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Preconception Care: Does it make a Difference in Pregnancy Outcomes?

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Dedication

To my husband and my mother-in-law who have been a source of unlimited support, encouragement and love.

I would also like to thank my father and mother for giving me the faith and passion to complete this study.

To the light of my eyes … my kids.

To all my friends and colleagues from them I learned and were the best gift I ever had.

Declaration

I certify that this thesis submitted for the degree of master is the result of my own work research, except where otherwise acknowledged and neither this thesis nor any of its parts had been submitted for higher degree to any other university or institution.

Signed

Maha B. Timraz

Date……/……/……

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With respect, Maha Timraz.

Abstract

Pre-Conception Care comprises a set of prevention and management interventions that aim to identify and modify risks to a woman's health or pregnancy outcome by emphasizing factors that must be acted on before, or early in pregnancy. This study ascertains the effect of the preconception care program offered at UNRWA Primary Health Care centers on pregnancy outcomes.

A quasi-experimental mixed method design was used, in which data had been triangulated, combining both, quantitative and qualitative methods. A stratified, random sampling process resulted in selecting 5 clinics, from which a sample of 800 conveniently selected women were chosen distributed as 400 PCC recipients and 400 non-recipients. A purposive sample of 11 Key informants were interviewed in addition to 60 beneficiaries and non-beneficiaries participated in focus group discussions. A structure interviewed questionnaire and records review were used for the quantitative part while a semi-structured protocol were used for the qualitative method. Quantitative data were analyzed using Statistical Package for Social Science and open coding thematic technique was used to analyze the qualitative part.

Findings showed that nearly half of recipients (47%) first knew about the service through midwives, 44.1% registered for the services because they were planning to get pregnant. Of the non-recipients, 31.5% indicated that the reason for not registering was not knowing about the availability of this service. Regarding preconception care activities, 71.7% of recipients indicated that they received health advices, around 99% of them were screened for hypertension, diabetes, dental problems and given folic acid, and more than 82.3% were counseled about its importance. Nevertheless, 75.8% of recipients were compliant in ingesting folic acid. The mean number of folic acid tablets taken by recipients was 113.1. Results showed that 92.2% of preconception care recipients took folic acid before conception vs 15.1% of non-recipients.

The total overall score which reflects perceptions about the appropriateness of the services was 73.8% with 47.9% of recipients indicated that they were involved in care. The total score for coordination and care continuity was 69.7%. The mean waiting time was 47.8 minutes, 54.5% of recipients perceived waiting time as being long and 48.3% indicated that the contact time was less than 5 minutes. Less than 10% of the clinic staff have introduced themselves to clients.

With regard to the program impacts, 57.9% of preconception care recipients and 67.4% of non-recipients faced complications during their last pregnancy, 53% of recipients and 55.8% of non-recipients had genitourinary tract infection, 51.7% among recipients suffered from anemia versus 71.4% of non-recipients and the differences were statistically significant. The percentage of women who delivered via caesarian section was 25.3% among recipients and 18% among non-recipients. A quarter (22.8%) of preconception care recipients and 32.5% of non-recipients faced complications during their last delivery, especially bleeding (36.3% and 51.5% for preconception care recipients and non-recipients respectively). Around 63.7% of recipients and 67.4% of non-recipients have full term pregnancy, mean birth weight of babies in grams among recipients was 3274.5 and 3225.4 among non-recipients. About 3.8% of preconception care recipient's vs 2.5% of non-recipients gave birth to a baby with congenital anomaly. The later unexpected variations might be attributed to the fact that the program targets particularly vulnerable groups who could be much worse without it.

The study concluded that the provided preconception care supports maternal outcomes, yet it needs further enhancement to achieve better outcomes. Targeting, staff beneficiary interactions, informing/counselling and compliance with the technical instructions are among the areas that require further investments. Also, it is important to strengthen monitoring and supervision.

