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**Knowledge and Practice of Primigravida Women about
Preconception Care in the Gaza Strip, Palestine**

Najwa Suliman Mahmoud Abu Mustafa

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Prepared By
Najwa Suliman Mahmoud Abu Mustafa

Bachelor degree in Nursing, Islamic University Gaza,
Palestine

Supervisor: Dr. Ahmed A. Najim

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Thesis Approval

**Knowledge and Practice of Primigravida Women about Preconception
Care in the Gaza Strip, Palestine**

Prepared by: Najwa Suliman Mahmoud Abu Mustafa
Registration No.: 21912592

Supervisor: Dr. Ahmed A. Najim

Master thesis submitted and accepted. Date: 21/12/2022

The names of signatures of the examining committee members are as follows:

1. Head of committee: Dr. Ahmed A. Najim

Signature.....

2. Internal examiner: Dr. Areefa Alkaseh

Signature.....

3. External examiner: Dr. Akram M. Abusalah

Signature.....

Jerusalem- Palestine

1444 / 2022

Dedication

For my mother.

To the soul of my deceased father.

To my husband Jawad.

For my sons and daughters “Anas, Sabreen, Soliman, and Mohamed”.

For my brother Mahmoud and his deceased wife who supported me in everything.

For my brother, Dr. Mohamed, and his wife.

For my sister Naela for her great support.

For my fathers in law who supported me in everything.

For martyr Sheren Abo Aglah and all Palestine’s Martyrs.

For my all friends.

For my family

I dedicate this work to all of them...

Najwa Suliman Mahmoud Abu Mustafa

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed:



Najwa Suliman Mahmoud Abu Mustafa

21/12/2022

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With my appreciation and respect

Najwa Suliman Mahmoud Abu Mustafa

Abstract

Background: Preconception care (PCC) may play a crucial role in reducing both immediate and long-term unfavorable health effects in mothers and their children. **Aim:** This study aimed to assess knowledge and practices of PPC among primigravida women in the Gaza Strip. **Method and materials:** A descriptive, cross-sectional design was utilized. A proportional quota sample was drawn from the main primary healthcare centers in the Gaza Strip, namely; Jabalia Martyrs, Al Rimal Martyrs, Al Daraj, Al Zytoun, Deir Al-Balah Martyrs, Khanyounis Martyrs, and Rafah Martyrs. The sample size was 376 primigravida women who visit the ANC service. Targeted women were interviewed using an interviewing questionnaire, a pilot study was conducted, the study began from January to august 2022, Cronbach alpha reliability was 0.905, and validity was assured by experts in the field. **Results:** The mean age of the study sample is 22.3. The majority, 53.2%, married before the age of 20, and 51.1% live in Gaza City. 94.7%, are unemployed. 55.9% of women have a high level about PCC knowledge (mean: 5.6) 46.5% of women have good practice, with a mean score of 9 (0-26). Two-thirds of women found PCC easy to obtain. The correlation between respondents' knowledge and practice is moderate ($r=0.507$, $p=0.000$). There was a statistically significant link between respondents' knowledge and the presence of a PCC unit ($\chi^2= 32.2$, $p = 0.000$), folic acid ($\chi^2= 42.1$, $p = 0.000$), and medical lab tests ($\chi^2= 30.8$, $p\text{-value} = 0.000$). Also, there was a statistically significant relationship between respondents' level of practice and accessibility to a health care center ($\chi^2= 11.7$, $p = 0.003$), the presence of a PCC unit in the health facility ($\chi^2= 32.2$, $p = 0.000$), and the availability of folic acid and lab tests. Age and age at marriage had statistically significant relationships with respondents' knowledge ($\chi^2=8.32$, $p=0.016$) and ($\chi^2=6.53$, $p=0.038$), respectively. The location also affects participants' knowledge, with most middle-zone women (90.5%) having a high level ($p=0.000$). The majority of university-educated women (65.4%) have a high degree of practice. Those with secondary education or less had a high level of knowledge ($\chi^2=14.4$, $p=0.001$). 61.4% of those with a university education, 56.3% of those with a secondary school, and 40% of husbands with preparatory education or less had good knowledge. The place of residence determines women's practice, with 76.2% of middle-zone women demonstrating excellent practice. North Gaza had 71.4%, Gaza 47.9 Khanyounis 27.1%, and Rafah 18.2% ($p=0.000$). The multivariate regression model found two variables that predict women's knowledge. First: education ($P=0.03$), women with a bachelor's degree or more have a higher PCC knowledge four times more than those with less educated (OR: 4, $P = 0.015$). Second: practice, those with the good practice category have a higher knowledge of 3.7 times more than those with the poor practice category (OR: 3.7, $p=0.000$). The model found three variables that predict women's practice. First: Place of residence ($P=0.000$). Middle zone women enhance their practice score 3.2 times higher than their Rafah counterparts (OR: 3.2, $p= 0.031$). Living in Gaza City increases women's practice by 3.3 times compared to Rafah (OR: 3.3, $p= 0.006$). Living in North Gaza increases women's practice by 3 compared to Rafah (OR: 3.2, $p= 0.000$). Second: knowledge, high knowledge increases practice by 3.6 times more than poor knowledge (O.R: 3.6, $P = 0.000$). Third, hospital accessibility. Women who found access to health care centers "difficult" were 0.87 times less likely to practice than those who found it "easy" (OR: 0.130, $P= 0.012$). **Conclusion and recommendations:** The study concluded that primigravida women have good knowledge and high practice about PCC service. Women's and families' knowledge and practice about PCC services should be increased by holding education sessions for any woman visiting PHCC and giving an interest in this topic in the clinics' brochures, posters, and boards containing encouraging phrases.

Keywords: Knowledge, Practice, PCC, PHCC, Primigravida, Gaza Strip

List of abbreviations

ACOG	American College of Obstetrics & Gynecologists
ANC	Antenatal Care
APO	Adverse Pregnancy Outcomes
BMI	Body Mass Index
CI	Confidence Interval
CMV	Cytomegalovirus
GDM	Gestational Diabetes Mellitus
HCPs	Health Care Providers
HDP	Hypertensive Disorders in Pregnancy
HIV	Human Immunodeficiency Virus
KaP	knowledge, and Practice
LBW	Low-Birth-Weight
MCH	Mother and Child Health
MMR	Maternal Mortality Rate
MoH	Ministry of Health
NCDs	Noncommunicable Diseases
NGOs	Non-Governmental Organizations
NICE	National Institute for Health And Care Excellence
NTD	Neural Tube Defects
PCBS	Palestinian Central Bureau of Statistics
PCC	Preconception Care
PHCCs	Primary Health Care Centers
PNC	Postnatal Care
SDG	Sustainable Development Goals
T1 DM	Type 1 Diabetes Mellitus
T2 DM	Type 2 Diabetes Mellitus
UNICEF	United Nations International Children's Emergency Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNRWA	The United Nations Relief and Works Agency for Palestine Refugees in the Near East
WB	West Bank
WHO	World Health Organization

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Chapter One

Introduction

1.1 Background

Reproductive health care, in all its components: preconception, inter-conception, antenatal (ANC), intrapartum, postnatal (PNC), post-abortion, and family planning in an integrated comprehensive approach is central to health in general and to socioeconomic development. Having preconception care has been shown to improve the use of antenatal care, delivery, and PNC services; and thus, contributing to improved reproductive health outcomes (Poels et al., 2017). In 2012, the World Health Organization (WHO) organized a meeting to develop a global Preconception care (PCC) to reduce maternal and child mortality (WHO, 2013). PCC is for every woman and couple to have a healthy pregnancy (Mwenda et al., 2017).

PCC provides biomedical, behavioral, and social health interventions to women and couples before conception to improve their health and reduce harmful behaviors, individual, and environmental factors that could contribute to poor maternal and child health outcomes (WHO, 2013). PCC is a specialized care targeted at women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that may militate against safe motherhood and positive pregnancy outcome (Ojifinni & Ibisomi, 2020).

On the other hand, PCC helps in addressing pre-pregnancy health risks and health problems that could have negative maternal and fetal consequences. As a result, it has the potential to reduce global maternal mortality and morbidity even further, particularly in low-income countries (James, 2015). Furthermore, PCC has been identified as one method of lowering maternal and child morbidity and mortality rates (Ukoha, 2017).

The WHO reported that in 2017, around 810 women died everyday from pregnancy and childbirth-related complications around the world (WHO, 2019). In 2017, 295 000 women died during and following pregnancy and childbirth. The vast majority occurred in low-resource settings, and most could have been prevented (WHO, 2019). Indirect causes of maternal deaths account for about a third of maternal deaths such as diabetes, infectious diseases, and anemia (NIPORT 2014 and WHO 2015).

According to the United Nations International Children's Emergency Fund (UNICEF), maternal malnutrition, anemia, infection during pregnancy, and repeated pregnancies contribute to low-birth-weight (LBW) babies who have a higher risk of death than children with normal weight (UNICEF, 2009).

The PCC involves health-promotive, preventive and curative interventions covering the physical, social, and psychological aspects of a woman's life (Zühlke & Acquah, 2016) (Ali et al., 2018). According to the Centers for Disease Control and Prevention (CDC), PCC focuses on the period before and during early pregnancy to address potentially dangerous lifestyle behaviors, raise awareness of family planning options, and maximize both male and female health status (CDC, 2014). Berglund and Lindmark (2016) define PCC as "the provision of biomedical and behavioral interventions before pregnancy to optimize women's health and subsequent pregnancy outcomes"

Growing data suggest that PCC may play a crucial role in reducing short- and long-term unfavorable health outcomes for mothers and their offspring (Steel et al., 2015). Many women enter pregnancy in poor health with untreated preexisting conditions or without knowledge of healthy behaviors, such as taking a daily folic acid supplement, avoiding exposure to tobacco and other teratogenic agents, or updating their immunizations, which puts them at risk for maternal and neonatal adverse outcomes (Charafeddine et al., 2014).

Having adequate knowledge about PCC is an important prerequisite for the practice and utilization of PCC especially among primigravida women who get pregnant for the first time of her life. Previous studies showed diversity in knowledge about PCC. In their study, Ayalew et al. (2017) found that the overall knowledge of PCC was 27.5% among women in Ethiopia, and Teshome et al. (2020) found that 21.3% of pregnant women had good knowledge of PCC, while Gurkan & Abbasoglu (2021) reported that only 12.3% of women in Turkey applied to a health institution to receive PCC.

Knowledge and awareness can be predictors of health-related behaviors, and PCC and education may reduce the risk of some of these poor obstetric outcomes (Crusenberry, 2016). Due to the importance of PCC in the promotion of health and reducing the complications of pregnancy, it is important to determine the knowledge and practices of PCC among future mothers before they get pregnant, to ensure safe pregnancy and childbirth for the mother and her baby.

1.2 Problem statement

The health status and health-related behaviors of women, occurring before conception are of concern, as there is likely to be a significant impact on conception itself (Rooney & Domar, 2014). Improving pregnancy outcomes and reducing maternal and infant mortality and morbidity have been major priorities for countries around the world (WHO, 2014).

In addition, inadequate intake of folic acid before conception has been linked to an increased risk of neural tube defects (NTD) in the fetus/infant. NTD includes spina bifida, anencephaly, and encephalocele (Elsinga et al., 2008). To decrease the incidence of congenital malformations, miscarriage, birth weight abnormalities, and preterm birth with women Type 1 Diabetes Mellitus (T1 DM), or Type 2 Diabetes Mellitus (T2 DM), should have strict preconception control of blood glucose levels.

As reported by MoH. In Palestine, the last five years (2014-2018) have shown a high rate of newborn and child mortality due to congenital abnormalities and premature birth. Congenital abnormalities were between 15.4% and 24.0% among baby mortalities, and between 17.2% and 24.0% among under-five mortalities. In contrast, the proportion of preterm deliveries among newborn mortalities ranged from 16% to 24%, and for under-five mortality from 12% to 21%. (Massad et al., 2019). PPC treatments could contribute to reducing the incidence of congenital anomalies, as congenital malformations can be prevented by vaccination, adequate consumption of folic acid and iodine through supplementation or food fortification, and adequate intake of vitamin D during pregnancy.

In Primary Health Care Centers (PHCCs), PCC is not usually provided to women, and women reported that health professionals rarely address the availability and necessity of PCC with them (Collins, 2016). According to studies, the understanding and awareness of health care professionals and women of childbearing age on PCC are low, and there is confusion among health professionals regarding who is responsible for providing PCC (Bortolus et al., 2017).

In Gaza Strip, one study carried out by Jarad (2020) found that level of knowledge about PCC was 60% and the level of practice was 59%, and the study raised the need to increase women's awareness about preconception consultation and seeking advice to be prepared for the next pregnancy. According to Gurkan & Abbasoglu (2021), women did not receive adequate PCC, therefore, women need to be provided with an awareness of preconception risk factors to increase their practice and utilization of PCC., and to do that, policies should

be developed to increase the frequency of women receiving PCC. Also, barriers that limit the availability and access to quality maternal health services must be identified and addressed at all levels of the health system.

In Gaza Strip, PCC services are available at some PHCCs with qualified midwives and physicians, but very few women attend the PCC clinics for consultation and evaluation of their health status and readiness for pregnancy according to the monthly reports of clinics that provide PCC. The weak attendance to PCC clinics could be attributed to a lack of awareness about the availability of this service, and a lack of knowledge about the importance of PCC in discovering hidden health problems, reducing pregnancy complications, and safe pregnancies for the mothers. Therefore, this study attempts to assess the level of primigravida women knowledge and practice about PCC.

1.3 Justification of the study

The PCC is one part of the health care system that results in healthier women, infants, and families. PCC is an integral part of antenatal care (ANC) as it helps to reduce potential risk, maternal and child mortality, birth defects in infants, as well as promote healthy pregnancy and fetal outcome, and improve readiness for pregnancy (WHO, 2013).

There is evidence that PCC improves maternal and infant pregnancy outcomes. It is recommended that health care providers (HCPs) incorporate evidence-based preconception services into their daily care of women of reproductive age (Atrash & Jack, 2020).

Moreover, the study will add new information to the body of knowledge and raise new questions that inspire further research about PCC. Furthermore, the study provides recommendations for health policymakers for developing programs related to PCC activities to improve knowledge and decrease the negative outcomes of pregnancy.

Up to the researcher's knowledge, few studies about PCC were carried out in Palestine and regional countries. Therefore, this study was conducted to assess the knowledge and practices of PCC among women in the Gaza Strip and to identify the relationship between knowledge and practice of PCC, and the associated factors that influence the level of knowledge and practice of PCC. The findings of this study can be used as baseline data to support future research work and programs.

1.4 Study objectives

1.4.1 General objective

The general objective of the study is to assess knowledge and practices of preconception care among primigravida women in the Gaza Strip.

1.4.2 Specific objectives

- To identify the level of knowledge about preconception care among primigravida women in the Gaza Strip.
- To identify the level of practice of preconception care among primigravida women in the Gaza Strip.
- To assess the level of utilization (availability and accessibility) of preconception service in the Gaza Strip.
- To investigate the relationship between knowledge and practice of preconception care among primigravida women in the Gaza Strip.
- To determine the differences in primigravida women knowledge about preconception care related to some sociodemographic factors.
- To examine the differences in primigravida women practice of preconception care related to some sociodemographic factors.
- To study the relationship between availability of PCC and primigravida women knowledge.
- To study the relationship between availability of PCC and primigravida women practice.
- To predict factors affecting women's knowledge and practice about preconceptions of care service.

1.5 Research questions

- What is the level of knowledge about preconception care among primigravida women in the Gaza Strip?
- What is the level of practice of preconception care among primigravida women in the Gaza Strip?
- Are preconception services utilized (available and accessible) at governmental Primary Health Care Centers in Gaza Strip?

- Is there a relationship between knowledge and practice of preconception care among primigravida women in the Gaza Strip?
- Are there statistically significant differences in primigravida women knowledge about preconception care related to sociodemographic factors?
- Are there statistically significant differences in primigravida women practice of preconception care related to sociodemographic factors?
- What are factors that can predict women's knowledge and practice about PCC?

1.6 Definition of terms

1.6.1 Theoretical definitions

1.6.1.1 Preconception care

Preconception care is defined as "a set of interventions and/or programs aimed at identifying and enabling informed decision making to modify biomedical, behavioral, and (psycho) social risks to parental health and the health of their future child, through counseling, prevention, and management, emphasizing those factors that must be acted on before conception and in early pregnancy, to have the greatest impact and/or choice" (Posner et al., 2006).

1.6.1.2 Primigravida

Primigravida is a woman pregnant for the first time (Bond, 2011).

1.6.1.3 Knowledge

Knowledge is understanding someone or something, such as facts, skills, or objects, requires familiarity with it (Cambridge Dictionary, 2020).

1.6.1.4 Practice

The practice is defined as something that is usually or regularly done, often as a habit, tradition, or custom (Cambridge Dictionary, 2020).

