



**NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF NURSING**

**KNOWLEDGE ON PRECONCEPTION CARE
AMONG PREGNANT WOMEN AT A HOSPITAL IN LIBERIA**

M.Sc. THESIS

Jemima Swordee NYENFUEH

**Nicosia
February, 2024**

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MASTER THESIS

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M.Sc. THESIS

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Supervisor

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February, 2024

Approval

We certify that we have read the thesis submitted by Jemima Sordee NYENFUEH titled **“Knowledge on Preconception Care among Pregnant Women at a Hospital in Liberia”** and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Nursing Sciences.

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Declaration

I hereby declare that all information, documents, analysis and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

Jemima Swordee Nyenfueh

08/02/2024

Acknowledgments

I Jemima Swordee, Nyenfueh dedicate this thesis to most high God who firstly granted me the opportunity to be in school up to this date. To my unique parents Brown P. Nyenfueh, Mrs. Elther G. Beah, and Mr. Philip J. Beah, I dedicate to you this thesis showing how grateful I am despite all the storms and the ups and downs we have passed through you guys have never give up on me. and to my dynamic advisor Prof. Dr. Dilek SARP KAYA GÜDER I will love to say thank you for your tireless effort in guiding me through this process. Lastly, also want to acknowledge all of my instructors at Near East University for all the knowledge they have impacted in me over the years.

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Jemima Swordee Nyenfueh

Abstract

Knowledge on Preconception Care Among Pregnant Women at a Hospital in Liberia

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Supervisor: Assoc. Prof. Dr. Dilek Sarpkaya Güder

MA, Department of Nursing

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Purpose: The purpose of this study is to determine the knowledge of pregnant women about preconception care at Ganta United Methodist Hospital in Liberia.

Material and Methods: This study used the descriptive and cross-sectional research design. The population of this study included all pregnant women who attended antenatal care at the Ganta United Methodist Hospital from July 15 to 15 December 2023. The total number of pregnant used in this study is 190. Data were collected face-to-face using a personal information form and the preconception care improvement scale. In this study, data was analyzed using descriptive statistics, and the Chi-Square test.

Findings: In this study, most of the pregnant women are single (72.6%), Christian and rural dwellers. More than half of pregnant women (57.9%) have primary education and 74.2% of the pregnant women have unplanned pregnancy. This study found that 77.4% of the pregnant women had low knowledge of preconception care whereas, 22.6% had good knowledge of preconception care. It was found that there is a statistically significant difference between marital status, area of residence, level of education, the number of live births, planned or unplanned pregnancies, age range, and level of knowledge on the preconception care Improvement scale ($p < 0.001$). It is found that there is no statistically significant difference between religion, occupation, and pregnant women's level of knowledge on the preconception care improvement scale ($p > 0.05$).

Conclusion and Recommendations: The knowledge of preconception care among pregnant women at Ganta United Methodist Hospital in Liberia is low. It is recommended that antenatal care services be added to preconceptional care of primary and secondary healthcare services as routine care

Key Words: Knowledge, nursing, preconception care, pregnant

Özet

Liberya'da Bir Hastanede Gebe Kadınlar Arasında Gebelik Öncesi Bakım Hakkında Bilgi

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Amaç: Bu çalışmanın amacı, Liberya'daki Ganta United Methodist Hastanesi'nde gebe kadınların gebelik öncesi bakım konusundaki bilgilerini belirlemektir.

Gereç ve Yöntemler: Bu çalışmada tanımlayıcı ve kesitsel araştırma tasarımı kullanılmıştır. Bu çalışmanın evrenini, 15 Temmuz-15 Aralık 2023 tarihleri arasında Ganta United Methodist Hastanesi'nde doğum öncesi bakıma katılan tüm gebeler oluşturmuştur. Bu çalışmada kullanılan toplam gebe sayısı 190'dır. Veriler yüz yüze kişisel bilgi formu ve gebelik öncesi bakım iyileştirme ölçeği kullanılarak toplanmıştır. Bu çalışmada veriler betimsel istatistikler ve ki-kare testi kullanılarak analiz edilmiştir.

Bulgular: Bu çalışmada, gebelerin çoğu bekar (%72,6), Hristiyan ve kırsal kesimde yaşamaktadır. Gebelerin yarısından fazlası (%57,9) ilkokul eğitime sahiptir ve gebelerin %74,2'si planlanmamış gebelik geçirmiştir. Bu çalışmada gebelerin %77,4'ünün gebelik öncesi bakım konusunda düşük bilgiye sahip olduğu, %22,6'sının ise gebelik öncesi bakım konusunda iyi bilgiye sahip olduğu bulunmuştur. Medeni durum, yerleşim yeri, eğitim düzeyi, canlı doğum sayısı, planlı ya da plansız gebelik, yaş aralığı ve gebelik öncesi bakım geliştirme ölçeği bilgi düzeyi arasında istatistiksel olarak anlamlı bir fark olduğu bulunmuştur ($p < 0.001$). Din, meslek ve gebe kadınların gebelik öncesi bakım iyileştirme ölçeği bilgi düzeyleri arasında istatistiksel olarak anlamlı bir fark olmadığı bulunmuştur ($p > 0.05$).

Sonuç ve Öneriler: Liberya'daki Ganta United Methodist Hastanesi'nde gebe kadınlar arasında gebelik öncesi bakım bilgisi düşüktür. Birinci ve ikinci basamak

sađlık hizmetlerinin gebelik ncesi bakımına rutin bakım olarak dođum ncesi bakım hizmetlerini de eklemesi nerilmektedir.

Anahtar Kelimeler: Bilgi, gebelik ncesi bakım, gebe, hemřirelik.

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List of Abbreviations

ACOG	American College of Obstetricians and Gynecologists
ANOVA:	Analysis of Variance
BMI:	Body Mass Index
CDC:	Center for Disease Control and Prevention
GP:	General practitioners
HIV:	Human Immune Virus
MMR:	Maternal Mortality Ratio
OR:	Odd Ratio
RR:	Relative Risk
STIs:	Sexually Transmitted Infections
USPHS:	United States Public Health Service
WHO:	World Health Organization
PCIS:	Preconception Care Improvement Scale

CHAPTER I

Introduction

This chapter, as the beginning of this research study, explains the problem associated with the selection of the topic, the objective of the investigation into preconception care knowledge, the relevance of the study, the limits of the study, and the definitions of words. In addition, this chapter defines the terminology that will be used throughout this thesis.

Statement of the Problem

There is a very high incidence of maternal mortality in Sub-Saharan Africa. In 2015, for instance, there were almost 550 maternal deaths for every 100,000 births in this region. In 2020, over 287 000 female lives were lost during or immediately after pregnancy or childbirth. In 2020, about 95% of all maternal deaths occurred in low and lower-middle-income countries, where most of these deaths were avoidable. Over 87% (253 000) of the anticipated global maternal fatalities in 2020 occurred in Sub-Saharan Africa and Southern Asia. Seventy percent of all maternal deaths (200 000) occurred in Sub-Saharan Africa, while just about sixteen percent occurred in Southern Asia (47 000) (WHO, 2023). Notwithstanding its significance, this rate is just approximately a third of the 6.4% annual rate required to reach the Goal of 70 maternal deaths per 100,000 live births by 2030 (UNICEF & WHO, 2023).

The rate of maternal mortality, also known as the maternal mortality ratio (MMR), in Liberia was calculated to be 742 maternal deaths for every 100,000 live births in the seven years leading up to the study. The range of fatalities that fall within the confidence interval for the 2019-2020 Liberia Demographic Health Survey is anywhere from 485 to 1,000 per 100,000 live births (LISGIS & ICF, 2021). Although there has been some progress in Sub-Sahara Africa, significant gaps in the distribution of essential maternity and new born care remain (Ruktanonchai CW, 2018). One of these gaps is the lack of need for preconception care services.

According to World Health Organization, preconception care refers to the provision of interventions in the areas of biomedicine, behavioral health, and social health to women and couples prior to the occurrence of human conception (WHO, 2013). The preconception care's goal is to increase mother and child health and

decrease the risk factors that threaten it (CDC, 2023). Preconception care services improve the chances of a successful pregnancy. Preconception care includes folate intake, family planning programme, infertility, immunisation, nutrition, genetic services, sexually transmitted infection, maternal and mental health, tobacco control, alcohol and drug addiction (WHO, 2013). It has been noted that pre-pregnancy care is one of the maternal health services in developed countries (Abekah-Nkrumah G., 2019). While preconception care is standard practice in high-income countries, it is an unused or even unrecognised service in low-income countries. The risks associated with pregnancy are quite high in low-income countries, but few couples consider taking precautions for these risks before having children (Shadab et al., 2017).

In Liberia, there is a significant gap in the provision of high quality antenatal care services. Concerning the usage of antenatal care services in Liberia, there are discrepancies that exist at both the county and regional levels. In several health facilities in Liberia, the incidence of eight or more antenatal care interactions is on the lower end of the spectrum. Women living in rural areas are less likely to attend at least four antenatal care visits. In spite of the fact that there has been considerable progress made in Antenatal care, a significant number of women continue to be denied access to this potentially life-saving medical therapy. Therefore, it is important to evaluate preconceptional care as part of antenatal care in Liberia (Blackstone, 2019; Luginaah et al., 2016; Ekholuenetale et al., 2022; Yaya et al., 2019).

A study conducted by Giri & Gutam found that 64.5% of reproductive-aged women have a medium level of knowledge about preconception care (Giri & Gautam, 2018). A study was conducted by Lemma et al (2022) found that 145 (35.4%) of the women had previously been exposed to information on preconception care (Lemma et al., 2022). Mwase-Musicha et al. (2022)'s study determined that about two-thirds of pregnant women did nothing to be ready for their babies. For those who did (36.1%), eating more healthily (71.9%) and conserving money (42.8%) were the most prevalent means of preparation (Mwase-Musicha et al., 2022).

In Alemu et al. (2021) study, it was found that just over a third of Ethiopian women (35.7%) were well-versed on preconception health (Alemu et al., 2021). In a meta – analysis, It was observed that 24.05 percent of reproductive-aged women used preconception care, whereas 33.27 percent had a strong understanding of the topic.

The research found that both preconception care usage and knowledge were poor in sub-Saharan African nations (Woldeyohannes et al., 2023). In 2021, in a study of 660 pregnant women in West Guji district in Southern Ethiopia, 177 (22.3 per cent) received treatment under preconception care before becoming pregnant (Amaje et al., 2022). In same study, it was found that preconception care was used by 40.0% of Chinese, 47% of Iranian, and 51.0% of Nepali women. Ethiopia's 9.6-18.2% preconception care usage rate was much lower than those countries mentioned (Amaje et al., 2022). A study done at the Korle-Bu Teaching Hospital in Accra, Ghana, among 120 participants, 71.7% were unfamiliar with the notion of preconception care, 76.7% were unaware of any components that included preconception care, and 27.5% were able to correctly identify the definition of preconception care. Preconception care was held in high regard by 39.2% of the participants (Beyuo et al., 2021).

Studies have found that receiving preconceptional care and the level of knowledge about this care are associated with many factors examples of these factors include previously being exposed to information on preconception care, married or having fewer children who were still alive were alive, a lack of time, cultural views, religious beliefs, having two- to three-year gap between pregnancies or waiting at least three years between pregnancies, the level of education, age, higher income, the number of pregnancy, the number of children, using family planning, hearing about preconception care, positive attitude towards preconception care, the ability to make decisions about maternal health services with her husband and the source of information on preconception care (Alemu et al., 2021; Amaje et al., 2022; Beyuo et al., 2021; Giri & Gautam, 2018; Mwase-Musicha et al., 2022; Woldeyohannes et al., 2023).