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List of Abbreviations

ANC	Ante-Natal Care
ANOVA	One way Analysis of Variance
BP	Blood Pressure
CBR	Crude Birth Rate
CDC	Center of Disease and Control
CF	Conceptual Framework
CFHP	Chief Field Health Program
CS	Cesarean Section
CWD	Children with Disability
DM	Diabetes Mellitus
FFHO	Field Family Health Officer
FGD	Focused Group Discussion
FP	Family Planning
GDM	Gestational Diabetes Mellitus
GG	Gaza Governorates
GS	Gaza Strip
HbG	Hemoglobin
HCP	Health Care Provider
HCS	Health Care System
HTN	Hypertension
IM	Infant Mortality
IMR	Infant Mortality Rate
KI	Key Informant
KII	Key Informant Interviews
LBW	Low Birth Weight
LSD	Least Significant Difference
MCH	Maternal and Child Health
MEAC	Middle East and Arab Countries
MICS	Multiple Indicators Cluster Survey
MM	Maternal Mortality
MMR	Maternal Mortality Rate

MO	Medical Officers
MOH	Ministry of Health
NCD	Non-Communicable Disease
NECC	Near East Council of Churches
NGOs	Non-Governmental Organizations
NICU	Neonatal Intensive Care Unit
NTD	Neural Tube Defect
OHA	Oral Hypoglycemic Agents
PCBS	Palestinian Central Bureau of Statistics
PCC	Pre-Conception Care
PET	Pre-Eclamptic Toxemia
PHC	Primary Health Care
PIH	Pregnancy-Induced Hypertension
PMMS	Palestinian Military Medical Services
PNC	Post-Natal Care
PNGO	Palestinian Non-Governmental Organizations
RBS	Random Blood Sugar
RCOG	Royal Colleague of Obstetrics and Gynecology
RCT	Randomized Controlled Trials
SCBU	Special Care Baby Unit
SD	Standard Deviation
SDGs	Sustainable Developmental Goals
SMO	Senior Medical Officers
SPH	School of Public Health
SPSS	Statistical Package for Social Science
SSN	Senior Staff Nurses
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Emergency Fund
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
WB	West Bank
WHO	World Health Organization

Chapter One

Introduction

Health is considered a critical component of the social and economic spheres, therefore investments in health directly improve developmental outcomes, economic and social well-being. Moreover, emphasizing precisely and deeply on the reproductive health in specific will add tremendously to the developmental effort of humanity (Lee & Sadana, 2011). Starting from this more focus is shifted towards Pre-pregnancy medicine or Pre-Conception Care (PCC); which is not directed at prospective parents expecting a baby, but at prospective parents wishing to become pregnant (Zee, 2013).

There is a strong evidence that initiating care before conception is critical to both infant and maternal well-being (Dean et al., 2013). For example, strict diabetic control both before and during pregnancy has been shown to reduce the diabetes teratogenic effect to the developing fetus (Dudenhausen et al., 2013). PCC offers the mothers an appropriate counseling and services that definitely decrease risk of Infant Mortality (IM) and risk of Low Birth-Weight (LBW) and reduce risks to the fetus and infant including spontaneous abortion, chromosomal defects, congenital malformations, and fetal distress (Dudenhausen et al., 2013).

The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) introduced PCC in 2011 aiming to achieve further reduction in infant and maternal mortality. Till now, only Near East Council of Churches-(NECC) provides this service in Gaza beside to UNRWA; although there are many organizations have plans to introduce it. PCC offers family physicians health team and their patients an opportunity to discuss the potentially modifiable risk factors that affect future pregnancy outcomes so these can be minimized. It aims to prepare women of reproductive age to enter pregnancy in an optimal health status. During 2017, a total of 37,271 women had been enrolled in UNRWA's PCC program representing an increase of 28.2% compared with 2016 29,080 (UNRWA, 2018).