1.6.2 Operational definitions

1.6.2.1 Preconception care

The researcher defines PCC operationally as any intervention including consultation, treatment, and lifestyle modification provided by a HCP to a woman before being pregnant.

1.6.2.2 Knowledge

The researcher defines knowledge operationally as measured by the total scores obtained by study respondents' on the knowledge about preconception care as reported through the questionnaire. Those who scored below or tied with the mean on the PCC knowledge (mean= 6) questions were deemed to have low knowledge (Fikadu et al., 2022).

1.6.2.3 Practice

The researcher defines practice operationally as measured by the total scores obtained by study respondents' on the practice of preconception care as reported through the questionnaire. Those who scored below or tied with the mean on the PCC practice statements (mean= 9) were deemed to have a good practice (Fikadu et al., 2022).

1.7 Context of the study

1.7.1 Sociodemographic context

Palestine encompasses 27,000 km² from Ras Al-Nakoura to Rafah (Annex 1). West Bank (5,655 km²), Gaza Strip (365 km²), and East Jerusalem make up the Palestinian territories. Gaza Strip is a narrow strip of land surrounded by Egypt, the Mediterranean Sea, and 1948-occupied territories east and north. Two-thirds of Gaza's population are refugees. North Gaza, Gaza, Mid-zone, Khan Younis, and Rafah make up Gaza Strip (Annex2). About 5 million Palestinians live in Palestine (3,008 in WB and over 2 million in Gaza Strip) with a male-to-female ratio of 103.4: 100. PCBS reports that Palestine's population density (per capita/km²) is 847 (548 in WB and 6,612 in Gaza Strip) (PCBS, 2020). (PCBS, 2020) The average household size is 5.1 (4.9 in WB and 5.5 in Gaza Strip). The crude birth rate is 23, the crude death rate is 2.9, and the fertility rate is 2.94 babies/woman of reproductive age (PCBS, 2020).

1.7.2 Health care system

The Palestinian healthcare system consists of five major providers: the Ministry of Health (MoH) which is the main health service provider, The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), Non-governmental organizations (NGOs), military medical services, and the private sector. MoH is operating 14 hospitals in WB and 13 in Gaza Strip, 583 PHCCs in WB, and 52 in Gaza Strip (MoH, 2020). In addition, UNRWA is operating 22 PHCCs in Gaza Strip. The healthcare system has suffered significantly under the siege. The restrictions, frequent military attacks by Israeli forces, and reduction of funding, along with the pandemic of COVID-19, have contributed to the decay of medical infrastructure and shortages of drugs, equipment, supplies, and personnel, which added extra pressure on the already exhausted health system (UNOCHA, 2020).

1.7.3 Primary health care services

There are 158 PHCCs in Gaza Strip, 52 are owned by MOH, 22 are owned by UNRWA, 5 are owned by the military medical services, and the rest are owned by NGOs and the private sector. The MoH classifies PHCCs into four levels.

Level1V centers Provide preventive services, mother and child health care (MCH), immunization, family planning, and health education. The PCC program in MCH is for one year.

The total number of pregnancies in the Gaza Strip in 2019 was 48,029 of them 14,248 registered at MoH centers. The fertility rate is 3.2/ woman in reproductive age which differs from that of 2012; 3/ woman in reproductive age (MoH, 2020).

From the researcher experience in the work in PHC, Palestine integration and implementation of PCC is endorsed in the National Reproductive Health Strategy (2018-2022) as one of the strategic objectives to ensure the provision of standard reproductive health care, and to prevent maternal and childhood mortality and morbidity. During the visit to the PCC clinic, the HCP should perform a risk assessment to determine the health status of the woman, and discover existing or pre-existing health problems.

Chapter Two

Conceptual framework and literature review

2.1 Conceptual framework

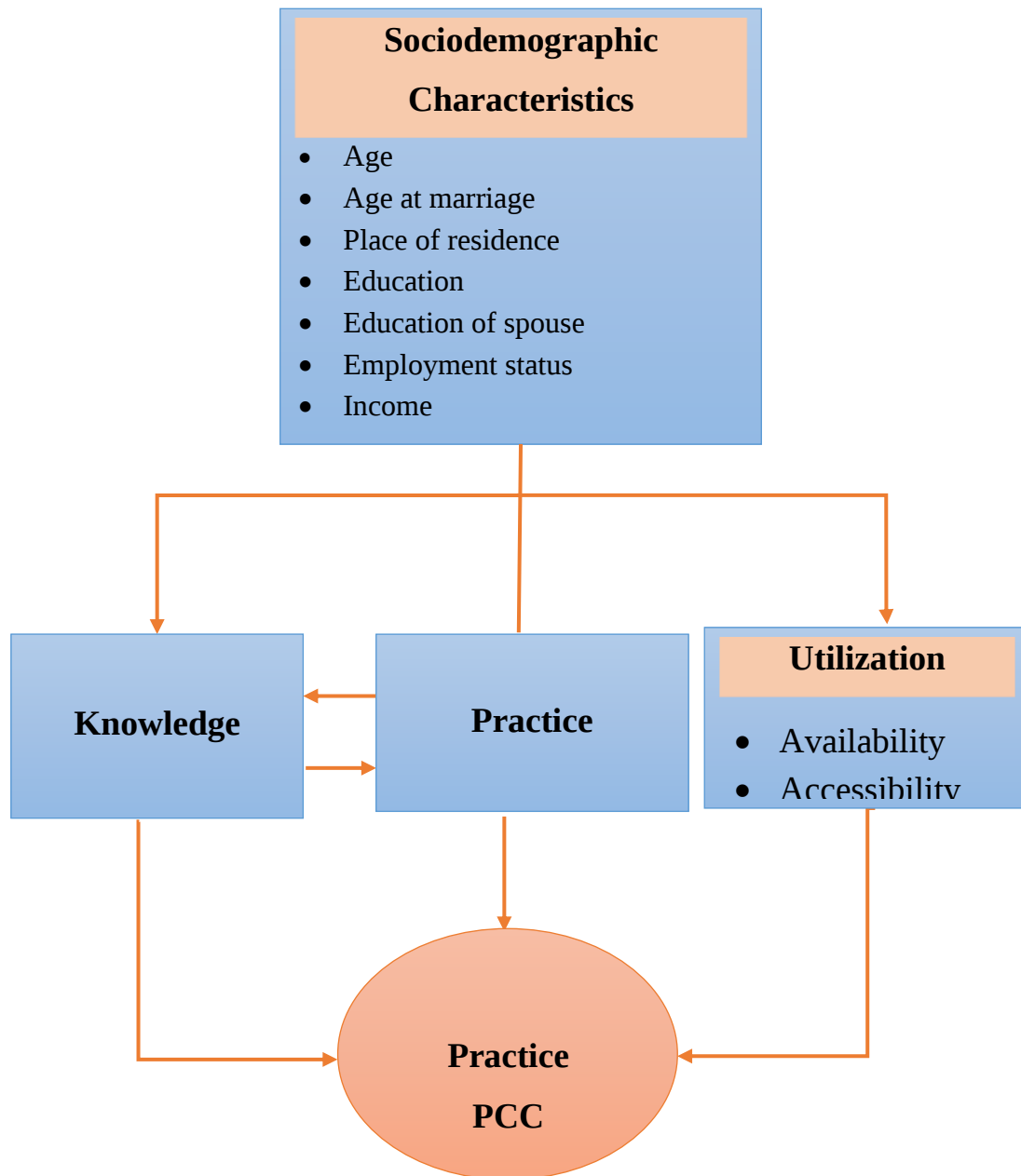


Figure (2.1): Conceptual framework (Self-developed)

The conceptual framework is the map that guides the research process. In the above diagram, the following variables are inter-related:

Independent variables

Age and age at marriage: age affects the knowledge and practice of PCC. It is suspected that primigravida, young-aged women have low experience with reproductive health, and in sequence will have low knowledge and practice of PCC.

Residency: Accessibility of health services is a factor that influences the utilization of health services; therefore, it is suspected that women who live far away from the PHCC will not visit the health center for PCC.

Level of Education: it is suspected women with higher education will have higher knowledge about reproductive health and subsequently will have higher knowledge and practice of PCC.

Education of spouse: It is suspected that husbands with a higher knowledge will support his wife to use the PCC service, thus the knowledge and practice of their wives will be more.

Employment status: women who are employed may not be able to leave their work and as a consequence will have poor utilization of PCC.

Family income: family income is an important factor in the utilization of health services. Women with low income may not be able to pay for transport and medication if needed, therefore, it is assumed that women with low income will not come to the clinic for PCC and consultation.

Accessibility of services: women who are living near the health center and have easy access to the health center will have better utilization of PCC.

Availability of service: The availability of PCC services in the health center is an important factor for the utilization of PCC services.

Dependent variable

knowledge and practices of PCC

Seeking PCC is determined primarily by the level of knowledge, which will be translated into practices, aiming at better utilization of PCC.

2.2 Literature review

2.2.1 Background

A renewed commitment to maternal health was made with the United Nations Global strategy for women's and children's and Adolescent health (2016-2030) as well as the call to countries to end preventable maternal mortality as framed in the WHO strategies toward ending preventable maternal mortality which set a supplementary target to Sustainable Development Goals (SDG 3.1). By 2030, no country should have a maternal mortality ratio higher than 140 per 100,000 live births. WHO is collaborating with partners to accelerate progress toward improved women's, children's, and adolescents' health and well-being. As a result, PCC has been identified as one method of reducing maternal and child morbidity and mortality.

PCC is defined as "any intervention provided to women and couples of childbearing ages, regardless of pregnancy status or desire, before pregnancy, to improve health outcomes for women, newborns, and children" by Dean et al. (2013). PCC is also defined as any promotional, preventive, and curative intervention that addresses the physical, social, and psychological aspects of a woman's life (Zuhlke & Acquah, 2016).

The primary goal of PCC is to help women conceive in good health and to improve maternal and child health (Farahi & Zolotor, 2013). Health behaviors occurring during pregnancy, such as maternal smoking, alcohol consumption, and/or inappropriate weight gain, along with health conditions arising during pregnancy such as iron-deficiency anemia, gestational diabetes, and pregnancy-induced hypertension, have been associated with multiple poor obstetric outcomes for both mother and fetus/infant (Dean et al., 2014).

PCC is recognized as a critical component to identify risk factors that might affect future pregnancies and development (Ololade et al., 2021). Likewise is recognized as a critical component of health care for women of reproductive age, especially with medical diseases (Ahmed et al., 2015). It also encompasses broader initiatives such as women's empowerment and education, as well as other interventions such as immunization and micronutrient supplementation (Ukoha, 2017).

A wide range of preventive, therapeutic, and lifestyle changes are required for effective PCC. PCC is made up of three major components: health promotion, risk assessment, and interventions (Poels et al., 2017). The PCC is also defined as any intervention given to

women and couples of childbearing age before pregnancy, regardless of pregnancy status or desire, to improve health outcomes for women, newborns, and children (Dean et al., 2013).

PCC bridges the continuum of treatment and tackles pre-pregnancy health risks and conditions that potentially have detrimental mother and fetal outcomes (Dean et al., 2014). PCC's primary objective is to provide health promotion, screening, and interventions to women of reproductive age to reduce risk factors that may impact future pregnancies (Ahmed et al., 2015). Before pregnancy, whether it is the first pregnancy or subsequent pregnancies, maternal health habits have improved the health of the mother and the newborn (Steel et al., 2015).

Gesualdo et al. (2016) argue that preconception risk factors in men must be considered when delivering PCC interventions to women. PCC, which includes reproductive planning and contraceptive use, can prevent unintended pregnancies, unsafe abortions, and STDs in adolescent girls and childbearing women (Dean et al., 2014). An Ethiopian study recommends male involvement to support modern contraceptives (Mohammed et al., 2014).

Family planning is key to preventing unplanned pregnancies, which can harm mothers and newborns. Reproductive health messages should be introduced early to prevent teenage pregnancies (Tamang et al., 2017). Preconception contraception helps couples conceive when ready (Salam et al., 2014). Preconception messages should inform men and women of childbearing age to use contraceptives and have pregnancies when physically, socially, and psychologically prepared.

2.2.2 Package of preconception care by WHO

According to the WHO (2013) report, 13 PCC packages include screening, promote, and preventive interventions for women. Nutritional conditions, tobacco use, genetic counseling, environmental health, infertility/subfertility, interpersonal violence, too-early unwanted and rapid successive pregnancies, STDs, HIV, mental health, psychoactive substance use, vaccine-preventable diseases, and female genital mutilation are among them.

2.2.3 Importance of preconception period

Regular ANC is too late for preventive interventions, as the fetus is already exposed to risks for adverse pregnancy outcomes at this point. PCC may improve a person's lifetime health. This is due to the fact that embryonic changes can affect a person's perinatal, childhood, and

adulthood. Consequently, PCC offers twenty opportunities to prevent these exposures. In addition, PCC provides additional benefits not only to the child but also to the parents. Planning for parenthood affords the opportunity for screening, prevention, and interventions, which may lead to a change in lifestyle and contribute to an individual's optimal health. Furthermore, PCC brings attention to the missing component in the existing health system for addressing the needs of adolescents, young women, and their partners before pregnancy is planned or occurs. Thus, it offers a process of delivering direct or indirect health-care interventions with the potential to identify and modify the biomedical, behavioral, and social risk factors that determine reproductive health outcomes van (Voorst, 2017).

It aims at improving the overall health status of adolescents, women, and children, as well as ensuring healthy adulthood by targeting risk behaviors for non-communicable diseases (WHO, 2014).

PCC research priorities in low- and middle-income countries are centered on the development and delivery of existing interventions, such as improving nutrition, contraception screening and treatment of chronic diseases and infections, and reducing harmful environmental smoke exposures (Dean et al., 2013).

Many women are unaware that their pre-pregnancy health may affect their risk of having an adverse pregnancy outcome. Women of reproductive age and adolescents must practice PCC, which includes appropriate preconception weight, adequate nutrition, optimal birth spacing, prevention and treatment of sexually transmitted diseases and HIV, screening for chronic diseases that reduce the risk of preterm birth, low birth weight, and congenital anomalies (Blencowe et al., 2013).

2.2.4 Components of preconception care

There is evidence that counseling and education during the preconception period result in changes in risk behaviors leading to improved maternal and neonatal outcomes. Based on history and medical assessment, if a health condition or a risk is identified, women and couples will have the opportunity to receive treatment or sit with a specialist to receive counseling on the best course of action (Atrash & Jack, 2020).

According to Maas et al. (2021), women who are overweight or obese, have the highest odds of developing any adverse pregnancy outcome, particularly Hypertensive Disorders in Pregnancy (HDP) and Gestational Diabetes Mellitus (GDM). Women who prenatally

continued smoking attained higher odds for Small-for-Gestational-Age (compared to the reference group, but these odds decreased when women prenatally quit smoking. Women who did not use folic acid supplements tended to have a higher odd of developing adverse pregnancy outcomes while women who prenatally started folic acid supplements did not.

Nutritional optimization and weight loss programs: PCC regarding weight should include calculating BMI for women of childbearing age, educating women about the risks associated with obesity and underweight, and assisting women in developing nutritional plans. These plans should recommend the consumption of a variety of healthy foods in the appropriate proportions and nutritional supplements (Lassi et al., 2014). It is recommended that 400 micrograms of folic acid should be taken as supplements daily from the moment a woman wants to become pregnant until 10 weeks of pregnancy, or the individual is encouraged to take foods rich in folic acid. Iron supplementation helps to boost iron stores needed during pregnancy to increase the oxygen-carrying capacity of red blood cells in both the mother and the developing fetus (American College of Obstetrics & Gynecologists - ACOG, 2015).

2.2.4.1 Screening of medical and infectious diseases

The primary aim of the individualized PCC is to ensure that the maternal disease is stable (Neff et al., 2020). A woman who is planning to get pregnant should be screened for existing chronic medical problems including DM, asthma, elevated blood pressure, anemia, blood clotting disorders, and thyroid disease. These diseases can complicate pregnancy. If the woman has a chronic disease, the drugs and dosages used should be reviewed and adjusted accordingly. Women with epilepsy or a seizure disorder should be well informed preconceptionally about the increased risk of seizures during pregnancy, the potential risks of serious complications due to the seizures, and the effect of anti-epileptic therapy on the pregnancy and neonatal outcome (Tomson et al., 2019).

Moreover, maternal diabetes status may also be important as babies exposed to maternal hyperglycemia during pregnancy are at increased risk of developing obesity and Type2 diabetes growing up (Shafaeizadeh et al., 2020).

Acute asthma exacerbation during the first trimester increases the risk of congenital malformations and must therefore be avoided where possible. Uncontrolled asthma can cause low birth, pre-eclampsia, and preterm birth (Neff et al., 2020).

