TURKISH REPUBLIC OF NORTH CYPRUS
NEAR EAST UNIVERSSITY
HEALTH SCIENCE INSTITUTE

PLEVALENCE OF DYSMENORRHEA AND ITS EFFECTS ON QUALITY OF LIFE AMONG UNDERGRADUATE FEMALE STUDENTS IN NEAR EAST UNIVERSITY

ESTHER ZENO NGWASI

MASTER THESIS
DEPARTMENT OF BIRTH AND WOMEN'S HEALTH NURSING

Supervisor:
Prof. Dr. GÜLSEN VURAL

NICOSIA
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THESIS APPROVAL

Directorate of Institute of Health Sciences

The thesis study of nursing department graduate student Esther Zeno Ngwasi with student number 20182066 titled "*Prevalence of dysmenorrhea and its effects on quality of life among undergraduate female student at Near East University"* has been approved with majority of votes by the jury and has been accepted as a Master of Nursing Thesis.

Thesis Defense Date: 22.01.2021

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DECLARATION

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Title of Dissertation : Prevalence of dysmenorrhea and its effects on quality of life among undergraduate female students in Near East University.

Supervisor: Prof. Dr. Gülşen VURAL

Year: 2021

I hereby declare that this thesis is my own work study, I had no unethical behavior in all stages from planning of the thesis and writing thereof. I obtain all the information of the thesis in academic and ethical rules. I provide references to all of the information and comments which could be obtained by the thesis study and took references into reference list and had no bad behavior of breeching patent rights and copyright infringement during the study and writing of this thesis

Esther Zeno Ngwasi

.....

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ACKNOWLEDGMENT

First of all, I am thankful and very grateful to the most beneficial and very sincere entity to me nobody else than almighty God. Also, my profound gratitude goes to my supervisor Prof. Dr. Gülsen Vural for her tireless guidance, patience, constructive criticisms, moral support, critical comments and suggestions throughout writing this thesis.

Together I extend my gratitude to Ass. Prof. Dr. Serap Tekbas, Ass. Prof. Dr. Dilek Sarpkaya Güder, and Prof. Dr. Hatice Bebiş.

Special thanks should go to my family, my husband Mr. C. Mndeme and my children Hanson and Francis for their support and love throughout my study, I shall always remain grateful for their support and prayers during this thesis preparations.

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LIST OF ABBREVIATIONS AND SYMBOLS

HRQoL	Health Related Quality of Life
QoL	Quality of life
NEU	Near East University
VAS	Visual Analogue Scale
SF 36	Short Form 36 Item
WHO	World Health Organization
BMI	Body Mass Index
MOS	Medical Outcome Study
P-value	Level of Significant

Prevalence of dysmenorrhea and its effects on quality of life among undergraduate female students in Near East University

ABSTRACT

OBJECTIVE: To determine the prevalence and severity of dysmenorrhea and its effect on quality of life among undergraduate female students in Near East University.

METHODS: This descriptive study was conducted at Near East University Faculty of Nursing and Faculty of Economics and Administrative Sciences in the department of Banking and Finance and department of Economics. Stratified sampling method was employed to determinate minimum required sample size. Out of 402 students a total 341 responded (giving a total response rate of 85.3%) and this was the working sample for the study. Online version of a questionnaire was used in data collection on socio-demographic, menstrual pattern, VAS was used to measure severity of dysmenorrhea and Short Form-36 Item health scale was used to measure quality of life.

RESULTS: The study reveals high prevalence of dysmenorrhea 63.0% among students and 57.2% had moderate degree of pain (5-7) according to VAS. Mean age of participant was 23.3±2.9 years ranging from 18 to 35 years, age at menarche was 11-13years. Most students 55.80% are reluctant to share dysmenorrhea, Dysmenorrhea effects by 57.7% of students on class attendance, less effect (37.7%) on class concentration and 32.1% on academic performance. There is limited awareness on managing and treatment as 63.3% of students reported not to require medical help, 65.1% bother not to seek professional help for dysmenorrhea. Those students with dysmenorrhea role limitation-physical ($P<0.001$), bodily pain ($P< 0.001$), social functioning ($p <0.012$) and general health perception ($P<0.002$) was found statistically significant. Severity of dysmenorrhea has an effect on quality of life of students all mean SF-36 domains, were found to be statistically significant ($p<0.05$) except vitality subscale ($p= 0.946$).

CONCLUSION: Dysmenorrhea is a common women's health problem having a negative effect on quality of life and education among undergraduate female students in Near East University.

Keywords: Dysmenorrhea, Prevalence, Quality of life, SF -36 Item, Female students.

Yakın Doğu Üniversitesi Lisans Öğrencilerinde Dismenore Sıklığı, Şiddeti ve Yaşam Kalitesine Etkisi

TURKCE ÖZET(TURKISH SUMMARY)

AMAÇ Araştırma, Yakın Doğu Üniversitesi lisan söğrencilerinin dismenore prevalansı,şiddetivedismenoreninöğrencilerinyaşamkalitesineetkisinibelirlemekamacı ylatanımlayıcıolarakyapılmıştır.

GEREÇ VEYÖNTEM: Tanımlayıcı tipteki bu çalışma Yakın Doğu Üniversitesi Hemşirelik Fakültesi, İktisadi ve İdari Bilimler Fakültesinin Bankacılık ve Finans Bölümleri ile İktisat bölümlerinde yapılmıştır.Minimum örnek büyüklüğünün belirlenmesinde tabakalı örnekleme yöntemi kullanılmıştır. 402 öğrenciden 341'i (toplam yanıt oranı% 85,3) anket ve ölçeği yanıtlamıştır.Online olarak uygulanan anket formunda öğrencilerin sosyo-demografik özellikleri ve menstruasyon özellikleri ile ilgili sorular bulunmaktadır, dismenorenin şiddetini ölçmek için VAS ve yaşam kalitesini ölçmek için SF-36 yaşam kalitesi ölçeği kullanılmıştır.

BULGULAR: Çalışmada dismenore prevalansı öğrencilerin% 63.0'ında, VAS'a göre ağrı öğrencilerin % 57.2'sinde orta derecede (5-7) saptanmıştır. Katılımcıların ortalama yaşı 23.3 ± 2.9 arasında değişmekte olup, menarş yaşı 11-13'tür. Çoğu öğrencinin% 55.80 dismenore sorunlarını paylaşma konusunda isteksiz olduğu, dismenorenin okula devam üzerinde % 57.7 oranında etkili olduğu, daha az etkisinin de (% 37.7) derse konsantre olma ve % 32.1 oranında da akademik performans üzerinde olduğu bulunmuştur. Öğrencilerin%63,3'ü tıbbi yardıma ihtiyaç duymadıklarını,% 65,1'i dismenore için profesyonel yardım istemedikleri için ilaç kullanma konusunda farkındalıklarının sınırlı olduğu saptanmıştır. Ölçeğin Dismenore rol kısıtlılığı-fiziksel ($p = 0.001$), bedensel ağrı ($p = 0.001$), sosyal işlevsellik ($p = 0.012$) ve genel sağlık algısı ($p = 0.002$) alt alanlarının önemli olduğu saptanmıştır. Dismenore şiddetinin öğrencilerin enerji alt gurubu dışında ($p = 0,946$) tüm SF-36 alanlarında etkili olduğu saptanmıştır ($p <0,05$).

SONUÇ: Dismenorenin, Yakın Doğu Üniversitesi'ndeki kız öğrencilerin yaşam kalitesini ve eğitimini olumsuz etkileyen yaygın bir kadın sağlığı sorunu olduğu saptanmıştır.

Anahtar Kelimeler: Dismenore, Prevalans, Yaşamkalitesi, SF -36, Kızöğrenciler.

1. INTRODUCTION

Menstruation signifies the transition from childhood to adulthood which provide the mark in puberty development of adolescent girls. Menstrual period in young girls may be characterized with variability in volume and pattern as well as associated pain and discomfort known as dysmenorrhea (Kural at al, 2015; DeSanctis et al, 2016). Dysmenorrhea has been the most common gynecological problem worldwide experienced by women which cause pain in the lower abdomen extending to the lower back and legs, this discomfort is experienced to some women and not all can experience such discomfort during menstruation period (Ju at al.,2014).

Several authors have reported high prevalence of dysmenorrhea across the global with variations in populations and ethnic groups. Dysmenorrhea is a critical public health burden owing to its high prevalence across studies. The prevalence of dysmenorrhea globally varies from 20% to 90% (De Sanctis et al., 2015). The highest rates have been reported to adolescents' girls in the population ranging 15.8% - 89.5% and more common at the age ranges between 17-24 years worldwide and is reported to decline in woman advanced age (Bernard et al,2017).

According to Kaunitz & Smith, (2014) prevalence of dysmenorrhea in Europe and America has been reported to be more than a half of adolescent's population which ranges 52.4% to 85.7%. Studies done in Asian countries reported that prevalence of dysmenorrhea was ranging from 58.8% to 84.9% (Chan, 2009; Pits et al, 2008). A study by Kumar et al. (2016), reported that, the prevalence of dysmenorrhea was 76.0% and this prevalence was higher compared to studies conducted among school and college girls in other India. The prevalence of dysmenorrhea was found to be 79.67% in a study done in Gwalior India among higher secondary school girls where most of them suffer severely symptoms a day before and first day of menstruation (Agarwal and Agarwal, 2010)

In addition, in the study done by Unsal et al. (2010) to female student in the University of Dumlupinar Kutahya Health School Western Turkey, prevalence of dysmenorrhea was found to be 72.7% and was significantly higher in coffee consumers and those who had a positive family history of dysmenorrhea when compared to others who has no family history in the same study. These reports

concludes that dysmenorrhea is very common and a public health problem worldwide.

Although menstruating is regarded as natural process in human development especially in women, its disorders like dysmenorrhea affects woman's life in different perspectives. Various studies in Africa have reported that the prevalence ranging from 58% to 85.4% (Azianto et al, 2014.; Olubun et at.,2016). Tanzania is one of African countries with high prevalence rate of dysmenorrhea. A study done by Pembe and Ndolele, (2011) reported 74.1% of adolescent's secondary school girls had dysmenorrhea with backache and headache which were significantly more common symptoms among adolescents with dysmenorrhea than without dysmenorrhea.

Furthermore, dysmenorrhea has been reported to have an effect in education of female students in schools and universities and in quality of life. Studies all over the world (Shewte and Sirpurkar, 2016; Gagua et al.,2012 and Ameade et al.,2018)) reported that dysmenorrheal causes short-term school absenteeism, poor class concentration and poor academic performance to adolescent girls and women's absenteeism at work which results in low economic status of the family and community. International Association for the Study of Pain (2007) found that at each menstrual period approximately 10% to 15% of dysmenorrhea women were not able to work for 1 to 3 days (Habibi et al.2015).

Moreover, the most important problem found in women with dysmenorrhea is low quality of life, apart from school and work absenteeism it has been reported that dysmenorrhea interferes with daily living activities, limitation in socialization, emotional disturbance and altered sleep patterns. A study done by Unsal et al. (2010) found that majority of women in their study (66.2%) reported to have moderate and severe degree of pain and they were not able to attend work and not able to perform domestic activities. Ju et al, (2014), reported that female students in rural areas reported a negative effect on their quality of life in social environment, work, and psychological status This indicates that dysmenorrhea is still an important public health problem.

However, studies around the world (Al-kind and Bulush, 2011; Avasarala and Panchangam, 2008) reported that most of the respondents with dysmenorrhea had poor interpersonal relationships with friends and family members and decreased daily physical activity with increase in the severity of dysmenorrhea. Similar results were also found by (Kumbhar et al., 2012) that social activities and interaction with families, limitation in physical activities, class absenteeism, emotional disturbances, fatique were reported to effect female students with dysmenorrhea than those without dysmenorrhea.

Shewte and Sirpurkar, (2016) in their study of assessing quality of life in association with the dysmenorrhea the results of the scores received from many of the QoL scales (SF-36 item) domains were significantly lower in students with dysmenorrhea ($p<0.05$). The same results also were found by ((Barnard et al., 2003, Chaumoor et al., 2012) that dysmenorrhea affects physical, social functioning, role– emotional, and mental health. As the severity of pain increase the mean scores received from of SF-63 scale of respondents shows decrease this suggest that those women with dysmenorrhea had lower QoL. Similar results were also reported by Unsal et al, (2010) in the study of female university students in Kutahya University Western Turkey where the scores received from many of SF-36 subscales were found to be significant to students with dysmenorrhea compared to students without dysmenorrhea.