Preconception care involves many health discipline. Many professionals such as endocrinologists, primary care physicians, dentists, public health nurses, social workers, obstetricians, dietitians, mental health professionals, pharmacists, renal specialists, ophthalmologists, genetic counsellors and mental health professionals work together to provide preconception care. In preconceptional care, the nurse has many educational, counselling and caring roles in promoting health, assessing risk and managing pre-existing conditions (CDC, 2023; Close et al., 2023; Kominiarek & Chauhan, 2015; Procter & Campbell, 2014; Ranzcog, 2017; NICE, 2023; Stang & Huffman, 2016). This study will raise awareness about the importance of

preconceptional care and the active role of nurses in this care (Goddard et al., 2017; Houck, 2023; ICNP, 2017; ICM, 2018).

Purpose of the Study

The purpose of this study is to determine the knowledge of pregnant women about preconception care at Ganta United Methodist Hospital in Liberia.

Research Questions:

- 1) What is the level of knowledge on preconception care among pregnant women?
- 2) Is there a significant relationship between the level of knowledge of preconception care and socio-demographic variables?

Significance of the Study

This study can reveal pregnant mothers' knowledge gaps on preconception care and understanding women's knowledge and misconceptions is essential for designing effective educational interventions, so the findings from this study can help in the formulation of tailored health education interventions. The study may help women to make informed decisions, adopt healthier habits and receive timely preconception health care. The results of this study can inform policy actions to promote preconception care education and assistance. Accordingly, preconceptional care can be included as a standard of care in primary health care in Liberia. Furthermore, this study will contribute to the literature on preconception care knowledge in Liberia. This study will benefit women in the study area in that the result of the study will be used by the government or organizations to organize programs that are beneficial to help them understand more fully the importance of preconception care. This study will be considered as a pioneer for nurses to initiate preconceptional care in the hospital. In addition, the results of this study may contribute to the research gap on this topic.

Limitations

This study is limited to pregnant women admitted to a hospital in Liberia. The data cannot be generalized to all hospitals in Liberia.

Definition of Terms

Preconception Care: The term "preconception care" refers to the practice of providing women and couples with biological, behavioral, and social health treatments prior to conception (CDC, 2023).

Knowledge - Any information or awareness that is known is referred to as knowledge (CareerRide, 2023).

Pregnancy refers to the gestational period during which a fetus undergoes development inside a woman's womb or uterus (NHS, 2024).

CHAPTER II

Literature Review

This chapter provides conceptual definitions, descriptions, and information about the topic from the existing literature.

Theoretical Framework

Definition of Preconception Care

The term "preconception care" refers to the practice of providing women and couples with biological, behavioral, and social health treatments prior to conception (CDC, 2023). According to World Health Organization, preconception care refers to the provision of interventions in the areas of biomedicine, behavioral health, and social health to women and couples prior to the occurrence of human conception (WHO, 2013).

History of Preconception Care

The history of preconception care dates back to ancient times and forms its basis. According to Plutarch, who lived between 46-120 AD, the ancient Spartans advised virgin women to do physical activity when they became pregnant so that their children would be stronger and develop more effectively (Quist Nelson, 2017). Not until the ninth century BC did anyone discover the first information about care before conception. In 1825, William Potts Dewees, a leading figure in perinatal medicine, expressed his belief that the time before the embryo is formed and even before marriage is of great importance. This is in addition to the process of pregnancy itself (Başlı and Aksu, 2018; Gökdemir and Eryılmaz, 2017). Chamberlain first used the term "specialised health care before pregnancy for women with poor reproductive health outcomes" to describe preconceptional care in 1980 (Bialystock et al, 2013). For the purpose of enhancing the health of women before to becoming pregnant, the idea of preconception care came into being. A publication titled "Perinatal Health

Guide" was released in 1983, and it includes a discussion of the notion of preconceptional health. In their publication titled "Preventing Low Birth Weight" that was released in 1986, the United States Public Health Service (USPHS) made references to this particular concern. The components of periconceptional care were identified by Jack and Clupper during the panel that was conducted in 1990 and was named "USPHS Expert Panel on the Content of Prenatal Care." According to Jack et al. (2008), the panel also underlined that preconceptional care may be delivered as one of the most effective primary care services. Recent years have seen an increase in the number of health organizations that have discussed preconception care (Hawks et al, 2018). A conference titled "Select Panel on Preconception Care" was convened in 2006 by the Centers for Disease Control and Prevention (CDC). This meeting was arranged in order to discuss preconception care. It has been determined that there will be a reduction in the availability of prenatal care in the event that it is not supplied (CDC, 2006; Thompson et al, 2017). A publication titled "Recommendations to Improve Preconception Health and Health Care-United States" was produced as a consequence of this conference, and actions that might be useful prior to pregnancy were outlined (Centers for Disease Control and Prevention, 2006). Centers for Disease Control and Prevention (CDC) has recently established preconceptional care guidelines and has put out efforts to enhance services, institutional structure, and collaboration with non-governmental groups (CDC, 2006; A conference was held in 2012 by the World Health Organization (WHO) with the purpose of achieving global agreement in preconception care and lowering the rates of maternal and childhood death and morbidity (Demisse et al, 2019; WHO, 2013). It was said that the initiatives that were established at the conference were not adequate to enhance the health of mothers and infants, and it was advised that nations include preconception care into their health systems (Başlı and Aksu, 2018; WHO, 2013). In a number of the publications that it has produced, the American College of Obstetricians and Gynecologists (ACOG) has placed a strong emphasis on the role that preconception care plays in the overall health of women (ACOG, 2020).

Goals of Preconception Care

The preconception care's goal is to increase mother and child health and decrease the risk factors (both behavioral and environmental) that threaten it. Its long-term goal is to enhance the health of mothers and their young children (CDC, 2023; WHO, 2013). Although preconception care is mainly designed to improve the health of mothers and their children, it also has positive effects on the physical and mental well-being of adolescents, women, and men who get it. Many programs that seek to promote girls, boys, women's and couples' health and well-being do so regardless of whether or not they want to have children, such as those that focus on nutrition, the environment, mental health, and the reduction of psychoactive drug use and interpersonal violence are connected with preconception care (CDC, 2023).

The goal of achieving the Healthy People 2020 objectives to improve maternal and child health outcomes. The recommendations are aimed at achieving four goals, based on personal health outcomes: (OASH, 2020)

- Goal 1. Improve the knowledge and attitudes and behaviors of men and women related to preconception health.
- Goal 2. Ensure that all women of childbearing age in the United States receive preconception care services (i.e., evidence-based risk screening, health promotion, and interventions) that will enable them to enter pregnancy in optimal health.
- Goal 3. Reduce risks indicated by a previous adverse pregnancy outcome through interventions during the interconception period.
- Goal 4. Reduce the disparities in adverse pregnancy outcomes.

Time, Frequency, and Duration of Receiving Preconception Care

Preconception care helps couples and individuals optimise their health and prepare for a successful pregnancy. The duration, frequency and length of preconception care depends on individual circumstances, medical history and recommendations from health professionals. It is recommended to start preconception care ideally one year before conception. Before starting preconception counselling, it is recommended to ask the question "Do you want to get pregnant next year?" (ACOG, 2020).

This timeline allows for lifestyle changes, health issues and health factor optimisation that may affect pregnancy and foetal development. Preconception care visits depend on health needs. Medical professionals encourage frequent check-ups, especially during pregnancy planning. These visits can be quarterly, monthly or as directed by the doctor. It can last months or longer, depending on the person's health, time to resolve health problems, and readiness for pregnancy (ACOG, 2020; CDC, 2023; WHO, 2013). For all women of childbearing age who are not pregnant, it is possible to include preconception health care in routine check-ups (Nypaver et al., 2016).

The Importance and Benefits of Preconception Care

When it comes to enhancing the health outcomes of both the mother and the fetus, the preconception period, which is the period before conception takes place, is an extremely important window of opportunity. It acknowledges the fact that the health state of both parents at the time of conception may have a substantial impact on the growth and well-being of the fetus. The goal of preconception care is to establish an environment that is conducive to conception, implantation, and embryonic development. This is accomplished by treating possible risk factors and enhancing health before pregnancy. During the preconception period, the development of the embryo is accomplished by several physiological processes that are essential. Early in pregnancy, often before a woman ever recognizes she is pregnant, these phases encompass key stages of organ production and fetal growth. These stages come about before a woman even realizes she is pregnant. During the time when prenatal care is being provided, some of these crucial developmental phases have already passed. For this reason, it is of the utmost importance to act during the preconception period to reduce potential dangers and encourage healthy growth from the very beginning stages (Barker et al., 2018; Cetin et al., 2019; Stephenson et al., 2018; Stephenson et al., 2019; Young & Ramakrishnan, 2020).

Health workers and couples can improve pregnancy outcomes and the health of the offspring by addressing risk factors in the preconception period. Interventions such as promoting healthy lifestyle choices, identifying and treating genetic risks, managing chronic medical conditions, ensuring immunizations are up to date, and improving dietary patterns are all examples of care that can be provided during this

period. If these issues are addressed and preconception care health is optimized, maternal and child health outcomes can be improved. Birth abnormalities, problems throughout pregnancy, and other negative effects may be lessened with its help. Furthermore, there may be lifelong impacts on the child's health and wellbeing if measures are taken to enhance the mother health before conception (OTIS, 2021; Zhao et al., 2019).

Components and Interventions on Preconception Care

Preconception care include risk assessment and screening, health promotion, and Implementation of risk reduction strategies (Fowler et al., 2020).

Preconception care encompasses several essential elements, such as Sexually transmitted infections (STIs), Human Immune Virus (HIV), mental health, psychoactive substance use, vaccine-preventable diseases, environmental factors, infertility/sub-fertility, interpersonal violence, unplanned pregnancies, dietary condition, tobacco use, existing health issues and exercise and physical activity (ACOG, 2020; CDC, 2023).

Sexually Transmitted Infections

Sexually transmitted infections (STIs) are infectious diseases that are spread from one individual to another by sexual intercourse or other forms of sexual contact. Typically, they are transmitted by vaginal, oral, or anal intercourse. However, in some occasions, they may be transmitted by other forms of sexual contact, such as those involving the penis, vagina, mouth, or anus. This is because many sexually transmitted diseases, such as herpes and Human Papillary Virus, are transmitted via direct contact between the skin of individuals (Medline, 2023). Including STIs testing as a component of preconception care is crucial for promptly detecting and managing infections, minimizing the likelihood of pregnancy-related problems, and optimizing the overall health outcomes for both the mother and the baby (ACOG, 2020). The following are recommendations in the scope of preconception care: delivering age-appropriate and comprehensive education and services related to sexuality, promoting safe sexual practices through interventions at the individual, group, and community levels, encouraging the use of condoms for protection against sexually transmitted infections (STIs) and unintended pregnancies, ensuring greater

availability of condoms, conducting screenings for STIs, expanding access to treatment and other pertinent health services.