In addition, infectious diseases such as syphilis, HIV, Rubella, Cytomegalovirus (CMV) infection, and Hepatitis B and C should be screened before a woman conceives. Rubella infection in early pregnancy can lead to intra-uterine fetal death, prematurity, and cardiac defects among others. On the other hand, Hepatitis B and C can be passed from an infected mother to the unborn child and which results in the inflammation of the liver causing serious effects. CMV-infected mothers can spread the infection through contact with cervical secretions and breast milk. CMV infection can be passed to the fetus and the neonate and has serious effects on the development of the child as it is associated with deafness, blindness, and lung and liver problems. It can also cause stillbirths in early pregnancy. Syphilis is an infection caused by *Treponema Pallidum* bacteria and it can be passed from the mother to the unborn child and also after birth through breast milk. Syphilis can be treated successfully with antibiotics before one conceives. Syphilis can cause miscarriage, prematurity, and intrauterine fetal death. Screening of these infectious diseases is paramount during the preconception period to prevent the serious consequences it poses on pregnancy (Central Manchester University Hospitals NHS Foundation Trust, 2016).

2.2.4.2 Immunization history

During the preconception period, a woman should ensure that her immunization history is up to date. This is because some of the vaccines are not safe during pregnancy while at the same time vaccination helps to protect the mother and her fetus from catching the disease and also after birth during the first few months. Measles, Mumps, and Rubella vaccines should be given to a woman at least one month before conception. Immunization against Rubella is important because it helps to reduce serious problems such as miscarriage and birth defects. A pregnant woman should be vaccinated against Whooping Cough and Influenza in every pregnancy (CDC, 2016).

2.2.4.3 Screening for use of environmental toxins

Exposure to environmental toxins before and during pregnancy can cause harmful effects on the fetus. Cigarette smoking in particular can make it difficult for a woman to conceive. In addition to the fact that cigarette smoking causes cancer and heart disease, it can cause preterm birth of the baby, fetal death, and birth defects such as cleft lip and palate during pregnancy. Cigarette smoking also predisposes the infant to sudden infant death syndrome where the infant dies suddenly and the cause of death cannot be found (CDC, 2016). Women

who are planning to conceive are also should discuss with their doctor the use of medications and especially over-the-counter medications as some of the drugs such as valproic acid, antipsychotic drugs, mood stabilizers, and anti-pain medications. These drugs have teratogenic effects when used during pregnancy. Women are further advised to take plenty of fresh fruits and vegetables during the preconception period but they should be thoroughly cleaned. This is to minimize microbial contamination and to remove the pesticides sprayed on them which could cause adverse effects on the baby during pregnancy. Women are also encouraged to limit their intake of fat fish and tuna to at least once a week during preconception and pregnancy. This is because tuna fish tend to accumulate Lead and Mercury which can cause harmful effects on the baby. Women anticipating pregnancy should also take folic acid to reduce the risk of autism in their babies (Joyce et al., 2018).

Genetic carrier screening of a woman's or her partner's obstetric and family history or ethnic background can sometimes prompt concern for an inherited genetic condition. Consultation with or referral to genetic services enables genetic counseling, guidance on appropriate testing, and interpretation and explanation of results (Royal Australian College of General Practitioners - RACGP, 2016).

2.2.5 The evidence bases of preconception care

Some PCC interventions are evidence-based, while others aren't. Preconception risk factors are linked to poor pregnancy outcomes, and pre-pregnancy lifestyle interventions improve outcomes (Hussein et al., 2016; Temel et al., 2014). Preconception smoking cessation, weight control, and folic acid supplementation are effective when done at the right time and intensity. Good evidence exists for interventions to reduce drug abuse, but none for preconception screening. The best way to ensure eligible women get preconception vaccines is unknown, despite their effectiveness (Good fellow, 2015).

In a 2014 French observational study, women with type 2 diabetes whose pregnancies were planned and who attended preconception care services had no fetal malformations (Callec et al., 2014). Lack of evidence on mental health screening and interventions before conception, except for women with pre-existing conditions (Goodfellow, 2015). A systematic review by Dean et al. (2013) found that preconception care improves pregnancy outcomes and should begin in adolescence, a vulnerable group with high maternal and child mortality. A randomized control trial is needed to show that preconception intervention improves pregnancy outcomes (Opray et al., 2015). Preconception counseling is linked to positive

maternal behaviors, which increases the chances of a healthy mother and baby (Williams et al., 2012). PCC-exposed women are more likely to change their behavior before 34 weeks of pregnancy, especially regarding healthy nutrition and folic acid supplementation.

2.2.6 Setting for PCC

Effective PCC is delivered through a wide range of clinical and community settings and cuts across many sectors, including health, education, and social (Atrash & Jack, 2020). Interventions could be delivered both in health facilities and in community settings. Although traditional mechanisms can certainly be used, innovative mechanisms such as electronic and mobile technology should also be used where possible (WHO, 2013).

The primary care setting has been shown to be the optimal location for providing PCC (Hussein et al., 2016). Health services' preconceptions and health issues should be discussed in schools to reach students who are unwilling to disclose their pregnancy plans (Bronstein et al., 2012). In addition, Coffey & Shorten (2014) suggested that PCC should be integrated into standard primary care for women of childbearing age due to the rise in unintended pregnancies. In this context, PCC may take the form of family planning, immunization, growth monitoring, and disease control (Lassi et al., 2014).

2.2.6.1 School settings

It is necessary to collaborate with organizations outside of traditional maternal and child health programs. Additionally, efforts must be made to collaborate with other sectors, such as schools. This environment is effective for increasing youths' knowledge and influencing behavioral changes. In this context, PCC can take the form of health education or be integrated into the life skills curriculum. This setting is also suggested by Good fellow (2015), who suggested using the school curriculum as a major vehicle for providing PCC to students. It is also suggested that PCC be provided during the early school years by integrating it into educational programs, particularly in secondary schools (Kasim et al., 2016).

2.2.6.2 Community environments

This can take the form of community support groups, mass media campaigns, or social marketing, according to Lassi et al. (2014). This setting can also be used for a high-risk population, which is defined as "the identification of women with medical and social issues that place them at a greater risk during pregnancy than the general population" (Poels et al., 2017).

2.2.7 Utilization of preconception care

The PCC refers to measures that women can take before and between pregnancies to increase the likelihood of having a healthy baby and being healthy themselves. Unfortunately, millions of women worldwide lack access to adequate PCC, ANC, and PNC services (Demisse et al., 2019). PCC is a series of interventions delivered to women and couples in the pre-pregnancy period to enhance their health status and prevent numerous risk factors that may contribute to poor MCH outcomes (WHO, 2012).

There is strong evidence of a gap in the current MCH continuum of care, one of which is the lack of attention paid to adolescent girls and young women until they get pregnant. In addition, ANC is too late to lessen the adverse impact women may have on the fetus during the crucial organogenesis phase. Fortunately, PCC can cover these gaps, increase women's and husbands' well-being, and improve subsequent pregnancy and child health outcomes (Wegene et al., 2022). Before pregnancy, the health and wellness of a woman are critical to achieving safe outcomes for her and her baby. Access to care is vital during this period because it allows providers to identify, treat, and stabilize chronic conditions; address behavioral health needs; and, plan for a healthy and intentional pregnancy (Centers for Medicare & Medicaid Services, 2020).

The availability and accessibility of PCC services are vital for the utilization of PCC. Okemo et al. (2020) found that accessibility and availability were among the important determinants of PCC along with awareness towards pregnancy, level of education, and social influences. Demisse et al. (2019) found that the overall utilization of PCC was 13.4%. Woman's age, marital status, knowledge, and availability of clinics for preconception care were significantly associated with the utilization of PCC. Kuupiel et al. (2019) reported poor accessibility to pregnancy-related diagnostic tests for maternal healthcare due to low availability. Therefore, improving access to maternal healthcare in resource-limited settings plays a critical role in improving maternal health outcomes and reducing maternal deaths. In addition, Wegene et al. (2022) found that only 19% of study participants had utilized PCC. History of family planning use before the current pregnancy, previous history of adverse birth outcomes, poor knowledge of PCC, and receiving counseling on PCC previously were significantly associated with PCC utilization.

2.2.8 Mothers' knowledge, practice, and associated factors of preconception care

PCC is one of the preventive strategies in maternal and newborn health as recommended by WHO and is considered to be feasible for both developed and developing worlds (WHO, 2013).

A qualitative study design was carried out in Italy to investigate behaviors of Italian women of childbearing age and healthcare professionals regarding preconception health. Two groups of non-pregnant women aged 22 to 44 and three groups of healthcare professionals participated in the focus groups. Women's queries about preconception health, concerns and barriers surrounding PCC interventions, behaviors of women and healthcare professionals regarding preconception health, and women's information sources were among the subjects of discussion. Focus groups were comprised of 14 women of childbearing age (8 nulliparous and 6 multiparous) and 12 healthcare professionals (three nurses, four midwives, and five doctors). The findings suggested the existence of numerous hurdles and a lack of preconception health awareness among women, healthcare professionals, and policymakers (Bortolus et al., 2017).

In Ethiopia, Gezahegn (2016) conducted a cross-sectional study. The purpose of the study was to determine the level of PCC knowledge among pregnant women attending ANC in public health institutions. The sample of the study consisted of 634 pregnant women selected by systematic random sampling technique. The sample size was assigned to each health facility proportionally. An interviewed structured questionnaire was used to collect information. Bivariate and multivariate logistic regression was used to identify factors associated with the knowledge and experience of pregnant mothers towards PCC. The results showed that 36.6% of mothers had poor knowledge and only 38.2% had experience with PCC. Having information on PCC was associated with knowledge of prenatal screening. Consideration of the benefits of PCC to couples was significantly associated with the experience of PCC. The study concluded that more than one-third of the study participants were not knowledgeable and more than half of them had low experience with PCC utilization. The information to be provided to pregnant mothers was a foundational step for improving the delivery and uptake of PCC.

A cross-sectional, hospital-based study carried out among Sudanese women of reproductive age, aimed to assess knowledge and practice of the PCC among Sudanese women with rheumatic heart disease. The awareness regarding PCC was seen in only 11% of the women

interviewed, the majority of the women either partially know or did not know the impact of pregnancy on their disease, and almost half of the women (49%) intended to seek PCC next time. The study concluded that PCC and the availability of well-designed multidisciplinary care are still poor and challenging in our humbled setup. Despite having poor knowledge, compliance for seeking PCC is high among women (Ahmed et al., 2015).

Although a Jordanian study by Al-Akour et al. (2015) among men and women indicates that their awareness of PCC is moderate, as they are aware that the health of the parents can affect the health of the child, general practitioners have limited knowledge and awareness of preconception guidelines. Tuomainen et al. (2013) found that women of childbearing age understood that alcohol, tobacco, and illicit drugs are harmful, but did not comprehend the significance of accessing health care services for cervical smears, risk assessment for diseases, and treatment review prior to pregnancy.

A quantitative, non-experimental descriptive-correlation study was conducted to investigate and describe the knowledge men and women of childbearing age have about PCC, to identify variables that influence men and women to acquire the appropriate knowledge about PCC, and to develop strategies that could aid in the provision of PCC. The target population for the study consisted of couples with the intention to conceive and women of childbearing age between the ages of 18 and 35 who were accessible at family planning, gynecological, and under-five clinics. The findings revealed a lack of PCC-related information and care. Clinics lacked PCC-related services, indicating an urgent need to educate HCPs on PCC in order to reduce maternal and neonatal mortality rates. The data were used to develop pertinent preconception strategies that would aid health care professionals in providing PCC to improve mother and newborn outcomes in Malawi (Kadango, 2017).

A descriptive, cross-sectional study was done among pregnant moms who visited the outpatient department of the Bharatpur, Chitwan, hospital. To investigate the level of understanding and practice of PCC among expectant moms, a sample of 100 prenatal mothers was chosen using the approach of purposive sampling, and data were gathered using a semi-structured interview schedule. The results suggested that the knowledge and practice of the mothers about PCC are rather inadequate; therefore, PCC-related awareness programs should be implemented to increase the mothers' knowledge, which in turn increases their practice (Nepali & Sapkota, 2017).

2.2.9 Women and healthcare workers practice preconception care

The PCC may decrease adverse pregnancy outcomes associated with pre-existing DM. This study sought to examine practitioner perspectives on preconception care delivery for women with T2 DM in the Northern Territory, where 31% of births occur to Aboriginal women. A mixed-methods study consisted of a cross-sectional survey of 156 health care professionals and 11 semi-structured interviews. The findings revealed that practitioners reported limited PCC attendance; nevertheless, 51% provided counseling on an individual basis. Practitioners in rural and isolated areas were most likely to find counseling viable. The majority (69%) employed suitable guidelines and addressed lifestyle alterations, such as smoking cessation (81%), weight management (79%), and appropriate prescription changes, such as discontinuing Angiotensin-converting enzyme inhibitors (69%). Fewer practitioners (40%) provided the recommended dose of folate (5 mg), and fewer (42%) felt confident advocating delaying pregnancy to achieve optimal preconception glucose control. The complexity of the care environment and the infrequency of preconception consultations were indicated as impediments to care. Women's motivation to make informed decisions around conception, including birth spacing, timing, and contraception, was emphasized. The enablers of PCC were intercultural dialogue, a multidisciplinary care team, and strong client-based connections (Klein et al., 2017).

Another study among primary HCPs in the US shows that PCC practices among HIV-infected women were inconsistent and not standard, as most did not know if there was a protocol of care (Coll et al., 2016). Health care workers know PCC improves pregnant women's preconception health. This study examined healthcare providers' knowledge, and practices regarding PCC, safer conception, and pregnancy in HIV-positive women. Methods: Physicians, physician assistants, and nurse practitioners (n = 14) providing obstetric/gynecological and HIV care in urban south Florida public and private hospitals completed structured qualitative interviews. Provider perceptions of patient knowledge and practices, and provider practices involving reproductive health emerged as the predominant themes. Results: Providers believed that patients lacked reproductive knowledge. Internalized HIV stigma prevented patients from initiating conception-focused talks. Knowledge and utilization of PCC procedures by providers were restricted. Barriers to PCC included competing medical goals, the failure to meet fertility desires, a lack of understanding, time constraints, and a lack of clarity regarding the standard of care.

A descriptive, cross-sectional study in Nigeria, aimed to assess the level of knowledge, and practice (KaP) of PCC among HCPs. The sample of the study consisted of 206 HCPs selected by using a multi-stage sampling technique. Data was collected using a structured questionnaire. The results showed that the mean age of respondents was 32.5 ± 1.613 years; 127 (61.7%) were single and more than half (58.3%) were females. Slightly more than half of the respondents (116;56.3%) were doctors and the majority (88.3%) of the respondents knew what PCC is. The level of knowledge was high (85.9%) and 78.2% had a high level of practice. The practice had a significant relationship with the attitude of HCPs ($r = 0.144$; $p = 0.039$) and contributed to only 2.1% of the change in practice. The knowledge of HCPs had a negative correlation with attitude ($r = -0.139$; $p = 0.046$) but only contributed to 1.9% of the change in attitude. The study concluded that the practice of PCC was not ideal and should be improved (Ololade et al., 2021).

The intention of Biratu's (2017) mixed-methods study was to produce a guideline to facilitate the inclusion of PCC into the Ethiopian health system, consequently reducing the high incidence of Adverse pregnancy outcomes (APO) in the nation. The explanatory sequential mixed approach was utilized to determine the obstacles to the adoption of PCC in Ethiopia. In addition, a policy document analysis was undertaken to determine whether PCC implementation in Ethiopia is guided by policy.

Results indicated that approximately 84.7% of HCPs never practiced PCC. Even among those who have ever exercised PCC, the majority (74%) did it inadequately. Moreover, 68.6% had inadequate PCC knowledge. Those with superior PCC knowledge were four times more likely to practice PCC than those with inferior PCC knowledge (AOR=4.4, 95% CI: 2.5-7.6). Analysis of policy documents revealed the absence of a policy governing the practice of PCC in Ethiopia. PCC was also absent from the HCP's curriculum. Absence of national PCC policy, PCC guideline, institutional PCC plan, competing demand, laboratory facilities, set up, accountable body, Individual or organization that introduced PCC to the country, educated PCC workforce, renowned PCC expert. Poor public awareness of preconception health and PCC, unplanned pregnancy, and poverty. In conclusion, the study demonstrated that HCPs lack standardized and comprehensive PCC practices. Virtually no HCPs implement PCC. Even those few practitioners were found to be performing PCC in a subpar, accidental, and inconsistent manner. In Ethiopia, there is no explicit policy document to guide execution. The curriculum for training HCPs did not cover PCC. The guideline

based on the study's findings advocated introducing PCC into the Ethiopian health care system (Biratu, 2017).

2.2.10 Knowledge and practice of primary health care students regarding PCC

Ukoha (2017) studied South Africa. The study aimed to explore and describe primary health care students' KaP about PCC in eThekweni. 138 nursing students participated in the non-experimental, exploratory, descriptive, quantitative study. Self-administered questionnaires were used to collect data. Primary health care nurses had high knowledge of PCC but lacked implementation, and 71.7% had never received PCC training. The study recommended that primary care nurses learn PCC.