Dysmenorrhea can be termed as a disabling condition which causes discomfort as well as the reduction in the quality of life of female students. Despite of high prevalence and negative effects on quality of life, treatment seeking behavior was found to be low among adolescent girls. As they seem to accept the discomfort as part of the process of their maturation into adulthood. Lakshmi et al. (2011) in the study to asses knowledge of dysmenorrhea to female medical students in Bharant University in India reported that treatment-seeking behavior was found to be low despite of severity of pain. Nearly two-fifth of the respondents with dysmenorrhea said that painful menstruation was a natural phenomenon and hence treatment was not required. This is also contributed by some traditions and religion factors where by the girls must obey the instructions given by parents or elderly community woman that the pain will disappear after delivery of first child. They told not to say/report

the pain since the first occurrence of menstruation/menarche (Nakame et al, 2019, Lee et al,2006). In addition, Kumar et al, (2016) report that despite the high prevalence of 76.0% dysmenorrhea in adolescents, only 38% of the girls with dysmenorrhea received treatment for painful menstruation. Majority of girls did not seek professional help for dysmenorrhea; more than a half runs to their mothers when experiencing pain or need for help and answers regarding their condition. Self-medication practice was also found very common to students as majority reported to use paracetamol as pharmacological pain relieve and hot tea and hot bath as non-pharmacological pain management measures. Although it is normal physiological process, many adolescents have less or no information about dysmenorrhea (Sharma and Gupta, 2003). These girls need proper education on management in order to change treatment behaviors. Appropriate counselling and information on management of dysmenorrhea should be insisted among female students to help them cope with the challenges of dysmenorrhea.

1.1 The aim of the study

The aim of this study was to determine the prevalence, severity of dysmenorrhea and its effect on quality of life among undergraduate female students in Near East University (NEU).

1.2 Significance of the study

The quality of life during dysmenorrhea is comparatively poor among dysmenorrhea girls. Loss of physical activity, work satisfaction, personal relationship and concentration in the class and at work also suffers. Therefore, the results of this study will increase awareness on dysmenorrhea and management of pain by female students and nurses and by so doing will reduce absenteeism at school and at work that will improve quality of life of teens. Results of this study will be useful in modifying health promotion services with a view to improving reproductive health services.

1.3 Research questions

- What is the prevalence of dysmenorrhea to female undergraduate students in NEU faculty of nursing and faculty of economics and administrative sciences department of banking and finance and department of economics?
- Do female students in NEU in selected faculties have knowledge on management and treatment of dysmenorrhea?
- What is the effect of dysmenorrhea on education?
- What is the effect of dysmenorrhea on student's quality of life?

2. GENERAL INFORMATION

Dysmenorrhea is common gynecological problem among child bearing age women's in the world. Menstrual pain or dysmenorrheal are terms most commonly used in medical practice and literatures. Dysmenorrhea may manifest like cramps pain and dull that usually the pain felt ranging from mild to severe degree of pain when measured in a pain scale. Dysmenorrhea always occurs just few days before menstruation period starts or after menstruation and this condition last between 2-4 days, (Grand et al, 2012, Ju et al, 2014).

Dysmenorrhea is also contributed by early or late menarche with heavy bleeding than normal menstrual flow. Dysmenorrhea may be associated with other risk factors namely low body weight, malnutrition, genetic factors, disturbed mental status, stresses, low social economic status of the family, inadequate physical exercise, exposure to active and passive cigarette smoking, excessive sugar, fat, salt and alcohol intake found to be reasons of dysmenorrhea (Grand et al, 2012).

Esimai and Esan, (2010) found that depression, anxiety, headache, aggressiveness, sadness and other emotional behaviors of woman increases the risk of dysmenorrhea, as all these factors has an impact in menstrual cycle function (Ju et al, 2014). Furthermore, woman varies in dysmenorrhea symptoms. Most dysmenorrhea symptoms experiencing by women with dysmenorrhea are, lower abdominal cramp-like pain radiating to the back and lower legs, headache, nausea and vomiting which sometimes accompanied by diarrhea, fatigue and body weakness (Gagua et al,2012).

2.1. Types of dysmenorrhea

Dysmenorrhea can be divided into two categories. Primary dysmenorrhea and Secondary dysmenorrhea. Primary dysmenorrhea has been described as common and recurrent menstrual cramps in a normal physiology of woman; it usually begins after menarche and possibly continues till a woman reaches her menopause. It has been reported that 50% of adolescent girls suffers from primary dysmenorrhea. Prostaglandins plays a big role in primary dysmenorrhea as they are made in the lining wall of the uterus, as the level of prostaglandins increases in the lining of the

uterus contraction of muscles of the uterus occurs due to low blood supply in uterus muscles and causes pain known as dysmenorrhea (Ozerdogan et al, 2009).

Secondary dysmenorrhea is another type of menstrual pain which occur due to pathological conditions of a woman. The condition may occur at any woman's age after menarche and before menopause and mostly when a woman reaches her 30 to 40s.The women may complain of cycle irregularities, bleeding length and severity of pain. Common pathological factors for secondary dysmenorrhea are; ovarian cyst, fibroids, post coital bleeding, PID, uterine polyps and cervical stenosis and myoma (Esimai and Esan, 2010).

2.2. Treatment of dysmenorrhea

Treatment of dysmenorrhea depends on the type of dysmenorrhea and its causes. Physical examination, medical history, family history, menstrual history may be performed to find the cause. In severe cases pelvic examination, ultrasound and laparoscopic diagnostic tests may be performed. Pain relievers like Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) may be recommended (Proctor & Farquhar, 2006). Life style modification activities like physical exercise, relaxation therapy and dietary modification, vitamin supplements, heating pad across the abdomen, hot bath or shower and abdominal massage may relieves pain. In severe cases the mix of treatment works the best.

2.3. Nursing role in the management of dysmenorrhea

Management aims to relieve pain or symptoms, which affect daily activities of adolescent girls and women. Application of evidence-based treatments practice is important in achievement of better quality of life and use of integrative therapies in order to achieve the best possible clinical outcome (Nakame et al, 2019).

Dysmenorrhea is linked with several misinformation and traditional practice which sometimes result into adverse health outcomes Therefore, nurses should educate the families and community on the management of dysmenorrhea and give education on menstruation in general to improve women health and reproductive (Dasgupta and Sarkar, 2008). Nurses should teach the girls to perform physical exercise and the use of relaxation techniques therapy such as yoga, meditation therapy. Renuka and

Jeyagowri, (2015) has found the relationship between stretching exercise and primary dysmenorrhea that stretching exercise can reduce menstrual discomfort through increase in vasodilation and decrease ischemia.Relaxation therapy reduces skeletal muscle tension which reduces pain intensity and improves blood circulation to meet oxygen demand of the uterus. (Bernard et al, 2000).

Dietary changes are important in management of dysmenorrhea, health education on dietary modification is crucial to girls especially on vitamins and minerals foods, reduce fat intake, sugar intake, avoid alcohol intake and avoid caffeine intake when experience menstrual pain. Muleneh et al., (2018) reported that women consuming excessive amount of sugar experienced severe dysmenorrhea than non-sugar consumers women. Nagata et al. (2005 and Bajalan,(2019) found that fat consumption has a significant association with dysmenorrhea that only the intake of saturated fat had a positive association with lower menstrual pain. Moreover, caffeine consumption was studied including coffee, tea, Nescafe, carbonated soft drinks, chocolate, and hot chocolate shows a significant effect with dysmenorrhea. Pejčić and Jankovic (2016), and Hailemeskelet al. (2016) found significant associations between caffeine consumption and higher intensity of menstrual pain.

Adolescent hygiene during menstruation is very important factor to consider when this during menstruation. Sanitary pads and other requirements must be well clean and kept dry in order to prevent ascending infection and funguses. Daily bathing is advice, change of feminine pads as often as possible and care of re-use products must be clean and dry and clean. (Lawan, et al, 2010; El-Hamad et al, 2011). Nurses should encourage adolescents' girls to improve personal hygiene by regular bathing and frequent changing of sanitary pad; this will add an advantage in preventing genital- urinary tract infections to the girls during menstruation period.

Warm or heat management for dysmenorrhea has been used as domestic or traditional therapy to relieve pain for dysmenorrhea the randomized control trial has compared the use of NSAID (ibuprofen. and heat therapy. The heat patch (39°C) used for 12 hours a day was found to be as effective as ibuprofen (400 mg three times a day) (Proctor & Farquhar, 2006 and Akin et al, 2004). Nurses should teach women the use of warm compress by placing a heating pad or hot water bottle on

lower back or abdomen to reduce pain. Heat increases vasodilation and muscle relaxation while decreasing ischemic uterus thus relieves abdominal cramps.

2.4. Definition of Quality of life (QoL) and health related quality of life (HRQoL)

QoL is defined by World Health Organization (WHO) as individual's perception of their position in life in the context of the culture and valued systems in which they live and in relation to their goals, expectations, standards, and concerns (https://www.who.int/healthinfo/survey/whoqol-qualityoflife/en/Accession date 11 September 11, 2020).

HRQoL is multidimensional concept that usually includes individual or group of people perception of positive and negative aspects with construct in physical health, mental health and social domains overtime (Karimi and Brazier, 2016).

2.4.1 History and early works in HRQoL

Quality of Life has been increasingly used in medical and philosophical literatures for the past four decades. In the 1960s and 1970s QoL was used as a parameter for making decisions in health issues. Consequently, researchers focused their interest on the construction and testing of instruments designed to measure health and QoL (Pennacchini et al, 2011).

2.4.2 The use of QoL in medicine and Nursing.

The term QoL began to be used in the early 1960s following changes in the health and the demographic profiles of late modern societies. QoL was first mentioned in medical field by Elkington J.R in 1966. In an editorial titled "Medicine and Quality of Life". In1971 – 1975 it was defined as generic concept reflecting the modification of life in physical, political, moral, social environment and overall health of human being (Pennacchini et al, 2011).

Nursing research development in quality of life was first developed in 1993 by the Cumulative Index for Nursing and Allied Health Literatures (CINAHIL). Where by nursing journals, publications dissertations were accessed and focused on phenomenological perspectives in understanding of the concept of nursing to develop

an instrument to measure quality of life of patient in nursing professionals (Padilla et al ,1992).

2.4.3 Quality of life model

Researchers have used a variety of QoL models as one of the conceptual models used as a measurement device to provide a concept across life span among individual, families and community. However, Bakas et al, (2012) reveals three models of QoL which are:

Wilson and Cleary (1995) models, this model combines two paradigms of biomedical and social sciences. It includes five major domains which are biological, symptoms functions and general health perception in overall health related quality of life.

Ferans et al, (2005) model, this model was reviewed and published by Wilson and Cleary model, the model defines the relationship of individual and environmental characteristics. The relationship among components will lead to effective clinical investigation., It is well recommended by Bakas et al,2012 as it add value in environment and community

WHO-International Classification of Functioning, Disability and Health (WHO-ICF 2007), is a model designed to provide a description of health and health states while unifying and standardize languages that can be used that can be used across cultures and disciplines. It covers infants, children, and adolescent. The model has components of functioning, disability, body functioning, structures and participation in environment and personal (Bakas et al, 2012).

Moreover, the Short Form 36 Item (SF-36) scale model was developed by Ware and Sherbourne in 1992. It is the most widely used generic instrument for rating health related quality of life. It is a self-evaluation instrument, constructed to survey health status in the Medical Outcomes Studies (MOS). The SF-36 includes one multi-item scale that assesses eight health domains/concepts https://pubmed.ncbi.nlm.nih.gov/1593914-the-mos-36-item-short-form-health-survey-sf-36-i-conceptual-framework-and-item-selection/ Accession date 12 September 2019).

