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DEPARTMENT OF NURSING AND MIDWIFERY

ASSESSMENT OF PRIMARY DYSMENORRHEA RISK FACTORS AND ITS EFFECT ON STUDENTS ACADEMIC PERFORMANCE AMONG FEMALE STUDENTS IN DEBRE BERHAN UNIVERSITY

BY:

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ATHESIS SUBMITTED TO THE SCHOOL OF GRDUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DGREE OF MASTERS OF SCIENCE IN MATERNAL AND REPRODUCTIVE HEALTH NURSING IN THE DEPARTMENT OF NURSING AND MIDWIFERY

JUNE, 2012

ADDIS ABABA, ETHIOPIA

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THIS THESIS BY **SOLOMON HAILEMESKEL BESHAH** IS ACCEPTED IN ITS PRESENTED FORM BY BOARD OF EXAMINERS IN SATISFYING THESIS REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN MATERNAL AND REPRODUCTIVE HEALTH NURSING.

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Advisor **Signature**

_____ _____

Examiner **Signature**

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ACRONYMS

AAU	Addis Ababa University
AOR	Adjusted Odds Ratio
BMI	Body Mass Index
BSc	Bachelor's of Science
COR	Crude Odds Ratio
DBU	Debre Berhan University
ETB	Ethiopian Birr
IRB	Institutional Review Board
MSS	Multidimensional Scoring System
PD	Primary Dysmenorrhea
PI	Principal Investigator
PMS	Pre- Menstrual syndrome
QOL	Quality of Life
SRS	Simple Random Sampling
VAS	Visual Analog Scale

ABSTRACT

Background: Primary dysmenorrhea is the most common gynecologic compliant among adolescent females. There is a wide variation in the estimate of primary dysmenorrhea 50 to 90%. The disorder is the most common cause of short term school and class absenteeism, loss of class concentration and test taking skill by adolescent women.

Objective: To assess associated risk factors of primary dysmenorrhea and its effect on student's academic performance in Debre Berhan University, North shoa zone, Amhara regional state from September 2011- May 2012.

Methods: A cross-sectional study was conducted in Debre Berhan University from September 2011 to May 2012 using multistage stratified sampling technique to select 440 female students. A structured and pretested self-administered questionnaire was used for data collection. The severity of dysmenorrheal pain was assessed by using verbal multidimensional scoring system and visual analog scale (VAS). The data was double entered into Epi Info version 3.1 and analyzed by using SPSS version 17. Data were analyzed using X^2 test and logistic regression analysis. P-value<0.05 at 95% confidence interval (CI) for Odds Ratio (OR) was considered statistically significant.

Result: a total of 440 students had participated in this study. The prevalence of primary dysmenorrhea was 368(85.4%). About 123 (28.5%) had mild, 164(38.1%) had moderate and 81(18.8%) had severe primary dysmenorrhea. 88.3% of dysmenorrheic students reported that primary dysmenorrhea had negative effect on academic performance. Of these 80% reported school absence, 66.8% reported lose of class concentration, 56.3% reported class absence, 47.4% reported lose of class participation, 37.8% reported limited sport participation, 31.7% reported limitation in going out with friends and 21% reported inability to do homework. Risk of primary

dysmenorrhea was approximately 7 times higher in students who had monthly income of less than 150ETB (AOR= 6.671); 6 times higher in students who had history of attempt to lose weight (AOR=6.085); 14 times higher in students who had history of depression or anxiety (AOR=13.607); 3 time higher in students who had disruption of social network either of family, friends or people they love (AOR= 3.218); 19 times higher in students who consume more than four glass of tea per day (AOR= 18.938); 7 times higher among students who consume one and more than one coca or Pepsi per day (AOR= 6.786); 47 times higher in nulipara (AOR= 47.318) and 27 time higher in students with a family history of dysmenorrhea (AOR= 27.228). In the contrary students' interval and duration of menstruation, student's age at menarche and body mass index were not significantly associated to primary dysmenorrhea.

Conclusion and recommendation: there is high prevalence of primary dysmenorrhea among Debre Berhan University students. The condition has a negative impact on student's academic performance and it is found to be a significant health problem in students that requires attention. Future studies will be important to better identify risk factors for primary dysmenorrhea and lighten its effect on students' academic performance.

Key words: Primary Dysmenorrhea, Academic Performance, Risk Factors of Primary Dysmenorrhea

CHAPTER ONE: BACKGROUND

1.1. Introduction

Dysmenorrhea is a disorder involving pain that arises in the inguinal region during or just before menstrual bleeding (1, 2 & 3) and which is common in reproductive age of women. The disorder is commonly presented by late adolescence in which 75% of girls experience some problems associated with menstruation (1). Generally, dysmenorrhea is classified into two broad categories as primary dysmenorrhea and secondary dysmenorrhea.

Primary dysmenorrhea is pain during menstrual bleeding without any identifiable pathological lesion and usually begins during adolescent (4 & 5). It is considered as primary when there is no evidence of apparent pelvic pathology (6). It is unusual for symptoms to start within first six months after menarche. Affected women experience sharp, intermittent spasm of pain usually concentrated in the supra pubic area. Pain may radiate to the back of the legs or the lower back. Systemic symptoms of nausea, vomiting, diarrhea, fatigue, mild fever and headache or lightheadedness are fairly common. Pain usually develops within hours of the start of the menstruation and peaks as the flow becomes heaviest during the first day or two of the cycle (7). It is also a public health problem because of its high prevalence (8).

Unlike primary dysmenorrhea, secondary dysmenorrhea (congestive dysmenorrhea) (8) is menstrual pain associated with underlying organic pathology such as endometriosis, pelvic inflammatory disease, intra-uterine devices, irregular cycles or infertility problems, ovaran cysts, adenomyosis, uterine myomas or polyps, intra-uterine adhesions, or cervical stenosis, and its onset may be years after menarche (9).

Primary dysmenorrhea is believed to be associated with many factors including behavioral and psychological aspects. It has been shown that dysmenorrhea among adolescents can adversely affect their personal life causing limitation of their social and academic performance. A study done on Prevalence and Impact of Dysmenorrhea on Hispanic female adolescents found that among participants who had had a menstruation in the previous 3 months, 85% reported dysmenorrhea. Of these, 38% reported missing school due to dysmenorrhea during the 3 months prior to the survey and 33% reported missing individual classes (10).

Furthermore, it is a common cause of sickness and absenteeism from both classes and work by females (11). A study done in Mexican university students found that dysmenorrhea affects 65% of student's daily activities (2). Based on this study the characteristics of menstrual factors that limits students daily activities were cramping pain in the lower abdomen (93%), swollen abdomen (67%), irritability (50%), depression (48%), painful or tender breasts (45%), backache (43%), gastrointestinal disturbances (26%), headache (24%), swelling legs (19%) (2).

Dysmenorrhea had negative effect on student's school activities. A study done on dysmenorrhea and its effect on school activities among adolescent girls in rural school in Selangor, Malaysia had found that the number of school and class absences increased with increasing severity of dysmenorrhea It was reported that the mean pain score was significantly higher in girls who reported to be unable to participate in sports and with poor concentration in class. Dysmenorrhea among the adolescent girls was common in this rural school associated with a significant negative impact in their school performance and activities. According to this study the prevalence of dysmenorrhea was 62.3%. Dysmenorrhea was significantly higher in the middle adolescence (15 to 17 years old) age group students with regular menstrual cycle ($p=0.007$) and a

positive family history. But there was no significant association with mean age of menarche and duration of menstruation (12).

The risk factors for dysmenorrhea are; age <20 years, nulliparity, heavy menstrual flow, smoking, high/upper socioeconomic status; attempts to lose weight, physical activity, disruption of social networks, depression and anxiety (13). But several observational studies have found controversial results. Population studies on normal and dysfunctional characteristics of menstrual cycles are scanty in Ethiopia. This study will explore the problem faced by Debre Berhan University female students during menses (primary dysmenorrhea and students' academic performance) and its correlation with biologic, behavioral, psychosocial and reproductive variables.

1.2. Statement of the problem

Dysmenorrhea is the leading cause of recurrent short-term school absenteeism among adolescent girls (14). A study found that an estimated 140 million hours are lost annually from school or work because of dysmenorrhea (13), in addition to this, in the United States it is estimated that approximately 600 million working hours are lost annually as a result of primary dysmenorrhea (11). In the United States the most common menstrual disorder is dysmenorrhea and it affects millions of women and represents an important health burden, and it is the leading causes of work or school absenteeism and substantially affecting quality of life (15).

Dysmenorrhea is most common in adolescent girls, prevalence rates range from 20% to 90% depending on measurement methods (16). Since estimated 10% of adolescent girls report severe dysmenorrhea, this leads to recurrent short-term school absences among girls of this age group. Different studies have shown that adolescents with dysmenorrhea report that, it affects their academic performance, social and different activities (17). In addition to this menstrual pain and distress can cause disability (loss of function and activity) and handicap (altered social roles) (4 & 6).

A study done on dysmenorrhea among adolescent girls in a rural school in Selangor, Malaysia found that dysmenorrhea is known to cause physical and social disability resulting in school or class absence with reduced concentration and inability to participate in sport activities (12). A similar study in India reported a prevalence of 73.83% among first and second year female medical students with a prevalence of other menstrual disorders such as menstrual irregularity, prolonged menstrual bleeding and heavy menstrual bleeding were 7.47%, 10.28% and 23.36% respectively. Among female medical students who reported dysmenorrhea; 31.67% and 8.68%

were frequently missing college & classes respectively. Premenstrual symptom was the second most prevalent disorder and reported social withdrawal (18).

According to a study conducted on primary dysmenorrhea among Mexican university students the most common symptoms of menstrual distress were found to be cramping pain in the lower abdomen (93%), swollen abdomen (67%), irritability (50%), depression (48%), painful or tender breasts (45%), backache (43%), gastrointestinal disturbances (26%), headache (24%), swelling legs (18.5%) just starting from 1–2 days before menses (26%) and 2–3 days after menses(2). Due to these menstrual symptoms, two-thirds of the study participants reported a limited daily activities while the rest of them reported school absenteeism (2).Moreover, in Thailand secondary school adolescent girls reported their in ability to concentrate in class, absence from school and a limited sport and social activities as a consequence of primary dysmenorrhea (19).

The above all mentioned literatures have showed that dysmenorrhea had negative effect on student's academic performance (like class participation, class concentration, school absence, class absence, test taking skill and homework) and student's social activities.

Although in developing countries reproductive health related to maternal health is recognized as a health priority, much less attention is given to menstrual health and menstrual disorders (1). A recent review of menstrual disorders in developing countries revealed high rates of menstrual morbidity (3), in Ethiopia dysmenorrhea has prevalence of 74% and72% in a study done in Addis Ababa and Dabat and Kola Diba respectively and study done in Jimma university students showed prevalence of premenstrual syndrome as 27%. However, much of the existing research focuses on prevalence estimates; there is little information on the associated risk factors and effect of dysmenorrhea on student's academic performance like class participation, test taking

skill, class concentration and sport participation. Of all menstrual complaints, dysmenorrhea is by far the most common and, possibly, the least understood and addressed complaint (1).

In Ethiopia, the prevalence of dysmenorrhea especially primary dysmenorrhea which is the most common problem in adolescents is not well studied. And its magnitude associated with socio-demographic, behavioral, mental health, reproductive factor and gynecologic factor is not well documented. Besides, there is scarcity of report on how females avoid such menstrual disorder. This study, therefore, will attempt to explore the associated risk factors that are assumed to be the cause for the occurrence of primary dysmenorrhea and the severity of the disorder among groups of female students in Debre Berhan University. The effect of primary dysmenorrhea on student's academic performance will also be investigated.

1.3. Significant of the study

There is a scarcity of research conducted in Ethiopia on associated risk factor of dysmenorrhea and its effect on student's academic performance. Even though the prevalence of dysmenorrhea in Ethiopia is assumed to be high among adolescents which is 74% in a study done in Addis Ababa high school students and 72% in a study done in Dabat and Kola Diba secondary school students, but all these studies were concerned on the estimation of dysmenorrhea prevalence and characterization of menarche and menstrual pattern of adolescents and little is known on the effect of dysmenorrhea especially primary dysmenorrhea on students academic performance.

The main aim of this study is therefore to provide information on the associated risk factors of primary dysmenorrhea among Debre Berhan University students. Besides, it will assess the effect of primary dysmenorrhea on student's academic performance in relation with class participation, class concentration, test taking skill, homework taking skill and sport activities among the students with dysmenorrhea. It may also used as a base line data for other researchers conducting studies in this related topics and for health care professionals working with menstruation related problems to prevent complications of dysmenorrhea early. It can be used as an input for stake holders and concerned bodies (governmental and non-governmental organizations) that work in the university in relation to menstrual disorder. Besides it may serve as a guide for policy makers focus on the prevention and early detection of dysmenorrhea and consider this problem as one of reproductive health problems and plan to reduce its effect on student's academic performance. This study will also have a significant input in the formulation of appropriate strategies in order to promote students health seeking behavior towards menstruation related problems and enhance the student's academic performance though reduction of associated risk factors of primary dysmenorrhea in the university.

CHAPTER TWO: LITERATURE REVIEW

2.1. Prevalence of Dysmenorrhea

Many cross-sectional studies were conducted at universities to assess the prevalence and effects of dysmenorrhea. A study conducted at Dumlupinar University, Kutahya, Health High School and Western Turkey showed the prevalence rate of 72.7 % (20). Another, descriptive cross-sectional study performed in three medical colleges of India reported prevalence rate of 73.83 % (18). Studies done at Turkish University and Mexican University students also revealed the prevalence rate of 55.5% and 64% respectively (8 & 21).

A study done among 356 Naples professional institute adolescents found prevalence of dysmenorrhea at 85%, 293 with primary dysmenorrhea; 9 with secondary dysmenorrhea; 54 without pain. According to the finding of this study early menarche was related to an increase in the prevalence and severity of dysmenorrhea. A long and heavy menstrual flow was related to an increase in the severity of dysmenorrhea. Concerning dietary habits of students, it was noted that a higher consumption of fish, eggs, fruit and a lower consumption of wine was correlated with a lower frequency of dysmenorrhea (22).

A recent study done among 1546 Canadian menstruating women revealed that 60% were having dysmenorrhea with severe or moderate pain of which 51% of them had limitation of activities and 17% experienced absenteeism (23). Another longitudinal cohort study done among Swedish women reported a prevalence of dysmenorrhea as 90% in women of 19 years of age and 67% in women of 24 years of age. Among the 24 years of age 10% of them reported as menstrual pain interfered with daily function. Regarding medications most adolescents self-medicate with over the- counter medicines, and few consult a physician about dysmenorrhea (6, 10 & 17).

In Africa, a study done in Nigeria college students in urban area of Ile- Ife, Osun state has found prevalence of dysmenorrhea as 62.5% (24). In Ethiopia, a study done among Jimma University students to assess the prevalence and effect of premenstrual syndrome on academic and social performances showed 27 % prevalence of premenstrual syndrome (25). Cross sectional study done in Addis Ababa high school girl showed that 74% of the respondents were found with health problem during menstruation (26). Similarly a study done in Dabat and Kola Diba North West Ethiopia secondary school adolescents showed prevalence rate of dysmenorrhea as 72% (27).

2.2. Associated risk factors of Dysmenorrhea

According to a study done in Dumlupinar University, Kutahya among females of age ranging from 17 to 30 years coffee consumption, menstrual bleeding with duration ≥7 days, and positive family history of dysmenorrhea were reported as important risk factors for dysmenorrhea (20). Another study conducted in the Pennsylvania State University found that smoking status and depressive symptoms/anxiety were related to menstrual symptoms and the impact of depressive symptoms/ anxiety on menstrual symptoms was strongly associated among non smokers as well ($r = 0.23–0.44$, $p < .05$) (28).

Studies on the prevalence of dysmenorrhea have shown that a number of risk factors are related to dysmenorrhea. These risk factors are a younger age (age< 20 years), low body mass index (BMI), nulliparity, smoking, early menarche, heavy menstrual blood flow (prolonged or aberrant menstrual blood flow), premenstrual syndrome, clinically suspected pelvic inflammatory disease, somatization, psychological disturbance, disruption of social relations with family or friends, poor mental health like depression and anxiety (16, 29 & 30). In addition to this menstrual cycle

problems, dysmenorrhea can be aggravated by emotional and behavioral problems such as depression and/or anxiety symptoms (31). Younger age at first childbirth, exercise, and oral contraceptives were negatively associated with dysmenorrhea. Drug or alcohol abuse, miscarriage, heavy menstrual flow, pelvic inflammatory disease, previous caesarean section, pelvic pathology, abuse, and psychological co-morbidity were associated with an increased risk of non-cyclical pelvic pain (31).

On the other hand a cross sectional study done among Turkish University students has found risk of dysmenorrhea was approximately 1.5-times higher in women with a satisfactory stipend allowance; 3.5-times higher in women with a family history of dysmenorrhea; 1.5- times higher in women who were underweight compared with overweight/obese women; 1.6-times higher in women who reported a history of smoking; and 1.8-times higher in women with an excessive sugar intake (8).