A cross-sectional survey aimed to assess the knowledge and awareness of undergraduate students related to PCC and to explore potential differences concerning some sociodemographic factors. The study included 69 students enrolled in a basic undergraduate nutrition course, during the first week of class. The survey measured knowledge, awareness, toward pregnancy-related issues and PCC. The results showed that students demonstrated low to moderate knowledge of issues related to preconception health, with an average composite knowledge score of 50%. Those reporting exposure from friends, family, and/or HCPs regarding PCC demonstrated less knowledge than those who reported little exposure. It is possible that those with greater knowledge are less likely to be aware of these cues to action, or that individuals in their lives are less concerned about issues of preconception health. However, overall knowledge scores were very low, and demonstrate the need for education regardless of age or perception of cues to action. The study concluded that additional research is needed to identify the most effective techniques to impact preconception health-related awareness and subsequent behaviors in this population (Crusenberry, 2016).

2.2.11 Knowledge of women and nurses regarding PCC

Emam et al. (2019) conducted a comparative, cross-sectional study in Egypt. The study aimed to compare the knowledge of married women and nurses regarding PCC. The sample of the study was a stratified cluster sample, consisting of 106 nurses and 750 women from MCH and PHCCs in Minia city. For data collection, the researchers used a self-administered questionnaire measuring awareness, knowledge related to PCC. The results showed that 97.2% of nurses had a diploma, 72.6% had training in ANC, and 60.4% provided PCC.

Women's age ranged between 17 and 48 years, and 39.5% had an intermediate education. Nurses' awareness was higher than women's ($p < 0.001$), they had higher knowledge scores in most areas and total knowledge ($p < 0.001$), but women were higher in vaccination ($p = 0.001$). In multivariate analysis, a greater level of education, more years of experience, and the provision of PCC were all favorable predictors of nurses' knowledge, whereas age and urban location were negative predictors. Education, past pre-term labor, intending pregnancy, having ANC, having PCC, and previous counseling positively predicted women's knowledge, but labor difficulties and chronic conditions were negative predictors. The study concluded that nurses' knowledge and awareness of PCC is superior to that of women. The report advised that formal PCC be established immediately in PHCC and MCH clinics (Emam et al., 2019).

2.2.12 Awareness of preconception health among adolescents

Charafeddine et al. (2014) carried out an interventional study in Lebanon. The study aimed to assess preconception health awareness among adolescents in Lebanese high schools and to test the effectiveness of a one-time educational session in improving preconception knowledge. A convenience sample consisted of 7,290 students of high school Lebanese students in grades 10 to 12, aged 14 to 26 years old, from 70 private and public schools in all six Lebanese provinces, who participated in the intervention. A multiple-choice questionnaire administered before and 2 months after the session was used to assess knowledge improvement among the students. The results showed that after the session, mean scores of correct answers increased from 4.36 to 6.42 out of 10, representing a 47.2% improvement ($p < 0.001$). The percent of correct answers increased for all the questions regarding health practices ($p < 0.001$). The greatest improvement was observed for questions about Trisomy 21, folic acid intake, and toxoplasmosis with percentages improvement of 96%, 172%, and 83% respectively. Being female or in private school was a significant predictor of higher scores in both pre-test and post-test ($p < 0.001$). The study concluded that awareness campaigns in schools increased the preconception health knowledge among high school students. The study recommends expanding the scope of educational interventions in universities in Lebanon (Charafeddine et al., 2014).

Chapter Three

Materials and Method

3.1 Study design

Descriptive cross-sectional design was used. This design describes study variables as they occur naturally without researcher interference. Cross-sectional studies are usually conducted on a population at a single point in time. It examines variable relationships and is economical, quick, and easily managed (Wang & Cheng, 2020).

3.2 Study population

The population of the study consisted of all primigravida women who attended the ANC clinics at governmental PHCCs in all governorates of the Gaza Strip. About 17,048 new pregnant women registered at ANC clinics in governmental PHCCs (Interview with the supervisor, MCH services in PHCCs).

3.3 Sample size and sampling process

The researcher calculated the sample size using the survey system's sample size calculator which revealed a sample of 376 pregnant women (Annex 3). The study sample was a proportional quota sample drawn from the main PHCCs that provide ANC services (one PHCC was selected from each governorate and three from the Gaza governorate as it is the biggest one with the higher population). As a result, the study included seven PHCCs.

Table (3.1): Sample size and distribution according to the governorate

Governorate	Population	No of sample
North Gaza	2520	56
Gaza	8640	192
Middle	945	21
Khan Younis	3826	85
Rafah	1117	22
Total	17048	376

3.4 Study Settings

The study was conducted in seven governmental PHCCs in all governorates of the Gaza Strip (Jabalia Martyrs PHCC, Al Rimal Martyrs PHCC, Al Daraj PHCC, Al Zytoun PHCC, Deir Al-Balah Martyrs PHCC, Khanyounis Martyrs PHCC, and Rafah Martyrs PHCC).

3.5 Period of the study

The research was carried out from December 2021 to December 2022.

3.6 Eligibility Criteria

3.6.1 Inclusion criteria

- Primigravida women who attend governmental PHCCs in the Gaza Strip for ANC.
- Primigravida women who are willing to participate in the study.

3.6.2 Exclusion criteria

- Multigravida women.

3.7 Study tool

The researcher designed a structured questionnaire after an extensive review of the literature. The questionnaire was designed to determine the knowledge, practice, and utilization of pregnant women regarding PCC. The questionnaire included the following items (Annex 4) and the translated version (Annex 5):

- Sociodemographic and medical characteristics including; age, age at marriage, residency, employment status, qualifications, qualification for the husband, income, presence of Noncommunicable diseases (NCDs), and sources of information about PCC if any.
- Family history of NCDs
- Knowledge about PCC; this item included eleven questions about PCC, time to practice PCC, and the importance of PCC. The questions were written in multiple choice questions and women should select the most accurate answer they think for each question.

- Practicing PCC; including 27 statements about practicing PCC and women should answer done or not done for each statement.
- Availability of the service; the item contains four questions about the availability of the service in the clinic, the availability of medicine, and lab tests, and accessibility to the service.

3.8 Validity and Reliability

3.8.1 Validity

3.8.1.1 Face and content validity

The face and content validity of the questionnaire was examined by a group of experts in MCH and research methodology (Annex 6) to examine the clarity and wording of the items, and ensure that the items of the questionnaire covered the topic and the study objectives

3.8.2 Reliability

The degree of consistency of the questionnaire determines an instrument's reliability. Cronbach's alpha was used to calculate the reliability coefficient for this purpose. The coefficients for the knowledge domain, practice domain, and overall are 0.824, 0.887, and 0.905, respectively as shown in Table 3.2. The results indicated that the questionnaire was reliable, as previously stated that a result greater than 0.70 was accepted and considered reliable (Taber, 2018).

Table (3.2): Cronbach's alpha coefficient for the study' Domains

Domain	Cronbach's alpha coefficient	No. of statements
Knowledge	0.824	11
Practice	0.887	27
Overall	0.905	38

Also, to standardize the data collection methods, the researcher trained her assistants on how to collect the data this could increase the reliability of the questionnaire.

3.9 Ethical and administrative considerations

Before beginning the study, the researcher obtained permission from Al- Quds University to conduct it. In Gaza, the Helsinki Committee provided an approval letter (Annex 7). In addition, an approval letter from the MoH was obtained (Annex 8). A consent form with the purpose of the study was attached to each questionnaire, indicating that participation is voluntary and confidentiality is guaranteed for all (Annex 9).

3.10 Pilot study

Before starting the actual data collection, a pilot study was conducted with 30 respondents, representing approximately 10% of the study participants, to obtain feedback on the questionnaire and to ensure its clarity, validity, and dependability. Minor modifications were done and approved for the actual sample.

3.11 Data collection procedure

The researcher visited the selected PHCCs that were included in the study. The researcher arranged for a meeting with the head nurse of each PHCC to inform them about the purpose of the study, and to ask for their help and cooperation during data collection. The researcher and her assistants collected the data explaining the purpose of the study to the eligible women. Instructions were given to women before filling out the questionnaire. The time allocated for each questionnaire was about 20 minutes.

3.12 Data entry and statistical analysis

The researcher used Statistical Package for Social Science (SPSS) program version 25 for data entry and analysis. The first stage of data entry was through constructing the entry base and coding of variables, followed by actual data entry. Data entry was performed at the time of data collection. At the analysis stage, data cleaning and data management for the variables of interest were performed. Descriptive analysis including, frequencies, percentages, and cross-tabulation were used to describe the main features of the data.

The score for knowledge was determined by assigning one point for each correct response and zero points for each incorrect response, then adding the points for the correct responses to determine the maximum possible score (0-11). Those who scored below or tied with the mean on the preconception care knowledge (mean= 6) questions were deemed to have low

knowledge. The scale was therefore dichotomized into high and low levels of knowledge (Fikadu et al., 2022).

The practice score was determined by assigning one point for each done statement and zero points for each not done statement, then adding the points for the done responses to determine the maximum possible score (0-27). Those who scored below or tied with the mean on the PCC practice statements (mean= 9) were deemed to have a good practice. The scale was therefore dichotomized into good and bad levels of practice.

The Chi-square test was used to test the relationship between dependents and independent variables. Pearson correlation coefficient test was used to test the relationship between knowledge, and practice. Logistic regression analysis was used to predict factors affecting knowledge and practice. The Confidence Interval (CI) was considered at 95% and the margin of error at 0.05 is considered significant.

3.13 Study limitation

- The data on PCC services was obtained during ANC services, which could result in recall bias.
- Women may get confused between the service provided in antenatal care and the service provided during PCC.

Chapter Four

Results

In this chapter, the study findings are presented. These findings of the research questions formulated in the introductory chapter regarding the level of participants' knowledge, practices, and utilization of PCC among primigravida women in the Gaza Strip. Then, we interpreted the main results and compared them with the international findings.

4.1 Descriptive analysis

Table (4.1): Baseline characteristics of the study sample (N=376)

Variable	Categories	N (%)
Age categories	<=20 years	151 (40.2)
	21-25 years	157 (41.7)
	> 25 years	68 (18.1)
Age	Mean $\pm$ SD (Min-Max)	22.3 $\pm$ 4.3 (14-44)
Age at marriage	<=20 years	200 (53.2)
	21-25 years	130 (34.6)
	> 25 years	46 (12.2)
Age at marriage	Mean $\pm$ SD (Min-Max)	21.1 $\pm$ 4.1 (14- 44)
Residency	Rafah	22 (5.9)
	Khan Younis	85 (22.5)
	Middle zone	21 (5.6)
	Gaza	192 (51.1)
	North Gaza	56 (14.9)
Employment status	Housewife	356 (94.7)
	Employed	20 (5.3)
Education	Preparatory or less	26 (6.9)
	Secondary	188 (50)
	University education or above	162 (43.1)
Education for spouse	Preparatory or less	55 (14.6)
	Secondary	176 (46.8)
	University education or above	145 (38.6)
Income N=350	< 1974 NIS	293 (77.9)
	1974- 2470 NIS	47 (12.5)
	> 2470 NIS	10 (2.7)
	NA	26 (6.9)

Three hundred, seventy-six primigravida women took part in the study. Table 4.1 demonstrates the respondents' demographic characteristics. Their mean age is 22.3 (14-44). The majority lie in the age groups <=20 years, and 21-25 years; 40.2%, and 41.8% respectively, and the majority 53.2 % get married before the age of 20 years, and 43.9% live

in Gaza city. A large percentage of women 94.7% are without work, however, a large percentage 51.1% hold a University education or above. The majority of their spouse is secondary educated 46.8%, or university educated 38.6% with the majority 77.9% living in the absolute poverty level with a monthly income below 1974 NIS.

Table (4.2): Medical characteristics of the study respondents

Variable	Categories	N (%)
Do you have a chronic disease?	Yes	9 (2.4)
	No	367 (97.6)
Hypertension	Yes	3 (0.8)
	No	373 (99.2)
Diabetes mellitus (DM)	Yes	1 (0.3)
	No	375 (99.7)
Cardiovascular disease	Yes	0 (0)
	No	376 (100)
Pulmonary	Yes	1 (0.3)
	No	375 (99.7)
Epilepsy	Yes	0 (0)
	No	376 (100)
Cancer	Yes	0 (0)
	No	376 (100)
Endocrine diseases	Yes	4 (1.1)
	No	372 (98.9)
Others	Yes	1 (0.3)
	No	375 (99.7)

Table (4.2) demonstrates the respondents' medical characteristics as reported subjectively from the respondents. As shown few respondents have chronic diseases (9, 2.4%). Three have hypertension, one has DM, one is recorded to have pulmonary disease, and four have endocrine disease.

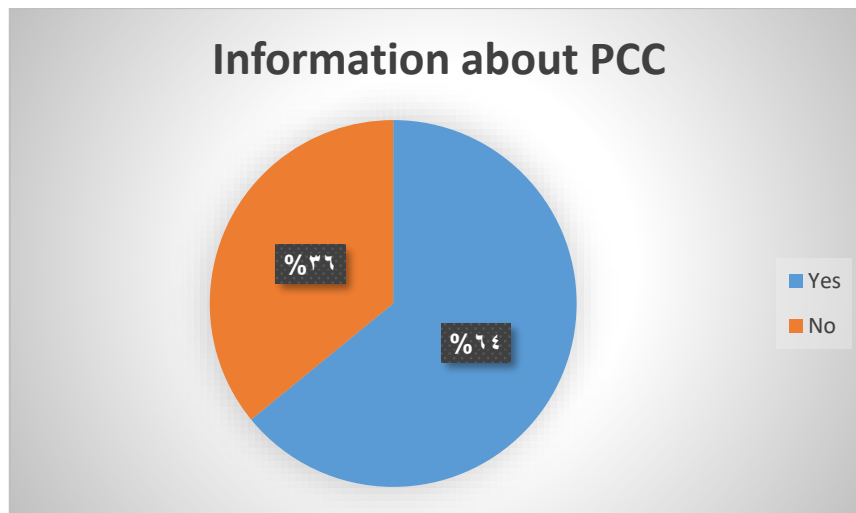


Figure (4.1): Information about PCC

Table (4.3): Sources of information

Variables	N	%
Health care providers (HCP)	68	19.7
Internet	58	16.8
Social media	50	14.5
Family	157	45.4
Friend	7	2.0
University	6	1.7

Table (4.3) illustrates multiple response analyses of the sources of information about PCC. The majority, 45.4% had heard about PCC from family members, 19.7% from the HCPs, 16.8%, and 14.5% from the internet and social media respectively.

Table (4.4): Respondents' responses about knowledge questions with correct and incorrect answers

Knowledge questions	Responses	Correct answers	Rank
What does preconception care mean?			
Care received by a woman before pregnancy to promote her health.	67 (17.8)		
Evaluation of risk factors for the health and future pregnancy of women.	16 (4.3)		
Investigation to determine whether the present state of health is safe for future pregnancies.	14 (3.7)		
Intervention and modification of health, behavioral, social, and environmental risks	3 (0.8)		
Counseling and screening for genetic conditions	3 (0.8)		
All of above	176 (46.8)	176 (46.8)	8
I do not know	97 (25.8)		
Why is Preconception care essential?			
To prepare for pregnancy by enhancing the couple's health before conception	14 (3.7)		
To have a healthy pregnancy, birth, and newborn	70 (18.6)		
To minimize intrauterine fetal malformations	13 (3.5)		
To promote a healthy lifestyle for the couple and their child.	4 (1.1)		
All of above	190 (50.5)	190 (50.5)	4
I don't know	85 (22.6)		
Who needs preconception care?			
Female	169 (44.9)		
Male	3 (0.8)		
Both	148 (39.4)	148 (39.4)	10
I do not know	56 (14.9)		
Total	376 (100)		
When does preconception care provide?			
Period before marriage	62 (16.5)		
Period following marriage	108 (28.7)		
Three to six months before pregnancy	129 (34.3)	129 (34.3)	11
Period following pregnancy	4 (1.1)		
I do not know	73 (19.4)		
What are the maternal risks associated with preconception nutritional deficiencies?			
Anemia	87 (23.1)		
Preterm labor	7 (1.9)		
Low fetal weight	27 (7.2)		
All of above	192 (51.1)	192 (51.1)	3
I don't know	63 (16.8)		
Total	376 (100)		
Which lifestyle is optimal when planning for pregnancy?			
Regular moderate exercise	14 (3.7)		
Maintain a healthy weight	23 (6.1)		
Stop using hormonal family planning methods (oral contraception) three months before planning pregnancy	20 (5.3)		
Care with teeth	3 (0.8)		

Table (4.4): Continued

Visit the doctor for a consultation	38 (10.1)		
Healthy diet	12 (3.2)		
All of above	177 (47.1)	177 (47.1)	7
None of above	3 (0.8)		
I do not know	86 (22.9)		
Why is it vital to consume folic acid before becoming pregnant?			
To avoid birth defects and congenital anomalies.	301 (80.1)	301 (80.1)	1
To increase weight	6 (1.6)		
To avoid anaemia	13 (3.5)		
I do not know	56 (14.9)		
Which screening tests should be conducted during the first preconception visit?			
Hb blood level	39 (10.4)		
Breast exam	3 (0.8)		
Measurement blood pressure	15 (4)		
Measurement of weight and height	17 (4.5)		
Laboratory test	14 (3.7)		
All of the above correct	150 (39.9)	150 (39.9)	9
None of above	4 (1.1)		
I do not know	134 (35.6)		
Total	376 (100)		
Which conditions include women with an identified risk factor for pregnancy?			
Preexisting medical conditions (Hypertension, DM, Obesity, and others	54 (14.4)		
Use medications	20 (5.3)		
Obesity	7 (1.9)		
All of above	182 (48.4)	182 (48.4)	6
none of above	14 (3.7)		
I do not know	99 (26.3)		
What are the dangers from which women must be protected in the preconception period?			
Chemical substances	7 (1.9)		
Radiation	1 (0.3)		
Toxic substances	4 (1.1)		
Smoking	6 (1.6)		
All of above	284 (75.5)	284 (75.5)	2
None of above	9 (2.4)		
I do not know	65 (17.3)		
In preconception care, the women should be examined for the presence of			
Anxiety	10 (2.7)		
Psychological and social disorders	12 (3.2)		
violence	9 (2.4)		
All of the above	189 (50.3)	189 (50.3)	5
None of above	15 (4)		
I do not know	141 (37.5)		

Table (4.4) shows participants' responses to the knowledge questions and clarifies the percentage of correct answers to these questions. Less than half (46.8%) of the participants knew the correct mean of the PCC and 50.5% knew the reason why PCC is an important aspect. Only 39.4% of the participants knew that both males and females need PCC and 34.3% knew that PCC should be started three to six months pre-pregnancy. 51.1% knew that anemia, preterm labor, and low fetal weight are associated with preconception nutritional deficiencies. 47.1% answered correctly about which lifestyle is optimal when planning for pregnancy and the majority 80.1% knew the benefits to consume folic acid before becoming pregnant to avoid birth defects and congenital anomalies. 39.9% of women knew about the screening tests (Hb blood cells, weight and height measurements, laboratory tests, and clinical breast examinations) during the first PCC visit. 48.4% knew the conditions with identified risk factors for pregnancy, and 75.5% knew the dangers from which women should be protected. Finally, 50.3% knew that women should be examined for the presence of anxiety, psychological and social disorders, and violence in PCC visits.