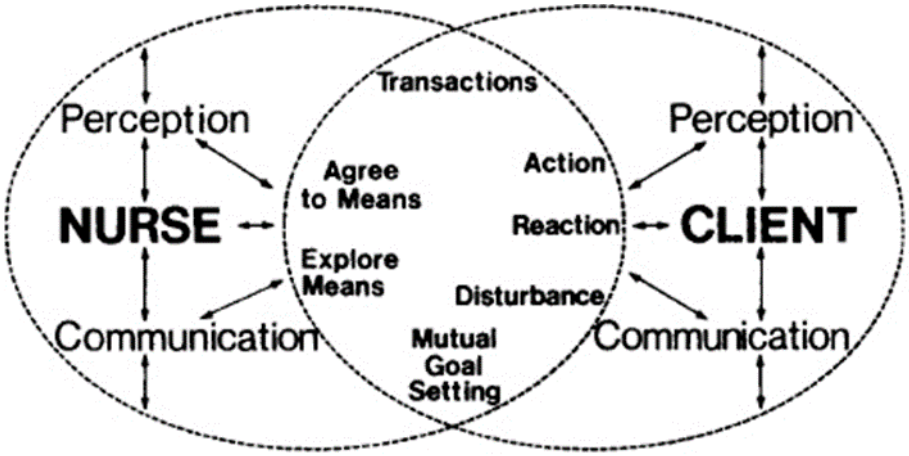
2.4.4 Conceptual framework of nursing and QoL

QoL perspectives are important scope in nursing practice world-wide. Nurses provides physical, psychosocial, spiritual and cultural components of care. Nursing has led the way to scientific disciplines in identifying, measuring, promoting and evaluating. Nursing theorist examined and revealed four nursing theorists attributed to QoL (Imogene King, Madeleine Leininger, Rosemarie Parse, Hildegard Peplau, and Martha Rogers): on contextual, subjective, intangible, and health related phenomenon (Plummer and Molzahn, 2009,; Kings & Hinds,2011).

The evaluation of QOL falls under the umbrella of nursing process the nursing process comprised of five steps: nursing assessment, planning, diagnosis, implementation, and evaluation. Nurses can utilize quality of life domains to evaluate teens reproductive health issues. Nurse or midwife, need to focus on the human interaction process that leads to goal settings of individuals, families, and community. Furthermore, in the theory of goal attainment focuses on good health. And the major concepts of the theory were nursing, health, individual, environment action and reaction. The theory states that *"Nursing is a process of action, reaction and interaction by which nurse and client share information about their perceptions in a nursing situation*" *and a process of human's action between nurse and client whereby each perceive the other and the situation and through communication they set goals, explor means and agree on means to achieve goa*ls.

(*King, 1981*)

The outcome measure of the theory is goal attainment which can be assessed by the evaluation of QoL (Figure 1). The interaction and relationship between nurse and adolescent girls lead to achievement of good health which is the goal of QoL.



SOURCE: King, 1981, p. 157. Copyright 1981 by Delmar Publishers, Inc. Reprinted by permission.

https://pltfrmrsrcs.sagepub.com/images/imogene-king/9780803940864-p29-1.jpg

Figure 1. Imogine King: A conceptual Frame work for nursing

3. MATERIALS AND METHOD

3.1 The Study Design

The descriptive cross-sectional research design was used to conduct this study.

3.2 The study site

The study was conducted at NEU in the faculty of Nursing and faculty of Economics and Administrative Sciences in the department of Banking and Finance and department of Economics. NEU is located in North Cyprus in North Nicosia and is a private university. The NEU currently has 16 faculties with 98 departments, 4 vocational schools, 2 high schools and 4 graduate school offering programs at undergraduate, postgraduate and PhD levels with over 25,000 students. NEU is the largest university in Northern Cyprus.

3.3 Study population and sampling

3.3.1 Population of the study.

Population of study included all Nigerians female undergraduate students in NEU faculty of nursing (N=200) and faculty of economics and administrative sciences in the department of banking and finance (N=100) and department of economics (N=102) making a total of 402 students. These faculties were selected due to the enormous presence of Nigerian female students.

3.3.2 Sample calculation

Stratified sampling method was employed to determinate minimum required sample size from the population and to estimate prevalence of dysmenorrhea among university students with 5% precision and 95% confidence interval. This is according to Australian Bureau of statistics. (https:// www. abs. gov. au/ websitedbs/ D3310114.nsf/ Sample+Size+Calculator+Stratification).

From a population of 402 students, minimum required sample size was estimated at 193 students. The researcher sent out the survey questionnaires to all students at the selected faculties and departments. Out of 402 students a total 341 responded giving a total response rate of 85.3% and this is the working s ample for the study, being

183 students (53.7%) from faculty of nursing, faculty of economics and administrative sciences department of banking and finance were 58 students (17.0%) and department of economics 100 studenst (29.3%) were all regarded as participants for the study as shown below.

Sample selection figure

Faculty/departments	Total Population	Number of participants	Sampling stratification ratio	Minimum required sample size for each stratum
Faculty of Nursing	200	183	49.75	96
Department of Banking and Finance	100	58	24.88	48
Department of Economics	102	100	25.37	49
Total	**402**	**341**	**100**	**193**

3.3.3 Sampling method

A voluntary response method was used to find the estimated sample needed for the study. In voluntary sampling potential respondents are selected through first volunteer first select (FVFS) concept order as 1^{st}, 2^{nd}, 3^{rd}… n^{th} volunteer (last respondents), where n is the final sample size. The voluntary ties are broken arbitrarily by the researcher (Murairwa.S, 2015).

After sample size calculation a total of 402online questionnaires were sent to Nigerians female students in all classes. The online method was chosen due to the emergence on Covid -19 pandemic. The diseases situation required minimum of zero contact between persons to prevent spread. Hence online self-administration questionnaire was safe approach to both researcher and respondents. Participants were given a maximum of six weeks to respond. The first response was regarded as number 1 participant and the last respondent was number 341 in the last day of the sixth week, hence 341 is the working sample in the study.

3.3.4 Inclusion criteria

- Because of the quality-of-life scale which was used in this study, validity and reliability study was done in Nigeria, only undergraduate female students from Nigeria in NEU in the faculty of Nursing, and Faculty of Administrative Sciences and Economics in the department of Banking and Finance and department of Economics was taken.
- Female students.
- Ability to speak and understand English.
- Voluntary to attend

3.3.5 Exclusion criteria

- Students who do not speak and read English.
- Students who are not Nigerians undergraduate female students in NEU in the Faculty of Nursing and Faculty of Administrative Sciences and Economics in the departments of Banking and Finance and department of Economics.

3.4 Data collection

3.4.1 Data collection tools

Data was collected by using an online questionnaire developed by the researcher based on literature, quality of life scale Short Form-36 Item and Visual Analog pain Scale (VAS) after establishing research tools in editable portable document format (PDF) online version. Email address of the female students was obtained from their class representatives, the request to participate was sent to students by email and those who agreed to participate they were given the letter of information for potential participant, informed consent and the study tool were sent for them to fill and after replaying the tools they send it back to researcher online.

3.4.1.1 Questionnaires

The questionnaires were developed by the researcher as online which consist of five parts; Section A of questionnaires gathered general demographic information of the respondent, the age, ethnic group, faculty and department of respondent, marital status, religion, height and weight. Section B developed to collect information with regard to menstrual pattern of respondents, in this area the respondent response will

lead to relationship and comparison with those with dysmenorrhea and those without dysmenorrhea in the quality of life. Section C was structured to capture information on awareness of dysmenorrhea and treatment practice. Section D shows effect of dysmenorrhea on education and section E gathered information on effects of dysmenorrhea on quality of life.

3.4.1.2 Visual Analogue Scale (VAS)

VAS is a pain rating scale and was first used by Hayes and Patterson in 1921. Scores are based on self-reporting on a line of 0 to10 points. The mark is placed in the line. at the point where a person felt. It is a self-evaluation pain scale where 0 is written means “no pain”, 5 is written in the middle of the scale and it means “moderate pain”. The values can be used to track pain progression for a person (Boonstra et al, 2008).

3.4.1.3 Quality of life Sf-36 Item scale

The Short Form 36 Item (SF-36) scale is the most widely used generic instrument for rating health related quality of life. The original scale was developed by Ware and Sherburne 1992 as part of the RAND Medical Outcomes Study. www.rand.org/health-care/,Accession date 20 October 2019. It is a self-evaluation instrument, constructed to survey health status in the Medical Outcomes Studies (MOS). The SF-36 includes one multi-item scale that assesses eight health domains/concepts: 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional problems; 3) limitations in usual role activities because of physical health problems; 4) bodily pain; 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); and 8) general health perceptions. Scores ranges from 0-100 for each domain separately, the higher score indicates the good quality of life and the lower the score the poor quality of life, QoL is a positive skew.

3.4.2 Pre testing

The questionnaires were pretested among 15 students via online (due to covid-19 infection) from the faculty of law prior to the real data collection, the pretest was carried out before starting collecting data in order to avoid bias and to check if questions are clear and understood, to note question which needed more clarification or probe. All necessary correction was done before starting the actual study. Six questions corrected and changed accordingly. Repeated questions were removed and questions which require more explanations were made into short questions and final tool was developed for use.

3.5. Study application or practice

Subject identities are kept confidential and anonymity maintained by not requesting for names only email addresses. Phone numbers were optional and for those volunteers to give their phone numbers confidentiality were highly maintained. The informed consent form includes: the purpose of the research, risk and benefit of study, information about voluntary participating and withdrawing from the study, contact information (optional). The researcher's name, phone number, email address and the institution 's address, the signature of the researcher and participant, witness name and signature, telephone number of participants. Participants are kept anonymous and the data gathered in survey process remains confidential to be used only on this research purposes. Questionnaires were sent to participant via emails. Student spent almost 10-15 minute to complete filling the questionnaires. In three weeks 40% were returned. Researcher reminded the participants to send back the remaining questionnaires. After another three weeks a total of 341 questionnaires were completed and sent back to researcher.

3.6 Statistical Analysis

Research data were statistically analyzed in IBM window version 21. Frequency analysis was used to determine the socio-demographic characteristics of each severity scale. Mann -Whitney U test was applied for comparison between two independent groups. The Kruskal Wallis test was applied to compare data among multiple groups Post Hoc test (ANOVA) used to provide specific information about which tool are significant from each other. A value of ($p<0.05$) were considered significant.

In this study, the reliability of this scale was established using Cronbach alpha as a measure of internal consistency. Cronbach's Alpha was calculated by using SSPS window 21.0 (IBM Co, Armonk. NY, USA) to test internal consistency (reliability)of the scale. Cronbach Alpha value of 0.754 was obtained which indicated that the questions items used in the scale are reliable to measure interest of construct, Cronbach's Alpha greater than 0.70 is considered as reliable.

Similar scale for reliability and validity study for Nigeria version of SF-36 were performed by Mbada et al, (2015) which were translated in Yoruba language and cross cultures in Nigeria. For their study Cronbach's Alpha value was above 0.700 which indicates that the questions used in the scale are reliable to measure interest's constructs. Before application of the scale to the study, researcher obtained writers permission to use the scale (Encl.2).
(https://www.researchgate.net/publication/281777209_Translation_crosscultural_adaptation_and_psychometric_evaluation_of_Yoruba_version_of_the_short-form_36_health_survey, Ac cession date 12 September 2019).

3.7 Ethical Considerations

Prior to the study, formal consent was taken from NEU Institute Review Board (IRB) with project number (YDU/2020/78-1057, approved on 23.4.2020 Encl. 3). The researcher also got permission to correct data from dean of faculty of nursing (approved on 20.5.2020, Encl.4).and permission letter to collect data from dean faculty of Economics and Administrative Sciences (Encl5) Permission to use RAND SF-36 scale developer (encl.6). Participant consent (Encl.7). Researcher ensured that participation is voluntary.

4. FINDINGS

4.1. Descriptive statistics

4.1.1 Socio-demographic characteristics of students

Table 1. Socio-demographic characteristics of the students (n=341)

Variable	n	Percentage (%)
Mean age ± SD	**23.3 ± 2.9**	
Age (Min 18, Max 35)		
≤20	35	10.1
21-25	245	71.8
>25	61	17.9
Religion		
Christian	217	63.6
Islam	124	36.8
Ethnicity		
Yoruba	121	35.5
Hausa	78	22.8
Igbo	89	26.1
Kanuri	41	12.0
Others*	12	3.5
Marital Status		
Married	14	4.1
Single	327	95.9
Department		
Nursing	183	53.7
Economics	100	29.3
Banking & Finance	58	17.0
Body Mass Index**		
Underweight (< 18.5)	20	5.9
Normal weight (18.5-24.9)	151	44.3
Overweight (25-29.9)	128	37.5
Obese (30-35.5+)	42	12.3

*Fulani, Tiv, Etsako, IjawandEfik

**kg/m^2

The analysis of demographical data revealed that majority of the participants 71.8% aged between 21-25 years of age, with a mean age of 23.3±2.9 years ranged from 18 to 35 years. Table1showed majority of 63% of students were Christians, 35.5% Yoruba ethnicity group, nearly a hundred percent were single. A large proportion of respondents 53.7% were nursing students. It was also observed that 44.3% have normal BMI (18.5-24.9).