PCC comprises a set of prevention and management interventions that aim to identify and modify risks to a woman's health or pregnancy outcome by emphasizing factors that must be acted on before, or early in, pregnancy in order to have maximal impact. Thus the main components of the PCC program includes health promotion, counselling, screening,

periodic risk assessments, intervention and follow-up, and folic acid supplementation (UNRWA, 2018). UNRWA's PCC program has directed its approach to provide PCC in a multidisciplinary rather than a single effort. Technically, UNRWA Health Care Providers (HCP) utilize opportunities with their patients to introduce and assess knowledge, attitudes, and behaviors associated with optimal reproductive health, besides assessing a woman risk before getting pregnant.

While there is evidence that the introduced PCC program is well targeted in terms of numbers as aforementioned, yet it is not clear how much the program has contributed to positive pregnancy outcomes for the mother and the newborn as well. Questions such as how PCC contributes to mother's positive outcomes such as reduction of maternal and neonatal morbidity, mortality and disability remain unanswered. Therefore, this study provided better insights about the effectiveness and the impact of the PCC on mothers and their babies.

1.1 Research Problem

For more than two decades, prenatal care has been a cornerstone of any strategy for improving pregnancy outcomes. In recent years, however, a growing recognition of the limits of prenatal care and the importance of maternal health before pregnancy has drawn increasing attention to preconception. Preconception care has, until recently, been a weak link in the continuum of care. However, it's acknowledged in recent literature that providing care to adolescent girls and women before and between pregnancies improves their own health and wellbeing, as well as pregnancy and newborn outcomes, and can also reduce the rates of preterm birth (Johnson et al., 2006).

PCC has been recently introduced in UNRWA Primary Health Care (PHC) services in 2011 (UNRWA, 2018), however its effects are not yet adequately studied. Issues around the PCC program impact, effects remain unanswered. Therefore this study tries to fill out some important gaps in information in reference to the PCC program particularly its effects/impacts. In other words, this study tried to explore the extent at which PCC services succeeded in reducing maternal and child risks and to detect areas of strengths and weaknesses in PCC services, so that ultimately we could improve mother and future progeny's health.

1.2 Justification

This study is the first of its kind in Palestine, thus the research added to the body of knowledge in one of the most important branches in social sciences which is mother and child health, therefore it is of great benefit to the society, country, government and the community. This research discovers if the current program does guarantee that: refugee's women enter pregnancy in good health. We can judge if it is implemented effectively and efficiently? And weather it achieved the goals for which it was initially introduced?

The study is helpful to UNRWA and the health department in particular as it provides a baseline view of the PCC program development forum, as PCC program is an important program and had not been evaluated before, thus the study provides a benchmark for other evaluative studies in the field. Apparently the study contributed to the theory and practice of the health staff, it has unshelled the cover over strengths and weaknesses thus it benefited the Health Care System (HCS), and guides its' forward developing steps. Furthermore, the limited available choices of monitoring and evaluation frameworks makes this study very relevant to users, including researchers and managers of HCS. It guides the nurturing of other innovative researchers and administrative platforms in Palestine and elsewhere in the region. Other stakeholders such as Ministry of Health (MOH), development agencies and donors can also benefit from the study.

Lastly this study is helpful to the researcher herself as a physician working in the UNRWA health sector, and the findings can inform her practice as well as her colleagues at the technical and professional levels.

1.3 Aim and Objectives

1.3.1 Aim

To ascertain the effect of the PCC program offered at UNRWA PHC clinics on pregnancy outcomes, in order to suggest recommendations that ultimately increase the positive effects of the program in reducing mortalities, morbidities and disabilities among women and newborns.

1.3.2 Objectives

1. To assess the effects of PCC program on maternal and fetal pregnancy outcomes.
2. To explore the strengths and weaknesses of the implemented PCC program.
3. To identify variations in maternal and fetal outcomes in reference to their characteristics variables.
4. To recognize differences in maternal and fetal outcomes in reference to the program dynamics and implementation.
5. To develop recommendations that might help in improve the positive outcomes of the program.