A population based cohort study in Chinese women investigated the independent effect of women's perceived stress in the preceding menstrual cycle on the incidence of dysmenorrhea in the subsequent cycle especially stress in the follicular phase of the preceding cycles had a stronger association with dysmenorrhea than stress in the luteal phase of the preceding cycles (32).

On the other hand, after controlling for parity and other factors one longitudinal study found that age was not a risk factor and after childbirth dysmenorrhea was improved (33). Dysmenorrhea was consistently associated with heavy menstrual blood flow (23). And family history of endometriosis was a risk factor for endometriosis, which was another cause of dysmenorrhea. On Observational studies smoking and dysmenorrhea were found to have association (34). But

association between being overweight and dysmenorrhea was found to be inconsistent (35). However, independent of body mass index in women aged 14–20 years attempts to lose weight were associated with increased menstrual pain (35). Other behavioral characteristics such as physical activity and alcohol consumption had not been found to be associated with dysmenorrhea (35). In addition to the above factors another potentially modifiable risk factor was poor mental health like depression, anxiety, and disruption of social relations have been inconsistently associated with menstrual pain (35).

2.3. Effect of dysmenorrhea

Obviously, dysmenorrhea has impact on public health and socioeconomic conditions. Many women consider dysmenorrhea as normal and so do not report their symptoms to their health care providers. As a result of this, untreated dysmenorrhea therefore results in lost work days and absenteeism from school, with significant socio-economic consequence**.** In adolescents dysmenorrhea is a common health problem and it has negative effects on quality of life of individuals especially in relation to health (20). As a result of these menstrual disorders, dysmenorrhea and premenstrual syndrome are considered to affect the quality of life (QOL) of women during reproductive age. When the symptoms are severe, it limits social activity via reducing QOL in women. These disorders are frequently encountered in young women and adolescence (20). In the United States the most common menstrual disorder is dysmenorrhea and it affects millions of women and represents an important health burden. This condition is leading causes of work or school absenteeism and substantially affects quality of life (15).

Generally, absenteeism from school and lose of work days are common in a woman with dysmenorrhea and this dysmenorrhea results in significant socio-economic consequence. In the

United States (US), due to dysmenorrhea an estimated 10– 30% of all working or studying women lose 1–2 working days per month, consequently it results 600 million working hours loss or up to 2 billion US dollar annually (36 & 37). The Swedish Gothenburg study revealed primary dysmenorrhea (PD) as the cause of 230,000 lost working days (in population of only 4 million), with 51% of study participants declaring absence from school or work at some time due to dysmenorrhea (38).

Even though in different countries, including both adolescent girls and women dysmenorrhea is the leading cause of recurrent short-term school and work absenteeism, the negative impact of it on the lives of these women is under-appreciated (14 & 10), and in female adolescents it has a negative impact on social, academic and sports activities (10). In several longitudinal studies of young women, the rates of absenteeism due to dysmenorrhea ranged from 34 to 50 percent (38).

In a study done in Canadian women, 50 percent of the women with dysmenorrhea reported that their activities had been limited, and 17 percent reported missing school or work because of menstrual pain (23). In addition to this a cross sectional study done in Hispanic female adolescents to determine impact of dysmenorrhea on academic performance, school attendance, and sports and social activities; and its management showed 85% prevalence rate of dysmenorrhea. Of these, 38% reported missing school due to dysmenorrhea and 33% reported missing individual classes. Hispanic female adolescents have reported that activities affected by dysmenorrhea included loss of concentration in class (59%), sports (51%), class participation (50%), socialization (46%), homework (35%), test-taking skills (36%), and grades (29%). Among participants reporting school absence, 46% reported missing one half to 1 day of school, 36% reported missing 2 to 3 days, and 18% reported missing more than 4 days. The rate of school absenteeism was 52% among participants reporting severe menstrual pain compared with

20% among those with mild menstrual pain. The school absenteeism rate was 67% among participants reporting emesis and 60% among those reporting diarrhea during menstruation. Treatments taken for dysmenorrhea included rest (58%), medications (52%), heating pad (26%), tea (20%), exercise (15%), and herbs (7%). Fourteen percent consulted a physician and 49% saw a school nurse for help with their symptoms. Menstrual pain was significantly associated with school absenteeism and decreased academic performance, sports participation, and socialization with peers (10). As reported by many studies, there is considerable cost to both the individual and to society as a result of dysmenorrhea.

A study done in Khon Kaen Thailand secondary school adolescent showed prevalence of dysmenorrhea 84.9%. Among these study participants eleven percent had mild dysmenorrhea, 62.3% had moderate and 25.8% had severe dysmenorrhea. The most common associated symptoms were mood change (84.8%), fatigue (70.7%) and backache (63.7%). 74% of the dysmenorrheic students reported that their ability to concentrate in class was reduced and 18.2% were absent from school because of it. Concerning pain management 89.3% students had take a rest for pain relief and 77.9% used oral analgesics for pain relief out of these 73.4% of students used acetaminophen, 16.4% used mefenamic acid and 0.6 % oral contraceptives. The study also tries to show health seeking behaviors of students in which only 5.7% consulted a physician (19).

A study done in Mexican University students found that Sixty-five percent of the women with dysmenorrhea reported that it limits their daily activities, and 42.1% reported school absenteeism as a result of it (8). According to a cross sectional study done in Kutahya semi-rural province situated in the western part of Turkey using short form-36 health related quality of life assessment tool students with dysmenorrhea had scored reduced level in all domains of SF-36: physical functioning, role– physical, bodily pain, general health perception, mental health, social

functioning, role- emotional and vitality are showing reduced quality of life. The distribution of the severity of dysmenorrhea cases was found as mild 33.8%, moderate 42.4%, and severe 23.8% (18). A study done in Nigeria on awareness of menstrual abnormality amongst college students in urban area of Ile-Ife, osun state had shown that 12.5% of the respondents reported school absenteeism as a result of dysmenorrhea (24).

In Ethiopia a study done on Jimma University had shown that about 14% of the study participants frequently missed classes and 15% missed examinations or scored a lower grade at least once because of premenstrual (PM) symptoms (25). On the other hand a study done on menstruation related health problem in Addis Ababa among adolescent high school girls had shown that 74% of girls reported to have health problems related to menstruation where abdominal/backache and mood change were the most reported. Absenteeism due to menstruation related health problems was 51%, majority of them for one day when the occurrence of menstruation coincided with week days (26)

2.4. Conceptual Framework

This study has used a comprehensive conceptual framework adapted from the burden and determinants of dysmenorrhea: a population-based survey of 2262 women in Goa, India in 2006

Figure 1 below displays the details of the framework. As illustrated in the diagram primary dysmenorrhea is affected by reproductive, psychosocial factors and behavioral factors.

The reproductive factor includes menorrheagia, younger age at menarche, nulliparity and younger age. Psychosocial factors, notably includes low education, stress and poor mental health and lastly the frame work contains behavioral factors including smoking, alcohol and tea consumption, Coca-Cola/ Pepsi intake and body mass index.

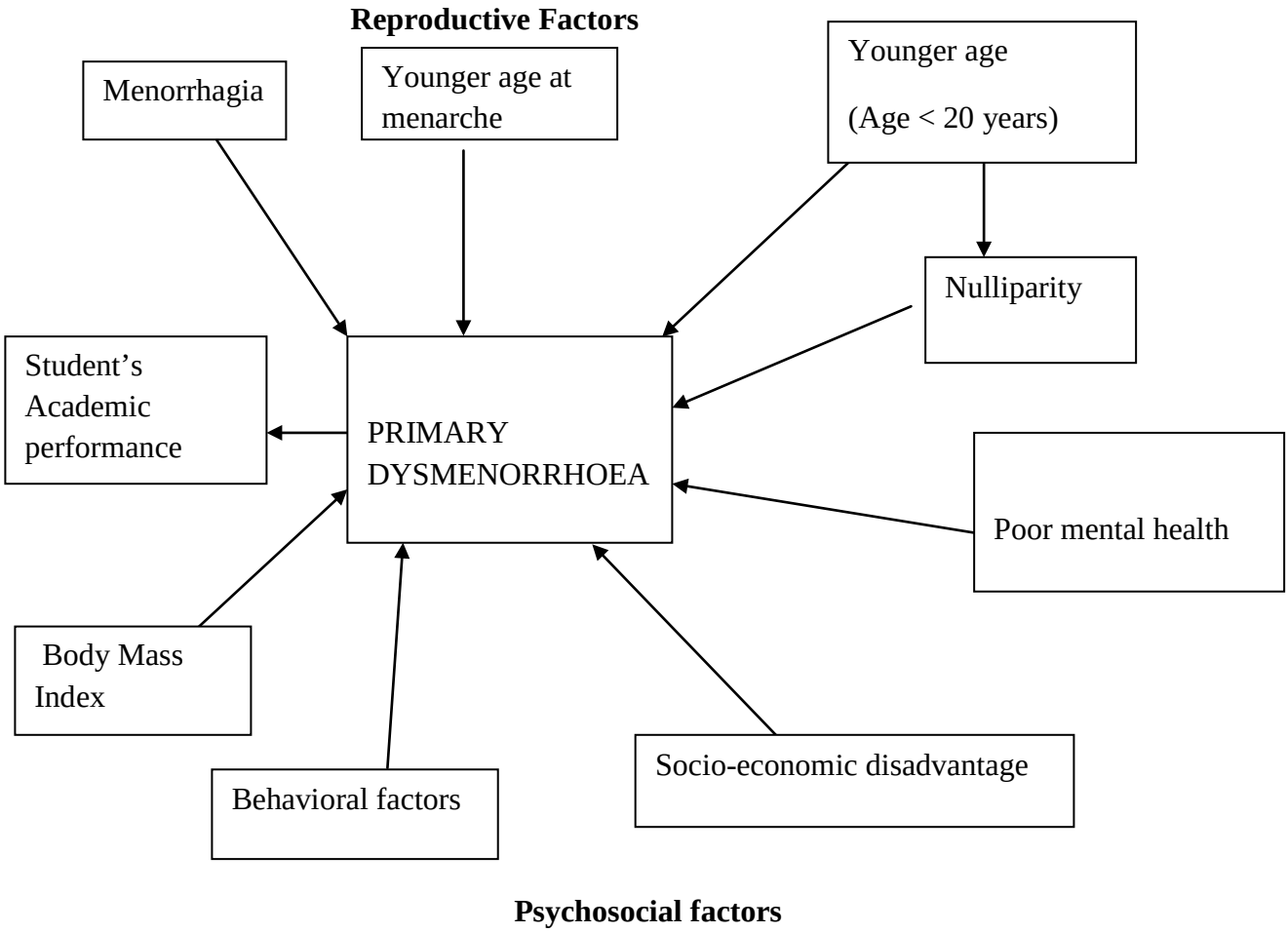

Figure 1. A conceptual framework for the assessment of primary dysmenorrhea risk factors and its effect on student's academic performance adapted and amended from the burden and determinants of dysmenorrhea: a population-based survey of 2262 women in Goa, India, 2006.

CHAPTER THREE: OBJECTIVES

3.1 General objective

To assess associated risk factors of primary dysmenorrhea and its effect on students' academic performance among female students in Debre Berhan University, North Shoa Zone, Amhara Regional State.

3.2. Specific Objectives

- To determine the prevalence of primary dysmenorrhea among female students in Debre Berhan university
- To assess the effect of primary dysmenorrhea on students academic performance among female students in Debre Berhan university
- To investigate the severity of primary dysmenorrheal pain among female students in DBU
- To identify associated risk factors of primary dysmenorrhea among female students of Debre Berhan university

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area and period

This cross-sectional study was conducted from September to May 2012 in Debre Berhan University which is one of the newly opened universities since 2007/8. The university is located at Debre Berhan town, which is 130km from Addis Ababa, the capital city of Ethiopia. Currently, the university has total number of 7639 students of which 2638 are female and 5001 are male students. The university has three schools (health science, computing and engineering) and four colleges (computational and natural science, social science and humanities, business and economics and agriculture) organized with a total of 25 departments.

4.2. Study design

This institutional based cross sectional study was designed to assess primary dysmenorrhea associated risk factors and its effect on students' academic performance. The study participants were recruited from all female students of Debre Berhan University after randomly selected colleges and/or schools from first year to fourth year based on the following inclusion and exclusion criteria.

4.3. Population

4.3.1. Source Population

All female students of Debre Berhan University were the source population for which the study was going to be implicated.

4.3.2. Study population

Regular female students of Debre Berhan University in randomly selected collages and/or schools from first year to fourth year during the data collection period were the study population (from College of social science and humanities: Psychology and Civics, from College of natural and computational science: Biology and Chemistry, from College of business and economics: accounting and management and from School of health science: Nursing and Health officer).

4.3.2.1. Inclusion Criteria

1. Female students who were regular students of the university
2. Female students who were mentally and physically capable of being interviewed.
3. Study subjects who were consented to be interviewed

4.3.2.2. Exclusion criteria

1. Female students who were extension students of the university
2. Female students who were not willing to be interviewed
3. Female students who were not physically and mentally competent to be interviewed

4.4. Sampling

4.4.1. Sample size determination

The sample size was determine by using a single population proportion formula by assuming current prevalence rate of 0.74 from previous study at Addis Ababa high School students(26) with 95% confidence interval as follows:

$$n = \frac{(Z\,\alpha/2)^2 \times P\,(1-p)}{d^2}$$

Where: α = the risk of rejecting the null hypothesis (0.05)

d = Degree of precision or margin of error

P = the proportion of currently known prevalence (74 %)

Z= the standard score corresponding to 95% confidence interval.

$$n = \frac{1.96 \times 1.96 \times 0.74 (1-0.74)}{0.05 \times 0.05}$$

$$n = \frac{3.8416 \times 0.1924}{0.0025} \quad n = 296$$

Since the total study population was less than 10,000 that is 2638 it needs population correction factor

$$nf = \frac{n}{1 + \frac{n}{N}}$$

$$nf = \frac{296}{1 + \frac{296}{2638}}$$

nf= 266

With 10% the non response rate and with the design effect of multistage sampling the final sample size were, n = (266+ 27) x 1.5 = 440.

4.4.2. Sampling Procedure

The study participants were selected from all female students of the university using multistage stratified sampling technique by applying simple random sampling (SRS). Probability Proportionate sampling (PPS) method was also applied to allocate the sample size according to the strata of the year (Figure 2).Obviously, four colleges and/or schools of the University were selected by using SRS and the calculated sample size (440) was distributed in to each of the selected colleges and/or schools by using PPS method. In each of the selected colleges and/or schools again by using SRS two departments were selected from each selected schools and colleges. Then, in the selected departments the required sample size was proportionally allocated based on the number of total female students. Consecutively, the sample size was divided for the strata based on stratified sampling according to the class year of the selected departments from the 1^{st} year to 4^{th} year depending on the total number of female students. Finally, in each of the strata /class year of the selected departments SRS was done to pick the required sample size using the pre determined sampling frame for each of the class where the sample was selected.