Human Immunodeficiency Virus

HIV is a viral infection that targets the immune system of the human body, particularly the CD4 cells, which are a kind of white blood cells (WHO, 2023). It is important to note that screening for HIV as part of preconception care is that it has a role in enhancing maternal health, preventing the transfer of diseases from mother to child, optimizing pregnancy outcomes, contributing to the general well-being of the child, and contributing to public health measures that are cost-effective (Ritchie et al., 2019; Ratcliffe et al., 2022; WHO, 2021). It is recommended that the following be done during the course of preconception care: family planning, promoting safe sex practices, and the use of dual methods for birth control, such as condoms, to prevent both unwanted pregnancies and the spread of sexually transmitted infections (STIs). It should also include offering HIV counselling and testing, including testing male partners and providing antiretroviral therapy for prevention and pre-exposure prophylaxis. Additionally, evaluating qualification for long-term antiretroviral treatment is also recommended (CDC, 2013).

Mental Health

Mental health refers to a condition of psychological wellness that empowers individuals to effectively manage life's pressures, recognize their capabilities, acquire knowledge proficiently, perform well in their professional endeavors, and make meaningful contributions to their society (WHO, 2023). Screening for mental health during preconception care is crucial for ensuring the well-being of mothers, promoting healthy pregnancies, potentially benefiting the development of the fetus, reducing the risk of postpartum mental health problems, improving parent-child relationships, and enabling timely interventions for individuals at risk (Borschmann et al., 2019; Crawford et al., 2022; Dean et al., 2018; Davidson, 2018; Learman, 2018; Leboffe et al., 2023).

It is possible to assist people in managing stress, anxiety, or depression by aiding and appropriate referrals for counselling or therapy. This, in turn, may contribute to improved reproductive health overall (Kee et al., 2021; Voit et al., 2022;).

Psychoactive substance use

Psychoactive substances refer to medications that, upon ingestion or administration, have an impact on mental processes such as thinking, awareness, thinking, state of mind, and feelings. Psychoactive medications are part of a larger group of psychoactive chemicals, which also include alcohol and nicotine (WHO, 2023).

Prior substance use may have a substantial impact on fertility and result in negative results during pregnancy. Before conception, the use of substances such as alcohol, tobacco, and illegal drugs might hurt the development of the fetus, potentially leading to Neonatal Abstinence Syndrome (NAS) in infants. Detecting drug use during preconception care enables the implementation of therapies aimed at mitigating the risk of Neonatal Abstinence Syndrome (NAS). It may have adverse impacts on maternal health, augmenting the likelihood of infections and medical issues during pregnancy. Detecting drug use before pregnancy allows healthcare practitioners to give treatments, support, and referrals to addiction treatment programs (Soneji et al., 2019; Guille & Aujla, 2019; Devlin & Davis, 2018; Krans et al., 2019).

According to WHO (2013) recommendations of preconception care of psychoactive substance use include: screening individuals for substance use, offering short-term interventions and treatment as necessary, addressing substance use disorders through both medication and therapy, assisting families with substance use disorders in family planning (including after childbirth and between pregnancies), and implementing prevention programs to decrease substance use among adolescents.

Vaccine-Preventable Diseases

There are infectious illnesses that are caused by viruses or bacteria that may be avoided by vaccinations. These diseases are referred to as vaccine preventable diseases (DC Health, 2020).

According to WHO (2023), There is a large amount of maternal, neonatal, and early infant morbidity and death that may be attributed to infectious illnesses that can be prevented with vaccination. The mother may be protected directly against vaccine-preventable illnesses by the use of maternal vaccination, which also provides a cocooning effect that has the potential to protect the fetus. Additionally, it has the potential to provide additional direct protection against infection to the fetus and the newborn by means of the transportation of certain antibodies to the fetus prior to delivery. Some recommendations of vaccine preventable diseases include: Immunization against rubella, Immunization against tetanus and diphtheria and Immunization against Hepatitis B. Immunizations and the prevention of infectious diseases are very important aspects of preconception care (CDC, 2023; WHO, 2013).

Environmental Factors

Industries at risk of potentially hazardous exposures during pregnancy include agriculture (pesticides), manufacturing (organic solvents and heavy metals), dry cleaning (solvents) and health care (biologicals and radiation). If pre-pregnancy exposures are identified, women can be trained to avoid exposure to toxic agents (ACOG, 2020).

Modifiable preconception hazards and health behaviors across a wide range of areas include body composition, lifestyle behaviors, nutrition, environmental exposures, and birth spacing, these variables are associated with a broad variety of health outcomes, such as impacts on the health of the embryo (for example, embryonic growth), the health of the mother (for example, gestational diabetes mellitus), the health of the fetus or newborn (for example, preterm delivery), and the health of the kid (for example, neurocognitive problems) (Caut et al., 2022).

As part of preconception care, genetic counselling and testing are crucial factors to consider. To make educated choices on family planning, genetic counselling educates people about their chances of having a child with a genetic illness. With the use of genetic screening, couples may find out whether they are carriers for certain hereditary disorders, which gives them more control over their reproductive decisions (Chapple et al.; Metcalfe, 2018).

The World Health Organization (2013), recommendation include: educating the public about potential dangers and how to avoid them, reducing the use of

pesticides; safeguarding individuals from lead exposure, informing women of childbearing age about methyl mercury levels in fish, promoting the use of cleaner gas and improved stoves.

Infertility/sub-fertility

It is common practice to use the phrases subfertility and infertility interchangeably; nevertheless, these two conditions are not exactly the same thing (Flinders-Fertility, 2020). The failure to conceive naturally after a period of one year of trying is referred to as infertility. Subfertility, on the other hand, is a condition in which there is a natural chance of conceiving, but the process often takes much longer than usual. There are several similarities between the causes of infertility and the causes of subfertility (Flinders-Fertility, 2020). The recommendations are as follows: promoting awareness and knowledge about fertility and infertility, including their preventable and non-preventable causes, reducing the stigma associated with infertility and the belief that it is predetermined, conducting screening and diagnosis for couples who have been trying to conceive for 6-12 months, and addressing any underlying causes of infertility or sub-fertility, such as previous sexually transmitted infections, therapy services for people or couples who have been diagnosed with infertility or sub-fertility due to circumstances that cannot be prevented (WHO, 2013).

Interpersonal violence

When one person utilizes power and control over another person, whether by physical, sexual, or emotional threats or acts, economic control, isolation, or other forms of coercive conduct, this is an example of interpersonal violence, as stated by Counselling Center 2023. The same survey says that the most prevalent kinds of interpersonal violence faced by college students are sexual assault, dating/domestic violence, and stalking. It is possible for a spouse, an ex-partner, an acquaintance, or even a stranger to be the perpetrator of interpersonal violence. Most of the time, the person who committed the crime is someone the victim or survivor is familiar with. Regardless of a person's gender identity or expression, sexual identity, race, ethnicity, financial class, religion, ability, age, or national origin, it is possible for them to be victims of interpersonal violence (CDC, 2023).

Some recommendations of interpersonal violence include: providing age-appropriate and comprehensive sexuality education that includes gender equality, human rights, and sexual interactions is an important aspect of engaging in health promotion for the purpose of preventing dating violence. Combining and integrating activities that promote economic development, gender equality, and community mobilization; recognizing the symptoms of violence against women. Providing health care services (including post-rape care), referral, and psychological support to victims of violence; and recognizing the indications of harassment and assault against women. Changing the standards that individuals and society have around drinking, screening and counselling those who have the issue of drinking excessively, and providing treatment for individuals who have alcohol use disorders (WHO, 2013).

The interpersonal violence should be diagnosed and solved in the preconceptional period. Otherwise, it may increase during pregnancy and adversely affect the health of mother and baby.

Unplanned pregnancy

An unplanned pregnancy is a pregnancy that is either unwanted, such as the pregnancy occurred when no children or no more children were desired. Or the pregnancy is mistimed, such as the pregnancy occurred earlier than desired (CDC 2023). For the purpose of gaining a better knowledge of the fertility of populations as well as the unfulfilled need for contraception, sometimes referred to as birth control and family planning, the idea of unplanned pregnancy is helpful. The vast majority of unwanted births are the consequence of either not using contraception at all or not utilizing it in a consistent or appropriate manner (CDC, 2023).

According to WHO (2013), the following recommendations include: keeping girls in school, influencing cultural norms that favor early marriage and coercive sexuality, providing age-appropriate comprehensive sexuality education, providing contraceptives and establishing community support for avoiding early pregnancy and providing contraceptive provision to teenagers are all important aspects of preventing early pregnancy and preventing sexually transmitted diseases.

In order to empower girls to reject compelled sexual activity, it is important to engage men and boys in critical evaluation of current norms and practices concerning gender-based violence and coerced sexual activity. Additionally, it is important to

educate women and couples about the risks that short birth intervals pose to both the mother and the infant. Infections related to sexual contact (also known as STIs) (WHO, 2013).

Dietary Condition

Folic acid supplementation and other prenatal feeding practices have decreased the incidence of neural tube defects and other birth defects. Therefore, female pre-pregnancy folic acid supplementation should be encouraged to reduce the risk of neural tube defects (ACOG, 2020). A well-rounded diet that is abundant in vital minerals, such as calcium and iron, is crucial for supporting the best possible health of both the mother and the unborn child (Marshall et al., 2022).

Not only does a nutritious diet assist to guard against malnutrition in all of its manifestations, but it also helps to protect against noncommunicable diseases (NCDs), which include diabetes, heart disease, stroke, and cancer (WHO 2020). A number of recommendations are included in the following: The process of screening for anaemia and diabetes, as well as providing iron and folic acid supplements, providing information, education, and counselling, monitoring nutritional status, providing nutrient and energy-dense dietary supplements, and managing diabetes, including counselling those who have diabetes mellitus. Iodization of salt and tobacco usage are two factors that should be promoted. An examination of females (WHO, 2013).

Results from the women first trial, a large multisite randomized control trials in India, Pakistan, Guatemala, and the Democratic Republic of the Congo, demonstrated that children born to mothers who took lipid-based micronutrient supplements daily from three months before conception all the way through pregnancy had significantly longer average births than children born to mothers who received only standard prenatal care (Hambidge, 2019).

Tobacco Use

Fathers who stopped smoking during early pregnancy and those who did not smoke at all throughout preconception were shown to have a lower risk of birth defects compared to continuing smoking and decreasing smoking groups (Zhou et al.,

2020). Continued smoking was found to be associated with an increased risk of birth abnormalities. Furthermore, the incidence of childhood overweight and obesity was shown to be higher among children who were exposed to father-preconception smoking in comparison to children who did not have any exposure to paternal smoking (You et al., 2022).

The recommendations include screening women and girls for tobacco use, including smoking and smokeless tobacco, during all clinical visits. The "5 As" approach, which includes asking, advising, assessing, assisting, and arranging, should be utilized. Additionally, brief tobacco cessation advice, pharmacotherapy (including nicotine replacement therapy, if available), and intensive behavioural counselling services should be provided. screening of all non-smokers, including men and women, and providing information on the dangers of second-hand smoke (WHO, 2013).

Existing Health Issues

Identifying and addressing any prior health conditions is a crucial aspect of preconception care. If conditions like diabetes, high blood pressure, and thyroid problems can be identified and treated before conception, it might improve the health of both the mother and the unborn child. Optimizing medication regimens, giving appropriate counseling, and assisting with the management of chronic conditions are essential components of preconception care (CDC, 2023). In order to improve health and decrease the chance of problems during pregnancy, it is recommended that people manage diseases like diabetes, hypertension, or thyroid issues before conception (Devido et al., 2017; Yehuda, 2016; Marshall et al., 2020).

Physical Exercise

Women with extremely high or low BMI are likely to experience infertility and maternal and foetal pregnancy complications. It is therefore recommended that women of reproductive age should be encouraged to try to achieve a BMI in the normal range before attempting pregnancy (ACOG, 2020).