1.4 Research Questions

1. How the PCC program at UNRWA is going?
2. To what extent the inputs required for the program implementation are appropriately available?
3. What goes right and what goes wrong in accordance with UNRWA technical instructions in the program related processes/dynamic?
4. What are the gained benefits of PCC to the mother?
5. What are the gained benefits of PCC to the child?
6. Do PCC services at its currently implemented approach help in decreasing risk to the mother such as anemia, controlling Hypertension (HTN), Diabetes Mellitus (DM), and decreasing Cesarean Section (CS) rates?
7. Do PCC services help in reducing fetal related risks such as Low Birth Weight (LBW), prematurity, anemia, congenital anomalies?
8. Are there variations in PCC program effects in reference to the services and program dynamics variables?
9. Are there variations in PCC program effects in reference to its characteristics variables?
10. What are the access barriers that might limit people participation in PCC service?
11. How do beneficiaries perceive PCC service delivery?
12. What can be done in order to improve PCC service delivery?

1.5 Context of the Study

1.5.1 Gaza Governorates (GG) demographic characteristics

1.5.1.1 Geographic

Approximately 1.89 million inhabitants live in the Gaza Strip (GS), which resembles 39.7% of Palestinian population in the West Bank (WB) and the GS combined (Palestinian Central Bureau of Statistics-PCBS, 2018). The GS is a narrow place of land approximately 365 square kilometer located in the southern area of Palestine, and is divided into five governorates: North Gaza, Gaza City, Mid Zone, Khanyounis and Rafah. This makes this small piece of land characterized by high population density, according to PCBS the population density in mid of 2017 in GS was equal to 5203 individuals per square meter. Thus Gaza ranks as the 3rd most densely populated polity in the world (Copeland et al., 2011). With this over crowdedness of the GS and facing the reality that the population in Gaza is among the fastest growing population in the world (Copeland et al., 2011). Projections estimate that by 2021 the population will have grown from current 1.89 million to 2.10 million and that it will reach 3.7 million people by 2035 (PCBS, 1997-2035), this means high fertility and this gives more significance to PCC.

1.5.1.2 Socioeconomic

It's noticed that the socioeconomic condition in the GS has deteriorated dramatically following imposition of a blockade by the "Israeli" government in 2007. The percentage of Gazans who live in poverty has been steadily increasing within the last years (raised from nearly 22% in 1998 to nearly 35% in 2006 to 38.3% in 2009, and it reached 38.8% in 2011 according to the survey published by PCBS in 2016. The unemployment rate is 48.2% in GS (PCBS, 2018) & the total dependency ratio is 83.8 in GS (PCBS, 2016). The total dependency ratio 82.1 in GS compared to 66.6 in WB according to (MOH, 2017).

With the continued economic decline and the implementation of even stricter closures on Gaza, the poverty rate is still high in GS as it reached 53% in 2017 expected to be higher in 2019 (PCBS, 2018).

1.5.1.3 Political

Living conditions have worsened since 2006, when the elected Palestinian administration became politically and economically boycotted, resulting in unprecedented levels of

Palestinian unemployment, poverty, and internal conflict, and increased restrictions to health-care access (Rahim et al., 2009 and van den Berg et al., 2015). The blockade has impacted the health sector in Gaza, as hospitals continue to lack adequate physical infrastructure, drugs and supplies (Van den Berg et al., 2015). In addition, conflicts in December 2008 to January 2009, November 2012 and July and August 2014 have contributed to deterioration of health services with reproductive health services being negatively affected (Mowafi, 2011).

The early mentioned demographic characters of the GG population including increasing population size and high fertility rates imply that there is an increasing load on the health sector and especially on reproductive services, which should respond to all the imposed current challenges including occupation, siege and political divisions besides to the increasing demands for health services resulted from the ongoing increase in population size.

In particular, the demand for reproductive health services which are provided by all health service providers mainly government and UNRWA clinics and some private hospital.