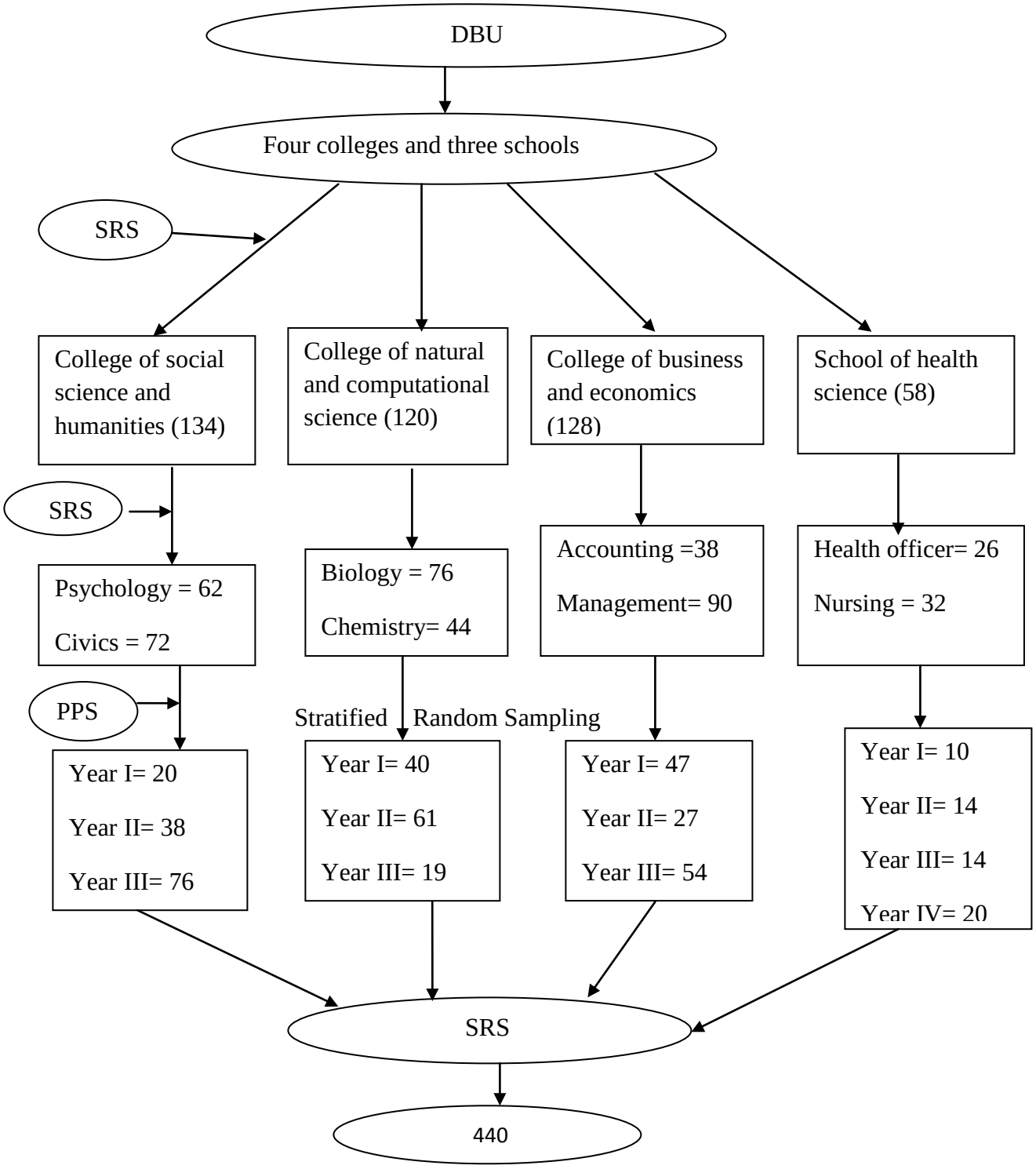

Figure 2.Schematic presentation of sampling procedure

4.4.3. Data collection procedure

Four diploma nurses were recruited from the town and trained for one day to collect the data. The training was given by the principal investigator prior to the data collection. The training were includes understanding of the objective of the survey, methods of data collection and ways to approach the respondents. In addition to this, the role and responsibility of the data collectors was discussed.

One BSc nurse was recruited for supervision. The supervisor was supervising the data collectors. The supervisor was checking the activities of each data collector by moving with the data collector in each department. And also the supervisor was checking all the filled questionnaires for its completion, clarity, and proper identification of the respondents. Then the questionnaire was double checked for the completion by the principal investigator.

Pre test were done in students that were similar in socio demographic characteristics with the people in the university. A total of 22 (5%) respondents were interviewed. In order to ensure better understanding to the data collection process findings were discussed among data collectors and supervisors.

4.5. Data collection Tools

Structured self administered questionnaire were used. The questionnaire were prepared with reference to previous studies done in assessing dysmenorrheal effect on student's academic performance in the literature (10, 39 & 40) and it had five parts. In the first part of the questionnaire, students were asked to state their socio demographic characteristics. The second part of the questioner included student's psychosocial factor and family planning history. The third part of the questioner included dysmenorrheal status, menstrual characteristics, activities

affected by primary dysmenorrhea and the fourth part of the questioner included behavioral factors in order to assess associated risk factors of primary dysmenorrhea and its effect on student's academic performance. The fifth part of the questionnaires included visual analogue scale (VAS) questions and multidimensional scoring system (MSS) to assess the severity of primary dysmenorrhea (39). For better understanding by the data collectors and respondents the English version of the questionnaire was translated in to Amharic language. Consistency was checked by another individual fluent in both languages by translating the Amharic version back to English.

4.6. Study Variables

4.6.1. Dependent Variable

- Primary Dysmenorrhea

4.6.2. Independent Variable

- Socio demographic factor such as: age, marital status, occupation, students' monthly income, educational level, Family income status.
- Anthropometric measurements: height, weight and body mass index
- Behavioral factor such as: Smoking, Alcohol consumption, Tea consumption, Coffee consumption and Coca-Cola/ Pepsi consumption.
- Psych social factors: poor mental health like depression and anxiety, disruption of social network and history of attempt to lose weight.
- Gynecologic factor such as: Age at menarche (year), Menstrual regularity, heavy menstrual blood flow, Family history of dysmenorrhea, Nulliparity.

4.7. Operational Definitions

Academic performance: self perceived impact of Primary dysmenorrhea on student's class concentration, class participation, test taking skill and homework.

Class absence: is when students miss individual classes because of primary dysmenorrhea during the previous months

School absence: is when students miss a school day due to primary dysmenorrheal pain during the previous months.

Primary dysmenorrhea is considered if an adolescent had pain in the abdominal, groin, and lumbar region on the day before the menstrual period and/or the first day of menstrual period (40).

Menstruation: The periodic blood that flows as a discharge from the uterus as a result of endometrial shedding.

Menstruation is considered as regular (normal), if an adolescent experienced menstrual bleeding in equal intervals between 21 and 35 days. If the menstruation interval is less than 21 days it is considered as short and long if it is more than 35 days.

Menstruation of less than 2 days is accepted as short, between 2 and 5 days as normal, and more than 5 days as long.

Multidimensional scoring system (MSS): is used to assess the severity of primary dysmenorrheal pain as mild, moderate and sever based on pain and limited physical activities (38, 41).

Grade 0, primary dysmenorrheal status: Menstruation is not painful and daily activity is not affected.

Mild (Grade 1) primary dysmenorrheal status: Menstruation is painful but rarely inhibits normal activity; analgesics are rarely required

Moderate (Grade 2) primary dysmenorrheal status: Daily activity is affected; analgesics required and give sufficient relief so that absence from school is uncommon.

Severe (Grade 3) primary dysmenorrheal status: Activity clearly inhibited; poor effect of analgesics with vegetative symptoms like headache, fatigue, vomiting, and diarrhea.

Body mass index (BMI): was performed by measuring student's weight and height. Those who had a BMI of 18.0–24.9 kg/m2 were classified as normal weight, students with BMI of 25.0–29.9 kg/m2 were classified as overweight, BMI of >30.0 kg/m2 were classified as obese, and BMI of <18.0 kg/m2 were classified as underweight (41).

Moreover, those smoking at least one cigarette a day were evaluated as smokers, those having more than 1 drink per day (any type of alcohol) were considered as alcohol consumers, those consuming at least 4 glasses of tea in a day as those consuming tea, those consuming at least 3 cups of coffee in a day as those consuming coffee, those consuming at least a glass of Coca-Cola or Pepsi in a day as those consuming coca-cola or Pepsi, and those eating at least 2 bars of chocolate in a day as those consuming chocolate (41).

Visual Analog Scale (VAS): used to assess students degree of menstrual pain in a 10-cm line. One extremity of the line was representing ‘un imaginable pain’, and the other extremity was representing ‘no pain at all’. The participants were asked to rate the degree of pain by making a mark on the line. The scores received from the scale were classified into mild dysmenorrhea if it is between 1–3 points, moderate between 4–7 points, and severe between 8–10 points (42).

4.8. Data processing and analysis

The data checked manually for completeness then coded and entered into Epi Info version 3.1 statistical software and cleaned thoroughly before exported to SPSS version 17 for further analysis. The statistical analysis made using chi-square test and bivariate logistic regression for finding significantly associated variables. And in order to control possible confounding variables multivariate logistic regression analysis was done. P-value and 95% confidence interval (CI) for Odds Ratio (OR) were used in judging the significance of the associations. A value of $P < 0.05$ was considered statistically significant.

4.9. Data quality control

The quality of data was ensured during collection, coding, entry and analysis. Training and follow up was given to data collectors and supervisors during data collection. Data collector supervision were includes observation of on how the data collector administered questions. Each questionnaires and respected departments with their section during the data collection were coded so that any identified errors were traced back using the codes. Each questionnaire was checked for its completeness by the data collectors, supervisors and PI on a daily basis. If so, any problem encountered were discussed among the survey team and provide a solution immediately.

4.10. Ethical consideration

The study was conducted after its approval by the Institutional Review Board (IRB) of Department of Nursing and Midwifery, Collage of Health Science, AAU. Official letters of Ethical clearance and approval were obtained from Department of Nursing and Midwifery, Collage of Health Science, AAU to Debre Berhan University and each department was informed about the study. The study participants were informed about the purpose and significance of the study and requested to cooperate for the study through written consent form with an opportunity to refuse without justification for doing so. All participants were assured about the confidentiality of data and the questionnaire was prepared anonymously.

4.11. Dissemination of the result

The result or report of this study will be submitted and presented to Department of Nursing and Midwifery research committee of Collage of Health Science, Addis Ababa University. Also the result of the study will be communicated to Debre Berhan University to use the information obtained in this study as a base line for future plan. Presentations at professional, local, national and international meetings and publication in peer reviewed national or international journals will be attempted.

CHAPTER FIVE: RESULTS

5.1. Scio Demographic Characteristic

Table 1 displays the socio- demographic variable of the respondents. Almost all 431(98%) of the study units participated in the study. The mean age of respondents were 20.57±1.36 (SD) and more than half 220(51.0%) of the respondents were in the age of less than 20 years.

Most of the respondents 353(81.9%) were orthodox followed by 45(10.4%) were Muslims and 29(6.8%) were protestants. In their ethnicity, majority of the respondent 316(73.3%) were Amhara followed by 41(9.5%) Oromo and 40(9.3%) were Tigre.

With regard to respondents marital status majority 391 (90.7%) were single and 39(9%) were marred, where as 1(0.3%) were divorced. Result of educational status distribution point to the greater part 160(37.1%) were third year and 136(31.6%) were at second year and 115(26.7%) were first year. while the rest 20(4.6%) were found to be at fourth year.

With regard to the respondents average monthly income, 121(28.1%) was less than 150 birr, 105(23.4%) was between 150-200 birr, 115(26.7%) was between 200-300 birr and 94(21.8%) was above 300 birr. Concerning with the respondents family income, 121(28.1%) had less than 1500 birr of monthly income, 101(23.4%) had 1500-2000 birr monthly income, 115(26.7%) had 2001-3000 birr monthly income and 94(21.8%) had more than 3000 birr monthly income.

In terms of parity, above two third 372(86.3%) of the respondents were nullipara and 59(13.7%) were multipara

Table 1: Socio demographic characteristics of respondents in DBU, Debre Berhan, 2012

Variable	Category	Frequency (n= 431)	Percent (100.0%)
Age	≤20 years	220	51.0
	21- 22 years	180	41.8
	>23 years	31	7.2
Religion	Orthodox	353	81.9
	Muslim	45	10.4
	Protestant	29	6.8
	Catholic	4	0.9
Ethnicity	Amhara	316	73.3
	Oromo	41	9.5
	Tigrie	40	9.3
	Guragie	19	4.4
	Others	15	3.5
Marital status	Single	391	90.7
	Married	39	9.0
	Divorced	1	0.3
Educational level	First year	115	26.7
	Second year	136	31.6
	Third year	160	37.1
	Fourth year	20	4.6
Monthly income	<150 ETB	121	28.1
	150-200 ETB	101	23.4
	201-300 ETB	115	26.7
	>300 ETB	94	21.8
Family income	Below 1500 ETB	121	28.1
	1500-2000 ETB	101	23.4
	2001- 3000 ETB	115	26.7
	Above 3000 ETB	94	21.8
Parity	Nullipara	372	86.3
	Multipara	59	13.7

5.2 psychosocial characteristics and family planning history

Table 2 below shows the psychosocial characteristics and family planning history of respondents. More than half of the respondents 239(55.5%) had previous history of attempt to lose weight. And 121(50.6%) of them performs different exercise to reduce weight, 81(33.9%) of the respondents attempt to lose weight by reducing food intake and 37(15.5%) of them reduced weigh by not eating dinner.

More than two third 340 (78.9%) of respondents had previous history of depression or anxiety and 286 (66.4%) of the respondents had previous history of disruption of social networks either of with family, friends or people they love. Concerning with contraceptive history 63(14.6%) of the respondents had history of contraceptive use. Of which majority 35(55.5%) of respondents used inject able type of contraceptive followed by 23(36.5%) used pills. In terms of duration of contraceptive use majority 23(36.5%) of the respondents used contraceptive for less than three months and 18(28.6%) used for greater than one years. The rest 13(20.6%) and 9(14.3%) of the respondents used contraceptive for 6-12 months and 3-6 months respectively

Table 2: Psychosocial characteristics and family planning history of respondents, DBU, Debre Berhan, 2012

Characteristics	Category	Frequency (n= 431)	Percent (100.0%)
History of attempts to lose weight	Yes	239	55.5
	No	192	44.5
	Total	431	100.0
Type of activity used to reduce weight	Exercise	121	50.6
	Reducing food	81	33.9
	Missing dinner	37	15.5
	Total	239	100.0
History of depression/anxiety	Yes	340	78.9
	No	91	21.1
	Total	431	100.0
Disruption of social networks either of with family, friends or people they love	Yes	286	66.4
	No	145	33.6
	Total	431	100.0
Contraceptive use	Yes	63	14.6
	No	368	85.4
	Total	431	100.0
Type of contraceptive	Pills	23	36.5
	Inject able	35	55.5
	Implant	2	3.2
	Loop	1	1.6
	Others	2	3.2
	Total	63	100.0
Duration of contraceptive use	< 3 month	23	36.5
	3- 6 month	9	14.3
	6-12 month	13	20.6
	>1 years	18	28.6
	Total	63	100.0

5.3 Menstrual characteristics

Table 3 displays the menstrual characteristics of the respondents. The mean ages at menarche of the respondents were 14.96± 1.53(SD). Among the respondents age at menarche, majority 292(67.7%) of them were between the age of 13-16 years followed by 75(17.4%) were less than 13 years and 64(14.9%) were above 16 years.

From the respondents 216(50.1%) of them had regular menstruation and the remaining 215(49.9%) of them had irregular menstruation. Among those respondents who had menstrual irregularity, only 32(14.9%) use medicine for correcting the menstrual irregularity. Regarding with the respondents menstrual cycle duration 302(70.1%) of them had between 21 and 35 days duration to each consecutive menstrual cycle, whereas the remaining 129(29.9%) of them had either less than 21 days or more than 35 days of duration of menstrual cycles.

With regard to the respondents menses days, the largest 294(68.2%) of them had 2-5 days stay of menstrual bleedings followed by 100(23.2%) had more than 5 days and 37(8.6%) less than 2 days. In terms of the respondents number of menstrual pad used per day, majority 285(66.1%) of them uses 2-4 pad/day, 123(28.5%) uses 1 pad/day and the rest 23(5.4%) uses 4 pad/day. Concerning respondents family history of dysmenorrhea 252(58.5%) of the respondents had family history of primary dysmenorrhea.

Table 3: Menstrual characteristics of the respondents, DBU, Debre Berhan, 2012

Menstrual characteristics	Category	Frequency	Percent (%)
Age at Menarche	<13 years	75	17.4
	13-16 years	292	67.7
	>16 years	64	14.9
	Total	431	100.0
Menstrual regularity	Regular	216	50.1
	Irregular	215	49.9
	Total	431	100.0
Use of medicine regulating menstruation	Yes	32	14.9
	No	183	85.1
	Total	215	100.0
Duration of menstrual cycle (days)	< 21 days	79	18.3
	21-35 days	302	70.1
	> 35 days	50	11.6
	Total	431	100.0
Menstrual bleeding duration (days)	< 2 days	37	8.6
	2-5 day	294	68.2
	> 5 days	100	23.2
	Total	431	100.0
Number of pad per day	1/day	123	28.5
	2- 4/day	285	66.1
	> 4/day	23	5.4
	Total	431	100.0
Family history of Dysmenorrhea	Yes	252	58.5
	No	179	41.5
	Total	431	100.0

5.4. Prevalence of primary dysmenorrhea

Table 4 below shows the prevalence and symptoms of primary dysmenorrhea among respondents. Regarding with the prevalence of primary dysmenorrhea, the largest 368(85.4%) of the respondents had primary dysmenorrhea, whereas 63(14.6%) of respondents had no pain associated with menstruation. Among respondents having menstrual pain, Back pain or abdominal pain 325(88.3%) were the most common symptom, pain at the groin alone accounts 247(27.2%), Mood change-irritability, depression accounts 213(57.8%), irregularity accounts 182(49.5%), head ache also accounts 108(29.3%), excessive flow contributed 93(25.3%), and the rest 63(17.3%) and 32(8.7%) were sleeplessness and other (diarrhea, nausea and vomiting) simultaneously.

Concerning time of menstrual pain, among these students with primary dysmenorrhea, in most 131(35.6%) of respondents the menstrual pain occurs in both times (One day before menstrual period and the first day of menstrual period), 125(34%) of the respondents had menstrual pain one day before the onset of menstrual period and 112(30.4%) of respondents had menstrual pain during the first day of menstrual period.