4.1.2 Menstrual pattern of students

Table 2. Menstrual pattern of students (n=341)

Variable	n	Percentage (%)
Age at menarche (in years)		
≤10	15	4.4
11-13	276	80.9
14-16	50	14.7
History of gynecological problem		
Yes	28	8.2
No	313	91.8
Gynecologic Problem n=28		
Myoma uteri	4	14.3
Ovarian cyst	6	21.4
Intra-ovarian adhesions	6	21.4
Pelvic inflammatory diseases	8	28.6
Others*	4	14.3
Menstrual cycle length (days)		
Long cycle (>35)	138	40.5
Short cycle (<28)	203	59.5
Menstrual bleeding duration (days)		
Long bleeding (> 6)	121	35.5
Short bleeding (<3)	220	64.5
Menstruation cycle regularity		
Regular	286	83.9
Irregular	55	16.1
Family history of dysmenorrhea		
Yes	82	24.0
No	102	29.0
Don't know	157	46.0
Having dysmenorrhea		
Yes	215	63.0
No	126	37.0
Severity of pain according to VAS (n=215)		
Mild (≤4)	6	2.8
Moderate (5 - 7)	123	57.2
Severe (8 -10)	86	40.0
Onset of dysmenorrhea n=215		
1day prior menstruation	37	17.2
2nd day prior to menstruation	15	6.9
At the day of menstruation	84	39.1
2nd day of menstruation	75	34.9
3rd day of menstruation	4	1.8
Pain persistent days		
1-3 days	188	87.5
4-5 days	27	12.6

*Endometriosis, ovarian polyp, adhesions

Table 2 above, shows menstrual pattern of students. Among the students, 80.9% experienced menarche at the age group of 11–13 years (Table 2). The mean age at menarche was reported as 12.5 ± 1.4 years. The findings reveal that 8.2% has gynecological problems this suggests that3 in 10 students showed to have gynecological problems (figure 2), Further the data tells that, pelvic inflammatory disease was the common problem accounting for 28.6% followed by ovarian cyst 21.4% and intrauterine adhesions 21.4% (Figure 3 below). In this study 59.5% of students have shorter menstrual cycle duration (<28) and approximately two-third 64.5% of students reported menstrual bleeding duration ≤ 3days. At the end of study 83.9% of students had regular monthly menstrual cycle pattern and 24.0% of participants reported a positive family history of dysmenorrhea. At the end of this study 63.0% of students reported experiencing painful menstruation/dysmenorrhea, 57.2% reported moderate degree of pain 5-7 and 40% reported severe degree of pain 8-10 according to VAS. Also, data shows that 39.1% pain occurs at the day of menstruation and for majority 87.4% pain persists between 1-3 days (Table 2).

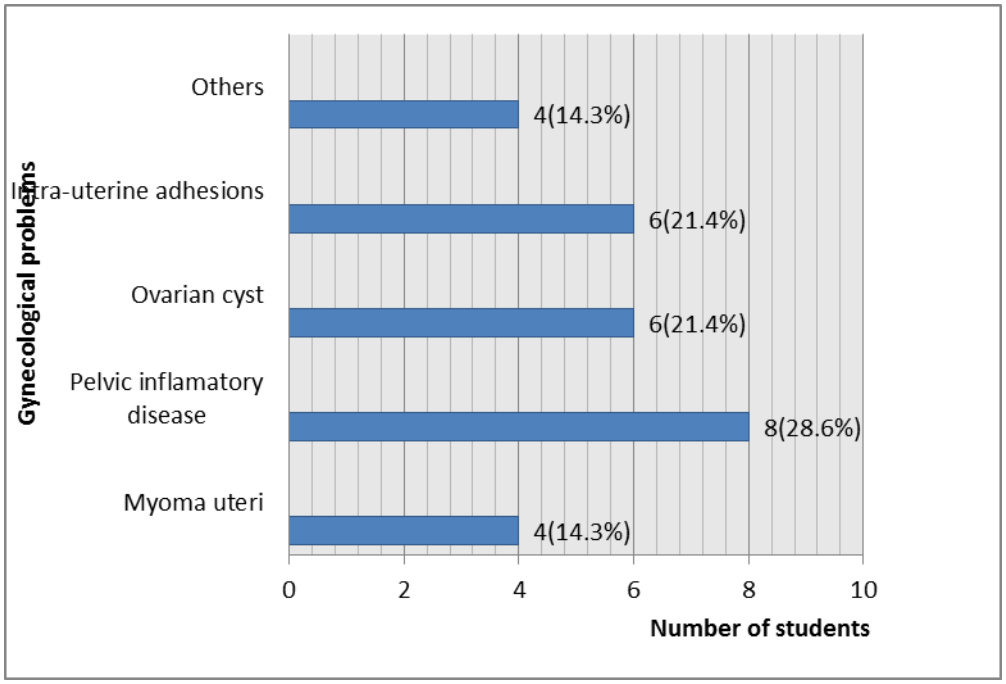


Figure 2: Distribution of gynecological problems among the students (n= 28)

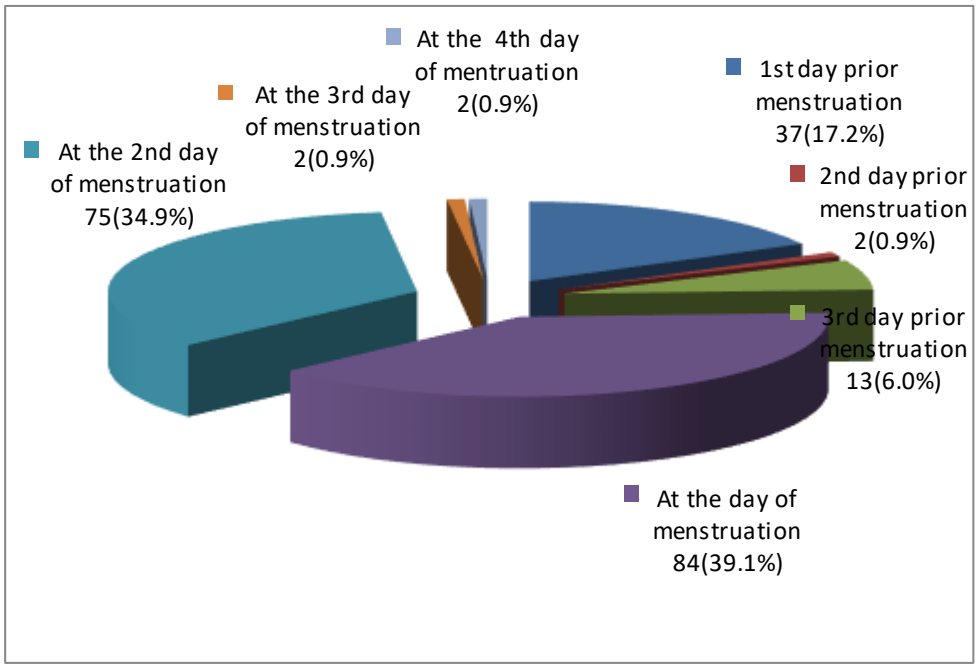


Figure 3: Onset of dysmenorrhea during menstrual period (n =215)

4.1.3 Awareness of dysmenorrhea and treatment practice

Table 3: Awareness of dysmenorrhea and treatment practice among the students (n=215)

Variable	Frequency	Percent
Sharing dysmenorrhea with others		
Yes	95	44.20
No	120	55.80
Total	**215**	**100.0**
Person shared dysmenorrhea problem		
Physician	4	4.2
Mother	36	37.9
Friends	31	32.6
Sisters	19	20.0
Nurse	5	5.3
Total	**95**	**100.0**
Seeking professional help		
Yes	75	34.9
No	140	65.1
Total	**215**	**100.0**
Reasons of not seeking medical		
Dysmenorrhea is normal	82	58.6
Shame	40	28.6
Other*	18	12.9
Total	**140**	**100.0**
Students opinion on requiring medical help		
Yes	79	36.7
No	136	63.3
Total	**215**	**100.0**

***Self-manageable, high cost, disgusting.

Table 3 shows awareness and treatment practice of dysmenorrhea. Out of 215 students with dysmenorrhea, 44.2% reported to have shared the dysmenorrhea problem with others. Of these, mothers 37.9% were the most common persons that students shared the dysmenorrhea problem. Interesting part is that only 5.3% shared by a nurse (Figure 4 below). It shows that 65.1% of students did not seek professional help for dysmenorrhea despite of pain they experience. The reasons for

not seeking professional help included; 58.6% of students reported that dysmenorrhea is a normal condition, 28.6% reported that it is shame to tell someone else and other reasons included self-medication and high cost, all accounting for 12.9% of students. Most of the students 63.3% reported that dysmenorrhea does not require medical treatment (Table 3).

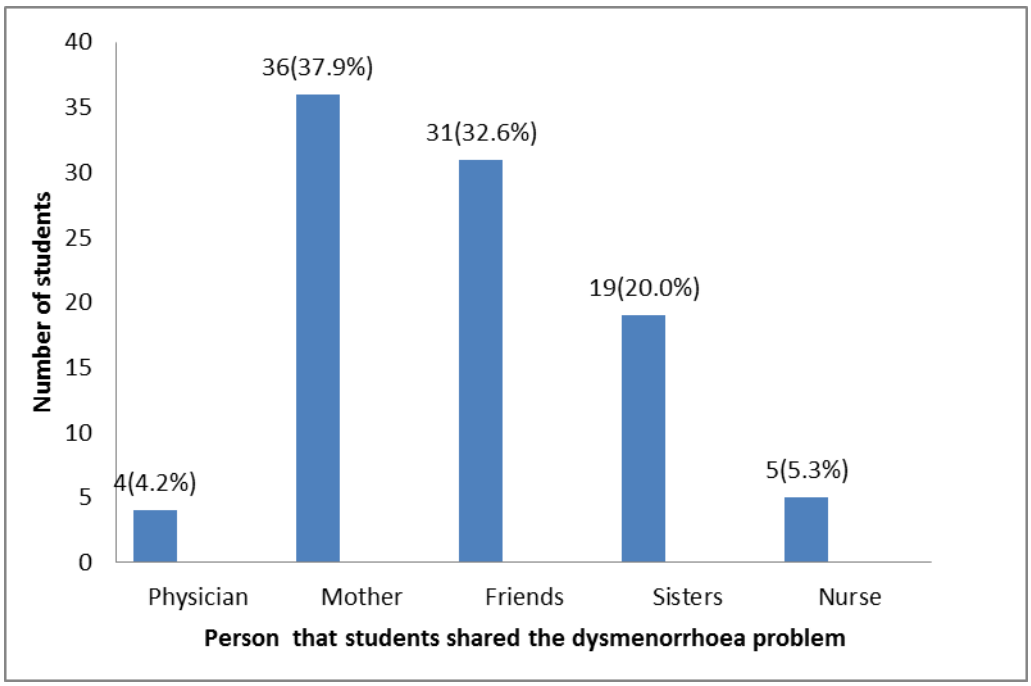


Figure 4: Person that student's shared dysmenorrhea problem.

Table 4. Pain relief methods used by students (n=215)

Variable	Frequency	Percentage
Using pain relief method		
Yes	144	67.0
No	71	33.0
Total	**215**	**100.0**
Type of pain relief method used		
Pharmacological	84	58.33
Non –Pharmacological	60	41.7
Total	**144**	**100.0**
Person recommended pain relief		
Doctor	36	42.9
Nurse	8	9.5
Relative	9	10.7
Friends	21	25.0
Others	10	11.9
Total	**84**	**100.0**
Type of pharmacological used		
Paracetamol	50	59.52%
Aspirin	20	23.80%
Ibrufen	14	17.50%
Total	**84**	**100.0**
Non-pharmacologic method used		
Hot bath	10	16.7
Heating pad	12	20.0
Hot tea	24	40.0
Herbs	8	13.3
Others*	6	10.0
Total	**60**	**100.0**

*Physical exercise, relaxing technique/yoga.

Table 4 shows out of 215 students with dysmenorrhea 67% uses pain relief methods to easy dysmenorrhea problem. Out of 144 students who used pain relief methods when having dysmenorrhea, 58.3% uses pharmacological methods and 41.7% of students uses non-pharmacological method and 59.52% of students reported using paracetamol and 23.8% uses Aspirin as pharmacological medication for pain relief (Figure5, Table 4). In the pharmacology method used 42.9% of students mentioned

the use of medication were prescribed by doctors and 25.05% students were friend's recommendation. Out of 41.7 % students that reported used non-pharmacological methods, 40.0% of respondents use hot tea (Figure 6).