Table (4.5): Descriptive analysis of practice questions

Practice statements	Done	Not done	Rank
	N (%)	N (%)	
	Good	Bad	
I'm in a safe place away from abuse and violence	340 (90.4)	36 (9.6)	1
I was psychologically prepared for the current pregnancy	244 (64.9)	132 (35.1)	2
I have stayed away from any source of smoking	241 (64.1)	135 (35.9)	3
I read about pregnancy from brochures or on the internet	231 (61.4)	145 (38.6)	4
I eat a complete diet (containing all food groups), as well as plenty of fruits and vegetables before pregnancy	231 (61.4)	145 (38.6)	5
I Have maintained my healthy weight	203 (54)	173 (46)	6
I kept myself away from the risk of chemical substances and radiation	193 (51.3)	183 (48.7)	7
I was supported to plan for this pregnancy by my husband	186 (49.5)	190 (50.5)	8
I took folic acid tablets before pregnancy	175 (46.5)	201 (53.5)	9
I have planned for the current pregnancy	161 (42.8)	215 (57.2)	10
I organize my meal times daily	149 (39.6)	227 (60.4)	11
I used to exercise (walk) before pregnancy 3-5 times a week for half an hour	140 (37.2)	236 (62.8)	12
I refrain from taking medicines without a medical prescription	132 (35.1)	244 (64.9)	13
I consulted a nurse/midwife before becoming pregnant	111 (29.5)	265 (70.5)	14
I measured my body mass (height and weight) before pregnancy (BMI)	107 (28.5)	269 (71.5)	15
I did the blood type test before the pregnancy	83 (22.1)	293 (77.9)	16

Table (4.5): Continued

I check my blood pressure before pregnancy	83 (22.1)	293 (77.9)	17
I conducted hemoglobin levels before pregnancy	81 (21.5)	295 (78.5)	18
I visited the dentist before I got pregnant	63 (16.8)	313 (83.2)	19
I did a physical exam before the pregnancy	52 (13.8)	324 (86.2)	20
I took multivitamin tablets before the pregnancy	45 (12)	331 (88)	21
I took iron tablets before the pregnancy	38 (10.1)	338 (89.9)	22
I have visited a preconception care clinic	37 (9.8)	339 (90.2)	23
I checked my blood sugar before the pregnancy	22 (5.9)	354 (94.1)	24
I used a method of contraception before my current pregnancy	14 (3.7)	362 (96.3)	25
I conducted a breast examination before the pregnancy	11 (2.9)	365 (97.1)	26
I did the hepatitis B test before the pregnancy	5 (1.3)	371 (98.7)	27

Table (4.5) demonstrates participants' responses to the practice questions. Women were asked about practicing PCC through 27 statements and the participants answered yes or no where the yes answer revealed a good practice and no revealed a poor practice. Seven statements are considered practiced well as more than 50% of women reported that they practiced it. The highest seven practiced issues are as follows. The majority of women 90.4% reported that they kept themselves away from abuse and 64.9% are psychologically prepared for the current pregnancy. In addition, 64.1% of the women reported that they stayed away from any source of smoking. Also, women read about pregnancy from brochures or on the internet, and eat a complete diet as well as plenty of food and vegetables 61.4% for each. 54% maintained a healthy weight and 51.3% of women keep themselves from the risk of radiation and chemical substances. The other 20 statements were practiced badly as less than 50% of women practiced them. The lowest practiced statements are as follows; 1.3% of women performed a hepatitis B test before pregnancy, 2.9% conducted breast examination, and 3.7% used contraceptives before pregnancy. Also, the percentage of women checked for blood sugar was 5.9%, visited a PCC clinic 9.8%, took iron tablets before pregnancy 10.1%, took multivitamins 12%, did physical exams 16.8%, tested Hb level 21.5%, testing blood pressure, blood type test 22.1% for each, 28.5% measured their BMI, 29.5% consulted nurse, midwife, or doctor. Further, 35.1% of women do not take medicine without a medical prescription, 37.2% used to exercise, 39.6% organized their meals, 42.8% planned for the current pregnancy, 46.5% took folic acid tablets before pregnancy, 49.5% were supported by their husbands to plan for the current pregnancy.

Table (4.6): Descriptive analysis of knowledge and practice scores

Variable	mean± SD	Min- Max
Knowledge	5.6± 3.2	0-11
Practice	9.0±5.6	0-26

Table (4.6) demonstrates the descriptive analysis of the knowledge and practice scores. The mean of respondents' knowledge is 5.6 (0 -11) and the mean for the practices is 9 (0- 26). Also, Figures (4.2), and (4.3) demonstrate the respondents' knowledge and practice categories. 55.9% and 44.1% of the participants fall in the high and low knowledge categories respectively and 46.5%, and 53.5% in the good and poor practice categories.

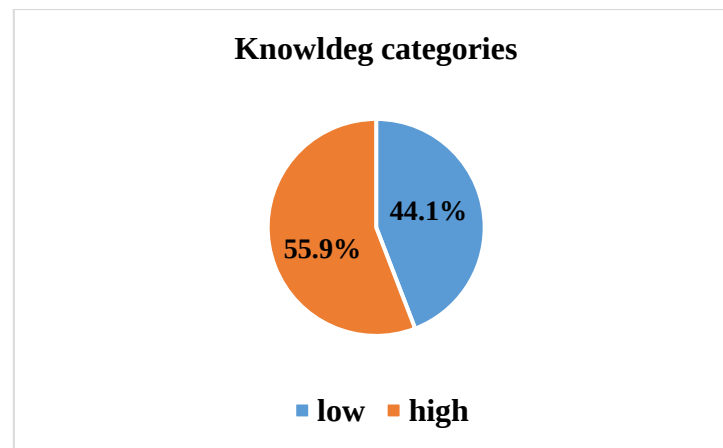


Figure (4.2): Knowledge categories about PCC

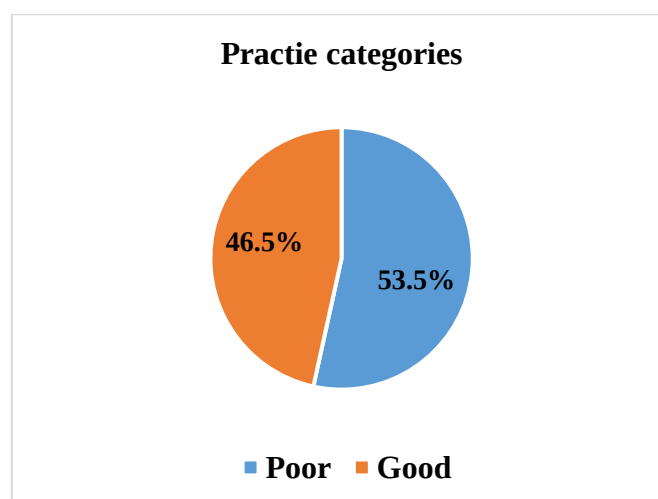


Figure (4.3): Practice categories about PCC

Table (4.7): Descriptive analysis of availability, and accessibility

Variables	Categories	N (%)
How do you describe your access to health centers?	Easy	263 (69.9)
	moderate	91 (24.2)
	difficult	22 (5.9)
There is a preconception care unit in the health facility	Yes	116 (30.9)
	No	28 (7.4)
	I do not know	232 (61.7)
Medicine such as folic acid is available at preconception care?	Yes	77 (20.5)
	sometimes	17 (4.5)
	no	38 (10.1)
	I do not know	244 (64.9)
Medical laboratory tests for preconception care are available	Yes	71 (18.9)
	No	33 (8.8)
	I do not know	272 (72.3)

Table (4.7) describes the availability of PCC service as perceived by the participating women. More than two-thirds of the women (69.9%) described their accessibility as easy, 24.2% as moderate, and only 5.9% as difficult. Only 30.9% knew about the presence of a PCC unit in the health facility. Only 20.5% and 18.9% knew about the availability of folic acid, and medical laboratory tests in the PCC unit, and the majority do not know about that.

4.2 Inferential analysis

Table (4.8): Relationship between knowledge and sociodemographics variables

Variable	knowledge			χ^2	p-value
	Low N (%)	High N (%)	Total N (%)		
Age					
<=20 years	80(53)	71(47)	151(100)	8.320	0.016*
21-25 years	62(39.5)	95(60.5)	157(100)		
> 25 years	24(35.3)	44(64.7)	68(100)		
Age at marriage					
<=20 years	100(50)	100(50)	200(100)	6.537	0.038*
21-25 years	51(39.2)	79(60.8)	130(100)		
> 25 years	15(32.6)	31(67.4)	46(100)		
Residency					
Khanyounis	40(47.1)	45(52.9)	85(100)	19.05	0.000* #
Gaza	80(41.7)	112(58.3)	192(100)		
Rafah	16(72.7)	6(27.3)	22(100)		
Middle zone	2(9.5)	19(90.5)	21(100)		
North Gaza	28(50)	28(50)	56(100)		
Employment status					
housewife	158(44.4)	198(55.6)	356(100)	0.147	0.701
Employed	8(40)	12(60)	20(100)		
Education					
Preparatory or less	18(69.2)	8(30.8)	26(100)	14.412	0.001*
Secondary	92(48.9)	96(51.1)	188(100)		
University education or above	56(34.6)	106(65.4)	162(100)		
Education for the spouse					
Preparatory or less	33(60)	22(40)	55(100)	7.413	0.025*
Secondary	77(43.8)	99(56.3)	176(100)		
University education or above	56(38.6)	89(61.4)	145(100)		
Income					
< 1974 NIS	128(43.7)	165(56.3)	293(100)	0.070	0.965
1974- 2470 NIS	20(42.6)	27(57.4)	47(100)		
> 2470 NIS	4(40)	6(60)	10(100)		

*Statistically significant, # Fisher's exact test

The link between participants' level of knowledge regarding PCC and demographic characteristics is shown in Table (4.8). Each of the age and age at marriage variables had a statistically significant relationship with the respondent's level of knowledge ($\chi^2=8.32$, p-

value= 0.016) and ($\chi^2=6.53$, p- value= 0.038) for age and age at marriage, respectively. Another element that influences participants' knowledge is where they live, with the majority of women living in the Middle Zone (90.5%) having a high level of knowledge. Then there were 58.3% for Gaza City, 52.9% for Khanyounis, 50% for North Gaza, and 27.3% for Rafah ($\chi^2= 19.05$, p-value=0.000).

Another demographic characteristic that influences participants' knowledge is education, with the majority of women having a university education or higher (65.4%) having a high level of knowledge. Whereas, 51.1% and 30.8% of those having a secondary education, or preparatory school or less have a high level of knowledge ($\chi^2=14.4$, p- value= 0.001). Furthermore, education for the spouse influences the participants' degree of knowledge. In that, 61.4% of those with a university education, 56.3% of those with secondary education, and 40% of husbands with preparatory education or less falling into the high knowledge category. The other investigated demographic factors (employment status, and income), however, do not affect the respondents' degree of knowledge (p-values > 0.05).

Table (4.9): Relationship between practice and sociodemographics variables

Variable	Practice			χ^2	p-value
	Bad N (%)	Good N (%)	Total N (%)		
Age					
<=20 years	90(59.6)	61(40.4)	151(100)	4.379	0.112
21-25 years	80(51)	77(49)	157(100)		
> 25 years	31(45.6)	37(54.4)	68(100)		
Age at marriage					
<=20 years	117(58.5)	83(41.5)	200(100)	4.474	0.107
21-25 years	63(48.5)	67(51.5)	130(100)		
> 25 years	21(45.7)	25(54.3)	46(100)		
Residency					
Khanyounis	62(72.9)	23(27.1)	85(100)	43.4	0.000*
Gaza	100(52.1)	92(47.9)	192(100)		
Rafah	18(81.8)	4(18.2)	22(100)		
Middle zone	5(23.8)	16(76.2)	21(100)		
North Gaza	16(28.6)	40(71.4)	56(100)		
Employment status					
housewife	190(53.4)	166(46.6)	356(100)	0.020	0.887
Employed	11(55)	9(45)	20(100)		

Table (4.9): Continued

Education					
Preparatory or less	15(57.7)	11(42.3)	26(100)	0.643	0.725
Secondary	103(54.8)	85(45.2)	188(100)		
University education or above	83(51.2)	79(48.8)	162(100)		
Education for the spouse					
Preparatory or less	36(65.5)	19(34.5)	55(100)	4.766	0.092
Secondary	95(54)	81(46)	176(100)		
University education or above	70(48.3)	75(51.7)	145(100)		
Income					
< 1974 NIS	155(52.9)	138(47.1)	293(100)	0.136	0.934
1974- 2470 NIS	26(55.3)	21(44.7)	47(100)		
> 2470 NIS	5(50)	5(50)	10(100)		

***Statistically significant**

Table (4.9) displays the relationship between respondents' level of practicing PCC and their demographic variables. The only demographic component that determines the practice of participants is where they live, with the majority of Middle-Zone women (76.2%) exhibiting good practice. Then there were 71.4 % for North Gaza, 47.9 % for Gaza, 27.1 % for Khanyounis, and 18.2 % for Rafah (p-value = 0.000). All other examined demographic variables (age, age at marriage, employment status, education, education for the spouse, and income), do not affect the level of practice of the individuals (p-values > 0.05).

Table (4.10): Relationship between knowledge and practice

		Practice	Knowledge
Practice	Pearson Correlation	1	0.507**
	Sig. (2-tailed)		0.000
	N	376	376
Knowledge	Pearson Correlation	0.507**	1
	Sig. (2-tailed)	0.000	
	N	376	376
**Correlation is significant at the 0.01 level (2-tailed).			

The link between the two outcome variables of this research is depicted in Table 4.10. Pearson correlation coefficient test shows a moderate statistically significant relationship between knowledge and practice ($r = 0.507$, $p\text{-value} < 0.01$).

Table (4.11): Relationship between availability and knowledge

Questions	categories	knowledge		Total	χ^2	P-value
		low	high			
How do you describe your access to the health center?	Easy	113(43)	150(57)	263(100)	1.144	0.564
	moderate	41(45.1)	50(54.9)	91(100)		
	difficult	12(54.5)	10(45.5)	22(100)		
There is a preconception care unit in the health facility	Yes	30(25.9)	86(74.1)	116(100)	32.241	0.000*
	No	7(25)	21(75)	28(100)		
	I do not know	129(55.6)	103(44.4)	232(100)		
Medicine such as folic acid is available at preconception care?	Yes	16(20.8)	61(79.2)	77(100)	42.1	0.000*
	sometimes	2(11.8)	15(88.2)	17(100)		
	no	11(28.9)	27(71.1)	38(100)		
	I do not know	137(56.1)	107(43.9)	244(100)		
Medical laboratory tests for preconception care are available	Yes	15(21.1)	56(78.9)	71(100)	30.8	0.000*
	No	7(21.2)	26(78.8)	33(100)		
	Yes	15(21.1)	56(78.9)	71(100)		

***Statistically significant**

The relationship between the availability of PCC service and the knowledge of women about the service is clarified in Table 4.11. The Chi-square test revealed a statistically significant relationship between respondents' level of knowledge and the presence of PCC unit in the health facility ($\chi^2= 32.2$, p-value = 0.000), availability of medicine such as folic acid ($\chi^2= 42.1$, p-value = 0.000), and availability of medical lab tests ($\chi^2= 30.8$, p-value = 0.000).