Out of the total study participants 196(53.3%) had reported that primary dysmenorrhea interfere with class activity, in terms of severity of the menstrual pain, 88(24%) of respondents the pain were relieved on using medication, 59(16%) reported that primary dysmenorrhea interfere with class activity leading to absenteeism and some 9(2.4%) of the study participants reported severity of primary dysmenorrhea as complicated with vomiting and diarrhea. On the contrary, 16(4.3%) reported that the pain of primary dysmenorrhea does not interfere with class activities.

With regard to class attendance among respondents with primary dysmenorrhea 173(47%) reported one day, 86(23.4%) two days, 21(5.7%) three days and four (1.1%) four day loss of class attending every cycle due menstrual pain. On the other hand 84(22.8%) of respondent reported no absence from class even though they do have menstrual pain.

Table 4: Prevalence and symptoms of primary dysmenorrhea in DBU, Debre Berhan, 2012

Variable	category		Frequency (n=431)	Percent (%)
Menstruation associated with pain	Yes		368	85.4
	No		63	14.6
			Frequency (n= 368)	Percent (100.0%)
Symptoms of menstrual pain	Irregularity	Yes	182	49.5
		No	186	50.5
	Excessive flow	Yes	93	25.3
		No	275	74.7
	Back pain or	Yes	325	88.3
	Abdominal pain	No	43	11.7
	Head ache	Yes	108	29.3
		No	260	70.7
	Mode change-	Yes	213	57.8
	irritability depression	No	155	42.2
	Sleeplessness	Yes	63	17.2
		No	305	82.8
	Pain at the groin	Yes	247	67.2
		No	121	32.8
	Other (diarrhea,	Yes	32	8.7
	nausea and vomiting)	No	336	91.3
Onset of menstrual pain	One day before menstrual period		125	34.0
	The first day of menstrual period		112	30.4
	Both time		131	35.6
	Doesn't interfere with class activities		16	4.3
Severity of menstrual pain	With vomiting and diarrhea		9	2.4
	Interferes with class activities leading to absenteeism		59	16.0
	Relief on using medication		88	24
	Interfere with class activities		196	53.3
Menstrual problem and class attendance	One day every cycle		173	47.0
	Two days every cycle		86	23.4
	Three days every cycle		21	5.7
	Four days every cycle		4	1.1
	No absence		84	22.8

5.5. Effect of primary dysmenorrhea on students academic performance

The result of table 5 shows the effect of primary dysmenorrhea on student's academic performance. Out of 368 affecting respondent with primary dysmenorrhea 325(88.3%) of respondent reported menstrual problem interfere with academic performance. The most commonly reported effect of menstrual pain on students academic performance were: school absence 260(80%), loss of class concentration 217(66.8%), class absence 183(56.3%), loss of class participation 154(47.4%), limit sport participation 123(37.8%), limit going out with friends 103(31.7%), inability to do homework 68(21%) and reduced test taking skill 50(15.4%).

Table 5: Effect of primary dysmenorrhea on academic performance, DBU, Debre Berhan, 2012

Variable	Category		Frequency (n= 368)	Percent (100.0%)
Menstrual problems interfere with school performance	Yes		325	88.3
	No		43	11.7
		Frequency (n= 325)		Percent (100.0%)
Effect of menstrual pain on school performance	School absence	Yes	260	80.0
		No	65	20.0
	Class absence	Yes	183	56.3
		No	142	43.7
	Inability to do homework	Yes	68	21.0
		No	257	79.0
	Loss of class participation	Yes	154	47.4
		No	171	52.6
	Loss of class concentration	Yes	217	66.8
		No	108	33.2
	Reduced test taking skill	Yes	50	15.4
		No	275	84.6
	Limit sport participation	Yes	123	37.8
		No	202	62.2
	Limit going out with friends	Yes	103	31.7
		No	222	68.3

5.6. Behavioral factor of the study participants

Table 6 below is about the behavioral pattern of students. All 431(100%) of respondents were never smoke cigarette. Regarding alcohol consumption 349(81.1%) had never drunk any alcohol, However 78(18.1%) of students drunk occasionally (2- 3 times per month) and 3(0.7%) of students drunk 2-3 times a week. But only 1 (0.2%) of study participant drank daily.

Concerning tea consumption 338(78.4%) of respondents drank less than four glass of tea per day, 41(9.5%) drink greater than four glass of tea per day and 52(12.1%) of respondents never drunk tea. With regard to coffee consumption majority 299(69.4%) of the respondents had never consume coffee, 107 (24.8%) of respondents consume less than three cup of coffee per day and 25(5.8%) of study subjects consumes more than three cup of coffee per day. In terms of coca/ Pepsi consumption out of the total respondents 347(80.5%) had never drink coca-cola or Pepsi. Whereas, 82(19%) of respondents drink one coca-cola/ Pepsi per day and 2(0.5%) of respondents drink more than one coca-cola/ Pepsi per day. Concerning chocolate consumption majority 394(91.4%) of respondents did not consume, 33(7.7%) of respondents consume two bar of chocolate and 4(0.9%) of respondent consume more than two bar of chocolate per day.

Table 6: Behavioral factors of students in DBU, Debre Berhan, 2012

Variables	Category	Frequency (n= 431)	Percent (100.0%)
Alcohol consumption	I have never drunk	349	81.0
	I drunk occasionally(2- 3 per month)	78	18.1
	I drunk 2-3 times a week	3	0.7
	I drink daily	1	0.2
Tea consumption	Not at all	52	12.1
	< Four glass/day	338	78.4
	>Four glass/day	41	9.5
Coffee consumption	Not at all	206	47.8
	Less than three cup/day	187	43.4
	More than three cup/day	38	8.8
Coca-Cola/Pepsi/ consumption	Not at all	296	68.7
	One coca/Pepsi/ day	135	31.3
Chocolate consumption	Not at all	394	91.4
	Two bars of chocolate/day	37	8.6

5.7. Verbal multidimensional scoring system for primary dysmenorrhea pain

Figure 3 below showed verbal multidimensional scoring system for assessment of primary dysmenorrhea pain. Out of the 431 study subjects 63(14.6%) menstruation were not painful and daily activity were not affected. Besides, 368 students had menstrual pain of these 123(28.5%) menstruation were painful but seldom inhibits normal activity and analgesics are seldom required (mild pain). The majority of students 164(38.1%) daily activity were affected; analgesics were required and gave sufficient relief so that absence from school was unusual (moderate pain). Additionally, 81(18.8%) of students daily activity were clearly inhibited; poor effect of analgesics and had vegetative symptoms like headache, fatigue, vomiting and diarrhea (sever pain).

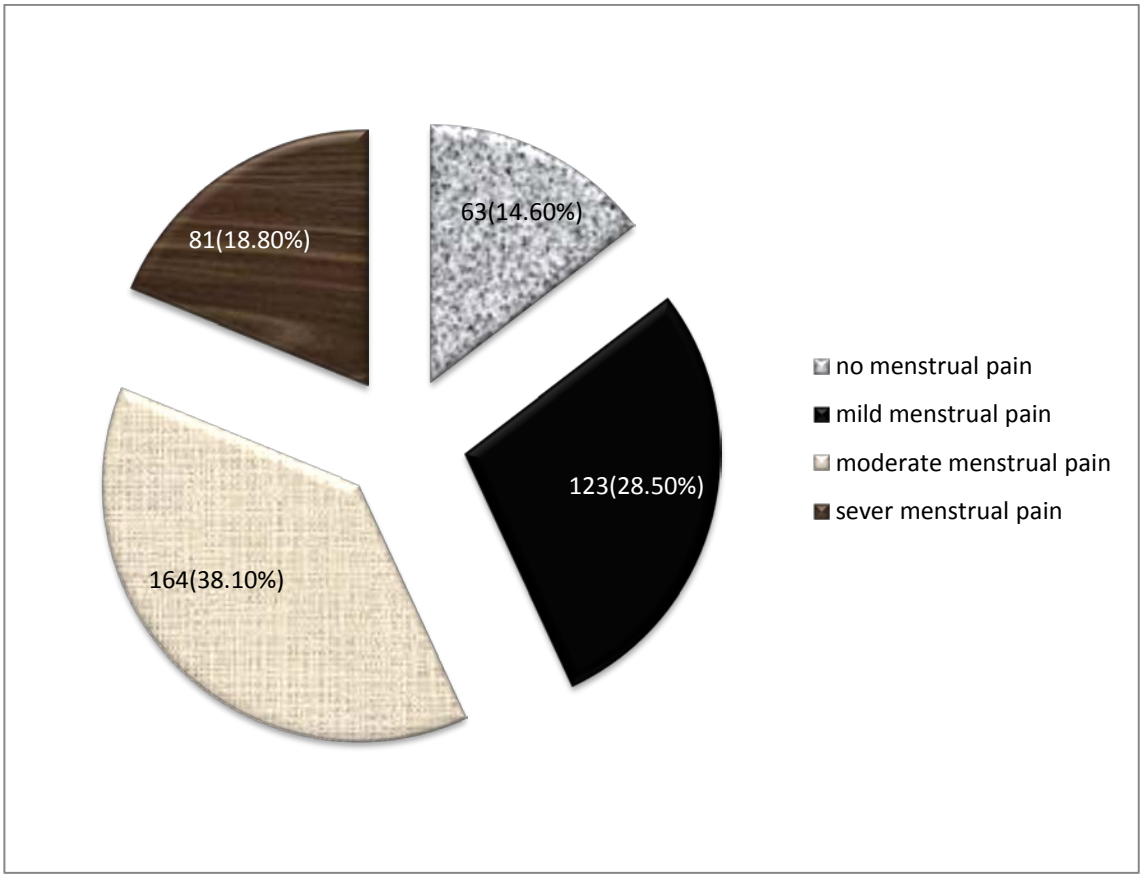

Figure 3: A pie chart showing Classification of student's menstrual pain using verbal multidimensional scoring system DBU, Debre Berhan, 2012

5.8. Students Body Mass Index (BMI)

Figure 4 below demonstrated the value of respondents Body Mass Index. The majority of respondents 347(80.5 %) BMI value rests on the normal range which is (18.00-24.99 kg/m^2). Whereas the rest 49(11.4%) were malnourished (below 18.00kg/m^2) and 35(8.1%) were overweight (25.00-29.99kg/m^2).

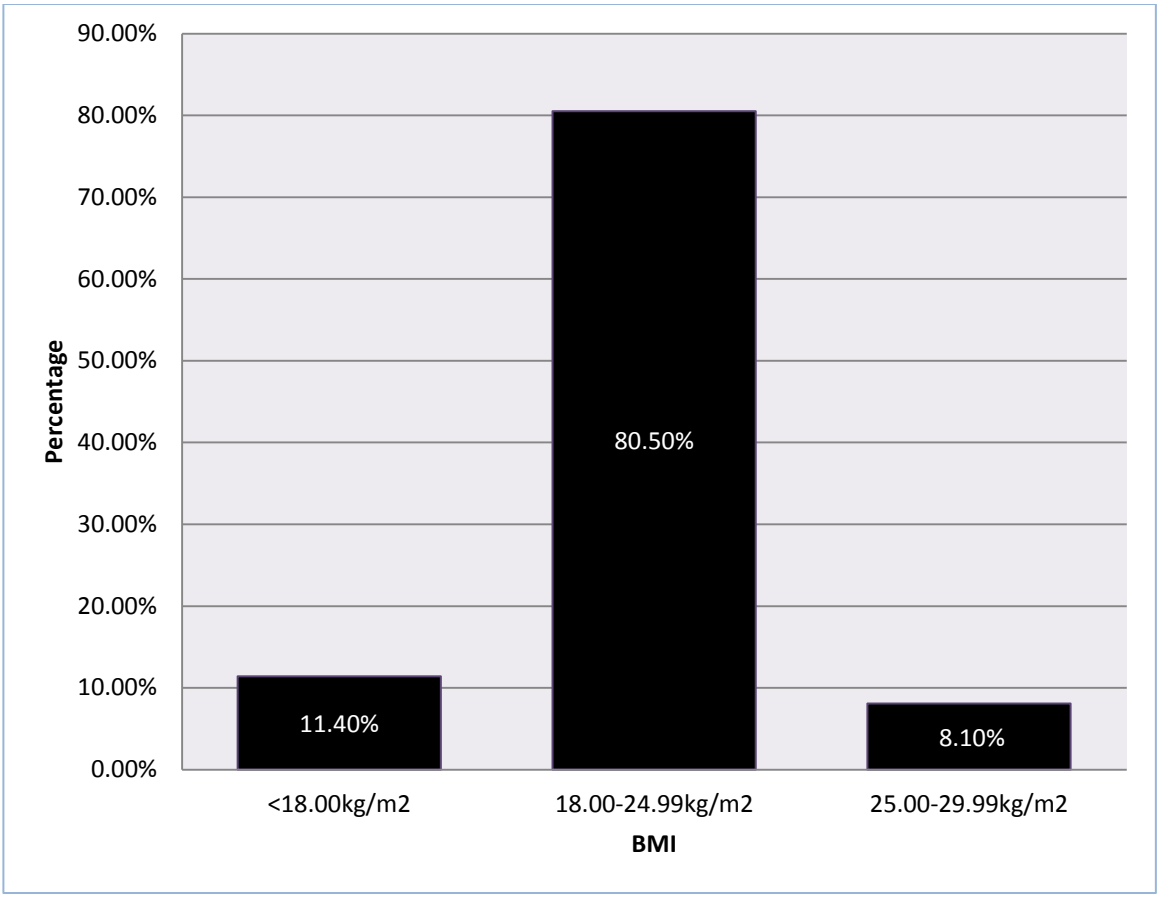

Figure 4: A bar Graph showing Body Mass Index (BMI) of students in DBU, Debre Berhan, 2012

5.9. Management strategies and treatment option of respondents during menstrual pain

Figure 5 below demonstrated the management strategies of respondents during menstrual pain. Among 368 dysmenorrheic students 156(42.4%) of students go to health care providers during menstrual pain, 95(25.8%) of students by medications from drug stores without consultation of health care providers. The rest 28(7.6%) and 27(7.4%) used traditional medicine and go to family members respectively. Lastly 62(16.8%) of students use other methods like heat pad and rest as a management option during menstrual pain.

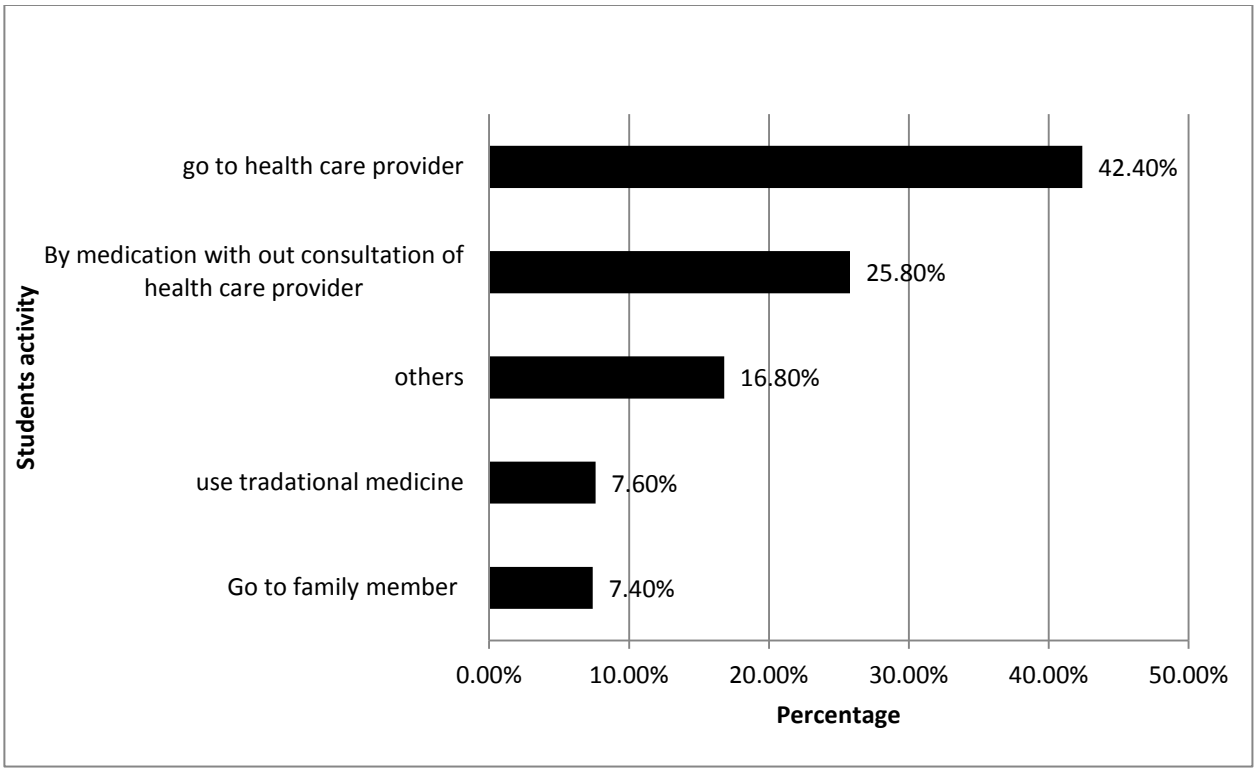

Figure 5: A Bar Graph showing Respondents management strategies during menstrual pain DBU, Debre Berhan, 2012

Figure 6 below represented the treatment option of respondents. Among 123 students who had took medications without consultation of health care providers and those who used traditional medicines; the largest proportion 44(35.8%) of them used Ibuprofen as treatment options, 23(18.7%) used paracetamol and 22(17.9%) used Diclofenac as treatment option. Whereas 25(20.3%) of students used heat pad as treatment option and the rest 9(7.3%) take rest during menstrual pain.