Regular physical exercise helps women control both their weight and cardiovascular health before conception. Women before pregnancy are recommended

to exercise moderately for at least 30 minutes a day, 5 days a week, for at least 150 minutes a week. Accordingly, it is important to encourage women to exercise as part of preconceptional care (ACOG, 2020).

The Roles of Nurses in Preconception Care

Obstetrics and Gynecology nurses have an essential task in delivering high-quality healthcare services to females across all age groups. These essential tasks include: (Simpson and Creehan, 2014)

- Nurses have the duty of offering thorough preconception counseling to women, equipping them with the required information to make well-informed choices about their reproductive well-being.
- Nurses provide a secure and encouraging setting for women to express their worries and seek information.
- Nurses also work cooperatively with other healthcare professionals, such as obstetricians and maternal-fetal medicine experts, to ensure that women receive appropriate care throughout their reproductive journey.
- Nurses at various clinics may provide drugs and immunizations, conduct health surveys, and collect vital signs and health histories.
- Obstetric-gynecologic nurses not only provide assistance for healthcare procedures, but they also engage in conversations about contraceptive alternatives with women who are not prepared for pregnancy.
- Nurses provide guidance on a range of contraception options, such as barrier techniques, hormonal methods, natural family planning, and long-acting reversible contraceptives.
- Nurses engage in discussions on the efficacy, adverse effects, and possible hazards of each approach in order to assist women in making well-informed choices.
- Obstetric gynecology nurses also champion women's health. Nurses work to promote awareness on the significance of reproductive health and advocate for enhanced availability of resources and services for women.

Pregnant women rely on the help of a nurses to ensure their own and their child's wellbeing. Pregnant women might benefit from the assistance of nurses in recognizing and avoiding any health issues that may arise during and after giving birth. Nurses teach expectant moms how to maintain a healthy lifestyle. During pregnancy, nurses collaborate closely with expecting parents. They may provide daycare services in schools, link families with community resources, and provide workshops on topics like breastfeeding and child rearing. Successfully carrying out these responsibilities calls for strong communication skills on the part of nurses. (Regis College, 2021).

Education and counseling roles are among the most important roles of nurses in the pre-pregnancy period. In the book on Nursing Interventions Classification (NIC) of (Bulechek et al., 2013, 6th ed.), Preconception Counseling is discussed in detail. Preconception Counseling is defined as *'Screening and providing information and support to individuals of childbearing age before pregnancy to promote health and reduce risks'*.

Some of the activities of nurses within the scope of this counseling are listed below (Bulechek et al., 2013, 6th ed.).

- Establish a therapeutic, trusting relationship
- Obtain client history
- Refer women with chronic medical conditions for a prepregnancy management plan
- Provide information related to risk factors
- Refer for prenatal diagnostic tests as needed for genetic, medical, or obstetrical risk factors.
- Support decision making about advisability of pregnancy, based on identified risk factors.
- Instruct about the relationships among early fetal development and personnel habits, medication use, teratogens, and self-care requisites
- Encourage contraception until prepared for pregnancy
- Encourage attendance at the early pregnancy and parenting classes.

Related Research

In a meta-analysis that included 28 studies with 13067 women, a total of 18.72% of pregnant women in Africa used preconception care, according to the pooled prevalence. Preconception care utilization was substantially associated with knowledge of preconception care, prior medical conditions, and pregnancy goals (Tekalign et al., 2021).

According to Ali et al. (2018), several factors influence the decision to use antenatal care. These include the mother's age, the number of living children, her education level, her socioeconomic status, her previous obstetrical history, the support she receives from her spouse, the quality of treatment she receives, and the distance from the health care facility.

The research involved 369 expectant mothers who went to the principal hospital of Addis Zemen in Ethiopia for antenatal care. According to Wolde et al. (2019), factors that contribute to delayed ANC initiation include being a housewife, self-employment, high travel costs, lack of understanding about the procedure, and unwanted pregnancies.

A study systematic literature review done by Alemu et al., (2021) showed that among Ethiopian women, 35.7 percent had an excellent understanding of the importance of preconception care. Subgroup analysis by area showed that women in the Amhara region had the lowest (22.34%) and the highest (45.06%) rates of excellent knowledge on preconception care. In addition, women who made use of family planning services were more than three times as likely to have an excellent level of knowledge of preconception care (Alemu et al., 2021).

A cross-sectional study was conducted among 50 pregnant women attending antenatal care at an outpatient clinic in Nigeria, 27 out of 30 women (71.1%) knew that it was specialized care provided to women who were planning pregnancies, whereas 1 out of 30 women (2.6%) knew that it was specialized care given to old women. twenty-six (52%) of respondents were certain that they could define preconception care. Further analysis showed that there were statistically significant correlations between preconception care awareness and preconception care knowledge and the concept of preconception care (Akinajo et al., 2019).

The results of a study done in Pokhara, India among 220 women showed that around 20% of respondents had a low level of knowledge about preconception

care, 64.5% had an average level of knowledge, and 15.5% had a high level of knowledge. The level of awareness of preconception care was significantly related to education, number of children, hearing about preconception care, and source (Giri & Gautam, 2018).

A meta-analysis was done to assess how often women of reproductive age in sub-Saharan Africa (SSA) get preconception care. The frequency of women in the reproductive age group in ssa with a high knowledge level of preconception care was 33.27 percent. 29.93% of people in eastern africa had a knowledge level between 20.14 and 39.45, whereas 41.52% of people in western africa had a knowledge level between 27.15 and 55.89 (Ukoha et al., 2019).

CHAPTER III

Methodology

This chapter contains information regarding the study design, the participants or sample, the techniques for collecting data and analysing it, as well as how the results are analysed.

Research Design

This study was used the descriptive and cross-sectional research design.

Participants / Population & The Sample

The population of this study consists of pregnant women who came to the obstetrics clinic of Ganta United Methodist Hospital in Liberia.

Ganta United Methodist Hospital is situated in Ganta, Northeast Liberia, Ganta United Methodist Hospital provides medical care for about 450,000 people from Liberia, Guinea, and Ivory Coast each year. Because of the location of this hospital in Ganta, which is one of the largest cities in Liberia, serving people from neighboring countries and the huge population it served, this hospital was chosen. Besides its 24-hour emergency services, the 80-bed hospital also provides prenatal care, a laboratory, outpatient services, and an eye clinic. The hospital Antenatal care served a very huge portion of the population living in that area and Ivory Coast and Guinea. The prenatal care department conducts all necessary checkups and counseling for all pregnant women who attend antenatal care services there. The department has trained nurses and health care providers who are experts in their various fields.

In this study, no sample selection was made. The sample of the study consisted of n=190 pregnant women who received prenatal care services at the Ganta United Methodist Hospital between June 15 and December 15, met the study criteria, and agreed to participate in the study voluntarily.

Including Criteria

- To be attending antenatal care at Ganta Methodist Hospital
- To be volunteer to participate in the study
- To be within the days and hours of pregnancy follow-up

Excluding Criteria

- To be under 18 year
- To have communication disorders

Data Collection Tools/Materials

The data collection tools that were used are the participant information form and the Preconception Care Improvement Scale (PCIS).

The Participant Information Form

The first entry of the participant information form includes the informed consent form of the participants before participating in the study. Women information form is made up of socio–demographic variables (Question number=8). Individual questions that include their age, marital status, area of residence, level of education, religion, occupation, live birth, and a question asking whether the pregnancy was planned or unplanned (Appendix File A).

Preconception Care Improvement Scale

Preconception Care Improvement Scale (PCIS) was developed by Teshome et al. in 2022. The PCIS has 17 items loaded into six factors:

- Substance-related behaviors have 4 items, screening for common non-communicable and infectious diseases has 4 items,
- Micronutrient supplementation, and
- Vaccination has 3 items,

- Seeking advice has 2 items,
- Decision and readiness for conception has 2 items, and s
- Screening for sexually transmitted diseases has 2 items.

It has 3 points Likert scale ranging from 'Yes', 'No' to 'Don't know'. The internal consistency (Cronbach's alpha) of the scale was 0.776. The knowledge score for 17 questions ranged from 0 to 17. Each question will receive 1 for yes and 0 for No and I don't know. 17 indicates all questions were answered correctly. Women who scored more than 50% (≥ 9 correct responses to the 17 items) were recognized as 'women with good knowledge of preconception care whereas those who scored below 50% (≤ 8 incorrect responses to the 17 items) were considered as 'women who had poor knowledge of preconception care (Teshome et al., 2020). (Appendix File B)

Data Collection Procedures

Data were collected by two registered nurses with a Master's Degree in Nursing as they are hospital-trained data collectors. Women were recruited when they went to the hospital for antenatal care. Every Monday and Wednesday from 8:00 am to 4:00 pm is antenatal check-up day at Ganta United Methodist Hospital. There is a health talk every morning on Monday and Wednesday. At the end of the health talk, those pregnant women can be told about the study concerning preconception care that was taking place at the facility since approval was granted for the study by the hospital administration. There was a specific desk in the hospital where pregnant women who wanted to voluntarily partake in the study could go and partake in the study. When they arrived at the desk, the study was explained to them again and they were given the questionnaire to fill out. The questionnaire took almost 15 minutes.

Data Analysis Plan

The data collected was analyzed using the Statistical Package (SPSS) 26.0 software. Descriptive statistics was used to analyse the demographic aspect of the questionnaire by finding the frequency and percentages and also the level of knowledge was categorized as good and low knowledge by finding the frequency and percentages. Those who scored below 50% were categorized as having Low

knowledge and those who scored 50% and above were categorized as having good knowledge. Due to the fact the level of knowledge was categorized as good and low knowledge, to find the relationship between the level of knowledge categorized as good and low knowledge and the socio-demographic variables, the study used for the two categorical variables such as gender and planned or unplanned pregnancy, the Chi-Square test instead of the Fisher Exact test as the reading of the table was suited for the 2 X 2 Chi-Square test. For more than two categorical socio-demographic variables and the level of knowledge, the study used the N X M Chi-square test.

Ethical Aspect of the Study

Ethical aspect approval for the study was obtained from the Near East University Ethics Committee on June 21, 2023. NEU/2023/115-1747) (Appendix B) A permission letter was given by the Ganta United Methodist Hospital where the research was conducted (Appendix C). Permission to use the PCIS for this study was obtained from Dr. Teshome. (Appendix File D) In accordance with the "Helsinki Declaration of Human Rights", the participants who voluntarily participated in the study were informed about the purpose, importance and process of the research through the informed consent form. All information gathered for this research was held in confidence.

CHAPTER IV

Findings

This chapter presents the characteristics of participants and research questions findings based on the collected data of this study.

Findings for Characteristics of the Pregnant Women

Table 1.