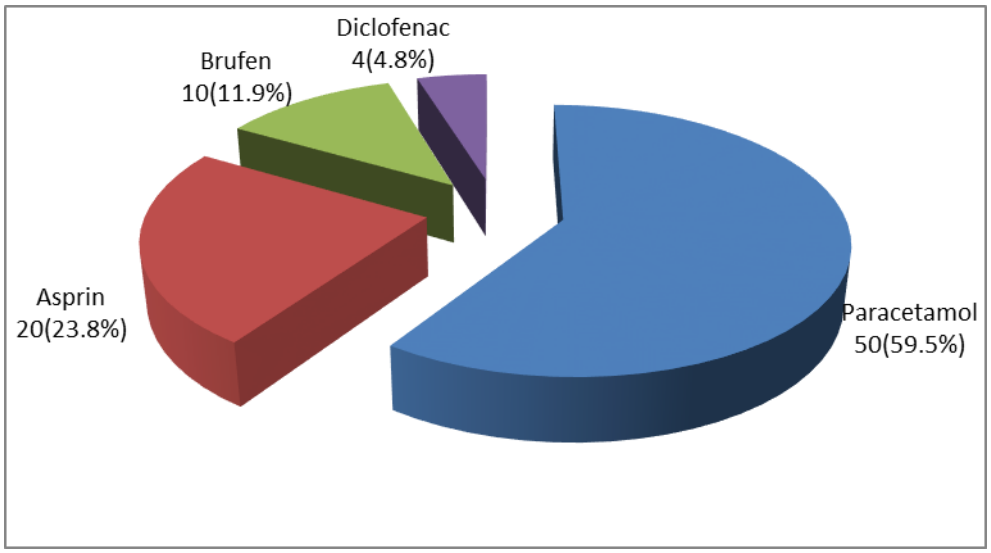


Figure 5: Pharmacological pain relief methods used among students with dysmenorrhea (n= 84)

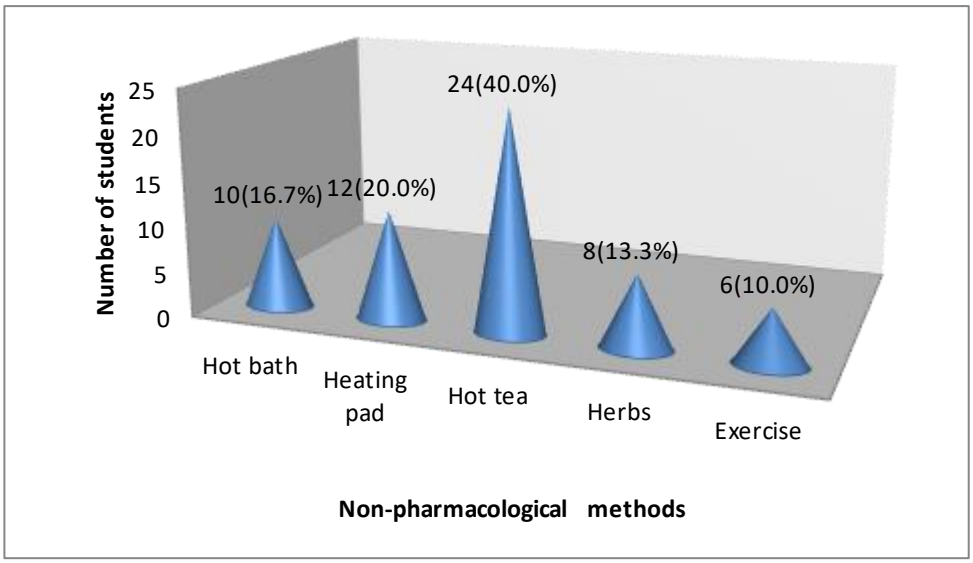


Figure 6: Non-pharmacological pain relief methods used by students with dysmenorrhea (N=60).

Table 5: Effect of dysmenorrhea on education (n=215)

Variables	Yes		No	
	Number	**Percentage**	**Number**	**Percentage**
Affecting class attendance	124	58.0	91	42.3
Affecting class concentration	81	38.0	134	62.3
Affecting exam grades/academics performance	69	32.0	146	67.9

*n was endured and percentages was taken according to n.

Table 5shows the effect of dysmenorrhea on students' education. More than a half of students 57.7% of students reported missing of classes when experiencing menstruation pain. However, to the 62.3% dysmenorrhea did not affect their class concentration. To the majority 67.9% of students mentioned dysmenorrhea does not affect their academic performance. As an important part of this study 31.5% of students reported three days of missed classes (Figure 7).

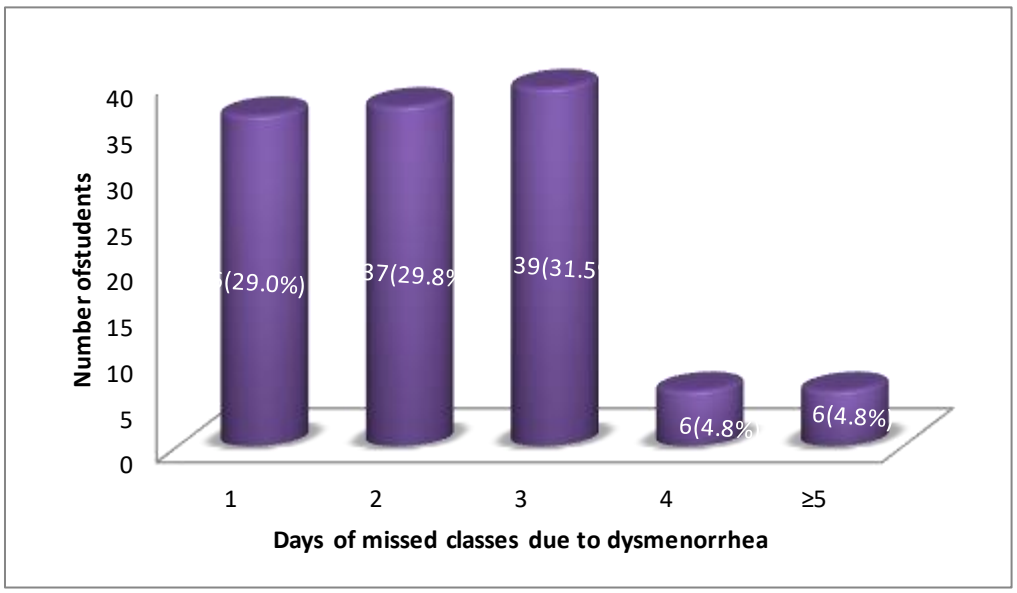


Figure 7: Number of days of missed classes due to dysmenorrhea.

4.2 Inferential Statistics

Table 6: Comparison of socio-demographic and menstrual characteristics of students with and without dysmenorrheal (n=341)

Independent (predictor) variables	**Having dysmenorrhea**		**Not having dysmenorrhea**		**Univariate analysis [OR(95%CI), p-value]**	**Multivariate analysis [OR(95%CI),p-value]**
	Yes(n=215)		No(n=126)			
	n	%	n	%		
Age						
≤ 25	192	68	88	31.4	1	
>25	23	37.7	38	62.3	4.6(2.1-7.9), 0.021	2.8(1.7-6.8), **0.001**
Marital Status						
Married	5	35.7	9	64.3	1	
Single	210	64.2	1117	35.8	1.3(1.1-2.9), 0.022	2.3(0.8-4.1), 0.056
Body Mass Index (kg/m^2)						
<185	11	55.0	9	45.0	1	
18.5-24.9	95	62.9	56	37.1	4.4(0.7-6.3), 0.980	0.980
25-29.9	73	57.0	55	43.0	2.7(0.2-4.8), 0.223	0.223
30-35.5+	36	85.7	6	14.3	1.9(0.5-3.8), 0.098	0.098
Age at menarche (years)						
≤10	10	66.7	5	33.3	1	
>10	205	62.9	121	37.1	0.5(0.2-0.9), 0.011	2.6(0.4-6.1), 0.437
Menstruation cycle regularity						
Regular	173	60.5	113	34.5	1	
Irregular	42	76.4	13	23.6	2.7(1.9-5.7), 0.002	6.2(2.7-8.8), **0.023**
History of gynecological problem						
Yes	17	60.7	11	39.3	1	
No	198	63.3	115	36.7	3.4(0.8-5.9), 0.653	0.653
Menstrual cycle duration (days)						
Long cycle (>35)	98	71.0	40	29.0	1	
Short cycle (<21)	117	57.6	86	42.4	1.9(1.1-3.8), 0.014	1.4(0.8-2.6), 0.773
Menstrual bleeding duration (days)						
Long bleeding (> 6)	74	61.2	47	38.8	1	
Short bleeding (<3)	141	64.1	79	35.9	2.6(0.5-5.7), 0.087	0.087
Family History of Dysmenorrhea						
Yes	76	92.7	6	73	1	
No	139	53.7	120	46.3	4.6(3.3-9.8), 0.003	2.2(1.5-6.8), **0.013**

Keys: OR = Odds ratio CI= Confidence Interval

As seen in table 6, when we look at age groups a higher proportion 68% of students with dysmenorrhea problem aged was less than ≤ 25, in the group of students without dysmenorrhea 62.3% aged >25.There was statistically significant difference between the groups ($p<0.05$). When we look at the marital status of students with dysmenorrhea, 64.2% of students was single and 64.3% of students without dysmenorrhea was married. There was statistically insignificant difference between the group ($p<0.05$). Age at menarche of students 66.7% with dysmenorrhea was >10 and 37.1% without dysmenorrhea was <10 years age at menarche. There is statistically insignificant difference between the age groups at menarche ($p>0.05$). On the menstruation cycle regularity student with dysmenorrhea 60.5% has regular cycle and 23.6% of students without dysmenorrhea has irregular menstrual cycle. Therefore, there is statistically significant difference between groups ($p<0.05$). Regarding menstrual cycle duration students with dysmenorrhea 71.0% has long cycle >35 days and students without dysmenorrhea 42.4% has short cycle of <21 days, there is statistically insignificant difference between gropes ($p>0.05$). On family history with dysmenorrhea ,92.7% of students with dysmenorrhea have family history and with no dysmenorrhea 46.3% has family history of dysmenorrhea. Therefore, there is statistically significant difference between groups ($p<0.05$). Furthermore, age of participants ($p=0.001$) menstrual cycle regularity ($p=0.023$) and the family history with dysmenorrhea ($p=0.013$) were significantly important factors associated with dysmenorrhea (Table 6).

4.2.1. Effects of dysmenorrhea on student's quality of life

Table 7: Mean SF-36 scores of participants with or without dysmenorrhea (n=341)

SF-36 domains	**Dysmenorrhea**		**p-value***
	Yes(n==215)	**No (n==126)**	
	Mean ± SD	**Mean ± SD**	
Physical Functioning	64.92±27.24	51.50±13.50	0.458
Role limitation (physical health problem)	38.69±34.58	80.45±23.06	**0.001**
Bodily pain	38.06±27.16	78.36±15.75	**0.001**
Social functioning	38.06±27.16	75.11±20.42	**0.012**
General mental health	62.32±13.51	49.82±11.96	0.072
Role limitation (emotional problems)	66.77±37.91	59.69±25.18	0.653
Vitality	60.08±14.60	51.77±14.09	0.331
General health perception	50.52±9.29	62.00±10.00	**0.002**

*Independent samples t-test.

Table7 shows mean SF-36 score of participants with or without dysmenorrhea for comparison of mean SF-36 scores of participants with and without dysmenorrhea, role limitation (mean 38.69±34.58, p<0.001) and bodily pain (mean 38.06±27.16, p-value= 0.001), social functioning (mean 38.06±27.16, p-value = 0.012) and general health perception (mean62.32±13.51, p-value= 0.072) was statistically significant (p<0.005). In this table the physical functioning mean score was (64.92±27.24, p-value=0.458), general mental health (mean 62.32±13.51, p=0.072), Role limitation (emotional problems) (mean value 66.77±37.91, p=0.653, Vitality (mean value 60.08±14.60, p=0.331) were found to be statistically insignificant (p>0.005).

