College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He/She wishes to undertake a research study on the topic Dysmenorrhoea and its impacts on the Quality and Coping Mechanisms of UCC Students .....

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed the proposal submitted by the bearer. The said proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his/her study. The ERB would be grateful if you would give him/her the necessary assistance that may be needed to facilitate the conduct of the said research.

Thank you.
Yours sincerely.

Dr. (Mrs.) Linda Dzama Forde
(Secretary, CES-ERB)

APPENDIX C

UNIVERSITY OF CAPE COAST DEPARTMENT OF PSYCHOLOGY AND EDUCATION INFORMED CONSENT FORM

Title: Dysmenorrhoea and Its Impact on the Quality Of Life and Coping Mechanism of University of Cape Coast Students

Principal Investigator: Maxwell Sakyi

Address: Department of Psychology and Education, College of Education Studies, University of Cape Coast, Cape Coast.

General Information about Research

The purpose of this study is to investigate dysmenorrhoea and its impacts on the quality of life and coping mechanism of UCC students. The study is to examine how students with mild, moderate and severe dysmenorrhoea differ in terms of their physical, psychological and social wellbeing. The study is to investigate the correlation between the physical health and psychological health of students with dysmenorrhoea. The study is to establish a correlation between the overall symptoms of dysmenorrhoea and Quality of life of students with dysmenorrhoea. The study is to test the relationship between headache as a symptom of dysmenorrhoea and painkiller use. The study is to examine how students with moderate dysmenorrhoea have better quality of life than students with severe dysmenorrhoea. The study is to establish a correlation between demographic variables and dysmenorrhoea. Self-Constructed questionnaire will be used for the collection of data.

Data Protection Policy

In order to ensure the safety of the information obtain from the participants, the output of the data will be kept safe on the researchers personal computer and protected with folder lock software.

Possible Risks and Discomforts

There is no risk involved as the sensitivity of the questionnaire will be reduced.

Possible Benefits

There are no tangible benefits related to participating in the study, but your participation will help health professionals to unravel the complex needs of participants. This will lead to improved and comprehensive health care delivery.

Alternatives to Participation

The alternative/other choice is not to participate in this study.

Confidentiality

The information you give to the researcher in this study will be kept confidential by law. Your name will not be used in any reports or advertisements. Your name will appear only on this consent form which will be kept in a locked file cabinet by the principal investigator conducting this study. The survey results will be analysed by researcher alone and no one will have access to the information without your consent.

Termination of Participation by the Researcher

The researcher may take you out of this study if he believes that you are upset in some way due to your participation in the study.

Contacts for Additional Information

Contact the principal investigator, Mr Sakyi Maxwell (050024330) with your questions.

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research "Dysmenorrhoea and Its Impact on Quality of Life and Coping Mechanism of UCC Female Students" has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

…… ……

Date Name and signature or mark of volunteer

APPENDIX D

Pretest Results of Maxwell's Dysmenorrhoea Questionnaire (Self-Constructed Questionnaire)

Scale Label	No of Items	Cronbach's Alpha
PRFDS	17	0.9
PSDS	10	0.9
QOLS	21	0.9
CMS	8	0.8
ODQS	56	0.9

Note the Following:

RFDS = Perceived Risk Factor of Dysmenorrhoea Scale SDS = Perceived Symptoms of Dysmenorrhoea Scale QOLS = Quality of Life Scale

ODQS = Overall Dysmenorrhoea Questionnaire Scale

APPENDIX E

MAXWELL'S DYSMENORRHOEA QUESTIONNAIRE

THIS QUESTIONNAIRE IS TO BE COMPLETED BY UCC FEMALE STUDENTS

DYSMENORRHOEA AND ITS IMPACT ON THE QUALITY OF LIFE AND COPING MECHANISM OF UNIVERSITY OF CAPE COAST STUDENTS

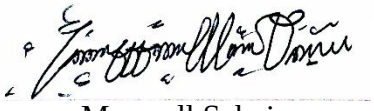
Dear Student,

The purpose of this study is to collect information about dysmenorrhoea (menstrual pain) and its impact on the quality of life and coping mechanism of University of Cape Coast students. The questionnaire is made up of five sections labelled from Section A to Section E for you to complete. Your responses will be needed in understanding more about dysmenorrhoea, its impact on quality of life and coping mechanism of UCC students.

This questionnaire will take less than 30 minutes to complete. The information you disclose will be entirely confidential.

Thank you for partaking in this important study.

Yours Sincerely,



Maxwell Sakyi

SECTION A

Background Information

Tick in the box the appropriate characteristics that apply to you.