Table (4.12): Relationship between availability and practice

Questions	Categories	Practice		Total	χ^2	p-value
		Good	Bad			
How do you describe your access to the health center?	Easy	133(50.6)	130(49.4)	263(100)	11.7	0.003*
	moderate	49(53.8)	42(46.2)	91(100)		
	difficult	19(86.4)	3(13.6)	22(100)		
There is a preconception care unit in the health facility	Yes	38(32.8)	78(67.2)	116(100)	32.223	0.000*
	No	13(46.4)	15(53.6)	28(100)		
	I do not know	150(64.7)	82(35.3)	232(100)		
Medicine such as folic acid is available at preconception care?	Yes	23(29.9)	54(70.1)	77(100)	43.696	0.000*
	sometimes	2(11.8)	15(88.2)	17(100)		
	no	17(44.7)	21(55.3)	38(100)		
	I do not know	159(65.2)	85(34.8)	244(100)		
Medical laboratory tests for preconception care are available	Yes	16(22.5)	55(77.5)	71(100)	41.783	0.000*
	No	12(36.4)	21(63.6)	33(100)		
	I do not know	173(63.6)	99(36.4)	272(100)		

***Statistically significant**

The relationship between the availability of PCC service and the practice of women about the service is illustrated in Table 4.12. The Chi-square test revealed a statistically significant relationship between participants' level of practice and accessibility to health care centers ($\chi^2= 11.7$, p-value = 0.003), the presence of a PCC unit in the health facility ($\chi^2= 32.2$, p-value = 0.000), availability of medicine such as folic acid ($\chi^2= 43.7$, p-value = 0.000), and availability of medical lab tests ($\chi^2= 41.8$, p-value = 0.000).

4.3 Multivariate analysis

Table (4.13): A prediction model for knowledge

Variables in	Categories	B	S.E.	Wald	df	Sig.	Exp(B)
Age	<=20 years (Reference)			0.363	2	0.834	
	21-25 years	0.213	0.382	0.309	1	0.578	1.237
	> 25 years	0.308	0.604	0.259	1	0.611	1.360
Age at marriage	<=20 years (Reference)			0.957	2	0.620	
	21-25 years	-0.152	0.390	0.153	1	0.696	0.859
	> 25 years	0.368	0.641	0.329	1	0.566	1.445
Residency	Rafah (Reference)			6.394	4	0.172	
	Khanyounis	0.326	0.447	0.530	1	0.467	1.385
	Middle zone	1.083	0.538	4.047	1	0.044	2.952
	Gaza	0.594	0.390	2.318	1	0.128	1.811
	North Gaza	0.063	0.495	0.016	1	0.899	1.065
Education	Preparatory or less (Reference)			7.028	2	0.030	
	Secondary	0.833	0.540	2.382	1	0.123	2.301
	University education or above	1.389	0.569	5.963	1	0.015	4.013
Education for the spouse	Preparatory or less (Reference)			2.076	2	0.354	
	Secondary	0.559	0.391	2.047	1	0.153	1.749
	University education or above	0.399	0.412	0.937	1	0.333	1.490
practice	Bad (Reference)						
	Good	1.314	0.268	24.005	1	0.000	3.720
There is a preconception care unit in the health facility	Yes (Reference)			1.467	2	0.480	
	No	0.627	0.781	0.645	1	0.422	1.873
	I do not know	-0.253	0.441	0.329	1	0.566	0.777
Medicine such as folic acid is available at preconception care?	Yes (Reference)			5.460	3	0.141	
	sometimes	0.276	0.867	0.101	1	0.751	1.317
	no	-1.474	0.894	2.715	1	0.099	0.229
	I do not know	-1.483	0.675	4.836	1	0.028	0.227
Medical laboratory tests for the preconception care are available	Yes (Reference)			1.588	2	0.452	
	No	1.222	1.026	1.418	1	0.234	3.393
	Yes	0.698	0.686	1.033	1	0.309	2.009
	Constant	-1.682	0.705	5.694	1	0.017	0.186

* Statistically significant

Table (4.13) demonstrates the results of the logistic regression model to predict factors affecting women's knowledge about PCC. The model included nine variables (age, age at marriage, residency, education, education of spouse, practice, availability of PCC unit in the health facility, availability of medicine such as folic acid, and availability of medical laboratory tests). These variables have p- value of less than 0.15 in the Univariate relationship with the knowledge. The Nagelkerke R associated with the model is 0.322 which means 32.3% of the variabilities in the knowledge can be predicted by this model. The model

resulted in two variables that have a significant association and can predict the women's knowledge. First: the level of education (P=0.03). Women who have a university education or above could increase their PCC knowledge by 4 times more than those who have preparatory school or less holding all other variables constant (O.R: 4.013, P- value= 0.015). Second: Practice. Being in the good practice category increases the knowledge by 3.7 times more than those being in the poor practice category (O.R: 3.72, P- value= 0.000).

Table (4.14): A prediction model for practice

Variable	Categories	B	S.E.	Wald	df	Sig.	Exp(B)
Age	<=20 years (Reference)			1.166	2	0.558	
	21-25 years	0.168	0.395	0.181	1	0.670	1.183
	> 25 years	0.672	0.635	1.119	1	0.290	1.959
Age at marriage	<=20 years (Reference)			0.351	2	0.839	
	21-25 years	0.197	0.400	0.242	1	0.623	1.217
	> 25 years	-0.027	0.653	0.002	1	0.967	0.974
Residency	Rafah (Reference)			27.326	4	0.000*	
	Khanyounis	0.623	0.510	1.494	1	0.222	1.865
	Middle zone	1.171	0.544	4.638	1	0.031	3.226
	Gaza	1.211	0.441	7.536	1	0.006	3.358
	North Gaza	1.12	0.344	6.3	1	0.005	3.21
Education for the spouse	Preparatory or less (Reference)			1.531	2	0.465	
	Secondary	0.289	0.396	0.534	1	0.465	1.335
	University education or above	0.490	0.406	1.457	1	0.227	1.633
knowledge	Low knowledge (Reference)						
	High knowledge	1.294	0.268	23.274	1	0.000*	3.649
How do you describe your access to the health center?	Easy (Reference)			6.674	2	0.036*	
	moderate	-0.228	0.298	0.587	1	0.443	0.796
	difficult	-2.042	0.808	6.383	1	0.012	0.130
There is a preconception care unit in the health facility	Yes (Reference)			0.709	2	0.701	
	No	-0.652	0.780	0.697	1	0.404	0.521
	I do not know	-0.173	0.459	0.142	1	0.706	0.841
Medicine such as folic acid is available at preconception care?	Yes (Reference)			2.187	3	0.535	
	sometimes	1.112	0.913	1.484	1	0.223	3.039
	no	-0.168	0.838	0.040	1	0.842	0.846
	I do not know	-0.251	0.631	0.159	1	0.690	0.778
Medical laboratory tests for preconception care are available	Yes (Reference)			4.606	2	0.100	
	No	0.056	0.934	0.004	1	0.952	1.057
	I do not know	-1.097	0.616	3.168	1	0.075	0.334
	Constant	-1.398	0.618	5.124	1	0.024	0.247

* Statistically significant

Table (4.14) clarifies the results of the logistic regression model to predict factors affecting women's practice of PCC. The model included nine variables (age, age at marriage, residency, education of spouse, knowledge, accessibility of women to the health care facility, availability of preconception care unit in the health facility, availability of medicine such as folic acid, and availability of medical laboratory tests). These variables have p- the value of less than 0.15 in the Univariate relationship with the practice. The Nagelkerke R associated with the model is 0.386 which means 38.6% of the variabilities in the practice can be predicted by this model. The model resulted in three variables that have a significant association and can predict women's practice. First: The place of residence (P=0.000). Women living in the Middle Zone increase their practice score by 3.2 times more than their counterparts living in Rafah holding all other variables constant (O.R: 3.22, p- value= 0.031). In addition, living in Gaza city increase the women's practice by 3.3 times more than those living in Rafah holding all other variables constant (O.R: 3.35, p- value= 0.006). Further, living in North Gaza increase the women's practice by 3 compared to those living in Rafah holding all other variables constant (O.R: 3.21, p- value= 0.000).

Second: Knowledge, being in the high knowledge category increases the practice by 3.6 times more than those being in the low knowledge category holding all other variables constant (O.R: 3.649, P- value= 0.000).

Third: Accessibility to the health care center. Women who perceived their accessibility to the health care centers as “difficult” would decrease their practicing by 0.87 compared to those who perceived it as “easy” holding all other variables constant (O.R:0.130, P- value=0.012).

Chapter Five

Discussion

This study assessed the primigravida women knowledge and practice about PCC services. The study's key findings are represented in this chapter. Following that, the main results are assessed and compared with the findings from other countries.

The study interviewed 376 primigravida women who attended a governmental PHCC in the Gaza Strip, their mean age was 22.3 years, and they were mostly housewives (94.7% of them), even though 43.1% of them had university degrees or higher. Except for nine women who reported having chronic illnesses, they were all in good health.

In general, 64% of study respondents knew about PCC services, compared to 46% who do not. The mean score of the knowledge of PCC was 5.6 with lowest and highest scores of 0 and 11 respectively, while the mean score of practice was found to be 9 with minimum and maximum scores of 0 and 26 respectively.

Concerning the PCC information sources, the majority 45.4% of people learn about PCC from family members, whereas just around a fifth 19.7% do so from medical professionals. The rest of the participants relied heavily on the internet and social media as their main sources of information regarding PCC services by percentages of 16.8%, and 14.5% respectively. When we further separated the knowledge score into high and low groups, the results showed that 55.9 % of respondents have high levels of knowledge and 44.1% have low levels. With regards to the practice domain, it is classified as having good practice or poor practice, and the results indicated that 46.5% have good practice toward the PCC programs while 53.3% have poor practice.

Regarding the availability and accessibility of PCC services, more than two-thirds of respondents 69.9% stated PCC services are easily available and only 5.9% said access is difficult. The PCC unit at the health center was only known to 30.9% of the participants. Around twenty percent of the pregnant women who were surveyed are aware that folic acid is available at PCC units, and 18.9% of them were aware that the PCC unit offers medical laboratory tests, but the majority were not.

During the analysis phase, we found a significant correlation between the participants' knowledge and practice of PCC programs. Participants with a high level of PCC knowledge typically have positive practices, while those with a low level of PCC knowledge were found to have unfavorable practices.

We also determined the relationship between women's knowledge of the PCC service and its accessibility. The results demonstrated a statistically significant correlation between participants' knowledge level and the presence of a preconception care unit in the healthcare facility, as well as the availability of drugs like folic acid and medical lab testing.

Additionally, we found two variables that have a significant correlation and can predict women's knowledge through the examination of the knowledge prediction model. The first was the level of education followed by the practice of PCC services. While through the analysis of the variables that influence women's practices, the results listed three variables that have a substantial correlation and can anticipate women's practices. These variables are the place of residency, the Knowledge, and finally the accessibility to the healthcare facilities.

5.1 Comparison to findings from previous research

5.1.1 Knowledge about PCC

This study revealed that the overall knowledge of PCC among pregnant women was 55.9%, which is comparable to another recent study carried out by Al-Kasseh et al.(2022) in Gaza Strip that reported around 60% of the surveyed mothers are considered to be knowledgeable about PCC services. However, it was higher than a study conducted in Ethiopia by Lemma et al. (2022) among women of reproductive age which reported that only 17.1% of the participants are considered to have good knowledge. Again the result is still higher than the findings reported from another earlier Ethiopian study that said only 26.8% of women have good knowledge about PCC (Fekene et al., 2020).

This considerable difference could be as a result of the impact of educational attainments as most of the surveyed Ethiopian women were not educated while in the current study only less than 6.9% were of preparatory school level or less. It may be also due to the absence of strategies and policies of the Ethiopian Ministry of Health regarding addressing PCC programs in their clinics whereas the situation in Palestine differs due to the presence of private clinics, NGOs, and non- profit organizations that provide maternal and child health

services in Gaza. Additionally, the knowledge percentage in this study was lower than the findings from Jordan, which was around 85 % according to Al-Akour et al. (2015) study. This apparent difference may be due to the different demographic makeup of the participants as the Al-Akour et al. (2015) study surveyed Jordanian women and men from a city in the center of Jordan, also the sample size was larger.

Similarly, for the specific preconception health topics, the respondents' knowledge of every item varied globally. In this study, around half of the surveyed pregnant women didn't know why PCC programs are essential, and this is higher than a figure obtained from Kasim (2016) study that reported only 10.4% of the respondents did not agree that PCC is an essential health issue during the reproductive age. This finding can be attributed to the subject's newness and a lack of information provided from the health-care providers about PCC components and its essentials. In this context, the researcher believes that providers should disclose effect information as well as knowledge on other service components other than practice.

In the current study, 80.1% of pregnant women reported that it is vital to consume folic acid before pregnancy to avoid birth defects and congenital anomalies, and this is comparable to the finding of another study that reported around 83% (Kasim et al., 2016).

In terms of PCC information sources, 45.4% of participants in our study learned about PCC from family members, which could be explained by the fact that they are all primigravida and most of them are completely healthy, so their contact with health care professionals is relatively low. Similarly, Daly et al. (2022) reported in their study that the main source of information for participants was non-healthcare sources such as websites as they were young and nulliparous too. This is contrasted to the findings from an Ethiopian study that reported 51.5% of participants relied heavily on their information regarding PCC in health institutions while a minority 6.7% of them have heard from friends (Ayalew et al.2017).

5.1.2 Practice of PCC

The current study estimated that around 46.5% of the study participants have good practices regarding PCC, similarly, a study carried out in Malaysia by Kasim et al. (2016) to determine the level of KaP regarding PCC among women attending ANC appointments showed 45.2% had good practices. This however varies from the results of the Al-Kasseh et al. (2022) study

that estimated a higher level of practice with a mean percentage of 59% and this could be attributed to the gravida status of the participants as they are all gravida two and more contrasting the primigravida state in this study.

In the present study, nearly two-thirds of 64.9% of the participants reported that they are psychologically prepared for the current pregnancy. While, in a study conducted among women of reproductive age group in Southern Ethiopia by Habte et al. (2021) showed that only 16.1% of mothers reported the necessity for optimizing psychological health before pregnancy, and this may be due to the family support to the pregnant women in our society especially if they are primigravida.

With regards to folic acid supplementation, 67.2% of mothers were regular users of folic acid Habte et al. (2021), while in this study around 46.5% reported taking folic acid tablets before pregnancy. Regarding healthy lifestyle practices, around 61.4 % of participants reported eating a complete diet (containing all food groups), as well as plenty of fruits and vegetables before pregnancy, and this is relatively lower than the findings reported by Kasim et al. (2016) study that said around 73.3% do so. Additionally, only 37.2 % mentioned that they used to exercise (walk) before pregnancy 3-5 times a week for half an hour, while a higher percentage 51.1 % reported engaging in an exercise in the Malaysian study and this could be explained by the different cultural contexts as regular walking is still considered unusual behavior in our society. However, the result is still better than that obtained by Turkish study that revealed only 14.2 % has regular exercise.(Can Gürkan & Ertuğrul Abbasoğlu, 2021).

Concerning folic acid use before pregnancy, in the current study less than half of the respondents 46.4% admitted using it, and this result is comparable to other reported figures from the Turkish study that reported 45.4% use of folic acid in the preconception period. However, this result was relatively higher than a figure obtained by Kasim et al. (2016) as they found only 29.6% of the women used folic acid during the preconception period, this difference could be explained by the cost of vitamins in the latter country while being available for free for most of the Gaza mothers.

5.1.3 Accessibility and availability of preconception units.

In the current study, a statistically significant relationship between participants' level of practice and accessibility to the health care center, the presence of a PCC unit in the health facility, availability of medicine such as folic acid, and availability of medical lab tests. The same findings are obtained by Habte et al. (2021) as they identified the time spent accessing nearby health facilities and the availability of PCC units as a significant predictor of the practice of PCC.

5.1.4 Relationship between the Knowledge, practice, accessibility, and availability of preconception units

During the analysis process, the study discovered a significant correlation between the knowledge and practice of the participants toward PCC programs. Individuals with a high degree of PCC knowledge tend to have good practices, while participants with a low level of PCC knowledge tend to have negative practices. In terms of numbers, being in the high knowledge category increase the practice by 3.6 times more than those being in the low knowledge category.