Table 8: Severity of dysmenorrhea and mean score SF-36 domains (n=215)

Scale Score	4&Less (n=6)	5 to 7 (n=123)	8 to 10 (n=86)	Xkw*	P**
	Mean±SD	**Mean±SD**	**Mean±SD**		
Total Score	63.16±16.99	55.17±12.37	43.31±14.21	36.911	**0.000**
Physical functioning	90.00±11.55	68.88±23.28	45.19±25.15	48.767	**0.000**
Role limitation (physical health problem)	62.50±43.30	50.93±32.74	32.79±28.46	18.029	**0.000**
Bodily pain	75.50±31.75	51.24±23.70	32.63±26.99	34.395	**0.000**
Social functioning	56.25±21.65	48.13±26.75	31.17±24.22	18.908	**0.000**
General mental health	54.00±30.02	58.81±13.00	64.83±12.74	12.155	**0.002**
Role limitation (emotional problems)	50.00±57.74	49.84±34.38	31.17±34.77	13.230	**0.001**
Vitality	65.00±17.32	59.53±14.07	59.48±15.47	0.110	0.946
General health perception	55.00±17.32	53.97±7.73	49.22±10.03	20.944	**0.000**

*****Kruskal Wallis Test

**Significant level of 0.05

Table 8 above shows students' severity of dysmenorrhea in relation with quality of life. For comparison of all students with dysmenorrhea on degree of pain with quality of life, total score all mean SF-36 domains were found statistically significant ($p<0.05$),Comparison of total scale score mean value degree of pain 4&Less 63.16±16.99, 5-7 degree of pain mean 55.17±12.37 and 8-10 degree of pain mean 43.31±14.21($p=0.000$).Comparison of physical functioning subdimension scale with students degree of pain 4&Lessmean value was 90.00±11.55 for 5 to 7,68.88±23.28 for 8 to 10 mean value was 45.19±25.15 ($p=0.000$).Comparison of role limitation (physical problems) subdimension scale with degree of menstrual pain mean value for 4&Less was 62.50±43.30, for 5 to 7 mean value 50.93±32.74 and for 8 to 10 32.79±28.46 ($p=0.000$).Comparison of bodily pain subdimension scale with degree of pain mean value for 4&Less was 75.50±31.75 for 5 to 7 was 51.24±23.70for 8 to 10 32.63±26.99 ($p=0.000$). Comparison of social functioning subdimension scale

with degree of pain mean value for 4&Less was 56.25±21.65, for 5 to 7 was 48.13±26.75 for 8 to 10 was 31.17±24.22 (p=0.000). Comparison of general mental health subdimension scale with degree of pain mean value for 4&Less was 54.00±30.02, for 5to7 was 58.81±13.00, for 8 to 10 was 64.83±12.74(p=0.002). Comparison of role limitation (emotional health) subdimension scale with degree of pain mean value for 4&Less was 50.00±57.74 for 5 to 7 was 49.84±34.38 and for 8 to 10 mean value 31.17±34.77(p=0.001). Comparison of vitality subdimension scale with student degree of pain mean value for 4&Less was 65.00±17.32 for 5 to 7 was 59.53±14.07 for 8 to 10 mean value 59.48±15.47 (p=0.946). Comparison of general health perception subdimension scale with degree of pain mean value for 4&Less was 55.00±17.32for 5 to 7 mean value 53.97±7.73 for 8 to 10 49.22±10.03 (p=0.000). A post-hoc analysis of pairwise-comparison revealed that those with 4&less relative to degree of painful menstruation have the highest quality of life, followed by those with 5-7 and the least quality of life being those with 8-10 degree of pain (p,0.05). However, in the vitality sub-scale, there is no significant difference in quality of life relative to the degree of pain (p>0.05).

5. DISCUSSION

Dysmenorrhea is one of the most common women's health problem around the world. Prevalence of dysmenorrhea reported to be high globally and varies in ethnicity and population groups. It has been estimated to range between 20% to 90% globally (De sancta's et al, 2015).

This study was conducted to determine the prevalence, severity and effect of dysmenorrhea on quality of life of female undergraduate Nigeria students at NEU. The findings of this study suggest that the mean age of participants was 23.3±2.9 years ranging from 18 to 35 years (Table 1). Similar results were reported in the study done by Kumbhar et al., (2011), the mean age of participants was 20.4. ±1.8. years ranging from 17 to 25 years and study by Unsal et al., (2011) reported the mean age of participants was 20.8±1. 8years.Many studies have reported that prevalence of dysmenorrhea decreases with the advanced age (Tavallaee et al., 2011).

Majority of participants has normal BMI ranging (18.5-25) and some participants has overweight (Table 2). This suggest that there is no correlation between dysmenorrhea and BMI to female participants at NEU (Table 6). Similar results were reported by (Ford et al., 2001; Flegal et all., 2005 and Kumal et al., 2006). However, (Katz et al., 2000; Gagua et al., 2012) found that BMI has been associated with severity of dysmenorrhea.

In this study, majority of students experience their menarche at around the age of 11-13 years (Table 2). This observation concurs with Vicdan et al, (1996) who found that most of female students had their first menstruation at around mean age of 13 years old. Dersehb et al., (2017) also found that the age at menarche in their study occurred within the ages of 12-15 years. Similar result was also reported by Femi-Agboola et al, (2017) that the age at menarche occurred between 9 and 16 to adolescent girls in their study among secondary school girls in Nigeria. In the current study, the age at menarche had no association with dysmenorrhea on multivariate logistic regression analysis (Table 6). This could be because of the age at menarche of more participants were within normal range (10-16 years).

The current study, positive history of gynecological problems was reported in 8.2% of students (Table 2, Figure 2), the majority of which being pelvic inflammatory

diseases (PID). This is consistent with Proctor & Farquhar (2007) who reported pelvic inflammatory diseases as the most common gynecological problems. It has been reported in the literature that one in five cases of PID occurs among younger women less than 19 years of age. The risk of developing PID for a 15-year-old girl is estimated to be 10 times than of a 24 years woman. PID is the most common cause of secondary dysmenorrhea which occurs at any time in a woman's life between menarche and menopause (Pullon et al (1988). Furthermore women of 26 years and above has increased risk of secondary dysmenorrhea with pelvic pain and stress which increase poor quality of life of women. (Proctor & Farquhar, 2007). This study demonstrated no significant relationship between history of gynecological problems and dysmenorrhea (Table 6), probably due to small number of students with gynecological problems (p-value >0.05).

In this study 59.5% of students have short menstrual cycle (<28days) and64.5% has shorter bleeding length less than 2 days (Table 2). There was insignificant effect between dysmenorrhea and menstrual cycle length of students in this study ((Table 6). Since, dysmenorrhea of less than 3 days is considered normal. This is in agreement with Wong, (2018) in the study to evaluate quality of life of adolescent girls with dysmenorrhea in Hong Kong where by over 70% of the participants had menstrual cycle of 21 days, similar results were found by Charu et al, (2012).

The results of this study found that 16.1% of participants with dysmenorrhea reported irregular menstrual cycle (Table 2). This figure was low compared to 22.6% and 31.8% that was reported by Sachan et al., (2012) and Sharma et al., (2008) respectively. Previous studies have reported that prevalence of menstrual irregularity ranges from10% to 38% which is consistent with the findings by (Gumanga & Kwame, 2012).

In determining the prevalence of dysmenorrhea in this study 63% was revealed (Table 2), a figure which is consistent with what was reported in other studies conducted by (Shewte&Sirpurkar, 2015, Chan et al., 2009 and Kumar et al., 2015). Similarly, Al -Hemeed at el., (2011) reported very high prevalence of 94% in a study in Egypt to nursing students. A Sri Lankan research reported 84% of dysmenorrhea among young women (Wijesiri et al.,2013). The possible reasons for these variations in estimates could be the differences in perceptions of pain of study participants, life

style of participants, difference in selections of age groups study definitions of dysmenorrhea.

Regarding severity of dysmenorrhea according to VAS, more than a half of students had moderate pain VAS 5-7, (Table 2). Similar severity pattern of dysmenorrhea was also reported by Unsal et al., (2010). In a study by Sharma et al., (2008) mild, moderate and severe degree were noted in 36.5%, 24.6% and 9.5% respectively, while Singh (2007), reported prevalence of dysmenorrhea to be 73.83% of these 30.37% moderate and 63.29% were mild grades. This variations in degree of pain in different studies indicates that dysmenorrhea a public health problem to female students and women across the global with a negative QoL in different domains. In this study 39.1%of girls have reported onset of pain on day 1 (Table:2, Figure 3). And 87.4% was reported pain to persist between 1-3 days. This is also in agreement with Kural et al, (2015) on study of menstrual characteristics and prevalence in central Indian majority of girls 61.5% reported onset of pain in day 1 of their mentation period.

In this study majority of students did not share dysmenorrheal problem. These results were also reported by (Gayatri et al., 2013; Al-Jefout et al., 2015), The current study demonstrated that mothers accounted for more than one third of person that students shared the dysmenorrhea problem (Table 3). It can also be deduced from the study that most female students prefer to keep the problem anonymous as majority of them prefer not to share this issue with anyone. The research carried out by Tangchai et al, (2004) complimented this assertion as they equally concluded that women usually fail to disclose their dysmenorrhea problem with physicians and nurses. A similar conclusion was equally reached by Kindi &Bulushi (2009) on this non-disclosure to medical practitioners. As an interesting result, only 5 out of 95 students in this study shared this problem with nurses (Figure 4and Table 3). Talking about menstruation seems to be a taboo in many African and Asians communities, issues regarding menstruation are considered privacy where the girl child should discuss with her mother or respected community woman leader. This suggests the opinion that there is still a weakened confidence in females sharing information about their reproductive health with medical practitioners (Nakame at al., 2018).

In investigation knowledge of students in management of dysmenorrhea, the current study observed that more than two-thirds of students did not seek professional help for dysmenorrhea despite of pain they experience (Table3). Similarly, Mason et al., (2003) in the study to evaluate the perception of rural young women in Kenya on menstrual health found that majority of study participants did not seek professional help for dysmenorrhea problem. This was in line with Chen et al., (2018) investigates why women do not seek medical help, majority of women mentioned that they are unaware of available treatment, a cost to see health providers and the health providers could not give any help since it is self-managed symptoms Lakshmi et al., (2011) in the study done to female medical students in India reported treatment-seeking behavior was found to be low despite of severity of pain. Parallel to our findings the reasons for not seeking professional help reported by participants in this study were that dysmenorrhea is a normal condition that does not require treatment, it is shame to tell someone else and other reasons included self-medication and high cost.

Proper use of pain relief techniques is popular among the study participants as majority of them in this study reported using pharmacological and non-pharmacological methods to relieve cramps (Table 4). Among the users of pharmacological techniques 59.52% of student's uses paracetamol as pain relief medication (Table 4, Figure 5). A study also found that 42.9% of pharmacological techniques users were prescribed by doctors and 25% offered by friends. While on pharmacological method persisted by 41.7%. Among which 40% of students were taking hot tea, 20% uses heating pad as the most common non-pharmacological pain relief methods used among students (Table 4, Figure 6). Keeping up with this result, Gabeyehu et al., (2017) in Gonda University Ethiopia reported that female students about 77.6% out of 389 of participants with dysmenorrhea22% were using medication from non-medical professional who were not aware of drugs indications and complications. This was in consistence with a study done to high school girls in Oman where reveals that paracetamol was the most common pain relief drug used by pharmacological relief users (Al-Kindi&Al-Bulushi,2011).Reported that Non-Steroid Ant-Inflammatory Drugs has been proved to treat dysmenorrhea pain as 95% of women reported pain has been relieved compared to heat wrap method (Proctor and

Farquhar,2006).However, effects of NSAID are generally tolerable, indication and contraindication on dispensing NSAID should be considered. Persons with history of gastrointestinal problems should seek alternative treatment for dysmenorrhea. All universities should have nurses in their health care centers and these nurses should give services including coping with dysmenorrhea.

In assessing the effects of dysmenorrhea on education in this study the results reveal that more than half of the students did not attend classes when experiencing dysmenorrhea (Table 5) and one in third of them missed classes for 3 days (Figure 7). Majority of student's reported that dysmenorrhea did not affect their class concentration nor their exam grades. This observation is similar to what was found in the study done by other authors (Avasarala and Panchangam, 2008; Femi-Agboola et al.,2019 and Gumanga&Kwame,2012) Menstrual associated symptoms were also disturbing the students in their studies when experiencing dysmenorrhea as they report to have vomiting, diarrhea, headache, fatigue, lethargy joint pain and back pain. Sickness absenteeism is significantly more among dysmenorrhea girls than non-dysmenorrhea girls during menstrual period ($p<0.01$) (Sharma and Gupta, 2003). Missing classes and having concentration problem are very important problems for students. For that reason, nurses who work in universities health centers should talk to female students in order to evaluate dysmenorrheal problem in students and apply nursing process.