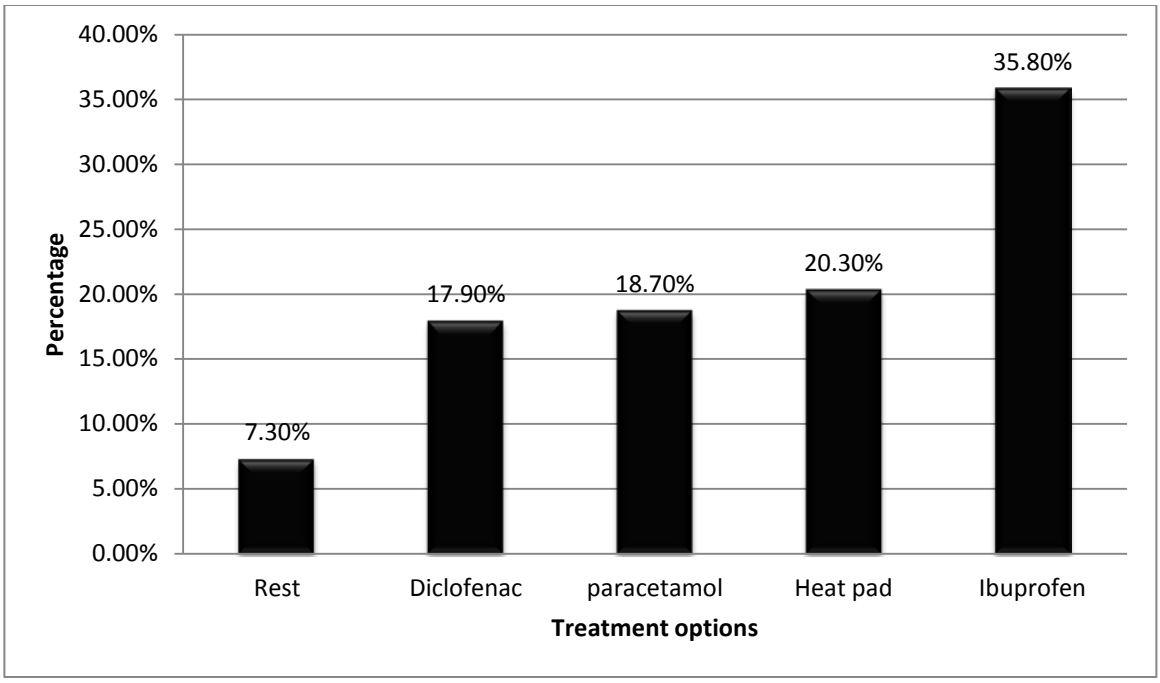

Figure 6: A Bar Graph showing Respondents treatment options during menstrual pain DBU, Debre Berhan, 2012

5.10. Socio demographic characteristics association with primary dysmenorrhea

Table 7 shows the bivariate analysis between socio-demographic variable with primary dysmenorrhea. Primary dysmenorrhea was significantly associated with students age (p= 0.009), with students educational level (p= 0.001), with students monthly income (p= 0.001), with students family income (p= 0.033) and with students parity (p= <0.001). Primary dysmenorrhea was not significantly associated with respondents Body Mass Index (p= 0.732).

Table 7: Cross tabs of socio demographic characteristics of study groups versus primary dysmenorrhea, DBU, Debre Berhan, 2012

Socio demographic variable		Primary dysmenorrhea			P value (X^2)
		Yes (n= 368)	No (n= 63)	Total (n= 431)	
Age	Below 20 years	199 (90.5%)	21(9.5%)	220(51.0%)	0.009 (9.47)*
	21-22 years	145 (80.6%)	35(19.4%)	180(41.8%)	
	Above 23 years	24(77.4%)	7(22.6%)	31(7.2%)	
BMI	Below 18.00kg/m2	40(81.6%)	9(18.4%)	49(11.4%)	0.732(0.62)
	18.00-24.99kg.m2	298(85.9%)	49(14.1%)	347(80.5%)	
	Above 25.00kg/m2	30(85.7%)	5(14.3%)	35(8.1%)	
Educational level	First year	102(88.7%)	13(11.3%)	115(26.7%)	0.001(15.10)*
	Second year	126(92.6%)	10(7.4%)	136(31.6%)	
	Third year and Fourth year	140(77.8%)	40(22.2%)	180(41.8%)	
Students monthly income	Below 150 ETB	103(93.6%)	7(6.4%)	110(25.5%)	0.001(15.30)*
	150-200 ETB	95(82.6%)	20(17.4%)	115(26.7%)	
	201-300 ETB	99(89.2%)	12(10.8%)	111(25.8%)	
	Above 300 ETB	71(74.7%)	24(25.3%)	95(22.0%)	
Family income	Below 1500 ETB	111(91.7%)	10(8.3%)	121(28.1%)	0.033(8.75)*
	1500-2000 ETB	89(88.1%)	12(11.9%)	101(23.4%)	
	2000-3000 ETB	93(80.9%)	22(19.1%)	115(26.7%)	
	Above 3000ETB	75(79.8%)	19(20.2%)	94(21.8%)	
Parity	Nulipara	337(90.6%)	35(9.4%)	372(86.3%)	<0.001(59.07)*
	Multipara	31(52.5%)	28(47.5%)	59(13.7%)	

*p value < 0.05

5.11. Students psycho social characteristics versus primary dysmenorrhea

Table 8 shows the bivariate analysis between students psycho social variable with primary dysmenorrhea. Primary dysmenorrhea was significantly associated with students who had previous history of attempt to lose weight (p= < 0.001), among students who reported history of depression or anxiety (p= < 0.001) and among students who reported history of disruption of social networks either of family, friends and people they love (p= < 0.001). Respondents' history of contraceptive use was not significantly associated with primary dysmenorrhea (p= 0.143).

Table 8: Psycho social factors versus primary dysmenorrhea, DBU, Debre Berhan from, 2012

Psycho social factors		Primary dysmenorrhea			P value(X^2)
		Yes (n= 368)	No (n= 63)	Total (n= 431)	
History of attempt to lose weight	Yes	226(94.6%)	13(5.4%)	239(55.5%)	<0.001(36.20)*
	No	142(74.0%)	50(26.0%)	192(44.5%)	
History of depression or anxiety	Yes	314(92.4%)	26(7.6%)	340(78.9%)	<0.001(62.68)*
	No	54(59.3%)	37(40.7%)	91(21.1%)	
Disruption of social networks either of family, friends or people they love	Yes	260(91.0%)	26(9.0%)	286(66.4%)	<0.001(20.80)*
	No	108(74.5%)	37(25.5%)	145(33.6%)	
Contraceptive use	Yes	50(79.4%)	13(20.6%)	63(14.6%)	0.143(2.14)
	No	318(86.4%)	50(13.6%)	368(85.4%)	

***P value< 0.05**

5.12. Students menstrual characteristics versus primary dysmenorrhea

Table 9 shows the bivariate analysis between students' menstrual characteristics with primary dysmenorrhea. Primary dysmenorrhea was significantly associated with menstrual regularity (p= <0.001) and students family history of dysmenorrhea (p= <0.001). Respondents age at menarche (p= 0.304), duration of menstruation (p= 0.116), interval of menstruation (cycle length) (p= 0.343) and number of menstrual pad used per day (p= 0.279) were not significantly associated with primary dysmenorrhea.

Table 9: Menstrual characteristic versus primary dysmenorrhea, DBU, Debre Berhan, 2012

Menstrual characteristics		Primary dysmenorrhea			P value (X^2)
		Yes (n= 368)	No (n= 63)	Total (n= 431)	
Age at Menarche	Below 13 years	63(84.0%)	12(16.0%)	75(17.4%)	0.304(2.380)
	13-16 years	254(87.0%)	38(13.0%)	292(67.7%)	
	Above 16 years	51(79.7%)	13(20.3%)	64(14.8%)	
Duration of Menstruation	Below 2 day	33(89.2%)	4(10.8%)	37(8.6%)	0.116(4.30)
	2-5 day	244(83.0%)	50(17.0%)	294(68.2%)	
	Above 5 day	91(91.0%)	9(9.0%)	100(23.2%)	
Interval of menstruation	Below 21 day	70(88.6%)	9(11.4%)	79(18.3%)	0.343(2.13)
	21-35 day	253(83.8%)	49(16.2%)	302(70.1%)	
	Above 35 day	45(90.0%)	5(10.0%)	50(11.6%)	
Flow of Menstruation	Regular	170(78.7%)	46(21.3%)	216(50.1%)	<0.001(15.47)*
	Irregular	198(92.1%)	17(7.9%)	215(49.9%)	
Number of Pads used per day	1 pad/day	102(82.9%)	21(17.1%)	123(28.5%)	0.279(2.55)
	2-4 pad/ day	244(85.6%)	41(14.4%)	285(66.1%)	
	>4 pad/day	22(95.7%)	1(4.3%)	23(5.3%)	
Family history of Dysmenorrhea	Yes	242(96.0%)	10(4.0%)	252(58.5%)	<0.001(55.13)*
	No	126(70.4%)	53(29.6%)	179(41.5%)	

*p value < 0.05

5.13. Students behavioral characteristics versus primary dysmenorrhea

Table 10 shows the bivariate analysis between students' behavioral characteristics with primary dysmenorrhea. Primary dysmenorrhea was significantly associated with students consumption of tea per day (p= 0.015), with students consumption of coffee per day (p= 0.008) and with students consumption of coca-cola or Pepsi per day (p= 0.010). Primary dysmenorrhea was not significantly associated with alcohol consumption (p= 0.082) and chocolate consumption (p= 0.207)

Table 10: Student's behavioral factor versus primary dysmenorrhea, DBU, Debre Berhan, 2012

Behavioral factor		Primary dysmenorrhea			P value (X^2)
		Yes (n= 368)	No (n= 63)	Total (n= 431)	
Alcohol consumption	Never drink	300(86.0%)	49(77.8%)	349(81.0%)	0.082(6.71)
	Drink occasionally(2-3 time in a month)	65(83.3%)	13(16.7%)	78(18.1%)	
	Drink 2-3 time/ week	3(100.0%)	0	3(0.7%)	
	Drink daily	0	1(100.0%)	1(0.2%)	
Tea consumption per day	Not at all	38(73.1%)	14(26.9%)	52(12.1%)	0.015(8.33)*
	<four glass/day	292(86.4%)	46(13.6%)	338(78.4%)	
	>four glass/day	38(92.7%)	3(7.3%)	41(9.5%)	
Coffee consumption per day	Not at all	165(80.1%)	41(19.9%)	206(47.8%)	0.008(9.58)*
	< 3 cup/day	167(89.3%)	20(10.7%)	187(43.4%)	
	>3 cup/day	36(94.7%)	2(5.3%)	38(8.8%)	
Coca-Cola or Pepsi consumption per day	Not at all	244(83.6%)	52(16.4%)	296(68.7%)	0.010(6.59)*
	One coca-cola/ day	124(91.9%)	11(8.1%)	135(31.3%)	
Chocolate consumption per day	Not at all	339(86.0%)	55(14.0%)	394(91.4%)	0.207(1.59)
	Two bar of chocolate/day	29(78.4%)	8(21.6%)	37(8.6%)	

*p value < 0.05

5.14. Logistic regression analysis of significant variables related to primary dysmenorrhea

5.14.1. Students socio demographic characteristics versus primary dysmenorrhea

Table 11 shows the results of the multivariate analysis using the significant bivariate variables for students Socio demographic characteristics. It shows that being third and fourth year is protective for primary dysmenorrhea. The risk of primary dysmenorrhea was 0.046 times less in second year (AOR= 0.046, 95%CI (.014-.288), P= <0.001), 1.08 times higher in first year though it was not statistically significant when adjusted for possible confounders (COR=2.242, 95%CI (1.141-4.406), P=0.019) and (COR=1.080, 95%CI (.204-5.721), P=0.019). the risk of primary dysmenorrhea was 6.671 times higher in students whose monthly income were less than 150 ETB compared with students whose monthly income were above 300 ETB (AOR=6.671, 95%CI(1.427-31.180), P= 0.016).

The risk of primary dysmenorrhea in students who had history of attempt to lose weight was approximately 6 times higher than students with no prior history of attempt to lose weight(AOR=6.085, 95%CI (1.998-18.529), P= 0.001). other risk factors for primary dysmenorrhea were an approximately 14 times higher risk in students who had previous history of depression or anxiety compared with those who had no prior history of depression or anxiety (AOR=13.607, 95%CI (4.542-40.767), P= <0.001); an approximately 3 times higher risk in students who had previous history of disruption of social network like with family, friends or people they love compared with students who had no prior history of disruption of social network (AOR=3.218, 95%CI (1.261-8.212), P=0.014).

Table 11: Student's socio demographic variable versus primary dysmenorrhea DBU, Debre Berhan, 2012

Variable		Primary dysmenorrhea		Crude OR (95%CI)	Adjusted OR (95%CI)	P-value	
		Yes (n= 368) (100%)	No (n= 63) (100%)			crude	adjusted
Educational level	First year	102(27.7%)	13(20.6%)	2.242(1.141-4.406)	1.080(0.204-5.721)**	0.019	0.927
	Second year	126(34.2%)	10(15.9%)	3.600(1.729-7.497)	0.064(0.014- 0.288)*	0.001	<0.001
	Third year& fourth year(Ref)	140(38.0%)	40(63.5%)	1.00			
Students monthly income	Below 150 ETB	103(28.0%)	7(11.1%)	4.974(2.033-12.167)	6.671(1.427-31.180)*	<0.001	0.016
	150-200 ETB	95(25.8%)	20(31.7%)	1.606(0.823-3.133)	0.572(0.162-2.025)	0.165	0.386
	201-300 ETB	99(26.9%)	12(19.0%)	2.789(1.308-5.945)	0.269(0.062-1.169)*	0.008	0.08
	Above 300 ETB(Ref)	71(19.3%)	24(38.1%)	1.00			
History attempt to lose weight	Yes	226(61.4%)	13(20.6%)	6.121(3.211-11-670)	6.085(1.998-18.529)*	<0.001	0.001
	No(Ref)	142(38.6%)	50(79.4%)	1.00			
History of depression or anxiety	Yes	314(85.3%)	26(41.3%)	8.275(4.639-14.761)	13.607(4.542-40.767)*	<0.001	<0.001
	No(Ref)	54(14.7%)	37(58.7%)	1.00			
Disruption of social networks like with family, friends or people they love	Yes	260(70.7%)	26(41.3%)	3.426(1.978-5.935)	3.218(1.261-8.212)*	<0.001	0.014
	No(Ref)	108(29.3%)	37(58.7%)	1.00			

Ref= Reference group*

*Statistically significant variables

** Significant variables in the crude were omitted from multivariate analysis

5.14.2. Students behavioral and gynecologic factors versus primary dysmenorrhea

Table 12 below demonstrates the result of logistic regression of behavioral and gynecologic factors of students versus primary dysmenorrhea. The risk of primary dysmenorrhea was approximately 19 times higher in students consuming more than four glass of tea per day compared with students who did not consume tea at all (AOR=18.938, 95%CI (2.190-163.730), P=0.008), where as students who consume less than four glass of tea per day had 0.093 times less risk for primary dysmenorrhea when compared to non consumers (AOR=0.093, 95%CI (0.023-0.376), P= <0.001). Concerning coca-cola or Pepsi consumption, the risk of primary dysmenorrhea was approximately 7 times higher in students consuming one and more than one coca-cola or Pepsi per day compared with non consumers at all (AOR=6.786, 95%CI (1.881-24.476), P=0.003). On the other hand the risk of primary dysmenorrhea was found to be 0.186 times less in students who consume two and more than two chocolate per day when compared to non consumers at all (AOR=0.186, 95%CI (0.042-0.815), P=0.026).

Concerning gynecologic factors the risk of primary dysmenorrhea was 47 times higher in students who are nulipara compared with students who are multipara (AOR=47.318, 95%CI (11.037-202.864), P= <0.001). The risk of primary dysmenorrhea in students who had a family history of dysmenorrhea was approximately 27 times higher than students with no prior family history (AOR=27.228, 95%CI (8.027-92.354),P= <0.001).