Characteristics of the Pregnant Women (n=190)

Variable	Categories	Frequency	Percentage
Marital Status	Single	138	72.6
	Married	52	27.4
Area of Residence	Rural	140	73.7
	Urban	50	26.3
Level of Education	Primary education	110	57.9
	Secondary and above	41	21.6
	No formal education	39	20.5
Religion	Christianity	137	72.1
	Muslim	43	22.6
	African traditionalist	10	5.3
Occupation	Farmer	19	10.0
	Housewife	61	32.1
	Merchant	27	14.2
	Other*	83	43.7
Livebirth	1	93	48.9
	2	75	39.5
	3 or more	22	11.6
Pregnancy	Unplanned	141	74.2
	Planned	49	25.8

*Other: Working in different forms of offices

In Table 1, the distribution of pregnant women's characteristics is given. The minimum age of the pregnant women is 18, the maximum age is 42 and the mean age is 25.5 ($s \pm 4.89$). It was determined that the majority of the women were single 72.6% whereas the remaining were married 27.4%. Based on residence, 73.7% of the participants were rural dwellers while 26.3% of them were urban dwellers. When it was examined the participant's education level, it can be see that 57.9% of them had primary education, 21.6% of them had secondary and above and 20.5% of them had no formal education. Regarding occupation, pregnant women 32.1% of the pregnant women were housewives, 14.2% were merchants and 10% were farmers. In terms of livebirth of the participants, it was found that 48.9% of them had 1 livebirth, 39.5% had 2 live birth and 11.6% had 3 or more livebirth. The majority of the pregnant women (74.2%) had unplanned pregnancies and 25.8% of them had planned pregnancies.

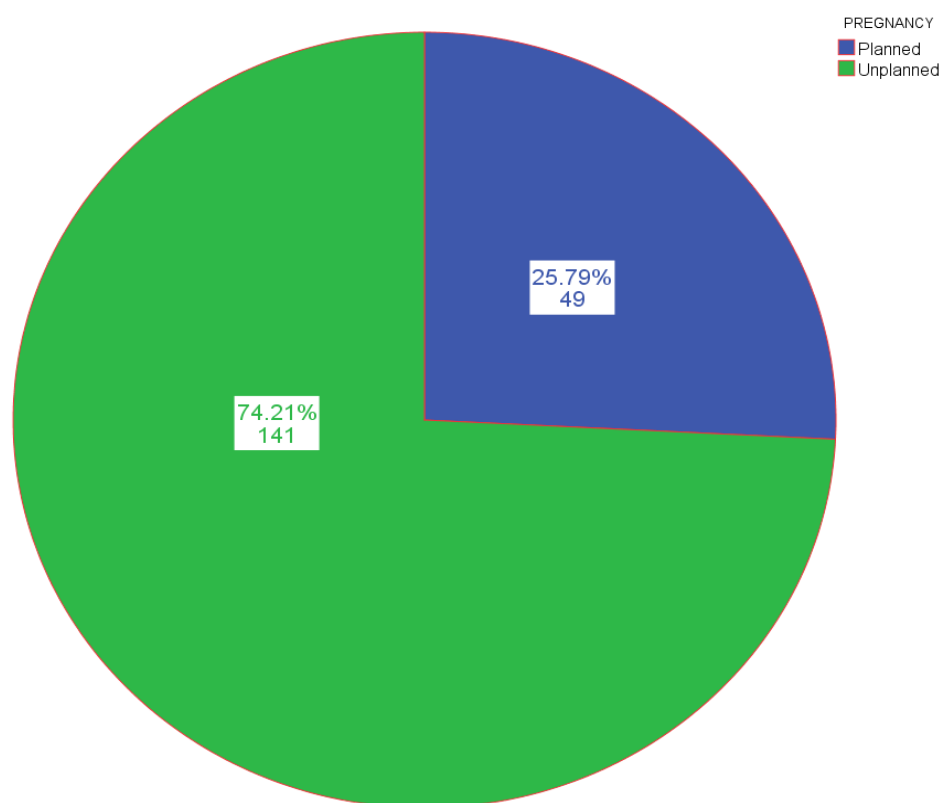


Figure 1.

Distribution of Pregnant Women's Planned Pregnancy Status

Findings for Research Question I

What is the level of knowledge on preconception care among pregnant women?

Table 2.

Questions on Pregnant Women's Knowledge of Preconception Care

Variable	Categories	Frequency	Percentage
Substance-related Behaviors			
Subscale			
Avoiding or cessation of cigarettes	Yes	43	22.6
	No	111	58.5
	Don't Know	36	18.9
Avoiding or cessation of alcohol	Yes	41	21.6
	No	106	55.8
	Don't Know	43	22.6
Avoid or cessation of chewing khat	Yes	38	20.0
	No	106	55.8
	Don't Know	46	24.2
Avoiding or cessation of using cannabis	Yes	42	22.1
	No	91	47.9
	Don't Know	57	30.0
Screening for Common non-communicable & Infectious Diseases			
Subscale			
Screening for diabetes mellitus	Yes	47	24.7
	No	99	52.1
	Don't Know	44	23.2
Screening for blood group	Yes	45	23.7
	No	104	54.7
	Don't Know	41	21.6
Screening for hypertension	Yes	48	25.3
	No	95	50.0
	Don't Know	47	24.7
Screening for Hepatitis B	Yes	46	24.2
	No	100	52.6
	Don't Know	44	23.2

Continue Table 2.**Micronutrient Supplementation & Vaccination subscale**

Taking iron or ferrous	Yes	46	24.2
	No	101	53.2
	Don't	43	22.6
	Know		
Taking folic acid	Yes	45	23.7
	No	98	51.6
	Don't	47	24.7
	Know		
Taking the tetanus vaccine	Yes	44	23.1
	No	98	51.6
	Don't	48	25.3
	Know		

Seeking Advice Subscale

Consulting health workers for advice	Yes	52	27.4
	No	99	52.1
	Don't	39	20.5
	Know		
Having good nutrition and diet	Yes	49	25.8
	No	102	53.7
	Don't	39	20.5
	Know		

Decision & Readiness for Conception Subscale

Stop or remove family planning	Yes	50	26.3
	No	97	51.1
	Don't	43	22.6
	Know		
Discussion with husband when to have becoming pregnant	Yes	41	21.6
	No	111	58.4
	Don't	38	20.0
	Know		

Screening for Sexually Transmitted Diseases Subscale

Screening for HIV/AIDS for the sake of becoming pregnant	Yes	56	29.5
	No	97	51.0
	Don't	37	19.5
	Know		
Screening for sexually transmitted disease	Yes	53	27.9
	No	100	52.6
	Don't	37	19.5
	Know		

Table 2. shows the responses of Pregnant Women's Knowledge of Preconception Care. When examining the subscale of Substance-related Behaviors Subscale, regarding avoiding or cessation of cigarettes: Among the respondents, 43

individuals (22.6%) responded yes, while 111 (58.5%) responded no, and 36 (18.9%) said they didn't know. Avoiding or cessation of alcohol: Out of the participants, 41 (21.6%) stated yes, 106 (55.8%) responses were no, and 43 (22.6%) said they don't know. Avoid or cessation of chewing khat: of the respondents, 38 (20.0%) reported yes, 106 (55.8%) did not, and 46 (24.2%) answered don't know. Avoiding or cessation of using cannabis: Among participants, 42 (22.1%) mentioned yes, 91 (47.9%) answered no, and 57 (30.0%) didn't know.

On the subscale of Screening for common non-communicable & infectious diseases, screening for diabetes mellitus: 47 individuals (24.7%) reported yes, while 99 (52.1%) responded yes, and 44 (23.2%) answered don't know. Screening for blood group: 45 respondents (23.7%) indicated yes, 104 (54.7%) responded no, and 41 (21.6%) didn't know. Screening for hypertension: 48 individuals (25.3%) reported yes, 95 (50.0%) answered no, and 47 (24.7%) responded didn't know. Screening for Hepatitis B: Among participants, 46 (24.2%) mentioned yes, 100 (52.6%) responded no, and 44 (23.2%) were unsure by their response of don't know.

When examining the Micronutrient Supplementation & Vaccination subscale, concerning the of Taking iron or ferrous supplements: 46 respondents (24.2%) reported yes that they took iron or ferrous supplements, while 101 (53.2%) did not by answering no, and 43 (22.6%) were unsure by responding don't know. Taking folic acid: 45 individuals (23.7%) reported taking folic acid by replying yes, 98 (51.6%) did not with a no reply, and 47 (24.7%) were unsure and said don't know. Taking the Tetanus vaccine: Among participants, 44 (23.2%) stated yes they took the Tetanus vaccine, 98 (51.6%) answered no that they did not, and 48 (25.3%) were unsure and answered don't know.

When also examining the Seeking Advice Subscale, about the question of Consulting health workers for advice: 52 individuals (27.4%) reported yes that they consulted health workers for advice, while 99 (52.1%) said no, they did not, and 39 (20.5%) were unsure by their respond on don't know. Having good nutrition and diet: 49 respondents (25.8%) reported yes to having good nutrition and diet, while no was the responses of 102 (53.7%), and 39 (20.5%) were unsure and responded don't know.

Table 2 also has the Decision & Readiness for Conception Subscale responses. When asked whether they stop or remove family planning: 50 pregnant women (26.3%) reported yes to stopping or removing family planning methods, 97

(51.1%) responded not, and 43 (22.6%) responded don't know. About discussion with husband when to become pregnant: Among respondents, 41 (21.6%) reported discussing with their husband when to become pregnant by answering yes, 111 (58.4%) did not and responded no, and 38 (20.0%) were unsure and answered don't know.

Finally, in table 2, is the Screening for Sexually Transmitted Diseases Subscale. The first question is the Screening for HIV/AIDS for the sake of becoming pregnant: 56 individuals (29.5%) reported yes to screening for HIV/AIDS for the sake of becoming pregnant, 97 (51.1%) did not and said no, and 37 (19.5%) were unsure by their responses of don't know. Screening for sexually transmitted diseases: 53 respondents (27.9%) reported yes to undergoing screening for sexually transmitted diseases, while 100 (52.6%) said no they did not, and 37 (19.5%) were unsure and said don't know.

When all subcomponents of pre-pregnancy problems are examined, it is seen that only one in every four women knows the questions, while the majority do not know or have no idea.

Table 3.

Total Score of Pregnant Women's Knowledge of Preconception Care Scale (n=190)

Variable	Categories	Frequency	Percentage
Knowledge of Preconception Care	Low	147	77.4
	Good	43	22.6

In Table 3, the Categorization of Pregnant Women's Knowledge of Preconception Care is given. In this study, most of the women 77.4% had Low knowledge of preconception care whereas, 22.6% had good knowledge of preconception care.

Findings for Research Question II

Table 4.

The Comparison of Pregnant Women's Knowledge of Preconception Care by Marital Status

Variable	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
Marital Status		
Single	123 (89.1%)	15 (10.9%)
Married	24 (46.2%)	28 (53.8%)

$$\chi^2 (1, 190) = 39.840, p=0.000$$

Table 4 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Marital Status.

The relationship between them is statistically significant, $\chi^2 (1, n=190) = 39.84$, $p < 0.001$. Regarding good knowledge of preconception care, Married Women had more Knowledge (53.8%) as compared to single women (10.9%).

Table 5.

The Comparison of Pregnant Women's Knowledge of Preconception Care by Area of Residence

Variable	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
Area of Residence		
Rural	118 (84.3%)	22 (15.7%)
Urban	29 (58.0%)	21 (42.0%)

$$\chi^2 (1, 190) = 14.538, p=0.000$$

Table 5 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Residence.

The relationship between them is statistically significant, $\chi^2 (1, n=190) = 14.538$, $p < 0.001$. Regarding good knowledge of preconception care, Women who are from Urban areas have more Knowledge (42.0%) as compared to women from rural areas (15.7%).

Table 6.***The Comparison of Pregnant Women's Knowledge of Preconception Care by Educational Level***

Variable	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
Educational level		
No Formal Education	36 (92.3%)	3 (7.7%)
Primary Education	93 (84.5%)	17 (15.5%)
Secondary & Above	18 (43.9%)	23 (56.1%)

$\chi^2 (2, 190) = 34.432, p=0.000$

Table 6 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Educational Level.