Although the respondents' knowledge about PCC was high. Only 37 (9.8%) primigravida visited PCC unit in the PHCC before pregnancy. This result could be attributed to the service being provided in other facilities rather than the governmental PCC.

Access to healthcare facilities was also identified as one of the primary key factors influencing women's PCC practices, which is entirely reasonable given that women who are knowledgeable about PCC services and their importance for healthy pregnancy outcomes. In addition to having good access to healthcare facilities that offer this service as a full package, are more likely to have good preconception practices to prepare for pregnancy.

5.2.5 Relationship between Knowledge and practice of preconception care with sociodemographic variables

Numerous studies have been conducted around the world to evaluate the characteristics that are connected to women's knowledge of and use of PCC, and they have identified a variety of sociodemographic variables that may be determinant factors. The paragraphs below showed how

PCC knowledge and practice relate to sociodemographic factors and how the findings compare to those of previous studies.

Although the age, age at marriage, place of residency, and education of the spouse variables had a statistically significant relationship with the respondent's level of knowledge through Univariate analysis, the prediction model found these variables do not have an explanatory role in the women's overall knowledge of PCC. This result contradicts the findings from another study regarding the women's age and education of the spouse as Ayalew et al. (2017) showed in their study that women aged above 25 years were 2.38 times more likely to know PCC than their counterparts. Additionally, the woman whose husband attended college and above is considered a significant predictor of her knowledge regarding PCC services.

While the education level is found to influence participants' knowledge both through Univariate analysis and by logistic regression as women who have a university education or above could increase their PCC knowledge 4 times more than those who have preparatory school or less. This finding is consistent with related research as Ayalew et al. (2017) and Al-Kasseh et al. (2022).

Despite that, income level was not found to be one of the determinants of knowledge in the current study. Ayalew et al. (2017) study revealed that women whose monthly income is between 118 and 177.5 Dollars were identified as significant predictors of knowledge for PCC. The inconsistency between the earlier and current studies could be explained by the provision of free PCC service in the Gaza Strip compared to other nations.

Considering the various effects of variations in sociodemographic characteristics on the women's PCC practices, the only demographic factor found to influence participants' PCC practices is where they live, with the majority of middle-zone women (76.2%) showing good practice. The following were the percentages: 71.4% for North Gaza, 47.9% for Gaza, 27.1% for Khanyounis, and 18.2% for Rafah. There may be accessibility-related discrepancies between residents of the central districts and those in the Southern ones. The level of practice of the people is unaffected by any of the other demographic factors that were looked at.

Chapter Six

Conclusion and Recommendations

6.1 Conclusion

PCC, a maternal and newborn health promotion approach, is essential for every woman and partner to have a healthy pregnancy. This study was carried out to analyze primigravida women's knowledge and practice of PCC in the Gaza Strip, as well as to investigate factors that may influence them. The mean level of knowledge on PCC among women is 5.6 (0-11), with 55.9% having a high level of knowledge. In terms of practice level, women have a mean score of 9 (0- 26), with 46.5% having good practice. Furthermore, two-thirds of the individuals described their access to PCC as easy. The study discovered that knowledge, practice, and service availability are all interconnected. Knowledge has a positive relationship with practice; as knowledge increases, so will practice. Meanwhile, service availability is linked to knowledge and practice, with both increasing among women who are aware of the accessibility of PCC services, medicine, and medical lab exams. The study discovered a link between knowledge and several demographic variables, including age, age at marriage, residency location, education, and education of the spouse. The study, on the other hand, reveals that residence location affects practice score.

Multivariate models found that two factors could predict women's knowledge of PCC; education level and practice. Furthermore, three variables could predict women's practice; place of residence, knowledge, and access to healthcare centers.

6.2 Recommendations

Based on the study results the researcher recommended the following:

6.2.1 Recommendations for healthcare providers and decision-makers

- To provide all components of PCC in the service such as breast exam.
- To provide folic acid and medical lab tests in all the PHCC centers.
- To strengthen supervision and monitoring of PCC service delivery.
- To increase the level of women's knowledge and families about PCC service by conducting education sessions targeting any women who visit PHCC for any reason.

- To give interest in this topic in the clinic's brochures, posters, and boards containing encouraging phrases.
- To provide PCC service at all levels of the PHCC to increase the awareness of all women to the service.
- Women should be encouraged by the HCPs to use the service and husbands should be encouraged to participate.

6.2.2 Recommendations for women and their families

- Women, husbands, and their families should give PCC an interest and should use the service when planning for a new pregnancy.
- Every woman and her husband should plan for every pregnancy and should prepare themselves before its occurrence.
- Women should commit to the instructions of the HCPs and should adhere to the appointments, treatment, and nutritional supplements.

6.2.3 Recommendations for future research

- A mixed method research (quantitative, and qualitative) study is required to dig further into the factors influencing women's practice of the PCC and to determine whether any social or psychological factors may influence it.
- A community-based study is required to investigate the same issues examined in this study outside of the healthcare system.
- To conduct research examining the utilization of the PCC service.
- To conduct research examining level of knowledge about PCC components among the HCPs.

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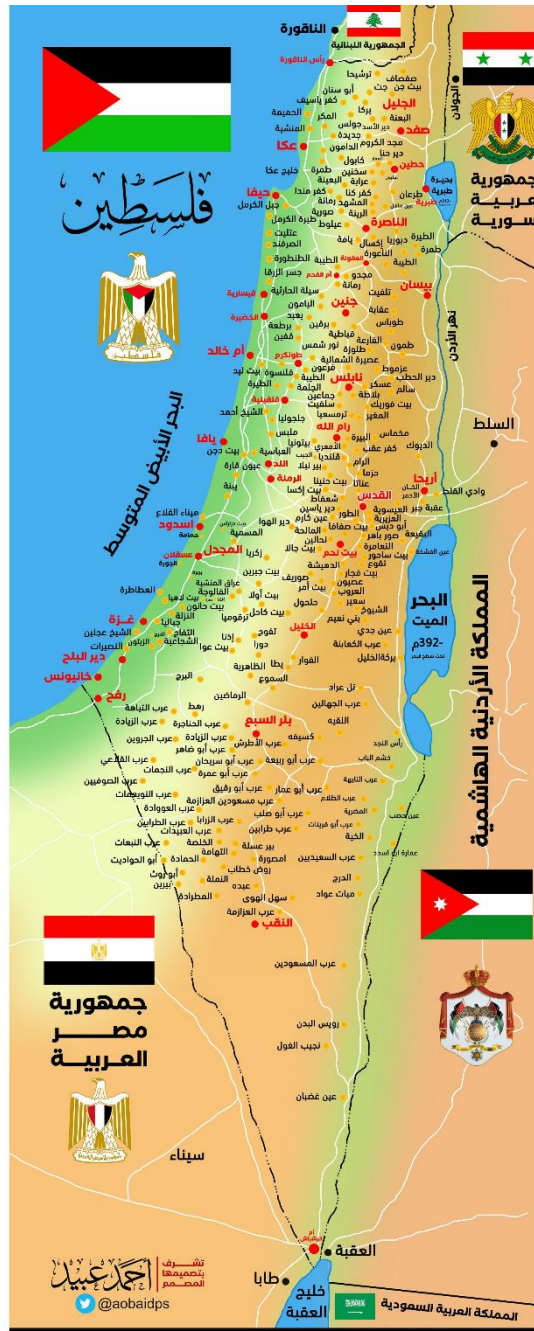
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Annexes

Annex (1): Palestine map



Annex (2): Gaza Strip map



Annex (3): Sample size calculation

Determine Sample Size	
Confidence Level:	☐ 95% ☐ 99%
Confidence Interval:	5
Population:	17048
Sample size needed:	376

Annex (4): Study tool- English version

Part 1: Demographic characteristics

1. Health center					
2. Age	years				
3. Age at marriage	years				
4. Place of residency	☐ Rafah	☐ Khanyounis	☐ Middle zone	☐ Gaza	☐ North Gaza
5. Employment status	☐ housewife		☐ Employed		
6. Education	☐ Preparatory or less		☐ Secondary	☐ University education or above	
7. Education for spouse	☐ Preparatory or less		☐ Secondary	☐ University education or above	
8. Income	☐ < 1974 NIS				
	☐ 1974- 2470 NIS				
	☐ > 2470 NIS				
9. Do you have a chronic disease?	☐ Yes		☐ No		
10.If yes, what is the problem?	☐ Hypertension		☐ Diabetes mellitus		☐ Cardiovascular disease
	☐ Pulmonary		☐ Epilepsy		☐ Cancer
	☐ Endocrine diseases		☐ Others,		
	**Note that there is a possibility of more than one answers				
11.Do you know about preconception care	☐ Yes		☐ No		
12.If yes, what is the source of information?	☐ a health care provider		☐ Social media		
	☐ Internet		☐ Family		
	☐ Friend		Other.....		

Part 2: Family history

1. Do your father/ or mother have a chronic disease?	☐ Yes		☐ No	
2. If yes, what is the problem?	☐ Hypertension	☐ Diabetes mellitus		☐ Cardiovascular disease
	☐ Pulmonary	☐ epilepsy		☐ Cancer
	☐ Endocrine diseases		☐ Others	
	**Note that there is a possibility of more than one answers			

Part 3: Knowledge about preconception care

Choose the correct answer from below statements

1.	What does preconception care mean?
A	Care received by a woman before to pregnancy to promote her health.
B	Evaluation of risk factors for the health and future pregnancy of women.
C	Investigation to determine whether the present state of health is safe for future pregnancies.
D	Intervention and modification of health, behavioural, social and environmental risks
E	Counseling and screening for genetic conditions
F	All of above
G	I do not know
2.	Why is Preconception care essential?
A	To prepare for pregnancy by enhancing the couple's health before conception
B	To have a healthy pregnancy, birth, and newborn
C	To minimize intrauterine fetal malformations
D	To promote a healthy lifestyle for the couple and their child.
E	All of above
F	I don't know
3.	Who needs preconception care?
A	Female

B	Male
C	Both
D	I do not know
4.	When does preconception care provided?
A	Period before marriage
B	Period following marriage
C	Three to six months before pregnancy
D	Period following pregnancy
E	I don't know
5.	What are the maternal risks associated with preconception nutritional deficiencies?
B	Anaemia
C	Preterm labor
D	Low fetal weight
E	All of above
E	I don't know
6.	Which lifestyle is optimal when planning for pregnancy?
A	Regular moderate exercise
B	Maintain a healthy weight
D	Care with teeth
E	Visit the doctor for consultation
F	Healthy diet
G	All of above
H	None of above
I	I do not know
7.	Why is it vital to consume folic acid before becoming pregnant?
A	To avoid birth defects and congenital anomalies.
B	To increase weight
C	To avoid anaemia
D	I do not know
8.	Which screening tests should be conducted during the first preconception visit?
A	Hb blood level

B	Breast exam
C	Measurement blood pressure
D	Measurement of weight and height
E	Laboratory test
F	All of above correct
G	None of above
H	I do not know
9.	Which conditions include women with identified risk factor for pregnancy?
A	Preexisting medical conditions (Hypertension, DM, Obesity, and others)
B	Use medications
C	Obesity
D	All of above
E	None of above
F	I do not know
10.	What are the dangers from which women must be protected in preconception period?
A	Chemical substances
B	Radiation
C	Toxic substances
D	Smoking
E	All of above
F	None of above
G	I do not know
11.	In preconception care, the women should be examined about the presence of
A	Anxiety
B	Depression
C	Mental and behavioral disorders
D	All of above
E	None of above
F	I do not know

Part 4: Women practice preconception care

N	Statements	Yes	No
1.	I have visited a preconception care clinic		
2.	I consulted a nurse/midwife / Doctor before becoming pregnant		
3.	I have planned for the current pregnancy		
4.	I was psychologically prepared for the current pregnancy		
5.	I were you supported to plan for this pregnancy by my husband		
6.	I used a method of contraception before my current pregnancy		
7.	I did a physical exam before pregnancy		
8.	I check my blood pressure before pregnancy		
9.	I checked my blood sugar before pregnancy		
10.	I measured my body mass (height and weight) before pregnancy		
11.	I took folic acid tablets before pregnancy		
12.	I took iron tablets before pregnancy		
13.	I took multivitamin tablets before pregnancy		
14.	I refrain from taking medicines without a medical prescription		
15.	I eat a complete diet (containing all food groups), as well as plenty of fruits and vegetables before pregnancy		
16.	I organize my meal times daily		
17.	I Have maintained my healthy weight		
18.	I used to exercise (walk) before pregnancy 3-5 times a week for half an hour		
19.	I have stayed away from any source of smoking		
20.	I'm in a safe place away from abuse and violence		
21.	I visited the dentist before I got pregnant		
22.	I conducted a breast examination before pregnancy		
23.	I kept myself away from the risk of chemical substances and radiation		
24.	I conducted hemoglobin level before pregnancy		
25.	I did the blood type test before pregnancy		
26.	I did the hepatitis C test before pregnancy		
27.	I read about pregnancy from brochures or on the internet		

Part 5: Availability of preconception care service

N	The extent of benefit from the preconception care service			
1.	How do you describe your access to health center?	☐ Easy	☐ moderate	☐ difficult
2.	There is a preconception care unit in the health facility	☐ Yes	☐ No	☐ I do not know
3.	Medicine such as folic acid is available at the preconception care?	☐ Yes	☐ sometimes	☐ No ☐ I do not know
4.	Medical laboratory tests for the preconception care are available	☐ Yes	☐ No	☐ I do not know

Annex (5): Study tool- Arabic version

استبانة المعرفة والممارسات قبل الحمل

المحور الأول: البيانات الشخصية والاجتماعية و الصحية

1. المركز الصحي	
2. العمر	 سنة
3. العمر عند الزواج	 سنة
4. مكان السكن	☐ رفح ☐ خانيونس ☐ الوسطى ☐ غزة ☐ الشمال
5. العمل	☐ ربة بيت ☐ تعمل / موظفة
6. المؤهل العلمي	☐ إعدادي فأقل ☐ ثانوي ☐ جامعي فأكثر
7. المؤهل العلمي للزوج	☐ إعدادي فأقل ☐ ثانوي ☐ جامعي فأكثر
8. الدخل الشهري	☐ أقل من 1974 شيكل
	☐ 1974 - 2470 شيكل
	☐ أكثر من 2470 شيكل
9. هل تعانيين من أمراض مزمنة؟	☐ نعم ☐ لا
10. إذا كانت الإجابة (نعم)، حددي نوع المرض	☐ ضغط ☐ سكر ☐ قلب ☐ أمراض صدرية ☐ صرع ☐ سرطان ☐ غدة ☐ أخرى، أذكره.....
11. هل لديك معلومات عن الرعاية ما قبل الحمل؟	☐ نعم ☐ لا
12. لو كان لديك معلومات، أين مصدرها؟	☐ من مقدم خدمة صحية ☐ الانترنت
	☐ مواقع التواصل الاجتماعي ☐ العائلة
	☐ صديق ☐ غيره، أذكره.....

المحور الثاني: تاريخ الأسرة:

1. هل يعاني والدك / والدتك من أمراض مزمنة؟	☐ نعم ☐ لا
2. نوع المرض:	☐ ضغط ☐ سكر ☐ قلب ☐ أمراض صدرية ☐ صرع ☐ سرطان ☐ غدة ☐ أخرى، أذكره.....