Table 12: Behavioral and gynecologic factors versus primary dysmenorrhea, DBU, Debre Berhan, 2012

Variable		Primary dysmenorrhea		Crude OR (95%CI)	Adjusted OR (95%CI)	P-value	
		Yes (n= 368) (100%)	No (n= 63) (100%)			crude	adjusted
Tea consumption per day	Not at all(Ref)	38(10.3%)	14(22.2%)	1.00			
	<four glass/day	292(79.3%)	46(73.0%)	8.014(3.492-18.394)	0.093(0.023-0.376)*	<0.001	<0.001
	>four glass/day	38(10.3%)	3(4.8%)	15.556(3.821-63.330)	18.938(2.190-163.730)*	<0.001	0.008
Coca-Cola or Pepsi consumption per day	Not at all(Ref)	244(66.5%)	52(82.5%)	1.00			
	One coca-cola/ day	124(33.7%)	11(17.5%)	2.402(1.210-4.768)	6.786(1.881-24.476)*	0.012	0.003
Chocolate consumption per day	Not at all(Ref)	339(92.1%)	55(87.3%)	1.00			
	Two bar of chocolate/day	29(7.9%)	8(12.7%)	0.588(0.256-1.353)	0.186(0.042-0.815)*	0.212	0.026
Parity	Nullipara	337(91.6%)	35(55.6%)	8.697(4.686-16.139)	47.318(11.037-202.864)*	<0.001	<0.001
	Multipara(Ref)	31(8.4%)	28(44.4%)	1.00			
Family history of dysmenorrhea	Yes	242(65.8%)	10(15.9%)	10.179(5.009-20.689)	27.228(8.027-92.354)*	<0.001	<0.001
	No(Ref)	126(34.2%)	53(84.1%)	1.00			

Ref= Reference group

* Statistically significant variables

** Significant variables in the crude were omitted from multivariate analysis

CHAPTER SIX: DISCUSSION

This study shows a high prevalence of primary dysmenorrhea (85.4%) which is slightly higher than with a study done in Dumlupinar University in Kutahya Health High School, western Turkey 72.7% (20), with study done in three medical colleges of India 73.83% (18); with a previous study conducted in Dabat and Kola Diba North West Ethiopia indicated that the prevalence of primary dysmenorrhea among secondary school adolescent students was 72% (27) and more higher than with a study done in Nigeria collage students 62.5% (24); with a study done in Turkish University 55.5% (18) and with a study done in Mexican university students 64% (21). A reason for the variation in this study could be the use of selected groups of students, age variation and the absence of universally accepted methods of defining primary dysmenorrhea because many studies use the definition of dysmenorrhea in general. Another reason for the variation could be difference in socio cultural, ethnic and life style factors among university students. But this study was similar with a study done in Thai secondary school students in Khon Kaen province which was 84.9% (19).

Major symptoms mentioned in this study for primary dysmenorrhea was back pain or abdominal pain (88.3%), mood change- irritability and depression (57.8%), irregularity (49.5%), headache (29.3%), pain at the groin (27.2%) and sleeplessness (17.3%) which is almost similar with a study done in Mexican university students which was cramping lower abdominal pain (93%), backache(43%), irritability(50%), depression(48%), and headache(24%) (2) and also similar with a study done in Thai secondary school students in Khon Kaen in which its major symptoms were; mood change (84.8%), headache (37.5%) and backache(63.7%) (19).

The mean age of this study was 20.57 year which is similar with a study done in Nigeria collage students which is 21.1 years (24) and is also almost similar with a study done in Turkey University which was 21.47(8). With regard to age at menarche, this study shows age at menarche is 14.96 which is in line with a study done in Nigeria collage students with mean age at menarche of 14.2(24) but slightly higher than with a study done at Turkey University with mean age at menarche of 13.08 years (8). The possible justification for this variation could be difference in socio economic variation in study groups and most studies were carried out among young and adolescents of different age groups.

This study shows that 88.3% of the respondents reported that primary dysmenorrhea had effect on academic performance. Some of the mentioned effects were school absence (80%), class absence(56.3%), loss of class participation(47.4%), loss of class concentration(66.8%), limit sport participation(37.8%), limit going out with friends(31.7%), inability to do homework(21%), and reduced test taking skill(15.4%) which is somehow different with studies done in Hispanic female students in which loss of class concentration (59%), limit sport participation (51%), lose of class participation (50%), homework (35%) and test taking skill (36%) (10).The study is also different with a study done in Khon Kaen, Thailand on effects of dysmenorrhea on academic performance of respondents. The Khon Kaen, Thailand study showed that primary dysmenorrhea had effect on the respondents' academic performance in causing poor class concentration (73.9%), limit sport activity (59.8%) and absence from school (18.2%) (19). This study is also slightly higher with a study done in Northwest Ethiopia secondary school adolescents in which 48.8% of students Had suffered with primary dysmenorrhea and reported to be absent from school (27). This variation could be because of the difference in the operational definition for the

above factors of the different studies, difference in severity of dysmenorrhea pain and variation in socio demographic variables.

Additionally this study revealed that among students with primary dysmenorrhea 47% reported one day school absence, 23.4% reported 2 day school absence and 5.7% of students reported three day school absence which is comparable with a study done in Hispanic female adolescents with 46% one half to one day of school absence, 36% reported 2 to 3 day school absence and 18% reported more than 4 school day absence (10). This indicates that primary dysmenorrhea is still an important public health problem and has a negative effect on student's academic performance, social environment, work, and psychological status.

This study shows more than half of the female students (56.9%) had moderate and severe types of primary dysmenorrhea and 28.5% of the students had mild primary dysmenorrhea which is slightly lower than with a study done at Dumlupinar University, Kutahya, Health High School, and Western Turkey in which 66.2% of students had moderate and severe dysmenorrhea (20). In the contrary, this study had higher percent 38.1% of moderate and 18.8% of severe primary dysmenorrhea compared with a study done among first and second year female medical students conducted in three medical college in India in which 30.37% of had moderate dysmenorrhea and 6.32% of had severe dysmenorrhea (18). The possible explanation for this variation could be student's difference in menstrual pain perception due to social, lifestyle or cultural factors and difference in socio cultural variable among students. This indicates that due to primary dysmenorrhea female students in different areas experience severe or moderate dysmenorrhea, which may have a negative effect on student's health related quality of life and their academic performance.

Many studies determined that the prevalence of primary dysmenorrhea showed a decrease with increasing age, indicating that primary dysmenorrhea peaks in late adolescence and the early 20s and the incidence falls with increasing age (23 and 40). Similarly this study shows that primary dysmenorrhea is higher among students less than in the age of 20 years and lesser in the age above 21 years old which is concurrent with a study done in Canada and Goa, India which reveals a decrease of primary dysmenorrhea with increasing age of the females(23 and 40).

First year and second year students were mostly affected by primary dysmenorrhea than third and fourth year students (OR= 1.080 95%CI (0.204-5.721) p= 0.001). This might be because of first and second year female students are younger and they are at new environment with full of stress than those senior female students.

As of the multivariate analyses, history attempt to lose weight was an important risk factor for primary dysmenorrhea (AOR= 6.085 95%CI (1.998 – 18.529) p=0.001), which is comparable with studies done in Dumlupinar University, Kutahya, Health High School, Western Turkey (20), and similarly History of depression or anxiety (AOR= 8.275(4.639 – 14.761); p= <0.001) and disruption of social networks either of with family, friends or people they love (AOR= 3.426(1.978-5.935); p=0.014) was an important risk factor for primary dysmenorrhea. This is compatible with studies done in University of Taledo College of medicine Taledo, Ohio, USA; in a study done on factors predisposing women to chronic pelvic pain and in a study done on Minerava result showed that the risk of dysmenorrhea was higher in disruption of social relation and poor mental health like depression (16, 29 & 30).

A study done in Turkish university showed that primary dysmenorrhea was approximately 1.5 times higher in females with satisfactory stipend allowance (8) which is completely different

with this study which shows primary dysmenorrhea is 7 times higher in students with monthly income less than 150 ETB (with less disbursement) than those with monthly income of greater than 300 ETB (AOR= 6.671, 95%CI (1.427-31.180); P= 0.016). This might be because of other socio-cultural and personal factors big contribution to primary dysmenorrhea other than monthly incomes, suggesting that further research is necessary to clarify this factors role.

The prevalence of primary dysmenorrhea was higher among students how had higher intake of tea (> glass/day) (AOR= 18.938, 95%CI (2.190- 163.730); p= 0.008) and coca-cola/Pepsi (one coca or Pepsi/day) (AOR= 6.786, 95%CI (1.881- 24.476); p=0.003) which was confirmed by regression analysis for behavioral factors which is slightly higher with a study done in Turkish university in which dysmenorrhea was 1.8 times higher in women with excessive sugar intake (8). The possible explanation for this relationship could be that sugar interferes with the absorption and metabolism of some important vitamins and minerals thus causing nutritional imbalances, which intern can cause difficulty in muscle functioning and leading to muscle spasms then finally students will develop menstrual pain.

According to the multivariate analysis, those students with family history of dysmenorrhea had 27 time higher risk of developing primary dysmenorrhea (AOR= 27.228, 95%CI (8.027-92.354); p= < 0.001), which is higher with a study done in Turkish university with 3.5 times higher in women with family history of dysmenorrhea (8) and a study done in Dumlupinar University, Kutahya, Health High School, Western Turkey with 3.043 times higher in students with appositive family history of dysmenorrhea (20). This result indicates that a family history of dysmenorrhea seems to be an important characteristic for women with primary dysmenorrhea. As an explanation for this, some researchers have reported that daughters of mothers who have menstrual complaints also experienced menstrual discomfort, and that the reason for this could

be related with behavior that is learned from the mother (28). The fact that family history was shown to be a risk factor for dysmenorrhea may be related to the risk for related conditions such as endometriosis, which has already been shown to have a familiar pattern (40).

The logistic regression analysis showed that parity was important risk factor for primary dysmenorrhea in which being nulipara had 47 times more risk to primary dysmenorrhea than being multipara (AOR= 47.318, 95%CI(11.037- 202.864); p= <0.001). This efficiency could be explained because women with dysmenorrhea have higher circulating levels of prostaglandins during menstruation compared with asymptomatic women. Excessive release of prostaglandins by the endometrium during menstruation causes hyper contractility of the uterus, leading to uterine muscle ischemia and hypoxia, which are primarily responsible for the pain for nulipara as compared to multipara students (8).

In this study, primary dysmenorrhea was more common among those who had irregular cycles (53.8%), longer duration of menstrual flow which is greater than 5 days (24.7%) this may be due to difference in student's gynecological age. About 31.2% of the study subjects had experienced abnormal menstrual cycle length (<21 days or >35 days) which is a common phenomenon in the first two years after menarche was similar with a study done at Dabat and Kola Diba district northwest Ethiopia (27). This is because anovolation is common at this time (27). Other causes of menstrual irregularity like endocrine disorders, tumours and acquired disorders like stress, strenuous exercise could also be considered.

Many studies reveled that having low body mass index (BMI) were important risk factor for primary dysmenorrhea (16, 29 and 30) but in this study BMI was not important risk factor for primary dysmenorrhea (p= 0.732). This is because many of the study participants in this study

had normal BMI (80.5%) and difference in the measuring instrument among studies. On the other hand studies showed that early age at menarche was important risk factor for primary dysmenorrhea which is less than 13 years old (16, 29 and 30). But in this study student's age at menarche were not significantly associated with primary dysmenorrhea (p= 0.304). The possible explanation for this discrepancy may be because in this study many of the respondents' age at menarche were above 13 years old (82.6%) and there may be genetic difference in prostaglandin hormone secretion among study participants. Additionally studies showed that having heavy menstrual blood flow (prolonged or aberrant) had significant association with primary dysmenorrhea (16. 29 and 30), but in this study duration of menstruation were not significantly associated with primary dysmenorrhea (p= 0.116) this is because that majority of the respondents (68.2%) in this study had normal duration of menstruation.

CHAPTER SEVEN: STRENGTH AND LIMITATION OF THE STUDY

7.1. Strength of the study

This study tries to apply a standardized self administered questionnaire to assess the effect of primary dysmenorrhea on students' academic performances, verbal multidimensional scoring system for assessing menstrual pain severity and its risk factors in DBU students which in turn increased the quality of information obtained.

7.2. Limitation of the study

- Due to the absence of adequate similar studies in our country, comparisons were difficult.
- Since the design is cross sectional temporal relations could not be assessed.
- There could be recall bias and over reporting of the condition since the students were asked for events within the last years prior to the study especially asking about age at menarche.

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION

8.1. Conclusion

Primary dysmenorrhea has a higher prevalence and pronounced effect on the academic performance among Debre Berhan university students which requires great attention. Considering the factors that affect the respondents' primary dysmenorrhea pain in this study, there was a significant association with student's educational level, student's monthly income, history attempt to lose weight, depression or anxiety and disruption of social network. Student's tea, coca-cola or Pepsi and chocolate consumption had also significant association with primary dysmenorrhea. Being nulipara, having menstrual irregularity and having family history of primary dysmenorrhea had also strong association with it.

In the contrary students' menstrual interval and duration, student's age at menarche, contraceptive use and body mass index were not significantly associated to primary dysmenorrhea in this study.

Primary dysmenorrhea is a prevalent and yet undertreated menstrual disorder among Debre Berhan University students. The pain suffered can be severe and disabling. Health care providers should therefore be prepared to discuss this more freely with university students. In addition, there is a need for education regarding primary dysmenorrhea and treatment options to minimize its impact on students' academic performance.

8.2. Implication of this study to nursing

This study should contribute to the development of effective educational strategies to promote health for students with primary dysmenorrhea. This study should also contribute for nurse researchers as a base line data in order to carry out in a broader social contexts and large sample size to investigate prevalence and associated risk factors of primary dysmenorrhea. Finally this study should contribute for the development of effective nursing practice in order to promote the health of students with primary dysmenorrhea by reducing primary dysmenorrhea risk factors based on the result of this study.

8.3. Recommendation

Still the problem of primary dysmenorrhea among university students is underestimated while it had negative effect on their academic performance. On the other hand since there is limitation in studies done on these issue students might have lack of knowledge about it. As a result, severity of the disorder and negative effect on academic performance will enhanced time to time. Therefore, prevention and early detection is necessary. For that reason, this study recommend to:

The students

- Have a regular follow up for their menstrual pain and take appropriate management as per the health care provider. And be cooperative and supportive in minimizing risk factors of primary dysmenorrhea.

The health professionals, especially nurses

- Teach students about risk factors of primary dysmenorrhea, advantages of normal routine care, preventive strategies and help them to carry out their roles in minimizing risk factors.
- Providing appropriate health education measures in this area to prevent unnecessary suffering and interruption in the adolescent's academic performance.

Universities/ DBU/

- Encouraging university students to consult their health care providers for primary dysmenorrhea.
- Prepare the student clinic with essential drugs that can threat primary dysmenorrhea
- Create awareness by female students about the effect of primary dysmenorrhea on education and help them to know clearly risk factors of primary dysmenorrhea.

Ministry of health

- Designs a strategy focused on early detection of primary dysmenorrhea and prevent complication that can be occurred as a result of it.
- Generate accessible, affordable and available care services, treatments, and education about dysmenorrhea for students so as to increase awareness about the disorder.
- Educating health care professionals about primary dysmenorrhea, its severity and impact on adolescent university students.
- Encouraging health care providers to screen routinely for primary dysmenorrhea among adolescent university students and offer treatment if necessary.

Other researchers

- Future studies will be important to better identify risk factors for primary dysmenorrhea like alcoholism, smoking and other behavioral factors which may need observational studies.
- Similar studies should be conducted in various settings (both similar and different settings) to come up with more representative findings, which will be helpful in designing interventional activities targeted at improving student's health and academic performance.

REFERENCES

1. Beckman CRB, Ling FW, Laube DW. Dysmenorrhea. In: S. Rybner (Ed.), Obstetrics and gynecology 2003; (pp.408-409). Baltimore: Lippincott Williams and Wilkins.
2. Ortiz MI. Primary dysmenorrhea among Mexican university students: prevalence, impact and treatment. European Journal of Obstetrics and Gynecology and Reproductive Biology 2010; **15**: 73–77.
3. Symonds ME, Symonds IM. Essentials of obstetrics and gynecology. (4th ed.). London: Churchill Livingstone 2004.
4. Callejo J, Diaz J, Ruiz A, Garci RM. Effect of a low-dose oral contraceptive containing 20 μg ethinylestradiol and 150 μg desogestrel on dysmenorrhea. Contraception 2003; **68:** 183–188.
5. Cunningham AS, Muneyyirci-Delale O. The association between primary dysmenorrhea and hyperemesis gravidarum. Medical Hypotheses 2009; **73**: 90–91.
6. Davis AR, Westhoff CL. Primary dysmenorrhea in adolescent girls and treatment with oral contraceptives. Journal of Pediatric and Adolescent Gynecology 2001; **14**:3-8
7. Li N, Liu H, Chen C, Yang F, Li Z, Fang Z. et al.. CYP1A1 Gene Polymorphisms in Modifying the Association between Passive Smoking and Primary Dysmenorrhea. Annals of Epidemiology 2007; **17** (11): 882–888.
8. Ozerdogan N, Sayiner D, Ayranci U, Unsal A, Giray S. Prevalence and predictors of dysmenorrhea among students at a university in Turkey. International Journal of Gynecology and Obstetrics 2009; **107**: 39–43.
9. Avasarala AK, Panchangam S. Dysmenorrhea in different settings: Are the rural and urban adolescent girls perceiving and managing the dysmenorrhea problem differently? Indian Journal of Community Medicine 2008; **33**: 246–9.

10. Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhea on Hispanic female adolescents. Archives of Pediatrics and Adolescent Medicine 2000; **154**:1226-9.
11. Dawood MY. Dysmenorrhea. Journal of Reproductive Medicine 1985; **30**:154–167.
12. Liliwati L, Verna L, Khairani O. Dysmenorrhea and its Effects on School Activities Among Adolescent Girls in a Rural School in Selangor, Malaysia, Medicine & Health; 2007; 2 (1): 42-47
13. Ylikorkala O, Dawood MY. New concepts in dysmenorrhea. American Journal of Obstetrics and Gynecology 1978; **130**:833– 47.
14. Klein J.R, Litt IF. Epidemiology of adolescent dysmenorrhea. Pediatrics 1981; **68**:661–4.
15. Mannix KL. Menstrual-Related Pain Conditions: Dysmenorrhea and Migraine. Journal of women's health 2008; **17**(5)
16. French L. Dysmenorrhea in Adolescents: Diagnosis and Treatment. Department of Family Medicine, University of Toledo, College of Medicine, Toledo, Ohio, USA. Pediatrics Drugs, 2008. **10** (1): 1-7.
17. Strinic T, Bukovic D, Pavelic L, Fajdic J, Herman I, Stipi I. et al. Anthropological and clinical characteristics in adolescent women with dysmenorrhea. Collage of Anthropology 2003; **27**:707-11.
18. Singh **A,** Kiran D, Singh H, Nel B, Singh P, Tiwari P. Prevalence and severity of dysmenorrhea: a problem related to menstruation, among first and second year female medical students. Indian Journal of Physiology and Pharmacology 2008; **52** (4): 389–397

19. Chongpensuklert Y, Kaewrudee S, Soontrapa S, Sakondhavut C. Dysmenorrhea in Thai Secondary School Students in Khon Kaen, Thailand. Thailand Journal of Obstetrics and Gynaecology January 2008; 16, pp. 47-53-167.
20. Unsa A, Ayranci U, Tozun M., Arslan G, Calik E. Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students. Upsala Journal of Medical Sciences 2010; **115**: 138–145.
21. Mario I, Ortiz IM. Primary dysmenorrhea among Mexican university students: prevalence, impact and treatment. European Journal of Obstetrics & Gynecology and Reproductive Biology 2010; **152**: 73–77.
22. Balbi C, Musone R, Menditto A, Di Prisco L, Cassese E, D'Ajello M, et al. Influence of menstrual factors and dietary habits on menstrual pain in adolescence age. European Journal of Obstetrics and Gynecology Reproductive Biology 2000; **91**:143–8.
23. Burnett MA, Antao V, Black A, Feldman K, Grenville A, Lea R. et al. Prevalence of primary dysmenorrhea in Canada. Journal of Obstetrics and Gynecology Canada 2005; **27**:765–770.
24. Esimie OA, Esan OGO. Awareness of menstrual abnormality amongst college students in urban area of Ile-Ife, Osun state, Nigeria 2010; Retrieved from http://www.ijcm.org.
25. Tenkir A, Fisseha N, Ayele B. Premenstrual syndrome: prevalence and effect on academic and social performances of students in Jimma University, Ethiopia. Ethiopian Journal of Health Development 2002; **17**(3):181-188.
26. Abera Y. Menarche, Menstruation related Problems and Practices among Adolescent High School Girls in Addis Ababa 2004. (unpublished)

27. Zegeye DT, Megabiaw B, Mulu A. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. BioMed Centeral Women's Health 2009; **9**:29.
28. Dorn L.D, Negriff S, Huang B, Pabst S, Hillman J, Braverman P, et al. Menstrual symptoms in adolescent girls: association with smoking, depressive symptoms, and anxiety. Journal of Adolescent Health 2009; **44**:237–43.
29. Latthe P, Mignini L, Gray R, Hills R, Khan K. Factors predisposing women to chronic pelvic pain: systematic review. British Medical Journal 2006; **332**:749–55.
30. Tonini G. Dysmenorrhea, endometriosis and premenstrual syndrome. Minerva Pediatrics 2002; **54**:525–38.
31. Dawood YM. Dysmenorrhea. Clinical Obstetrics and Gynecology 1990; 33:168–78.
32. Wang L, Wang X, Wang W, Chen C, Ronnennberg A.G, Guang W, Huang A. et al. Stress and dysmenorrhea: a population based prospective study. Occupation and Environmental Medicine 2004; **61**:1021–1026.
33. Sundell G, Milsom I, Andersch B. Factors influencing the prevalence and severity of dysmenorrhea in young women. British Journal of Obstetrics and Gynecology 1990; **97** (7): 588-94.
34. Juang CM, Yen MS, Twu NF, Horng HC, Yu HC, and Chen CY. Impact of pregnancy on primary dysmenorrhea review. International Journal of Gynecology and Obstetrics 2006; **92** (3): 221-7
35. Rapkin AJ, Tsao JC, Turk N, et al. Relationships among self-rated tanner staging, hormones, and psychosocial factors in healthy female adolescents. Journal of Pediatrics and Adolescent Gynecology 2006; **19** (3): 181-7.

36. Baranowski AP, Abrams P, Fall M. Urogenital pain in clinical practice. New York: Information Healthcare USA, Inc 2007.
37. Dawood MY. Nonsteroidal anti-inflammatory drugs and changing attitudes toward dysmenorrhea. American Journal of Medicine 1988; **84**:23–9.
38. Andersch B, Milsom I. An epidemiologic study of young women with dysmenorrhea. American Journal of Obstetrics and Gynecology 1982; **144**:655–60.
39. Wewers ME, Lowe NK. A critical review of visual analogue scales in the measurement of clinical phenomena. Research in Nursing and Health 1990; **13**:227–36.
40. Patel V, Tanksale V, Sahasrabhojanee M, Gupte S. and Nevrekar P. The burden and determinants of dysmenorrhoea: a population-based survey of 2262 women in Goa, India. British Journal of Obstetrics and Gynecology 2006; **113**:453–63.
41. Kocyigit H, Aydemir O, Olmez N, Memis A. Reliability and validity of the Turkish version of Short-Form-36 (SF-36). Turkish Journal of Drugs Therapy 1999; **12**:102–6. 46
42. Larroy C. Comparing visual-analog and numeric scales for assessing menstrual pain. Behavioral Medicine 2002; **27**:179–81.

ANNEXES

Annex I: English version Information sheet and consent form

Addis Ababa University

College of Health Sciences

Department of Nursing and Midwifery

1. Subject Information Sheet

Here, I the undersigned, at Addis Ababa University College of Health Sciences Department of Nursing and Midwifery, Graduate Program studies, currently I will be undertaking research on a topic entitled assessment of associated risk factors of primary dysmenorrhea and its effect on academic performance among female students in Debre Berhan University, Amhara region, north shoa zone , Ethiopia.

For this study, you will be selected as a participant and before getting your consent or permission of your participation, you need to know all necessary information related to the study. Thus, this information will be detailed as;

Objective: To assess associated risk factors of primary dysmenorrhea and its effect on student's academic performance among female students in Debre Berhan University, North Shoa Zone, and Amhara Regional State.

- **Significance of the study**: The study will assess associated risk factors of primary dysmenorrhea and its effect on student's academic performance in Debre Berhan University. It can be used as an input for stake holders and concerned bodies (governmental and non-governmental organizations) that work in the university in relation to menstrual disorder. It will be also used as a base line data for those who are interested to conduct researches in similar issues. This study will also have a significant input in the formulation of appropriate strategies in order to promote students health seeking behavior towards menstruation related problems and enhance the student's academic performance though reduction of associated risk factors of primary dysmenorrhea in the university.

- **Participants to be included**: the study will include regular female students of Debre Berhan university who are registered for 2011/2012 academic year during study period
- **Confidentiality:** All information you give will be kept confidential and won't be accessible to any third party. Your name won't be registered on the question sheet so that you will not be identified.
- **Risks and Benefits of the study**

  Risks: The study will be carried out simply by asking you, the already prepared and structured questions. The procedure doesn't bear any physical or psychological trauma. Furthermore, you will not be forced to respond to the information you do not know.

  Benefits: For your participation in the study no payment will be granted or has no any special privilege to you. But, participating in the study and giving your information to questions asked will have great input in efforts to identify possible associated risk factors of primary dysmenorrhea and its effect on student's academic performance.
- **Consent:** Your participation in the study will be totally based on your willingness. You have the right not to participate from the beginning, or stop any time after starting participation. You will not be forced to respond to the information you do not know.
- **Name of principal investigator**: Solomon Hailemeskel Beshah

Date: 10/2/2012

Signature_____

Address of PI: Tel: 0913312912

Mail: solomonhmeskeldb@yahoo.com

1. **Consent form**

I the undersigned have been informed that the interview is to gather information about assessment of associated risk factors of primary dysmenorrhea and its effect on student's academic performance among female students in the university. The result of the study will help to identify associated risk factors of dysmenorrhea and helps the government and health facilities involved in this service provision to reduce the effect of dysmenorrhea on student's academic performance.

I also agreed about the confidentiality of the responses to be at a higher possible level.

Signature of Participant: _____

Date: _____

Name and Signature of data collector: _____

Annex II: English Version Questionnaire

Questionnaire on the assessment of associated risk factors of primary dysmenorrhea and its effect on students academic performance among female students in Debre Berhan University Ethiopia, 2011/2012

01. Questionnaire code_____
02. Collage/school _____
03. Department _____
04. Section _____

Section one: socio-demographic information			
S. NO	**Questions**	**Options/ answer**	**Remark**
101	Age	---------- years	
102	Marital status	1.Single 2.Married 3.Divorced 4.Widowed	
103	Religion	1.Orthodox 2.Muslim 3.Protestant 4.Catholic 5.Others (specify)	
104	Educational level	1.frist year 2.Second year 3.Third year 4.Fourth year	
105	Ethnicity	1.Oromo 2.Amhara 3.Tigrie 4.Guragae 5.Others (specify)	

106	Monthly income	--------**(**Birr**)**	
107	Family income	--------**(**Birr**)**	
108	Parity	1.nullipara (0) 2.multipara (>1)	
Section two: psychosocial factor and family planning history			
S. NO	Question	Choices	
201	History of attempts to lose weight	1.Yes 2. No	
202	If yes to question number 201 what activities you do	_____	
203	History of depression/anxiety	1. Yes 2.No	
204	Disruption of social networks like with family, friends or people you love	1. Yes 2. No	
205	Contraceptive use	1.Yes 2.No	
206	If yes which type	1.pills 2.injectable 3.implant 4.loop 5.others, specify	
207	For how long you used it	_____	
Section three: Menstrual characteristics			
S.NO	Questions	Options/ Answer	Remark
301	Age at Menarche	-------- **(years)**	
302	Duration of Menstruation	1. <2 Day	

		2. 2-5 Days 3. >5days	
303	Interval of menstruation	1. <21Days 2. 21-35 Days 3. >35 Days	
304	flow of Menstruation	1. Regular 2. Irregular	
305	Number of Pads per day	1.<3/day 2. >3/day	
306	Family history of Dysmenorrhea	1. Yes 2. No	
307	If yes which family member	1.Sister 2. Mother 3. Grand mother	
308	Use of medicine regulating menstruation	1. Yes 2. No	
309	Is your menstruation associated with pain	1.Yes 2. No	
3010	If yes, (you can circle more than one)	1. Irregularity 2. Excess flow 3. back pain or abdominal pain 4. Head ache 5. Mood change-irritability, depression 6. Sleeplessness 7. pain at the groin 8.diarrhea, nausea, vomiting 9. Other, specify	
3011	When does the menstrual pain occur?	1.One day before menstrual	

		period 2. The first day of menstrual period 3.Both time	
3012	How severe is the menstrual pain?(multiple option is possible)	1.Doesn't interfere with class activities 2. With vomiting and diarrhea 3. Interferes with class activities leading to absenteeism 4.Relief on using medication	
3013	Is your menstrual problem interferes with class attendance, how often does it do so?	1. One day every cycle 2. Two days every cycle 3. Three days every cycle 4. Four days every cycle	
3014	Do you think menstrual problems interfere with academic performance?	1.Yes 2. No	
3015	If yes to question number 3014 how your menstrual pain affects it (multiple choice is possible)	1. school absence 2. class absence 3. inability to do homework 4. loss of class participation 5. loss of class concentration 6. reduced test taking skill 7. limit sport participation 8. limit going out with friends	

3016	What do you do when you have menstrual problems?	1. Go to family members 2. Go to doctors, health personnel 3. Go to clinics 4. Buy medication from drug stores without consultation of health personnel 5.Use traditional medicine 6. Other, specify	
3017	If you use medication without consultation of health personnel, what is the medication you often use?	----------	
Section four: behavioral factors			
S.NO	Questions	Options/ Answer	Remark
401	Cigarette smoking	1. Not at all 2. one cigarette per day 3. > one cigarette per day	
402	Do you drink alcohol? (like Tej,Tella,Areke, Beer and the like)	1. I have never drunk 2. I drunk occasionally(2-3 times in a month) 3. I drunk 2-3 times in a day 4. I drink daily	
403	Tea consumption per day	1. Not at all 2. < Four glass/day 3. >Four glass/day	
404	Coffee consumption per day	1. Not at all 2. Less than three cup/day 3.More than three cup/day	

405	Coca-Cola or Pepsi consumption per day	1. Not at all 2. one coca- cola per day 3. More than one coca-cola/day	
406	Chocolate consumption per day	1.Not at all 2. Tow bars of chocolate/day 3.More than two bars of chocolate/day	

Section five: multidimensional scoring system and Visual Analog Scale(VAS)			
S.NO	Questions		Options/ Answer
501	Is your menstruation not pain full and daily activity is not affected		1.Yes 2. No
502	Is your menstruation painful but seldom inhibits normal activity; analgesics are seldom required		1.Yes 2. No
503	Is your daily activity affected; analgesics required and give sufficient relief so that absence from school is unusual		1.Yes 2. No
504	Is your activity clearly inhibited; poor effect of analgesics; vegetative symptoms (headache, fatigue, vomiting, and diarrhea)		1.Yes 2. No
Visual analog scale			
505	Mark the VAS indicating specific number to show menstrual pain, how is severe your menstrual pain for you? (no pain 0, mild 1-3, moderate 4-7 and sever 8-10	VAS 0 1 2 3 4 5 6 7 8 9 10 No pain worst imaginable pain	
506	Anthropometric measurement Height Weight BMI	_____ _____ _____	

Annex III: Amharic version information sheet and consent form

አዲስ አበባ ዩኒቨርስቲ

የህክምና ት/ቤት

የነርሲንግና ሚድዋይፍ ት/ት ክፍል

ጥናታዊ የመረጃ መሰብሰቢያ ቅፅ

1. **የጥናቱ ተሳታፊዎች የ መረጃ ቅጽ**

የጥናቱ ርዕስ፡ **በወር አበባ ገዜ የሚከሰትን ህመም የሚያመጡ ምክኒያቶቺን ና የወር አበባ ህመም በተማሪወች ትምህርት ላይ ያለውነን** ተጻእኖ ዳሰሳ ፤ ደብረ ብርሀን ዩኒቨርሲቲ አማራ ክልል ሰሜን ሸዋ ዞን፡፡

<u>የጥናቱ ዓለማ:</u> የ ዚህ ጥናት ዋና ዓላማ **በወር አበባ ገዜ የሚከሰትን ህመም የሚያመጡ ምክኒያቶቺን ና የወር አበባ ህመም በተማሪወች ትምህርት ላይ ያለውነን** ተጻእኖ ለማጥናት ነው፡፡ ይህን መሰረት በማድረግም ሴቶች ከወር **አበባ ጋር ተያያዝነት ያላቸውን የጤና ችግሮችበቶሎ** እንዲታከሙ እና በወር **አበባ** ውቀት ህመምን የሚያስከትሉ ችግሮችን በመለየት እና በማስተካከል የሴቶችን የትምህርት ሁኔታ ማሻሻል የሚያስችሉ ስልቶችን/አሰራሮችን ለመቀየስ የሚጠቅም መረጃ ለመሰብሰብ/ለማግኘት ነው፡፡