The relationship between them is statistically significant, $\chi^2 (2, n =190) = 34.432, p < 0.001$. Regarding good knowledge of preconception care, Women who have Secondary & Above Education, have more Knowledge (56.1%) as compared to women who have other levels of education.

Table 7.***The Comparison of Pregnant Women's Knowledge of Preconception Care by Religion***

Variable	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
Religion		
Christianity	108 (78.8%)	29 (21.2%)
Muslim	31 (72.1%)	12 (27.9%)
African Traditionist	8 (80.0%)	2 (20.0%)

$\chi^2 (2, 190) = 0.891, p =0.641$

Table 7 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Religion.

When examined, the relationship between them is not statistically significant, $\chi^2 (2, n =190) = 0.891, p > 0.05$. Women from different religions have similar Knowledge of Preconception Care.

Table 8.***The Comparison of Pregnant Women's Knowledge of Preconception Care by Occupation***

Variable Occupation	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
House Wife	47 (77.0%)	14 (23.0%)
Farmer	16 (84.2%)	3 (15.8%)
Merchant	16 (59.3%)	11 (40.7%)
Other	68 (81.9%)	15 (18.1%)

$\chi^2 (3, 190) = 6.554, p = 0.088$

Table 8 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Occupation.

When examined, the relationship between Women's knowledge of Preconception care and occupation is not statistically significant, $\chi^2 (2, n = 190) = 6.554, p > 0.05$. Women from different occupations have similar Knowledge of Preconception Care.

Table 9.***The Comparison of Pregnant Women's Knowledge of Preconception Care by Number of Livebirth***

Variable Number of Pregnancy	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
1	81 (87.1%)	12 (12.9%)
2	53 (70.7%)	22 (29.3%)
3 & More	13 (59.1%)	9 (40.9%)

$\chi^2 (2, 190) = 11.148, p = 0.004$

Table 9 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Number of Livebirth.

When examined, the relationship between Women's knowledge of Preconception care and the number of live births is statistically significant, $\chi^2 (2, n = 190) = 11.148, p < 0.05$. Women who have 3 & More livebirth have more Knowledge (40.9%) as compared to women who have fewer livebirth.

Table 10.

The Comparison of Pregnant Women's Knowledge of Preconception Care by Pregnancy

Variable	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
Pregnancy		
Planned	17 (34.7%)	32 (65.3%)
Unplanned	130 (92.2%)	11 (7.8%)

$$\chi^2 (2, 190) = 68.674, p=0.000$$

Table 10 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Number of pregnancies.

When examined, the relationship between Women's knowledge of Preconception care and Pregnancy is statistically significant $\chi^2 (2, 190) = 68.674, p < 0.001$. Women who have Planned pregnancies have more Knowledge (65.3%) as compared to women who Unplanned pregnancies (7.8%).

Table 11.

The Comparison of Pregnant Women's Knowledge of Preconception Care by Age-Group

Variable	Knowledge of Preconception Care	
	Low Knowledge	Good Knowledge
Age – Group		
15 – 24	76 (89.4%)	9 (10.6%)
25 – 34	66 (68.8%)	30 (31.3%)
35 – 49	5 (55.6%)	4 (44.4%)

$$\chi^2 (2, 190) = 13.559, p=0.001$$

Table 11 shows the comparison of the Comparison of Pregnant Women's Knowledge of Preconception Care by Age - group.

When examined, the relationship between Women's knowledge of Preconception care by age group Pregnancy is statistically significant $\chi^2 (2, 190) = 13.559, p < 0 .001$. Women who are in the age range of 35 – 49 have more Preconception care knowledge (44.4%) as compared to younger women.

CHAPTER V

Discussion

This chapter presents the discussion of these findings in comparison to the studies in the literature.

This study determines the knowledge of pregnant women about preconception care at Ganta United Methodist Hospital in Liberia. This study is important as it highlights the level of awareness about preconception care among pregnant women, and the relationships between the scoring of preconception care knowledge and socio-demographic characteristics. The average age of the study participants was 25.5. The majority of the women in the study were single (Table 1). This singleness is indicated from the fact that many men are afraid of getting married to these women as they think that married is very expensive and they don't have money for such endeavour.

Rural dwellers accounted for more of the study participants, and more of the women had primary education. Regarding occupation, pregnant women who were housewives were the majority in the study. It is also noteworthy that one out of every five women in the scope of the study has never received any education (Table 1). These sociodemographic characteristics of the women included in the study show that the status of women is so low. Considering the fact that Liberia is an underdeveloped country, it is thought that women may have significant obstacles in accessing health services due to their economic conditions. Therefore, women's level of knowledge about improving and managing their own health before pregnancy is considered important.

In terms of the number of live births in the study, the number of women who have given one livebirth was in the majority, and regarding pregnancy type, women whose pregnancies were unplanned had the highest number (Table 1). World Health Organization stated that the proportion of unplanned pregnancies that result in induced abortions is 61%, whereas the proportion of unsafe abortions is 45% and most are in developing countries (WHO, 2022). Therefore, the high number of unplanned pregnancies in this study suggests that women are at risk of unsafe abortions. Preconception care includes encouragement to use contraceptive methods

until physical and psychological readiness for pregnancy. Thus, planned pregnancies may have a positive effect on mother and baby.

Discussion of the Research Question I

In this study found that knowledge of pregnant women regarding preconception care is low (Table 3). Most of the women (77.4%) had low knowledge of preconception care whereas, 22.6% had good knowledge of preconception care. Many women from the study areas are living a far distance from the hospital and many of the roads are not in good condition. When many women think about the distance to the nearest hospital and the many difficulties they will encounter they are reluctant to seek preconception care. Many rural communities do not have access to radio coverage and other modern technological devices that can be used for receiving information, as such they do not know about preconception care. In the second reason, there was a gap in the continuum of care, which is related to the fact that the majority of women do not receive care prior to becoming pregnant. According to the available evidence (Gryseels et al., 2022; Teshome et al., 2020), fewer than one-third of women of reproductive age visited health facilities and had conversations with health care providers before to becoming pregnant regarding their current state of health and the potential impact it could have on the result of their pregnancy (Frederiksen et al., 2021; Tasneem et al., 2023; Pelt et al., 2023).

This study agrees with a study conducted by Shibata et al., (2023) among 13 and 232 rural Japanese women who were both interviewed and surveyed. The study found that the majority of them lack knowledge of preconception care most especially those who have their first pregnancy. In another study conducted by Munthali et al., (2021) in Mzuzu city in Ethiopia among 253 women of reproductive age, 42.3% of respondents had inadequate knowledge about preconception care, whereas approximately 57.7% of respondents displayed a strong level of knowledge concerning preconception care. This study result has significant relations to this study as seen from the fact that the study was conducted exclusively among reproductive women who were from the rural district and the majority of the pregnant women in this study are from the rural part of the study region. In different parts of rural Africa, women share similar difficulties concerning accessing preconception care resources. The author population size was much larger than this

study and the setting was quite different which might explain reason why the level knowledge was high and our study was low.

A community-based cross-sectional study was done on 422 systematically selected women of reproductive age residing in Adet town Ethiopia. The study found that the general knowledge of preconception care was low (Ayalew et al., 2017). Similar this study, rural communities lack access to roads which limit them receiving basic services. A cross-sectional study was done among women who were not yet pregnant or were currently pregnant in the region of Shaanxi, China. Women in Shaanxi during the periconceptional period had low overall Knowledge Attitude and Practice (KAP) about periconceptional care, particularly among those residing in rural regions and with lower levels of education (Li et al., 2019). A cross-sectional study was conducted in Jinka town involving 337 married women who were recruited from the community. Evidence from the study data indicates that women possess a moderate level of knowledge regarding preconception health care (Fikadu et al., 2022). This study's results are higher than this study's results as the length of time in the data collection was much longer and the sample size was higher, the study setting and the study population were different. In another community base study conducted by Amaje et al., (2021) in Fiche town among 393 pregnant women, the knowledge of preconception care was low. This study's results are similar even though the sample size was large due to the setting. A cross-sectional study was conducted at UDUTH Sokoto, Nigeria, involving 131 women who were recruited through a simple random sampling technique at the ante-natal care clinic. The findings revealed a lack of adequate knowledge regarding preconception care, but a positive perception and willingness to embrace preconception care (Umar et al., 2019).

The studies mentioned above (Umar et al., 2019) have similar results to our study. Women's low level of knowledge about improving preconception care suggests that it may also affect their antenatal care services. The lack of information on this subject may be due to the lack of knowledge of healthcare personnel on this subject. The study was conducted among women of reproductive age suggesting that information about preconception care is also lacking within the population.

Women who were attending the antenatal clinic at Ahmadu Bello University Teaching Hospital in Zaria, Nigeria, were the subjects of a study that was done using a cross-sectional methodology. There was a moderate level of knowledge of

preconception care, but there was a lack of preconception care practices (Kachiro et al., 2022). This result is a bit higher due to the setting of the study, the women in this study were from the city. A cross-sectional approach was used to look at married women of childbearing age in the Tokha municipality of Kathmandu, India knowledge of preconception care. a total of the 200 women polled, 133 had an average level of knowledge about preconception care, 61 had an adequate level of knowledge, and only 3% did not know enough about it (Khanal, 2020). A cross-sectional study was carried out by Jafari and Rashidi (2017) in the Abhar district of Northwest Iran. The study group consisted of four hundred married women who had been referred to Abhar Health Care Centers in order to get treatments related to maternity and child health. 68.8 percent of women had sufficient knowledge regarding preconception care, which is more than two thirds. This result could be due to information sharing on preconception care by authority and other organizations and also due to the inclusion of preconception care knowledge in regular antennal care and the knowledge of the healthcare provider on preconception care.

In this study, it is seen that only one in every four women knows the questions, while the majority do not know or have no idea about all subcomponents of preconceptional care. The most known knowledge of preconception among pregnant women was screening for sexually transmitted diseases, decision and readiness for conception, and seeking advised, while the least was micronutrient supplementation vaccination (Table 2). It is thought that the level of awareness and knowledge about applications that are not very common may be lower. The fact that women's pre-pregnancy knowledge levels are so low may also negatively affect their health management during pregnancy.

Discussion of the level of knowledge of Preconception Care and Socio-Demographic Characteristics

In this study found that married women had more knowledge (53.8%) as compared to single women ($p < 0.05$). (Table 4). In Liberian culture, it is expected that when you are married, you should start having children, as such married couples are expected to seek advice on preconception care as they plan to expand their family. This is one reason why married couples' knowledge of preconception care is

high as compared to those who are single. This study's results are contrary to a study conducted by Munthali et al., (2021) in Malawi among 253 women of reproductive age from nine townships of Mzuzu City in which no relationship was seen between knowledge of preconception care and marital status. The population is different from our study population, the sample is much larger and it might be that more married women were included in the study which accounted for no significant difference seen in the study. This study result is in line with a study conducted by Godar et al., (2023) in Nepal among 215 women of reproductive age who participated in a community-based descriptive cross-sectional study that was carried out in Bheerkot Municipality, to evaluate their knowledge and practice about preconception care. knowledge of preconception care was statistically significantly associated with marital status. Married women display higher knowledge of preconception care as compared to those women who were not married. A community-based study from Berhan Town among 414 reproductive-age women in Ethiopia shows that knowledge of preconception care was not associated with marital status (Lemma et al., 2022). Unlike this study, married women might have little education which might have contributed to no significant relationship.