In comparing socio-demographic and menstrual characteristics between participants with and without dysmenorrhea (Table 6). Multivariate logistic regression analysis reveals that age of the participants, menstrual cycle regularity and family history of dysmenorrhea were significantly important factors associated with dysmenorrhea ($p<0.05$).The age of the participants (p-value = 0.001) is significantly associated with dysmenorrhea, higher proportion 68% of students with dysmenorrhea problem aged less than ≤ 25, in the group of students without dysmenorrhea 62.3% aged >25.This suggest a statistically significant difference between age of participant and dysmenorrhea. Similar results were reported. Travallee, (2011) reports that high prevalence of dysmenorrhea was associated with young age. On the menstruation cycle regularity of students there is statistically significant relationship (Table 6) between menstrual irregularity and dysmenorrhea (p-value = 0.023). The significant

relationship between irregular menstrual cycle and dysmenorrhea that was found in this study does not imply a causal relationship. In keeping with other studies, Charu et al, (2012), observed menstrual irregularity was associated with dysmenorrhea. Participants with positive family history of dysmenorrhea in this study had a statistically significantly relationship with dysmenorrheal (p-value = 0.013) (Table 6). The finding is consistent with previous studies by (Shabani-Nashtai & Mohamad Alizadeh, 2010). The reasons for association could be genetic predisposition and also girls modeling behaviors after their mothers and sisters A study by Kural et al, (2015) reported 90.9% of people who had some family history of dysmenorrhea experiences the same condition. The report showed participants whose family members (sisters or mother) had a history of dysmenorrhea had 3 times greater chance of having the same problem when compared to participants without family history of the same. Positive association of family history and prevalence of dysmenorrhea was also observed by Parveen et al. (2009) for 76% of medical students Israr University Hyderabad. Further the study revealed that 33% of mother and 43% sisters has a history of dysmenorrhea. The study was concerned about observing familial risk of dysmenorrhea.

QoL is one of the important aspects and the general well-being of individuals which is very important for human. One of the most important problem in female students affecting their quality of life is dysmenorrhea (Wong.2018). Findings from this study in (Table 7) have shown that comparing the SF 36 scale domains of participants with or without dysmenorrhea, the role limitation (physical health problem) mean 38.69±34.58, p-value = 0.001), bodily pain (mean 38.06±27.16, p-value= 0.001), social functioning (mean 38.06±27.16, p-value = 0.012) and general health perception (mean 50.52±9.29, p-value= 0.002) were statistically significant ($p<0.005$),(Table 7).This result indicates dysmenorrhea has an effect on QoL of students in four subdimensions scales. Student with dysmenorrhea has showed low scores ofSF36 domains than female students without dysmenorrhea. Similar findings were observed by Bernard et al., (2003) that high quality of life is significantly associated with those who do not have the problem of dysmenorrhea while those with dysmenorrhea are associated with low quality life. The limited physical activity, regular work and interference in relationship seen in this study is also found by Avasarala & Panchangam (2008). Similar result was also reported by Shwete &

Sirpukar (2016) on assessing dysmenorrhea and QoL on medical and nursing students report reveals that those female students with dysmenorrhea received lower scores in al domains of HRQoL SF-36, the statical difference were found by using students t -test. Suresh et al.,2011 and Wong 2018) all gave credence to this assertion about the association of low quality of life to individuals suffering from dysmenorrhea.

Considering assessment of severity of dysmenorrhea and QoL mean SF-36 domain scores on participants with dysmenorrhea all mean SF-36 subdimensions were statistically significant ($p<0.05$) except vitality subscale mean $p=0.946$ (Table 8). There is a statistically significant difference in QoL relative to the degree of painful menstruation. This clearly indicates that regardless of degree of pain experienced by female students in this study, dysmenorrhea is disturbing their QoL more when compared with the lives of non-dysmenorrhea girls. Similar findings were reported by Kumbhar, (2011) that QoL during dysmenorrhea is poor among girls with dysmenorrhea, impaired physical activities physical activity ($p<0.01$) reduced work capabilities ($p<0.02$), poor personal relationship ($p<0.001$), confidence and concentration at work also suffers ($p<0.05$). Fernandez et al, (2019) used the Spanish EuroQol-5D version of QoL to determine the effect of severity of pain from dysmenorrhea and QoL and found statistically significant difference in QoL to pain persistence ($p<0.05$). All students with painful menstruation have low quality of life regardless the degree of pain or number of days.

5.1. Strengths and Limitations

The strength of this study is that it is the first study to observe the effect of dysmenorrhea on QoL of Nigerians female undergraduate students in Northern Cyprus. And the results have shown a significant effect to the female students. This study may be used as a preliminary work in context of menstrual pain and QoL as it has been the first study to use SF-36 Item scale in NEU. However, there are some limitations while conducting this study. Firstly, the study was performed in two faculties and only female Nigerians students were involved; therefore, it may not be representative of all female students in Near East University. Another limitation is that the study employed online participation and self-reporting which may have

results in underreporting of the condition. Further studies are recommended to investigate other factors associated with dysmenorrhea that could affect quality of life of students in the universities like cigarette smoking behaviors and other risk behaviors among female students.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Findings of this study demonstrated that prevalence of dysmenorrhea is high among all Nigerians undergraduate female students in Near East University. The study reveals the detrimental effects of dysmenorrhea on education and QoL, furthermore it reveals that age of students, family history of dysmenorrhea and irregular menstrual cycles are significantly important factors associated with dysmenorrhea. Majority of students did not seek professional help or seek medical advice for dysmenorrhea despite of pain they experience. Very few students shared the dysmenorrhea problem with others. Meaning that there is limited knowledge and awareness on management and treatment of dysmenorrhea among female students. In this study, more than half of students did not attend classes when experiencing dysmenorrhea and 31.5% of them missed classes for 3 days. QoL of the students with dysmenorrhea were very low as the severity of pain increases.

6.2. Recommendation

Since dysmenorrhea has more prevalence among all Nigerians female undergraduate students in NEU, it is therefore recommended that:

- Female students with dysmenorrhea should be encouraged to consults doctor and nurses and get professional help for dysmenorrhea since dysmenorrhea is a public health problem.
- Self-medication is considered dangerous in most way. Female students and women should be encouraged to seek professional care rather than resort to self-medication and over the counter medication that can pose challenge to their well-being.
- Approximately two-thirds of students did not seek professional help for dysmenorrhea despite of pain. Students should be supported by the nurses who work in health care center of universities and dormitory managers in order to seek medical help for their dysmenorrhea problem.

- Gynecological problem has been associated with severe bleeding and dysmenorrhea. Students with dysmenorrhea should be encouraged to seek medical help for medical examination and treatment of secondary dysmenorrhea.
- Majority of students lack knowledge and awareness on dysmenorrhea management and treatment. Therefore, health education on dysmenorrhea and reproductive health issues should be given to adolescents' girls in schools, this will help them to make informed choice on management and correct misinformation's regarding women health issues.
- In this study school absenteeism was found to affect students for 3 days, reduced class concentration and effect on exam grades. This means schools should make some regulations to help the female students compensate their missing studies and re-do exams/ make-up exams in order to improve their performances.

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ENCLOSURES

Enc1.1 Questionnaires

Instructions: This questionnaire is prepared to determine only Near East University **Nigerian female student's** dysmenorrhea problems and quality of life. Please answer all questions **as honestly as possible** by ticking (√) in the box provided or by writing your opinion in the space provides.

Researcher's telephone number +905488489293/+255768272993 Email: ngwasie@yahoo.com Student's phone number…… (Optional)

Student's email address……

SECTION A: SOCIODEMOGRAPHIC CHARACTERISTICS

1. Age of correspondent……

2. Religion
   a) Christian ( )
   b) Islam ( )
   c) Others (please mention) ……

3. Ethnic group
   a) Yoruba ( )
   b) Hausa
   c) Igbo ( )
   d) Kanuri
   Other……

4 . Marital status.

   a) Married ( )
   b) Single ( )

5 . In which faculty /department are you?

   a) Nursing ( )
   b) Economics department ( )
   c) Banking and finance department ( )

6. Please write your…..
   a) Weight in Kg…….
   b) Height in Centimeters…….

SECTION B: MENSTRUAL PATTERN OF CORRESPONDENT

7. What is your age at first menstrual bleeding? Please write……years.

8. Do you have any gynecological problems?
   a) Yes ( )

b) No ( ) (If your answer is No, Skip question numbered 9)
If Yes, please answer question numbered 9.

9. Which gynecologic problem do you have?
   a) Myoma uteri ( )
   b) Endometriosis ( )
   c) Ovarian cyst ( )
   d) Uterine polyps ( )
   e) Pelvic inflammatory diseases ( )
   f) Endometriosis ( )
   g) Uterine adhesions ( )
   h) Other (Please mention)
   ……..
10. How long is your menstrual cycle length (From first day of one period to first day of another period (**please write down**)……days.
    a) Long menstrual cycle length ( )
    b) Short menstrual cycle length ( )

11. What is your menstrual bleeding's length? (From first day of the period to last day of the same period) **Please write below as days.**
    a) Long menstrual cycle bleeding length ( )
    b) Short menstrual cycle bleeding length ( )

12. Do you have history of painful menstruation (dysmenorrhea) in your family?
    a) Yes ( )
    b) No ( )

13. Do you experience **painful menstruation(dysmenorrhea)** in **every menstrual cycle**?
    a) Yes ( )
    b) No ( ) **(IF YOUR ANSWER IS NO MOVE TO SECTION E)**
14. If yes please mark your degree of pain on the scale given below.
    0 Zero means no pain
    5 means moderate pain
    10 means severe pain
    0 1 2 3 4 5 6 7 8 9 10

15. When do you experience menstrual pain (Onset of pain)?
    a) 1day prior menstruation ( )
    b) 2 day prior menstruation ( )
    c) 3 day prior menstruation ( )
    d) At the day of menstruation ( )
    e) At the 2 day of menstruation ( )
    f) On day 3 and above ( )

SECTION C: AWARENESS OF DYSMENORRHEA AND TREATMENT PRACTICE

16. Do you share dysmenorrhea problem with others?
    a) Yes ( )
    b) No ( ) (If No Skip question numbered 17)
17. With whom do you share dysmenorrhea problem?
    a) Physician ( )
    b) Mother ( )
    c) Friends ( )
    d) Sister ( )
    e) Nurse ( )
    f) Doctor ( )
18. Did you seek professional help for dysmenorrhea?
    a) Yes ( ) If Yes, skip question number 19)
    b) No ( ) If No, answer question 19)
19. Why did you not seek professional medical help?
    a) I think it is normal ( )
    b) Because of shame ( )
    c) Other (Please explain)…….
20. Do you think your dysmenorrhea problem require medical help?
    a) Yes ( )
    b) No ( )
21. Do you use any methods of pain relief when having dysmenorrhea?
    a) Yes ( )
    b) No ( )
22. If yes, which method you use when having dysmenorrhea?
    a) Pharmacological ( )
    b) Non-pharmacological ( )
23. Who recommends pharmacologic /medication for you?
    a) Doctor ( )
    b) Nurse ( )
    c) My relative ( )
    d) My friends ( )
    e) Others ……..
24. If non- pharmacological method please mark the method you use in a list given below?
    a) Hot bath ( )
    b) Heating pad ( )
    c) Hot tea ( )
    d) Herbs ( )
    e) Others ……..

SECTION D: EFFECT OF DYSMENORRHEA ON EDUCATION

25. Does dysmenorrhea affect your class attendance?

    a) Yes ( )
    b) No ( ) (If No, skip question number 26)

c)

26. If, yes for how many days you don't attend classes?

a) 1day ( )
b) 2 days ( )
c) 3 days ( )
d) 4 days ( )
e) 5 days and more

27. Does dysmenorrhea affect your class concentration?

a) Yes ( )
b) No ( )

28. Does dysmenorrhea affect your exam grades/academic performance?

a) Yes ( )
b) No ( )

SECTION E: EFFECT OF DYSMENORRHOEA ON QUALITY OF LIFE

RAND CORPORATION https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form/survey-instrument.html

36-Item Short Form Survey Instrument (SF-36)

RAND 36-Item Health Survey Questionnaire Items

1. **General Health perception (GH)**
   In general, would you say your health is:
   (circle one)
   Excellent 1
   Very good 2
   Good 3
   Fair 4
   Poor 5

2. **Compared to one year ago,** how would you rate your health in general now?
   (circle one)
   Much better now than one year ago 1
   Somewhat better now than one year ago 2
   About the same as one year ago 3
   Somewhat worse now than one year ago 4
   Much worse now than one year ago 5

3. **Physical Function (PH)**

The following questions are about **activities you might do during a typical day.**

Does **your health now limit you** these activities? If so, how much? Please mark on the grade given right side of the table.