المحور الثالث: المعرفة بالرعاية قبل الحمل

1.	ماذا تعني رعاية ما قبل الحمل؟
أ.	الرعاية التي تتلقاها المرأة قبل الحمل لتعزيز صحتها
ب.	تقييم عوامل الخطر على صحة المرأة وحملها في المستقبل
ت.	تحديد ما إذا كانت الحالة الصحية الحالية آمنة للحمل في المستقبل
ث.	التدخل وتعديل المخاطر الصحية والسلوكية والاجتماعية والبيئية
ج.	الاستشارة والكشف عن الأمراض الوراثية
ح.	كل ما سبق صحيح
خ.	لا أعرف
2.	لماذا تعتبر رعاية ما قبل الحمل ضرورية؟
أ.	للتحضير للحمل من خلال تحسين صحة الزوجين قبل الحمل
ب.	للحصول على حمل صحي وولادة صحية
ت.	لتقليل تشوهات الجنين داخل الرحم
ث.	لتعزيز نمط حياة صحي للزوجين
ج.	كل ما سبق صحيح
ح.	لا أعلم
3.	من الشخص الذي يحتاج الى الرعاية ما قبل الحمل
أ.	المرأة
ب.	الرجل
ت.	كليهما
ث.	لا أعرف
4.	ما الفترة التي تقدم بها رعاية ما قبل الحمل؟
أ.	فترة ما قبل الزواج
ب.	الفترة التالية للزواج
ت.	فترة ثلاثة الى ستة أشهر قبل الحمل
ث.	الفترة التالية للحمل
ج.	لا أعلم
5.	ما هي المخاطر المصاحبة لنقص التغذية قبل الحمل عند المرأة؟
أ.	فقر دم
ت.	ولادة مبكرة
ج.	انخفاض وزن الجنين
ح.	كل ما سبق صحيح

ح.	لا أعلم
6.	ما هو نمط الحياة الأمثل عند التخطيط للحمل
أ.	ممارسة التمارين الرياضية المعتدلة
ب.	الحفاظ على وزن صحي
ت.	العناية بالأسنان
ث.	القيام بزيارة الطبيب للاستشارة
ج.	حمية صحية
ح.	كل ما سبق
خ.	لا شيء مما سبق
ذ.	لا أعلم
7.	ما أهمية تناول أقراص حمض الفوليك قبل الحمل؟
أ.	لتجنب العيوب الخلقية والتشوهات الخلقية لدى الجنين
ب.	لزيادة الوزن
ت.	لتجنب فقر الدم
ث.	لا أعلم
8.	ما هي الاختبارات التي يجب إجراؤها خلال الزيارة الأولى قبل الحمل؟
أ.	مستوى هيموجلوبين الدم
ب.	فحص الثدي
ت.	قياس ضغط الدم
ث.	قياس الوزن والطول
ج.	فحص مخبري
ح.	كل ما سبق صحيح
خ.	لا شيء مما سبق
د.	لا أعلم
9.	ما هي الحالات التي تشمل وجود عامل خطر محدد للحمل؟
أ.	الحالات المرضية الموجودة مسبقاً (ارتفاع ضغط الدم، مرض السكري، السمنة، وغيرها)
ب.	استخدام الأدوية
ت.	السمنة
ج.	كل ما سبق
د.	لا أحد
ذ.	لا أعلم

10.	ما هي الأخطار التي يجب حماية المرأة منها في مرحلة ما قبل الحمل؟
أ.	مواد كيميائية
ب.	إشعاع
ت.	المواد السامة
ث.	التدخين
ج.	كل ما سبق
ح.	لا شيء مما سبق
خ.	لا أعلم
11.	في رعاية ما قبل الحمل، يجب تقييم الصحة النفسية والعقلية حول وجود:
أ.	قلق
ب.	كآبة
ت.	اضطرابات عقلية وسلوكية
ث.	العنف الأسري
ج.	كل ما سبق
ح.	لا شيء مما سبق
خ.	لا أعلم

المحور الرابع: الممارسة الخاصة بالرعاية قبل الحمل

مدى الممارسة للرعاية قبل الحمل	نعم	لا
1. قمت بزيارة مركز الرعاية الأولية ما قبل الحمل		
2. قمت باستشارة الممرضة / القابلة / الطبيب قبل الحمل		
3. قمت بالتخطيط للحمل الحالي		
4. كنت مستعدة نفسياً للحمل الحالي		
5. قدم زوجي لي الدعم للتخطيط لهذا الحمل		
6. لقد استخدمت وسيلة أو طريقة منع حمل قبل الحمل الحالي		
7. قمت بإجراء فحص جسدي قبل الحمل		
8. قمت بفحص الضغط قبل الحمل		
9. قمت بفحص السكر قبل الحمل		
10. قمت بقياس كتلة الجسم (الطول والوزن) قبل الحمل		
11. تناولت أقراص حمض الفوليك قبل الحمل		
12. تناولت أقراص الحديد قبل الحمل		
13. تناولت أقراص الفيتامينات قبل الحمل		
14. امتنعت عن تناول الأدوية بدون وصفة طبية		

مدى الممارسة للرعاية قبل الحمل	نعم	لا
15. تناولت وجبات غذائية متكاملة (تحتوي على جميع المجموعات الغذائية) قبل الحمل بالإضافة الي الكثير من الفواكه والخضروات قبل الحمل		
16. قمت بتنظيم مواعيد الوجبات الغذائية يومياً		
17. حافظت على وزني الصحي		
18. قمت بممارسة (المشي) قبل الحمل من 3-5 مرات أسبوعياً لمدة نصف ساعة		
19. ابتعدت عن أي مصدر للتدخين		
20. انا في مكان امن بعيداً عن الإساءة والعنف		
21. قمت بمراجعة طبيب الاسنان قبل الحمل		
22. أجريت فحص ندي قبل الحمل		
23. قمت بالابتعاد عن المخاطر في الطبيعة مثل المواد الكيميائية والاشعة		
24. أجريت فحص نسبة الهيموغلوبين في الدم قبل الحمل		
25. أجريت فحص فصيلة الدم قبل الحمل		
26. أجريت فحص التهابات الكبد الوبائي قبل الحمل		
27. قمت بالقراءة عن الحمل من النشرات أو الانترنت		

المحور الخامس: توفر الخدمة

مدى الاستفادة من الخدمة	نعم	بعض الأحيان	لا	لا أعرف
1. وجود مرفق صحي في منطقتك	☐		☐	☐
2. كيف توصفي عملية الوصول الى المركز الصحي	☐	☐	☐	☐
3. توافر وحدة لتقديم خدمة ما قبل الحمل في المركز الصحي	☐	☐	☐	☐
4. تتوفر الادوية مثل حمض الفوليك في رعاية ما قبل الحمل؟	☐	☐	☐	☐
5. توافر الفحوصات المخبرية لرعاية ما قبل الحمل	☐	☐	☐	☐

Annex (6): List of experts

No.	Name	Affiliation
1	Dr. Hamza Abdeljawad	Al-Quds University
2	Dr. Akram Mohammad Abusalah	Palestine college of nursing
3	Dr. Mohammed Tabash	Assistant Prof. Al Azhar University
4	Ali Alkhateeb	Deanship of Nursing college in Applied
5	Dr. Areefa Said Al-Bahri	Islamic University
6	Dr. Khalil Shuaib	University College of Applied Sciences
7	Dr. Amed Shaer	Islamic University
8	Dr. Samira Abo Al Sheikh	MoH

Annex (7): Helsinki approval

**المجلس الفلسطيني للبحوث الصحي**
Palestinian Health Research Council
تعزير النظام الصحي الفلسطيني من خلال مؤسسة استخدام المعلومات البحثية في صنع القرار
Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee
For Ethical Approval

Date: 06/06/2022 **Number:** PHRC/HC/1101/22

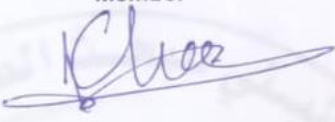
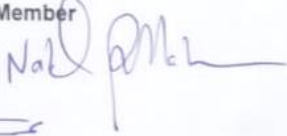
Name: Najwa abu mostafa **الاسم:**

We would like to inform you that the committee had discussed the proposal of your study about: **نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:**

Knowledge and Practice of Primigravida Women about Preconception Care in the Gaza Strip, Palestine

The committee has decided to approve the above mentioned research. **و قد قررت الموافقة على البحث المذكور عاليه**
Approval number PHRC/HC/1101/22 in its meeting on 06/06/2022 **بالرقم والتاريخ المذكوران عاليه**

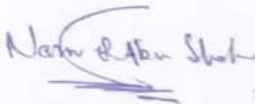
Signature

Member  **Member** 

Chairman 

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:- 



Annex (8): Admin approval – MoH

State of Palestine
Ministry of health



دولة فلسطين
وزارة الصحة

التاريخ: 18/10/2022

السيد : جهاد عبدالقادر عكاشه المحترم

رقم المراسلة 1088934

مدير دائرة الإدارة العامة للوحدات الإدارية المساعدة /وزارة الصحة

السلام عليكم ,,,

الموضوع / تسهيل مهمة الباحثة نجوى سليمان محمود الفرا

التفاصيل // السلام عليكم نهديكم أطيب التحيات ونود منكم تسهيل مهمة الباحثة/ة نجوى سليمان محمود الفرا الملتحق/ة ببرنامح ماجستير تعريض صحة الأم والطفل – جامعة القدس أبو ديس في اجراء بحث بعنوان: Knowledge and Practice of Primigravida Women about Preconception Care in the Gaza Strip, Palestine معرفة وممارسة نساء البكرى حول رعاية ما قبل الحمل في قطاع غزة، فلسطين حيث الباحثة/ة بحاجة لتعبئة استبانة من عدد من العرضي المراجعين في مرافق وزارة الصحة (مراكز الرعاية الأولية) ، دون اجراء أي تدخل طبي او سحب عينات دم ، نأمل توجيهاتكم لنجوى الاختصاص بضرورة الحصول على الموافقة المستنيرة من المشاركين ، بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، ودون تحمل الوزارة أي أعباء أو مسئولية وتفضلوا بقبول التحية والتقدير ملاحظات / تسهيل المهمة الخاص بالدراسة أعلاه صالح لعدة 3 أشهر من تاريخه، يرجى التأكد من توافق الاستبانة المرفقة والتي يتم تعبئتها ميدانيا على ان لا يتم أي إضافة أو تعديل على الاستبانة المرفقة

علي حسن البليسي

حكيم جامعي

المرفقات

■ أدوات البحث نجوى سليمان محمود الفرا.pdf



Annex (9): Consent form



السلام عليكم ورحمة الله وبركاته

انا الباحثة: نجوى سليمان ابو مصطفى اقوم باجراء دراسة ماجستير بعنوان

Knowledge and practice of primigravida women about preconception care in the Gaza strip Palestine.

معرفة وممارسة رعاية ما قبل الحمل في قطاع غزة-فلسطين

وهي كمتطلب اساسي للحصول على درجة الماجستير في برنامج صحة الام والطفل بجامعة القدس وان اجابتك على الاسئلة بالغ الاهمية في تحقيق هذه الدراسة " معرفة وممارسة نساء البكارى حول رعاية ما قبل الحمل في قطاع غزة- فلسطين "

ارجو قراءة جميع العبارات في الاستبانة بدقة والاجابة عنها بموضوعية لما في ذلك من اثر كبير على صحة النتائج والتوصيات التي سوف تتوصل اليها الباحثة مع العلم بانه سوف يتم التعامل مع البيانات بسرية وستستخدم لاغراض البحث العلمي فقط .

نشكركم على حسن تعاونكم معنا

مع خالص الاحترام والتقدير

Abstract in Arabic

عنوان الدراسة: معرفة وممارسة نساء البكاري حول رعاية ما قبل الحمل في قطاع غزة، فلسطين"

إعداد الباحثة: نجوى سليمان محمود أبو مصطفى

إشراف: د. أحمد نجم

الملخص:

المقدمة: هناك أدلة متزايدة على أن رعاية ما قبل الحمل قد تلعب دورًا حاسمًا في الحد من الآثار الصحية غير المرغوبة سواء الفورية أو طويلة الأجل على الأمهات والأطفال. هدف الدراسة: هدفت هذه الدراسة الى تقييم معرفة وممارسة رعاية ما قبل الحمل لدى النساء البكاري في قطاع غزة. المنهجية والمواد: استخدم تصميم وصفي شامل واستخلصت عينة تناسبية شمولية ملائمة من المراكز الرئيسية السبعة لرعاية ما قبل الحمل في قطاع غزة. وهذه المراكز هي: شهداء جباليا وشهداء الرمال والدراج والزيتون وشهداء دير البلح وشهداء خانيونس وشهداء رفح. كان حجم العينة 376 من النساء البكاري يزورن عيادات رعاية الحمل. وأجريت المقابلات مع النساء المستهدفات باستخدام استبيان وقد تم اجراء عينة استطلاعية، وبدأت الدراسة في يناير 2022 وانتهت في أغسطس 2022.

النتائج: متوسط أعمار السيدات المشاركات هو 22.3 سنة (14-44). الغالبية، 53.2%، تزوجوا قبل سن 20، ويعيش 51.1% في مدينة غزة. معظم النساء، 94.7%، عاطلات عن العمل. 55.9% من النساء لديهن مستوى عال من معرفة رعاية ما قبل الحمل (متوسط: 5.6) 46.5% من النساء لديهن ممارسة جيدة، بمتوسط 9 (0-26). وجد ثلثا النساء أنه من السهل الحصول على رعاية ما قبل الحمل. العلاقة بين معرفة المشاركين والممارسة علاقة متوسطة ودالة احصائيا (معامل الارتباط بيرسون = 0.507، 0.000). كانت هناك صلة ذات دلالة إحصائية بين معرفة المشاركين ووجود وحدة رعاية ما قبل الحمل (قيمة مربع كاي = 32.2، مستوى المعنوية = 0.000)، ووجود حمض الفوليك (مربع كاي = 42.1، مستوى المعنوية = 0.000)، ووجود الفحوصات المخبرية (مربع كاي = 30.8، مستوى المعنوية = 0.000). كما كانت هناك علاقة ذات دلالة إحصائية بين مستوى ممارسة المشاركين وإمكانية الوصول إلى مركز الرعاية الصحية (مربع كاي = 11.7، مستوى المعنوية = 0.003)، ووجود وحدة رعاية ما قبل الحمل في المرفق الصحي (مربع كاي = 32.2، مستوى المعنوية = 0.000). كان للعمر والعمر عند الزواج علاقات ذات دلالة إحصائية مع معرفة المشاركين (مربع كاي = 8.32، مستوى المعنوية = 0.016) و (مربع كاي = 6.53، مستوى معنوية = 0.038) على التوالي.

يؤثر مكان السكن أيضًا على معرفة المشاركين، حيث تتمتع معظم نساء المنطقة الوسطى (90.5%) بمستوى عالٍ من المعرفة (مربع كاي = 0.000). وتتمتع غالبية النساء الحاصلات على تعليم جامعي (65.4%) بدرجة عالية من المعرفة. أولئك الذين حصلوا على تعليم ثانوي أو أقل لديهم مستوى عالٍ من المعرفة (مربع

كاي =14.4، مستوى معنوية= 0.001)، 61.4 % من الحاصلين على تعليم جامعي، و 56.3% من الحاصلين على التعليم الثانوي، و 40% من الأزواج الحاصلين على تعليم إعدادي أو أقل لديهم معرفة جيدة.

وجدت الدراسة أن مكان الإقامة يؤثر في ممارسة النساء، حيث أن 76.2 % من النساء في المناطق الوسطى يظهرن ممارسة ممتازة. كان شمال غزة 71.4% وغزة 47.9% وخانيونس 27.1% ورفح 18.2% (مستوى معنوية = 0.000). وجد نموذج الانحدار متعدد المتغيرات متغيرين يتنبأان بمعرفة المرأة برعاية ما قبل الحمل. أولاً: التعليم (مستوى معنوية= 0.03)، من حيث أن النساء الحاصلات على درجة البكالوريوس أو أكثر تزيد معرفتهن برعاية ما قبل الحمل أربع مرات أكثر من أولئك الحاصلات على تعليم أقل (نسبة الأرجحية: 4، مستوى المعنوية= 0.015). ثانياً: الممارسة، أولئك الذين لديهم ممارسة يتمتعون بمعرفة جيدة تزيد ب 3.7 مرة أكثر من أولئك الذين لديهم ممارسة سيئة (نسبة الأرجحية: 3.7، مستوى المعنوية= 0.000).

وجد النموذج ثلاثة متغيرات تتنبأ بممارسة النساء لرعاية ما قبل الحمل. مكان الإقامة (مستوى معنوية= 0.000) تزيد درجة ممارسة النساء في المنطقة الوسطى لرعاية ما قبل الحمل 3.2 مرة من النساء سكان مدينة رفح (نسبة الأرجحية: 3.2، مستوى معنوية= 0.031). وهي أكثر لدى النساء الذين يسكنون مدينة غزة بمقدار 3.3 مرات مقارنة برفح (نسبة الأرجحية: 3.3، مستوى معنوية= 0.006). كما تزيد للنساء الذين يسكنون شمال غزة بمقدار 3 مرات مقارنة بالنساء سكان مدينة رفح (نسبة الأرجحية: 3.2، مستوى المعنوية= 0.000).

ثانياً: المعرفة، تزيد المعرفة العالية من الممارسة بمقدار 3.6 مرة أكثر من أولئك الذين لديهم ضعف في المعرفة (نسبة الأرجحية: 3.6، مستوى معنوية= 0.000). ثالثاً: إمكانية الوصول إلى المستشفى. النساء اللواتي وجدن أن الوصول إلى مراكز الرعاية الصحية "صعب" لهم أقل ممارسة 0.87 من أولئك الذين وجدوا أنه "سهل" (نسبة الأرجحية: 0.130، مستوى معنوية = 0.012)

الملخص والتوصيات: يتمتع نصف النساء بمعرفة جيدة وممارسة عالية بشأن خدمة رعاية ما قبل الحمل وينبغي زيادة معارف وممارسات المرأة والأسرة فيما يتعلق بخدمات رعاية ما قبل الحمل عن طريق عقد دورات تثقيفية لأي امرأة تزور الرعاية الصحية الأولية والاهتمام بهذا الموضوع في كتيبات العيادات والملصقات واللوحات التي تحتوي على عبارات مشجعة. يجب على النساء وأزواجهن استخدام خدمة رعاية ما قبل الحمل أثناء التخطيط لحمل جديد.

الكلمات المفتاحية: المعرفة، الممارسة، رعاية ما قبل الحمل، مراكز الرعاية الأولية، البكاري، قطاع غزة