1.5.1.4 Health Status

According to the PCBS figures in 2016, the natural increase of population in Palestine was 2.8%; and in GS 3.3%. The total number of reported live births in Palestine was 124,331; out of them 54,442 occurred in GS (43.8%). Despite progressive decline over the years, the number of live births per 1,000 of population per year is still high compared with other countries. The reported Crude Birth Rate (CBR) in 2016 was 28.7\1000 of population in 2016, and 30.9\1,000 in GS (MOH, 2017). Based on a Multiple Indicators Cluster Survey-(MICS) that PCBS conducted in (2011-2013); the total fertility rate in Palestine was 4.4 and 4.5 in the GS (PCBS, 2018). Consequently, and expectedly the demand for health care services and especially for reproductive health services in Gaza is high, and the burden of work load over HCP's is much higher (Jaaron, 2012). Faced by the fact that there is an increasing demand on reproductive services, there was a universal call for action toward achieving Sustainable Developmental Goals (SDGs), since then child and maternal mortality has been decreasing in many countries for many decades (Pogge & Sengupta, 2015). However, to judge by Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR), important inequality exists within and across countries (Beck et al., 2010). One

example is the disparity in these measures between Israel and the occupied Palestinian Territory (Alkema et al., 2016). According to World Bank estimates in 2015, the IMR was estimated at 3 per 1000 live births in Israel, compared with 18 per 1000 live births in the occupied Palestinian territory (Alkema et al., 2016). MMR in Israel was 5 per 100.000 live births, while it was 45 per 100.000 live birth in Palestine (Alkema et al., 2016).

The deterioration in economic situation might have its impacts on Maternal and Child Health (MCH). According to (MOH, 2017), reported IMR in Palestine in 2016 was 10.5 per 1,000 live births.

Furthermore the deteriorating socioeconomic status might increase the burden of poverty related diseases such as malnutrition and iron deficiency anemia (Palestinian Non-Governmental Organizations network-PNGO, 2009) which are common among children and mothers. Approximately 28.2% of pregnant women in Palestine suffer from anemia and the percentage of reported anemia among high risk pregnant women was 30.4% (MOH, 2017). MMR (15.5 in GS and 12.4 in WB) average of Palestine 13.8. The number of maternal deaths recorded in Palestine were18 cases, including 9 in WB and 9 in GS in 2016. The majority of these deaths could have been prevented (MOH, 2017). Thus there is an alarming need to improve our service provision, and to re-prioritize our efforts and focus, to value the prevention more than the curative services, for example giving more attention to the PCC.

1.5.2 Health Care System

Palestinian HCS is composed of five main HCP's; MOH, UNRWA, Non-Governmental Organizations (NGO), Palestinian Military Medical Services-(PMMS), and the private for-profit service providers (MOH, 2017). The main HCP in GG is MOH; it provides PHC, secondary and tertiary services for the entire population. It also offers advanced medical services through contracting with hospitals or private NGOs inside the occupied territory or even outside Palestine. Regarding governmental PHC services in GG, MOH runs well established and well-equipped PHC centers. There are 49 governmental PHC centers out of the 152 centers in the Governorates (MOH, 2017).

Those PHC centers are classified from level two to level four, offering different health services according to the clinic level, these services include MCH, care of chronic diseases, daily care, dental, mental services and others (MOH, 2017). Health systems have three

fundamental objectives which are improving population health; responding to people expectations and providing protection against sudden unplanned payment for health services especially for the poor. In the Palestinian context, MOH is not only responsible for providing those three objectives but also it is responsible for regulating the provision of health services provided by the other providers.

UNRWA health related services will be explained in details in the next section. The NGO sector composed from hospitals, facilities community health centers supported by international organizations it offers preventive and curative services through 77 PHC facilities in GG. The PMMS is also composed of 3 different levels and provide primary, secondary and tertiary health care services in co-operation with local and international organizations there are 5 PHC administrated by PMMS (MOH, 2017). The private for-profit health sector also provides the three levels of care through a wide range of practices (MOH, 2017).