(circle one number on each line)

ACTIVITIES	Yes, Limited A Lot	Yes Limited A Little	No, Not Limited At All
a. **Vigorous activities**, such as running, lifting heavy objects participating in strenuous sports	1	2	3
b. **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
c. Lifting or carrying groceries	1	2	3
d. Climbing **several** flights of stairs	1	2	3
e. Climbing **one** flight of stairs	1	2	3
f. Bending, kneeling or stoopin	1	2	3
g. Walking **more than a mile**	1	2	3
h. Walking **half a mile**	1	2	3
i. Walking **one hundred yard**	1	2	3
j. Bathing or dressing yourself	1	2	3

4. **Role limitations due to Physical health problems (RP)**

During the past 4 weeks, have you had any of the **following problems** with your **work** or **other regular daily activities as a result of your physical health?**

(circle one number on each line)

	YES	NO
a. Cut down on the **amount of time** you spent on work or other activities	1	2
b. **Accomplished less** than you would like	1	2
c. Were limited in the **kind** of work or other activities	1	2
d. Had **difficulty** performing the work or other activities (for example, it took extra effort)	1	2

5. **Role Limitations due to emotional problems (RL)**

During the **past 4 weeks**, have you had **any of the following problems** with your **work** or other **regular daily activities** as a result of any emotional problems **(such as feeling depressed or anxious)**?

(circle one number on each line)

	YES	NO
a. Cut down on the **amount of time** you spent on work or other activities	1	2
b. **Accomplished less** than you would like	1	2
c. Don't do work or other activities as **carefully** as usual	1	2

6. **Social Functioning (SF)**

During the <u>past 4 weeks</u>, to what extent has your **physical health or emotional problems** interfered with your **normal social activities** with family, friends, neighbours, or groups?

(circle one)

Not at all 1
Slightly 2
Moderately 3
Quite a bit 4
Extremely 5

7. **Body pain (BP)**

How much **<u>bodily</u> pain** have you had during **the <u>past 4 weeks</u>?**

(circle one)

None 1
Very mild 2
Mild 3
Moderate 4
Severe 5
Very severe 6

8. **Body Pain (BP)**

During the **<u>past 4 weeks</u>**, how much did **<u>pain</u>** interfere with your normal work (including both work outside the home/class and housework)?

(circle one)

Not at all 1
A little bit 2
Moderately 3
Quite a bit 4
Extremely 5

9. General mental health (GH) covering psychological distress & well-being (b, c, d, f, and h)
Vitality (VT) energy or fatigue (a, e, g, and i).

These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the one answer that comes closet the way you have been feeling. How much of the time **during the past 4 weeks?**

(circle one number on each line)

	All of the Time	Most of the Time	*A Good* bit of the Time	*Some* of the Time	*A little* of the Time	None of the Time
a. Did you feel full of life?	1	2	3	4	5	6
b. Have you been a very nervous person?	1	2	3	4	5	6
c. Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
d. Have you felt calm and peaceful?	1	2	3	4	5	6
e. Did you have a lot of energy?	1	2	3	4	5	6
f. Have you felt down hearted and low?	1	2	3	4	5	6
g. Did you feel worn out?	1	2	3	4	5	6
h. Have you been a happy person?	1	2	3	4	5	6
i. Did you feel tired?	1	2	3	4	5	6

10. Social functioning (SF)

During the **past 4 weeks**, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with Friends, relatives, etc.) ?

(circle one)

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

11. General health perceptions (GH)

How TRUE or FALSE in each of the following statements for you?

(circle one number on each line)

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
a. I seem to get ill more easily than other people	1	2	3	4	5
b. I am as healthy as anybody I know	1	2	3	4	5
c. I expect my health to get worse	1	2	3	4	5
d. My health is excellent	1	2	3	4	5

Encl. 2. Permission letter to use Sf-36 scale's validity and reliability study Nigeria on Yoruba ethnic group.

Permission to use Yoruba version of the SF-36 Scale Validity and reliability
Yahoo/Inbox
Esther Ngwasi <ngwasie@yahoo.com>**To:** doziembada@yahoo.com

Mon, Apr 6 at 2:21 PM

Sir.

My name is Esther Ngwasi, a Master Nursing student in Near East University North Cyprus, Turkey. I am writing to ask for your permission to use your validity and reliability of the Yoruba version of the SF-36 scale from your research titled **Translation, cross -cultural adaptation and psychometric evaluation of Yoruba version of short form 36 health survey.** Title of my study **is Prevalence of dysmenorrhea and its effect on quality of life to undergraduate female students in Near East University**, where by the target population is Nigerian female students.

Thank you.

ChidozieMbada <doziembada@yahoo.com>
To:esther ngwasi
Mon, Apr 6 at 4:51 PM
Dear Researcher,
By this mail, on behalf of other authors, you have the permission to use the tool requested for your study. Do well to reference appropriately.
Best wishes,
Dr C. E. Mbada

Encl. 3. Ethical approval from IRB of Near East University

YAKIN DOĞU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR ETİK KURULU

ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU

Toplantı Tarihi : 23.04.2020
Toplantı No : 2020/78
Proje No :1057

Yakın Doğu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Prof. Dr. Gülşen Vural'ın sorumlu araştırmacısı olduğu, YDU/2020/78-1057 proje numaralı ve **"Prevalence of Dysmenorrhoea and its Effects on Quality of Life among Undergraduate Female Students in Near East University"** başlıklı proje önerisi kurulumuzca online toplantıda değerlendirilmiş olup, etik olarak uygun bulunmuştur.

Prof. Dr. Rüştü Onur
Yakın Doğu Üniversitesi
Bilimsel Araştırmalar Etik Kurulu Başkanı

Encl 4. Permission letter from Dean Faculty of nursing -NEU

20.5.2020

Sayın Prof. Dr. Gülşen Vural

Danışmanlığını yürüttüğünüz YDÜ Hemşirelik Fakültesi Yüksek Lisans öğrencisi Esther Zeno Ngwasi "**Prevalence of Dysmenorrhoea and its Effects on Quality of Life among Undergraduate Female Students in Near East University"** konulu tez çalışmasının anketini YDÜ Hemşirelik Fakültemizde öğrenim gören Afrikalı kız öğrencilere on-line uygulayabilme talebi uygun görülmüştür.

Saygılarımla

Ümran Dal Yılmaz

Prof. Dr. Ümran Dal Yılmaz
YDÜ Hemşirelik Fakültesi Dekanı

Encl.5. Permission letter for data collection from dean faculty of Economics and Administrative Sciences NEU

YAKIN DOĞU ÜNİVERSİTESİ
İKTİSADİ VE İDARİ BİLİMLERİ FAKÜLTESİ

NEAR EAST UNIVERSITY
FACULTY OF ECONOMICS AND ADMINISTRATIVE SCIENCES

14.01.2021

Konu: Anket Uygulaması hk.

Yakın Doğu Üniversitesi Hemşirelik Fakültesi Dekanlığı'na,

YDÜ Hemşirelik Fakültesi Yüksek Lisans öğrencileri Muinat Taiwo ve Esther Zeno Ngwasi Prof. Dr. Gülşen Vural danışmanlığında tez çalışmalarının anketlerini İktisadi ve İdari Bilimler Fakültesinde eğitim-öğretim gören Afrikalı kız öğrencilere uygulamaları uygundur.

Saygılarımla

YAKIN DOĞU ÜNİVERSİTESİ İKTİSADİ VE İDARİ BİLİMLER FAKÜLTESİ DEKANLIĞI 1988

Prof. Dr. Şerife Eyüpoğlu
İktisadi ve İdari Bilimler Fakültesi Dekanı

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Encl. 6. Permission to use RAND SF-36

RAND-Terms and Conditions for Using the 36-Item Short Form Survey (SF-36)

RAND hereby grants permission to use RAND 36-Item Short Form Health Survey in accordance with the following conditions, which shall be assumed by all to have been agreed to as a consequence of accepting and using this document:

1. Changes to the Health Survey may be made without the written permission of RAND. However, all such changes shall be clearly identified as having been made by the recipient.
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4. The user of the 36-Item Health Survey will provide a credit line when printing and distributing this document acknowledging that it was developed at RAND as part of the Medical Outcomes Study.
5. No further written permission is needed for use of this Health Survey.

Encl.7. Informed consent form for participants

You are invited to take part in this study which is conducted by Master nursing student, at the Near East University in North Cyprus faculty of nursing. You were selected as a possible participant in this study because you are a female Nigerian student and you just met the inclusion criteria of study. Your participation is voluntary and you are allowed to withdraw from the study without any penalties. If you decide to participate, you will sign the editable consent form sent as online. You will provide your information, knowledge and experience of having dysmenorrhea. This will be done by answering questions prepare by research as online editable text which will be provided to you to fill it. After answering the questions by filling on it, you will send back to the researcher on the same way. There are not risk expected to occur while participating in this study. There are no direct benefits from participating in this research but your experiences will help to improve health of adolescent's girls around the world. Your identities will be kept confidential by separating the consent form from the questionnaire and kept them in isolated envelop to ensure privacy and confidentiality of data. All the electronic collected data (soft copies) will be stored in a secure and locked in researcher and supervisor computers with password. You can decide where or not to participate and this will not affect your relationship the university. If you have any questions about the study, please feel free to contact the researcher.

Esther Zeno Ngwasi
Master nursing student
Near East University
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If you have questions regarding your rights as a research subject please contact the NEAR EAST UNIVERISITY INSTITUTIONAL REVIEW BOARD. You will be offered a copy of this form to keep. Your signature indicates that you have read and understand the information provided above, that you willingly agree to participate t you may withdraw your consent at any time and discontinue participation without penalty, that you will receive a copy of this form and that you are not waiving any legal claims

Participant

Name, Surname

Address:

Phone:

Signature

Encl.8. Ethical approval from IRB of Near East University English version

NEAR EAST UNIVERSITY

SCIENTIFIC RESEARCH ETHICS COMMITTEE

RESEARCH PROJECT EVALUATION REPORT

Meeting Date: 23.04.2020

Meeting No: 2020/78

Project No: 1057

Near East University Faculty of Nursing Prof, Dr. GulsenVural is the principal researcher on project number, YDU / 2020 / 78-1057. The project proposal titled "**Prevalence of Dysmenorrhea and its effects on Quality of Life among Female Undergraduate Students in Near East University**" In an online meeting by our board.it has been evaluated and found ethically appropriate.

Prof. Dr. RüştüOnur

Near East University

Scientific Research Ethics Committee Chairman

Encl.8.CURRICULUM VITAE

Name	Esther	**Surname**	Ngwasi
Place of birth	Dar es salaam	**Date of Birth**	28.05.1976
Nationality	Tanzanian	**Tel**	+255768272993 +905488489293
E-mail	ngwasie@yahoo.com		

Educational Level

Degree	**Name of the Institution where he/she was graduated**	**Graduation year**
Master	Master nursing, Birth and women health nursing/Near East University	2021
Undergraduate	The Aga Khan University, Tanzania, (BScN) Muhimbili University Tanzania, Diploma in general nursing and midwifery (RN, RM)	2013 1999
High school	Mombo secondary school/scientific field	1994

Job experience

Duty	**Institution**	**Duration (Year - Year)**
General nurse practitioner	Muhimbili National Hospital, Tanzania	2006 - 2018
Research assistant/ HIV/AIDS Counselor	Muhimbili University of Health and Allied Sciences, Tanzania	2001- 2006
Nurse manager	Fadhila Health Centre/Dar es salaam, Tanzania	2000 - 2001
Maternal nurse	Rika health center/Tanzania	2000Feb- Aug 2000

Foreign Language	Reading comprehension	Speaking*	Writing*
English	Very Good	Good	Good

Foreign Language Examination Grade								
YDS	UDS	IELTS	TOEFL IBT	TOEFL PBT	TOEFL CBT	FCE	CAE	CPE
-	-	7	-	-	-	-	-	-

Computer Knowledge

Program	Use proficiency
Microsoft word, PowerPoint, Excel, SPSS	Very Good

PREVALENCE OF DYSMENORRHOEA AND ITS EFFECTS ON QUALITY OF LIFE AMONG UNDERGRADUATE FEMALE STUDENT IN NEAR EAST UNIVERSITY

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