<u>ሊደርስ የሚችል አደጋ :</u> በዚህ ጥናት ውስጥ አደጋ የሚያደርስ ድርጊት የለም::

<u>የሚገኝበት ጥቅም፡</u> በዚህ ጥናት ውስጥ የሚሳተፉ ሴት **ተማሪዎች ቀጥተኛ የሆነ** ጥቅም አያገኙም፡፡

<u>ሚስጢራዊነት፡</u> የ ማንኛውም የጥናቱ ተሳታፊዎች መረጃ በሚስጥራዊነት ይያዛ ል፡ ፡ የእያንዳንዱን ግለሰብ መረጃ ከዋናው ተመራማሪ እና አማካሪ በስተቀር ማንም ሊያገኝ አይችልም

<u>ፈቃደኝነ ትን ስለማቋረጥ፡</u> የጥና ቱተሳታፊዎች መረጀን ያለመስጠት፣ በጥናቱ ለመሰተፋ ፋቃደኝነት የማሳየት እንዲሁም ናሙና ያለመስጠት መብታቸው የተጠበቀ ነ ው፡ ፡

<u>ለማንኛው ጥያቄ አድራሽ ማወቅ ካስፈለገዎ</u>

የጤና ሳይንስ ኮሌጅ ህክምና ፋኩሊቲ፣ አዲስ አበባ ዩኒቨርሲቲ

የድህረ ምረቃ ፕሮግራምና ምርምር የተባባሪ ዲን ቢሮ፡ ፡

የ መ.ሣ.ቁ 9086

አዲስ አ በ ባ ስ.ቁ +2511155128765

የዋናው ተመራማሪ አድራሻ ፡ -

በአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ በእናቶች እና ሥነ-ተዋልዶ ጤና የ ድህረምረቃ ትምህርት ክፍል

ስ ልክ 0913312912

2. የስምምነት ቅጽ

እኔ ከዚህ በታች ስሜ የተገለጸዉና የፈረምኩ ግለሰብ የሰጠሁት ቃለምልልስ **በደብረ ብርሃን ዩንቨርሲቲ ሴት ተማሪዎች ላይ በወር አበባ ጊዜ የሚከሰት ህመምን በተመለከተ** መረጃ ለመሰብሰብ ሲሆን የጥናቱ ዉጤትም የመንግስትንና በዚህ ዘርፍ የተሰማሩ ተቋማትን የ**አገልግሎት** ጥራትና ተጠቃሚነትን ለማሻሻል **የሚ**ረዳ ነዉ::

በተጨማሪም የሰጠሁት መረጃ ሚስጢራዊነቱ ፈጽሞ የተጠበቀ እንደሚሆን ተነግሮኝ ተስማምቻለሁ::

መረጃዉን የሰጠዉ ሰዉ ፊርማ ----------

መረጃዉ የተሰበሰበበት ቀን ----------

መረጃዉን የሰበሰበዉ ሰዉ ስምና ፊርማ ----------

Annex IV: Amharic version Questioner

አጠቃላይ መረጃ

01. የመጠይቁ መለያ ቁጥር-------

02. ኮሌጅ/ ት/ት ቤት----------

03. ት/ት ክፍል----------

04. ክፍል----------

ክፍል አንድ፡ የተጠያቂው አጠቃላይ የማህበራዊና ኢኮኖሚያዊ መረጃ የተመለከተ መጠይቅ			
ተ.ቁ	ጥያቄዎች	አማራጭ መልሶች	ምርመራ
101	እድሜ	---------- አመት	
102	የጋብቻ ሁኔታ	**1.** ያላገባ **2.**ያገባ **3.**የፈታች **4.**ባል የሞተባት	
103	ሃይማኖት	**1.**ኦርቶዶክስ **2.**ሙስሊም **3** ፕሮቴስታንት **4.**ካቶሊክ **5.**ሌላ ይጥቀስ	
104	የት/ት ደረጃ	**1.**አንደኛ አመት **2.**ሁለተኛ አመት **3.**ሶስተኛ አመት **4.**አራተኛ አመት	
105	ብሄር	**1.**ኦሮሞ **2.**አማራ **3.**ትግሬ **4.**ጉራጌ **5.**ሌላ ይጠቀስ	
106	ወርሃዊ ገቢ	--------(ብር)	
107	የቤተሰብ ወርሃዊ ገቢ	--------(ብር)	
108	ወልደው ያውቃሉ	**1.**ወልጇ አላውቅም**(0)**	

		2.ወልጃለሁ **(.1)**	
ክፍል ሁለት፡ የተጠያቂው ስይኮሶሻልና የወሊድ ምቆጣጠሪያ አጠቃቀም ሁኔታ			
ተ.ቁ	ጥያቄወች	**አማራጭ መልሶች**	**ምርመራ**
201	ክብደትዎን ለመቀነስ ሞክረው ያውላሉ	**1.**አዎ **2.** አላውቅም	
202	ለጥያቄ ቁጥር **201** መልስዎ አዎ ከሆነ ምን አይነት ስራዎችን ሰርተው ያውቃሉ	**---------**	
203	ከአሁን በፊት ያይምሮ ጭንቀት ወይንም ድብርት ተሰምቶወት ያውቃል	**1.** አዎ **2.**አላውቅም	
204	ከአሁን በፊት ከሚወዱት ሰው ጋር፡ ከገደኛ ጋር ወይንም ከቤተሰብ ጋር ተጣልተው ያውቃሉ	**1.** አዎ **2.** አላውቅም	
205	የእርግዝና መከላከያ ተጠቅመው ያውቃሉ	**1.**አዎ **2.**አላውቅም	
206	መልስዎ አዎ ከሆነ ምን አይነት መከላከያ	**1.**እንክብል **2.**በመርፌ **(**ዲፖ**)** **3.**በክንድ ቆዳ ስር የሚቀበር **4.**በማህፀን የሚቀመጥ **5.**ሌላ ይጥቀሱ	
207	ለምን ያህል ጊዜ ተጠቀሙ	**----------**	
ክፍል ሶስት፡ የወር አበባ ሁኔታ			
ተ.ቁ	ጥያቄ	አማራጭ መልሶች	ምርመራ
301	ለመጀመሪያ ጊዜ የወር አበባ ያዩበት እድሜ	**--------** **(**ዓመት**)**	
302	የወር አበባ ለምን ያህል ጊዜ ይቆያል	**1. <2** ቀን **2. 2-5** ቀናት **3. >5**ቀናት	
303	የወር አበባዎትን በየስንት ቀን ያያሉ	**1. <21**ቀናት **2. 21-35** ቀናት **3. >35** ቀናት	
304	የወር አበባ ኡደት	**1.** ቀኑን ጠብቆ ይመጣል **2.** ቀኑን ጠብቆ አይመጣም**(** ያዛባል**)**	

305	መልስዎ ይዛባል ከሆነ ለማስተካከል መድሃኒትተጠቅመውያ ውቃሉ	**1.** አዎ **2.** አላውቅም	
306	በቀን ስንት ሞዴስ ይጠቀማሉ	**1.** <3/በቀን **2.** >3/በቀን	
307	የወር አበባ በሚያዩበት ሰዓት ህመም የሚሰማው የቤተሰብ አባል አለ	**1.** አለ **2.** የለም	
308	መልስዎ አለ ከሆነ የትኛው የቤተሰብ አባል	**1.**እህት **2.** እናት **3.** አያት	
309	የወር አበባ በሚያዩበት ሰዓት ህመም ይሰማዎታል	**1.**አዎ **2.** አይሰማኝም	
3010	ህመም ከተሰማዎት ምን አይነት ህመም (ከአንድ በላይ መምረጥ ይችላሉ)	**1.** መዛባት **2.**ሙበዛት **3.**የወገብ ህመም ወይም የሆድ ህመም **4.** የራስ ምታት **5.**የባህሪለውጥ(ድብርት መጨናነቅ መነጫነጭ) **6.** እንቅልፍ ማጣት **7.** የብሽሽት ህመም **8.** ሌላ ይጠቀስ	
3011	የወር አበባ ህመም መቼ ይጀምርዎታል	**1.**የወር አበባ ከመምጣቱ ከአንድ ቀን በፊት **2.** የወር አበባ የመጣ እለት **3.**በሁለቱም ጊዜ	
3012	የወር አበባ ህመምዎት ምን ያህል ከባድ ነው(ከአንድ በላይ መምረጥ ይቻላል)	**1.**ት/ት መከታተል አልቻልም **2.**ተቅማጥ እና ትውከት አለኝ **3.** ከት/ቤት ያስቀረኛል **4.**ማስታገሻ ስወስድ ይተወኛል	
3013	የወር አበባ ህመምዎ በየወሩ ከት/ት ምን ያህል ቀን ያስቀርዎታል	**1.** በየወሩ አንድ ቀን **2.** በየወሩ ሁለት ቀን **3.** በየወሩ ሶስት ቀን	

		4. በየወሩ አራት ቀን	
3014	የወር አበባ ህመም በት/ት ውጤት ላይ የሚያመጣው ተፅዕኖ አለ ብለው ያስባሉ	**1.** አዎ **2.** የለውም	
3015	***መልሰዎ ለተራ ቁጥር*** 3014 አዎ ከሆነ በምን አይነት መልኩ ተፅዕኖ ይኖረዋል(ከአንድ በላይ መምረጥ ይቻላል)	1.ከትምህርት ቤት ማስቀረት 2. **በትምህርት ክፍለ ጊዜ መቅረት** 3. **የቤት ስራ** እንዳልሰራ ማድረግ 4. **ክላስ ውስጥ** እንዳልሳተፍ ማድረግ 5. **ክላስ ውስጥ በጽሞና** እንዳልከታተል ማድረግ 6. **ፈተና** እዳልፈተን ማድረግ 7. እስፖርት እንዳልሰራ ማድረግ 8. **ከ ደጆኞች ጋር** እንዳልቀሳቀስ ማድረግ	
3016	የወር አበባ ህመም ሲሰማዎት ምን ያደርጋሉ	**1.** ወደ ቤተሰብ እሄዳለሁ **2.**ወደ ጤና ባለሙያ እሄዳለሁ **3.** በራሴመድሃኒትገዝቼ እጠቀማለሁ **4.** ባህላዊ ህክምና እጠቀማለሁ **5.** ሌላ ይጠቀሰ	
3017	ያለ ጤና ባለሙያ ትዕዛዝ መድሃኒት የሚወስዱ ከሆነ ምን አይነት መድሃኒት ይወስዳሉ	----------	

ክፍል አራት ባህሪ

ተ.ቁ	ጥያቄ	አማራጭ መልሶች	ምርመራ
401	ሲጋራ ማጨስ	**1.** አላጨስም **2.** በቀን አንድ ሲጋራ **3.** በቀን ከአንድ ሲጋራ በላይ	

402	መጠጥ ይጠጣሉ (ለምሳሌ ጠላ ጠጅ አረቄ ቢራ ወዘተ)	**1.** አልጠጣም **2.** አንዳንድ ጊዜ(በወር **2-3** ጊዜ) **3.** በቀን ከ **2-3** ጊዜ **4.** በየቀኑ	
403	በቀን ስንት ብርጭቆ ሻይ ይጠጣሉ	**1.** አልጠጣም **2.** ፡ አራት ብርጭቆ **3.** ፤ከአራት ብርጭቆ በላይ	
404	በቀን ስንት ሲኒ ቡና ይጠጣሉ	**1.** አልጣም **2.** ከሶስት ሲኒ በታች **3.**ከሶስት ሲኒ በላይ	
405	በቀን ስንት ኮካ ይጠጣሉ	**1.** አልጠጣም **2.** በቀን አንድ ኮካ **3.** በቀን ከአንድ ኮካ በላይ	
406	በቀን ስንት ቸኮሌት ይመገባሉ	**1.**አልመገብም **2.**ሁለት ቸኮሌት በቀን **3.**ከሁለት ቸኮሌት በላይ	

ክፍል አምስት መልቲ ዳይሜንሽናል ሽኮሪንግ ሲስተም

ተ.ቁ	ጥያቄዎች	አማራጭ መልሶች	ምርመራ
501	በወር አበባ ጊዜ ህመም አይሰማኝም፤ የየዕለት ተግባሬንም ለማከናወን አያግደኝም	**1.**አዎ **2.** አይደለም	መልስዎ አዎ ከሆነ ወደ ጥያቄ **505** ይሂዱ
502	የወር አበባዬ ህመም አለው፤የየዕለት ተግባሬንም አንዳንድ ጊዜ እንዳልከውን ያደርገኛል፤በዚህም የተነሳ አንዳንድ ጊዜ መድሃኒት እወስዳለሁ	**1.**አዎ **2.** አይደለም	
503	የወር አበባዬ ህመም ያለው ቢሆንም መድሃኒት በምወስድበት ጊዜ ስለሚሻለኝ ከት/ቤት አልቀርም	**1.**አዎ **2.** አይደለም	

504	በወር አበባ ጊዜ ከፍተኛ ህመም ይሰማኛል፤ ለምሳሌ ያስታውከኛል ያስቀምጠኛል ራሴን ያመኛል፤ መድሃኒት ብወስድም አያሽለኝም	**1.**አዎ **2.** አይደለም	
	ቪዥዋል አናሎግ ስኬል		
505	ከሚከተሉት አስር ቁጥሮች ውስጥ አንዱን በመምረጥ የእርስዎ የወር አበባ ህመም ምን ያህል ከባድ እንደሆነ ይግለፁ **(ህመምየሌለው 0, መጠነኛ 1-3, መከከለኛ** 4-7, ከፍተኛ 8-10)	_ **0 1 2 3 4 5 6 7 8 9 10** ህመም የሌለው በጣም ከፍተኛ ህመም	
506	**አንትሮፔትሪክ መለኪያ** **ቁመት** **ክብደት** **ቦዲማስኢንዳይክስ** (BMI)		

ANNEX IV: BIBLIOGRAPHY OF PRINCIPAL INVESTIGATOR

1. Personal Information

Name: Solomon Hailemeskel
SEX: MALE
Date of birth: April 17, 1986
Place of birth: Sekota
Nationality: Ethiopian
Marital Status: married
Religion: orthodox
Address: Mobile: 0913312912; Email**:** *solomonhmeskeldb@yahoo.com*

Educational Back ground

BSC degree in Midwifery, Msc fellow in maternal and reproductive health nursing

University	Addis Ababa university
Field of study	Midwifery
Awarded qualification	*Bachelor degree in Midwifery*

High-school

- Years 2006/ 07- 2008/2009 : Sekota High school, Sekota (grade 11 and 12)
- Years 2002/03- 2004/05: Sekota High School, Sekota (grade 9 and 10)

Elementary

- Amdewerk elementary school, Amdewerk (grade 1-8)

2. Working experience and organization

A one year service in Debre Berhan health Science College and two years service in Debre Berhan University as instructor. I served as head of nursing department for one year**.**

3. Short term trainings

S. No	**Training title**	**Trainer organization**	**Training place**	**Training year (E.C.)**
1	International English Language Testing System (IELTS)	Addis Abba university(AAU)	Addis Ababa	August 2010 (2 months)
2	Research and research methodology	Addis Abba university(AAU)	Addis Ababa	October, 2010 (15 days)
3	Computational skill (statistical software of Epi ifo)	Addis Abba university(AAU)	Addis Ababa	October 2010(10days)

4. Language and computer skills

Language	Speaking	Listening	Reading	Writing
Amharic	Excellent	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent	Excellent
Computer	**Word**		**Excel**	
	Excellent		Good	

5. HOBBIES AND INTEREST

- Participation in community health services.
- Reading religious books and other fictions
- I want to help my community especially in health related services.

6. REFERENCES

1. Mr. Adugnaw Berhane (Mph) Director, school of health science in Debre Berhan university(DBU)

   Address: Tell (office): 0116816291
   Mobile: 0911391111
   Email: adugnaw mph@yahoo.com
2. Mr. Muluken Desalegn (Mph) Research team Leader, school of health science in DBU

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   Mobile: 0912009692
   Email: mulusef@yahoo.com

ANNEX V: SIGNED DECLARATION

I THE UNDERSIGNED DECLARE THAT THIS THESIS IS MY ORIGINAL WORK AND HAS NOT BEEN PRESENTED FOR A DEGREE IN THIS OR ANY OTHER UNIVERSITY AND THAT ALL SOURCES OF MATERIALS USED FOR THIS THESIS HAVE BEEN DULY ACKNOWLEDGED.

NAME: SOLOMON HAILEMESKEL BESHAH (BSC, MSN Candidates)

SIGNATURE: _____

PLACE: ADDIS ABABA UNIVERSITY

DATE OF SUBMISSION_____

THIS THESIS HAS BEEN SUBMITTED FOR EXAMINATION WITH MY APPROVAL AS THE UNIVERSITY ADVISOR.

NAME OF THE ADVISOR: ASRAT DEMISSIE (RN, BSCN, MSCN, Assistant Professor)

SIGNATURE_____

DATE_____