Pregnant women were recruited consecutively at the Mother and Child Health (MCH) clinics located in Aga Khan University Hospital (urban) and Maragua Level Four Hospital (rural) in Kenya. Both of these health facilities are located in Kenya. A total of 194 participants, with 97 participants coming from each of the two settings. Marital status was seen to have a significant relationship with knowledge of preconception care (Okemo et al.,2020). Married women were 2.6 times more likely to have higher knowledge as compared to single women. This study sample size and study setting are consistent with this study in that they are similar. It is realistic to expect that married people are more concerned about having children as such they seek preconception care services.

Women from the Urban area (42.0%) had higher knowledge of preconception care ($p < 0.05$) (Table 5). Urban areas have more services and community engagement than the rural areas which accounts for why women from the urban areas have more knowledge even though the region and sample size are different.

This study is supported by a similar hospital-based study. The Wolayita zone in South Ethiopia was the location of a hospital-based cross-sectional study that was carried out on a sample of 370 mothers who had given birth at public hospitals in the

region. Yohannes et al., (2019) found that residence was associated with knowledge of pregnant women. They found that pregnant women who resided in urban areas were 1.94 times more likely to have good knowledge as compared to those from rural areas. Unlike this study result, Amaje et al., (2022) study among 660 pregnant women in West Guji, Ethiopia, who participated in a community-based cross-sectional study and selection done in a systematic manner found that knowledge was not associated with residence. Differences in results might be due to the study setting and the sampling technique. They conducted community-based research and selected their sample systematically while this study was hospital-based research and the sample were selected conveniently.

This study also examined the level of education and knowledge of preconception care (Table 6) and found that women with Secondary & Above education (56.1%) had higher knowledge of preconception care as compare to those with lower level of education($p < 0.05$). This is the case because, in Liberia, women who have more education feel inclined to stay up to date with the present reality. As such, they always listen to the radio, watch the television, and browse social media where knowledge of preconception care may be found. They are also found to read books, magazines and journals where discussion of preconception care is more likely to be seen. They are also easily able to understand some difficult subjects like preconception care. Supporting this study, a cross-sectional study conducted in Tianjin, China examined 1,921 women who visited two maternal and child healthcare clinics for their first postnatal check-up between 6-12 weeks after giving birth. The study revealed that a higher level of education was linked to greater knowledge about preconception care among these women. This study examined women who give birth and this study examine pregnant women, women who give birth are already familiar with preconception care as they have been told while seeking prenatal care and getting education also increase that awareness as it is easy to comprehend what is been said (Jing et al., 2017).

Temel et al., (2015), conducted research in Rotterdam, the Netherlands, using random sample of residents, ranging in age from 16 to 85 years, drawn from the municipal population record for the years 2007, 2009 to 2014 found that knowledge of preconception care was associated with a higher level of education. College and a higher level of education were associated with higher education levels. This study result is notable as higher education gives you the knowledge needed to understand

research and find out things on your own and also enable things that you are been told. It also enable you to better investigate pertinent things concerning your health.

In West Guji Zone in Ethiopia, among 660 pregnant women using a systematic random sampling technique, Amaje et al., (2022) found that more knowledge of preconception care was associated with a higher level of education in a community base study.

It was also found in Kenya by Okemo et al., (2020) among 194 pregnant at two hospitals that higher knowledge of preconception care was associated with higher level of education. Those with tertiary education had 4 times odd (1.8–8.8) of having good knowledge of Preconception as compared to those who had a lower level of education. Individuals possessing higher levels of education frequently enjoy enhanced access to knowledge. They are inclined to engage in reading, conducting research, and staying well-informed about different aspects of healthcare, including preconception care. Accessing this information can facilitate a more thorough comprehension of the significance of preconception health.

Giri & Gautam (2018) study using a purposive sample strategy was employed to choose a total of 220 women of reproductive age in Pokhara, Nepal India found a non-significant relationship between Knowledge of preconception care and level of education. The study was conducted in a single ward among married women and the researcher selected those who they thought were available which might explain why there was a difference in the result.

The study examined the relationship between religion and preconception care knowledge (Table 7) and found that no particular religion pregnant women had more knowledge of preconception care as compared to women from other religions ($p > 0.05$). This is because, in Liberia, it is not the purpose of the church to teach health matters and many church leaders are not knowledgeable about the issue of preconception care. It is considered awkward for religious leaders to leave their preaching and discuss health-related matters. This result is supported by Thakuri & Singh (2017). A cross-sectional study was conducted among 55 women of reproductive age who were visiting the Gynecological/Obstetric Outpatient Department of the National Medical College Teaching Hospital in Birgunj, India, they found out that religion was not associated with knowledge of preconception care. Logically, religion should not be associated with religion as religious places is

not a medical place but rather a teaching of sacred writings which might explain similarities in results.

A cross-sectional study was conducted on a sample of 50 pregnant women who voluntarily participated in a study at the antenatal outpatient clinic located in Idi-Araba, Lagos. The study found that there was no statistically significant relationship between knowledge of preconception care and religion (Akinojo et al., 2019). A purposive sample strategy was employed to identify 220 women of reproductive age in Pokhara in a study done by Giri & Gautam (2018) and they found no statistically significant relationship between religion and the knowledge of preconception care.

This study found that occupation was not associated with knowledge of preconception care ($p > 0.05$) (Table 8). This no association is reflected in this study because women of different educational levels work in different professions in Liberia. The level of unemployment is high in Liberia as such, women have no choice but to do whatever good work is available to provide and support their family. This study is similar to a study conducted by Giri & Gautam (2018) among 220 women of reproductive age in Pokhara, India. They found no statistically significant relationship between occupation and the knowledge of preconception care among reproductive. In another research conducted by Gautam & Dhakal (2016) among 227 women in Tulsipur municipality of Dang District, Nepal in a single ward Found no statistically significant difference between occupation and the knowledge of preconception care. This study like this research is hospital-based and had more rural participants, the sample characteristics are made up of mostly very young and first-time mothers which might be a reason why they all have similar results.

A total of 414 women of reproductive age were included in a cross-sectional study conducted in Debre Berhan Town, Ethiopia. It was found that working women had an 8.7 times greater likelihood of having a good knowledge about Preconception care compared to housewives (Lemma et al., 2022). There are health and safety programs that are implemented at workplaces. These programs include details about general wellness, including sexual and reproductive health education. Educational opportunities may be provided to staff members regarding lifestyle variables, nutrition, and other topics that are pertinent to preconception care.

This study found that women who had 3 or more live birth (40.9%) had more knowledge of preconception care as compared to those who had 1 or 2 live birth ($p <$

0.05) (Table 9). This study result is acceptable because the more you become pregnant, the more you visit the clinics and meet health professionals who are always reminding you of the need for heeding preconception care advises for the sake of your health and family's wellbeing. This result is supported by Lemma et al (2022) study among 422 women of reproductive age in a community setting study. It was determined that multigravida women were 72% more likely to have good knowledge about PCC than primigravida women. This may be attributed to the fact that primigravida women tend to have heightened levels of anxiety and apprehension around their pregnancy while multigravida women have advanced knowledge and know what exactly to do in pregnancy preparation-

In contrast, Umar et al., (2019) conducted a study among 131 women using simple random sampling technique at a University teaching hospital in Sokoto, North–West Nigeria, and found no statistically significant between the number of live births and the knowledge of preconception care among the women. The difference might be due to the understanding that preconception care was assessed from women in general who might not be concentrating on pregnancy and see no need for knowing about preconception care since readiness is no there.-The number of children was statistically associated with knowledge of preconception care in a study in Nepal among 220 women of reproductive age in a community-based study (Giri & Gautam, 2018). Preconception care knowledge was associated with the number of live births in a study conducted in AKUH and MLFH health facilities in Kenya among 194 pregnant women by Okemo et al., (2020).

This study found that women who had planned pregnancy (65.3%) had more knowledge of preconception as compared to those who had unplanned pregnancy ($p < 0.05$) (Table 10). This is because when you plan for pregnancy, you are concerned about the well-being of the child and your health, as such you are always consulting health professionals who will give guidance on preconception care. In Ethiopia, a cross-sectional study among married women in a community setting by Filkadu et al., (2022) found that Women who plan their pregnancy have more knowledge than those who do not. Both results are similar because married women usually seek counselling before getting married and preconception care knowledge is included in marriage counselling in African setting which likely account for the similarity in study result. Another study carried on in Brazil by Borges et al., (2016) among a total of 807 women, out of which 649 had a planned pregnancy found that planned

pregnancy was associated with high knowledge of preconception care. In community-based research among 229 pregnant women in Adet, Northern Ethiopia, found that planning for pregnancy by family planning was associated with knowledge of preconception care (Goshu et al., 2018). Lack of preconception care was associated with unplanned pregnancy in a study conducted in Iran among 702 Iranian ladies who gave birth in hospitals located in the city of Isfahan (Shadab et al., 2017).

This study also considered age groups and the knowledge of preconception care (Table 11). Women who are in the age range of 35 – 49 (44.4%) had more knowledge of preconception care as compared to those with lower ages ($p < 0.05$). Women who are in the age range of 35 and above are considered to be in the risky age as such, they are very careful with their lifestyle to avoid additional complications. They regularly seek advice on preconception care and avoid certain risky behaviors. Goshu et al., (2018) found a statistically significant difference in preconception knowledge between age groups in a community-based research among 229 pregnant women in Adet, Northern Ethiopia. Women who were great than 30, were 2.1 times more likely to utilize preconception care than women who were less than 30. This is because most marriage in Africa take place in late 20 or early 30 which account for the significant difference.

Contrary to our result, no association was found between the age group and the knowledge of preconception care in a cross-sectional study carried out at the Obstetrics and Gynecological Department of the Usmanu Danfodiyo University Teaching Hospital in Sokoto, Nigeria among 131 pregnant women. The limited sample size might explain the non-significant result (Umar et al., 2019).

This study has presented a thorough synopsis of the existing preconception care procedures among the hospital's patient population. The study has examined the necessity of educational programs in improving patients' understanding and consciousness of preconception care. The importance of developing measures to empower patients in their preconception health has been highlighted. Participate in the advancement or enhancement of nursing procedures and recommendations pertaining to preconception care. Facilitate additional investigations into preconception care, expanding upon the discoveries made in this initial study. Promote a culture of continuous investigation and enhancement within the healthcare environment.

CHAPTER VI

Conclusions and Recommendations

In accordance with the research's purpose and findings, this chapter concludes and makes recommendations.

Conclusions

- In this study, most of the pregnant women are single (72.6%), Christian and rural dwellers.
- More than half of pregnant women (57.9%) have primary education and one in five women have no education at all.
- Almost half of the pregnant women have one livebirth and have working different kinds of offices.
- Almost all of the pregnant women (74.2%) have unplanned pregnancy.
- In this study, it is seen that only one in every four women knows the questions, while the majority do not know or have no idea about all subcomponents of preconceptional care.
- Most of the women (77.4%) had low knowledge of preconception care whereas, 22.6% had good knowledge of preconception care. It was concluded that approximately 8 out of every 10 pregnant women have low knowledge about this care in the hospital.
- In this study found that married women had more knowledge (53.8%) as compared to single women. Women who are from Urban areas have more knowledge (42.0%) as compared to women from rural areas (15.7%). Women who had Secondary & Above education had more knowledge (56.1%) as compared to those with lower education. Women who had 3 or more live births had more knowledge (40.9%) than those with 1 or 2 live births. Women who had planned pregnancy had more knowledge of preconception care (65.3%) than those who had unplanned pregnancy (7.8%) and women who were in the age range of 35 – 49 (44.4%) had more knowledge of preconception care than those who had lower ages.