1. Age-range 19—24 ☐ 25—29 ☐ 30—34 ☐ 35—39 ☐

2. Marital Status Single ☐ Married ☐ Divorced ☐

Widow ☐

3. Social class Low ☐ medium ☐ high ☐

4. At what age did you experience your first menstruation?

9—11 ☐ 11—13 ☐ 13+ ☐

5. At the first time of menstruation was there menstrual cramps? ☐ Yes

No ☐

6. What is the level of your menstrual pain? Mild ☐ moderate ☐

Severe ☐

7. What is your menstrual cycle?

Less than 28days ☐ 28-30days ☐ 31-35days ☐ more than

35days ☐

8. What's the duration of your menstrual period?1—2 day ☐ 3—5day ☐

5+ ☐

SECTION B

Perceived Risk Factors associated with Dysmenorrhoea

The following is a list of risks factors that may be associated with dysmenorrhoea. Tick your answers in the box below. SD = strongly disagree; D = disagree; UD = neither agree nor disagree; A= agree; SA= strongly agree.

	STATEMENTS	SD	D	UD	A	SA
9	Women who are between ages of 18 and 25 may have menstrual pain					
10	Women who have not given birth before may have menstrual pain					
11	Women who have their menses on time do not have menstrual pain					
12	Mostly women with irregular menstrual cycle may have menstrual pain					
13	Young girls are likely to inherit menstrual pain from their mother					
14	Women with heavy flow of menses may have menstrual pain					
15	Mostly women who had their first ever menstruation at a very early age are likely to have					
16	Mostly women who are depressed may have menstrual pain					
17	Mostly women who have knowledge about menstrual pain do not experience its effect much					
18	Mostly women who are overweight may have menstrual pain					
19	Most women use contraceptive may reduce menstrual pain					
20	Mostly women who smoke are prone to having menstrual pain					
21	Mostly women who abuse alcohol may be prone to having menstrual pain					
22	Women who have waist pain may be prone to having menstrual pain					
23	Mostly women who have longer flow of blood during menstruation may have menstrual pain					
24	Exercise may be the cause of an increase or decrease in menstrual pain					
25	A woman having problem with the cervix may have menstrual cramps					

SECTION C

Perceived Symptoms of Dsymenorrhoea

The following are the signs and symptoms of dysmenorrhoea. Tick your answers in the box below. SD = strongly disagree; D = disagree; UD = neither agree nor disagree; A= agree; SA= strongly agree.

26	Most women become angry due to their menstrual pain					
27	Most women have feeling of anxiety due to their menstrual pain					
28	Most women become confused due to their menstrual pain					
29	Most women become withdrawn away and prefer being alone menstrual pain					
30	Most women become depressed because of the menstrual pain					
31	Most women easily become irritated which is caused by menstrual pain					
32	Most women begin to have headaches which is					
33	Women breast become tender or swollen when am about to have my menstruation					
34	Most women have toes and hands become swollen during menstruation					
35	Most women abdomen become bloated and painful during menstruation					

SECTION D

Impact of Dysmenorrhoea on the Quality of Life

The questions in this section ask about the impacts of menstrual pain across the four domains of students. Participants are required to tick in the box the appropriate answers. SD = strongly disagree; D = disagree; UD = neither agree nor disagree; A= agree; SA= strongly agree

	STATEMENTS	SD	D	UD	A	SA
36	Some women bath more than twice and frequently change diapers because of the menstruation					
37	Some women do not bath at all due to menstrual pain					
38	Most women absent themselves from school due to menstrual pain					
39	Most women cannot sleep or sleep a lot due to menstrual pain					
40	Most women cannot focus on anything like course work because of menstrual pain					
41	Most women become tired and lethargic because of menstrual pain					
42	Most women becomes uncomfortable due to menstrual pain					
43	Most women have difficulty resting due to menstrual pain					
44	Most women work capacity is reduced due to menstrual pain					
45	Some women may rely on pain relieving agents to cope with menstrual pain					
46	Most women wished they were men because of menstrual pain					
47	Most women become emotionally unstable due to menstrual pain					
48	Some women become scared that menstrual pain may make them childless					
49	Some women thinking and concentration in classroom/workplace is affected due to pains					
50	Some women may confine themselves in bed due					
51	Some women may withdraw from social activities due to menstrual pain.					
52	Sexual activity may be affected due to menstrual pain					
53	Some women are assisted by their friends to perform their chores when having menstrual pain					
54	Some women may spend money treating their menstrual pain					
55	Most women cannot enjoy their hobbies due to menstrual pain					
56	Most women cannot participate in group discussion due to menstrual pain					

SECTION E

Coping Mechanism for Dysmenorrhoea

This section requires students to indicate how women /they may cope during dysmenorrhoea. Participants are required to tick in the box the appropriate answers. SD = strongly disagree; D = disagree; UD = neither agree nor disagree; A= agree; SA= strongly agree.

	STATEMENTS	SD	D	UD	A	SA
57	Most women use warm press to cope with menstrual pain					
58	Some women may use massage to cope with menstrual pain					
59	Some women may use contraceptive to manage menstrual pain					
60	Engaging in exercise may be help manage menstrual pain					
61	Sleeping may be used as a therapy to manage menstrual pain					
62	Most women rely on pain relieving agents to cope with menstrual pain					
63	Herbal medicine maybe used by women to cope with menstrual pain					
64	Most women reduce intake of salt, sugar, caffeine to help them cope with menstrual pain					