- This study found that occupation and religion were not associated with pregnant women's knowledge of preconception care.

Recommendations

Recommendations according to Findings

- In line with the conclusion that approximately 8 out of every 10 pregnant women include low knowledge about preconceptional care in the study, it is recommended that nurses and women start education and counselling about preconceptional care (in all its sub-dimensions) to all women of reproductive age in the hospital.
- It is recommended that antenatal care services be added to the preconceptional care of primary and secondary healthcare services as routine care. It is recommended that the study results be shared with Liberia governments or organizations to demonstrate the importance of this care.
- Nurses should raise awareness on the subject by preparing brochures and posters regarding preconceptional care for women coming to the hospital. It is recommended that these brochures and posters about all its sub-dimensions.

Recommendations for Future Studies

- Future studies should include a larger sample size and a longer time frame for data collection to get more pregnant women involved.
- Future studies should be conducted on all women of reproductive age attending the hospital to know their knowledge level of preconception care.
- Future studies should also include men since they are an important part of the pregnancy preparation process.
- Future studies should be conducted on healthcare providers (nurse and midwives) to see how prepared they are to deliver preconception care education and the barriers to presenting such education.

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APPENDICES

Appendix A

INFORMED CONSENT FORM FOR STUDENTS

Dear Participant,

My name is JEMIMA SWORDEE NYENFUEH, I am a master's student currently studying at Near East University in Northern Cyprus who developed an interest to conduct a research on 'Awareness, knowledge, and attitude on preconception care among pregnant women at Ganta United Methodist Hospital in Liberia' under the supervision of my course advisor Associate Professor Dr. Dilek SARP KAYA GUDER. The purpose of this study is to determine awareness, attitude and knowledge about preconception care at the Ganta United Methodist Hospital in Liberia. Your participation is voluntary. Your decision whether or not to participate will not affect your relationship with the hospital or who so ever. Any information collected during our research will be kept confidential. The completion of the questionnaire will take about 10 minutes. If you have any questions about the study, please feel free to contact [jemimanyenfueh@gmail.com]. [Advisor: Assoc. Prof. Dr. Dilek Sarpkaya Güder, email: dilek.sarpkaya@neu.edu.tr]. The study was approved by the ethics committee of NEU* University on (IRB No. NEU/.....). Thank you very much for participation. Please check (X) in the box that corresponds to your response.

SECTION A: Sample Characteristics (Please tick as appropriate)**1. Age**

- 16-20 { }
21-25 { }
26-30 { }
31 -35 { }
36-40 { }

2. Marital status

- Single { }
Married { }
Divorced { }

3. Residence

- Rural { }
Urban { }

4. Educational level

- Nil { }
Primary { }
Junior high { }
Senior high { }
Tertiary { }

5. Religious affiliation

- Christianity { }
Muslim { }
African Traditionalist { }

6. Occupation

Housewife	{	}
Farmer	{	}
Merchant	{	}
Other	{	}

7. Number of Live birth

One	{	}
Two	{	}
Three or More	{	}

8. Pregnancy

Planned	{	}
Unplanned	{	}

Appendix B. Preconception Care

Improvement Scale

Components on Knowledge of preconception care	Yes	No	Don't Know
Substance-related behaviors			
1. Avoiding or cessation of cigarettes for the sake of becoming pregnant			
2. Avoiding or cessation of alcohol for the sake of becoming pregnant			
3. Avoid or cessation of chewing khat for the sake of becoming pregnant			
4. Avoiding or cessation of using cannabis for the sake of becoming pregnant			
Screening for common non-communicable and infectious diseases			
5. Screening for diabetes mellitus for the sake of becoming pregnant			
6. Screening for blood group for the sake of becoming pregnant			
7. Screening for hypertension for the sake of becoming pregnant			
8. Screening for Hepatitis b for the sake of becoming pregnant			
Micronutrient supplementation and vaccination			
9. Taking iron or ferrous for the sake of becoming pregnant			
10. Taking folic acid for the sake of becoming pregnant			

11. Taking the Tetanus vaccine for the sake of becoming pregnant			
Seeking advice			
12. Consulting health workers for advice for the sake of becoming pregnant			
13. Having good nutrition and diet for the sake of becoming pregnant			
Decision and readiness for conception			
14. Stop or remove family planning, (if user) for the sake of becoming pregnant			
15. Discussion with husband when to have a child			
Screening for sexually transmitted diseases			
16. Screening for HIV/AIDS for the sake of becoming pregnant			
17. Screening for sexually transmitted disease for the sake of becoming pregnant			

Appendix C

Confirmation Letter To Use The Facility



MASTER THESIS APPROVAL RESEARCH LETTER

From : Administrator

To : Jemima Swordec Nyenfuch
Student International Master Thesis at
Near East University

Date : June 13, 2023

Congratulation, your request to conduct a research paper at our Hospital has been approved. We are pleased to inform you that we are willing to work with you throughout the research period. It's a pleasure selecting our Hospital among many Hospitals. Thanks once again, and we do hope to see you soon.


Respectfully yours,

Allen Zomonway
Administrator
Ganta United Methodist Hospital



Appendix D

Ethical Approval Letter



NEAR EAST UNIVERSITY
SCIENTIFIC RESEARCH ETHICS COMMITTEE

RESEARCH PROJECT EVALUATION REPORT

Meeting date :21.06.2023
Meeting Number :2023/115
Project number :1747

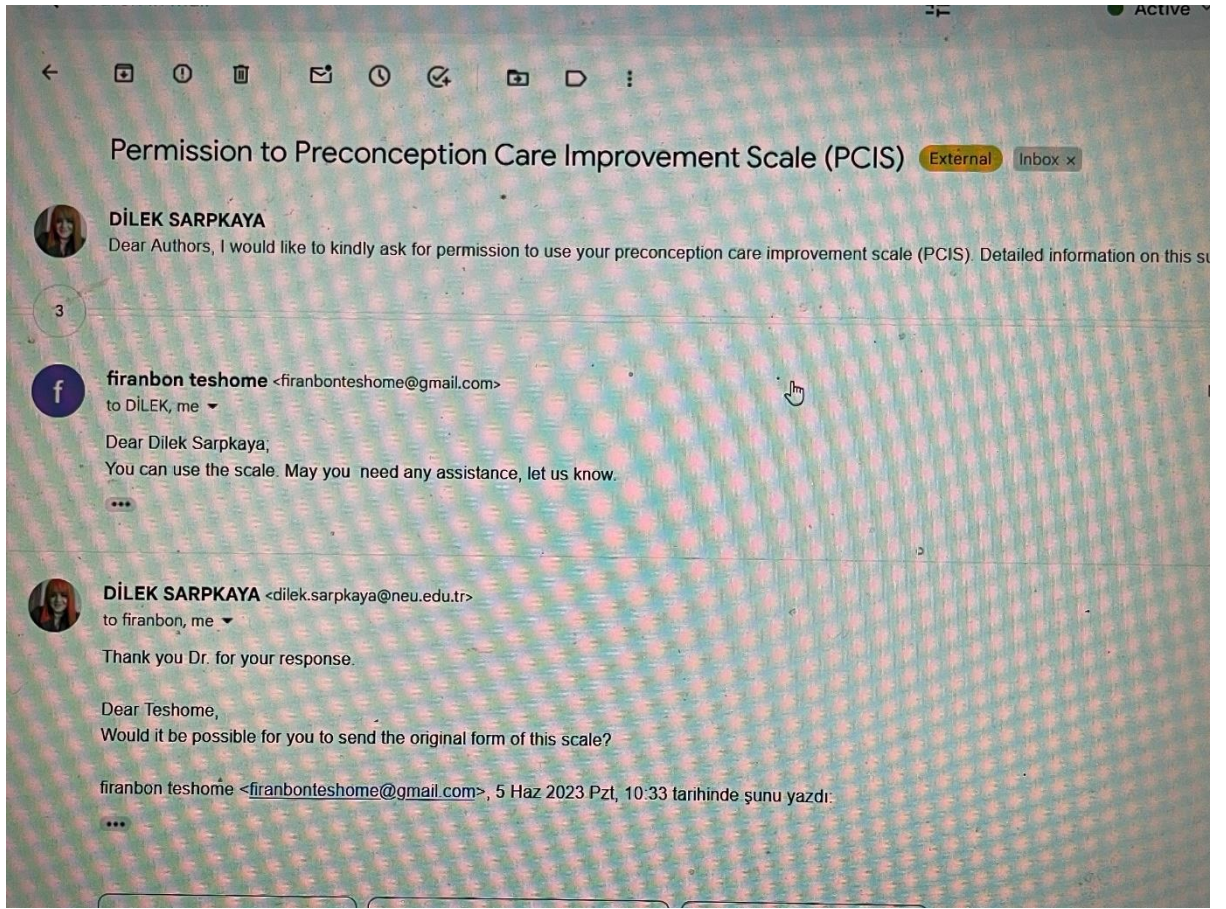
The project entitled **“Knowledge On Preconception Care Among Pregnant Women at A Hospital in Liberia”** (Project no: NEU/2023/115-1747), which will be conducted by Assoc. Prof. Dr. Dilek Sarpkaya Güder has been reviewed and approved by the Near East University Scientific Research Ethical Committee.

NAME-SURNAME	ROLE	SINGNATURE
1.Prof. Dr. Şanda Çalı	HEAD OF ETHICS REVIEW COMMITTEE	<i>d. şalu</i>
2.Assoc. Prof. Dr. Gulifeiya Abuduxike	RAPPORTEUR	<i>Gulifeiya</i>
3.Prof. Dr. Tamer Yılmaz	MEMBER	<i>Tamer</i>
4.Prof. Dr. Şahan Saygı	MEMBER	<i>Şahan</i>
5.Prof. Dr. Ilker Etikan	MEMBER	<i>Ilker</i>
6.Prof. Dr. Nilüfer Galip Çelik	MEMBER	KATILYADI
7.Assoc. Prof. Dr. Mehtap Tınazlı	MEMBER	<i>Mehtap</i>
8.Assoc. Prof. Dr. Dilek Sarpkaya Güder	MEMBER	
9.Assoc. Prof. Dr. Burçin Şanlıdağ	MEMBER	<i>Burçin</i>

<https://etikkurul.neu.edu.tr/>

Appendix E

Approval to Use the Preconception Care Improvement Scale



Appendix F

Turnitin Similarity Report

Jemina Tez			
ÖRİJİNALLIK RAPORU			
%23	%17	%16	%6
BENZERLİK ENDEKSİ	İNTERNET KAYNAKLARI	YAYINLAR	ÖĞRENCİ ÖDEVLERİ
BİRİNCİL KAYNAKLAR			
1	www.ncbi.nlm.nih.gov İnternet Kaynağı		%3
2	www.researchgate.net İnternet Kaynağı		%3
3	Firanbon Teshome, Yohannes Kebede, Fira Abamecha, Zewdie Birhanu. "What do women know before getting pregnant? Knowledge of preconception care and associated factors among pregnant women in Mana district, Southwest Ethiopia: a community-based cross-sectional study", BMJ Open, 2020 Yayın		%1
4	www.coursehero.com İnternet Kaynağı		%1
5	nursekey.com İnternet Kaynağı		%1
6	vdoc.pub İnternet Kaynağı		%1
7	Mtondera Eness Munthali-Nkhoma, Isabel Kazanga-Chiumia, Chrispin Mandiwa, Saul		<%1