In the face of the above mentioned realities, and the urgent need for a more integrated, comprehensive, affordable and accessible PHC services, and talking more precisely and deeply on maternal health services, the governmental PHC centers should offer a more comprehensive means for services delivery, to protect, and promote the health and wellbeing of the society, there is still a deficiency in providing this kind of holistic health services, for example both PCC and Post-Natal Care (PNC) should be reformed and well integrated in MCH care services offered by MOH PHC facilities.

1.5.3 UNRWA Health Care Services

UNRWA is one of the largest United Nations programs, with a population of 6,021,510 Palestinian refugees under its mandate in 2018. (UNRWA, 2018) The Agency's mission is to assist Palestine refugees in achieving their full potential in human development until a durable and just solution is found to the refugee issue. The agency fulfils its humanitarian and human development mandate by providing protection and essential services to Palestine refugees in the GS, the WB, Jordan, Lebanon and Syrian Arab Republic. Some 2538519 Palestine refugees are registered in the occupied Palestinian territory, of those 1,515,649 refugees in the GS making up (84.4%) of the respective total resident population of Gaza 1,795,183 (UNRWA, 2018).

UNRWA runs 22 PHC centers distributed all over GG (MOH, 2017). It provides PHC services to the refugee population, and purchases secondary and tertiary care services when needed (UNRWA, 2018).

The first of four human development goals contained in UNRWA's Medium-Term Strategy for 2010-2015, namely "a long and healthy life," articulates the Agency's focus on health as one of the essential components of its support to the needs and rights of Palestine refugees.

This goals mean provides a comprehensive, horizontal, integrated, population focused, and fully structured PHC program in accordance to the life cycle approach to health care that is promoted by the Agency. In order to do so, in 2010, there were a number of activities took place to respond and start implementing the recommendations of its on-going health care reform.

In recent years, UNRWA has made significant improvements to its health services in Gaza, where refugees are assisted from preconception to active ageing through curative and preventive health services (UNRWA, 2016). Since its establishment in 1949, one of UNRWA's main accomplishments has been the significant improvement in the health status of Palestine refugees, and in particular in the reduction of maternal and child mortality (UNRWA, 2016).

1.5.4 UNRWA Reproductive Health Program Including PCC

UNRWA delivers primary MCH care to Palestine refugees, UNRWA reproductive health services include PCC, Ante-Natal Care (ANC), Intra-Natal Care (INC), PNC and Family Planning (FP).

In an era of SDG, maternal, newborn, and child health still require improvement. Despite of the presence of several HCP's those don't all offer the needed PCC service. Facing the economic constraints, and political blockade with the siege imposed over The GS we must reform HCS and our health care service delivery mechanisms. Thus the continuum of care is considered key to improving the health status of these populations (UNRWA, 2016). The continuum of care is a series of care strategies starting from pre-pregnancy to motherhood-childhood. The effectiveness of such linkage between the pregnancy, birth,

and postnatal periods has been demonstrated. However, the notion of PCC is still recent in GG, and currently is fully integrated in PHC services that are provided by UNRWA.

1.5.5 UNRWA PCC Program

The UNRWA PCC program, introduced in 2011, aims to achieve further reduction in infant and maternal mortality (UNRWA, 2016). UNRWA's PCC program has directed its approach to provide PCC in a multidisciplinary rather than a single effort. Technically UNRWA HCP's utilize opportunities with their patients to introduce and assess knowledge, attitudes, and behaviors associated with optimal reproductive health, besides assessing a woman risk before getting pregnant.

PCC offers family physicians health team and their patients an opportunity to discuss the potentially modifiable risk factors that affect future pregnancy outcomes so these can be minimized. It aims to prepare women of reproductive age to enter pregnancy in an optimal health status. During 2017, a total of 37,271 women had been enrolled in UNRWA's PCC program representing an increase of 28.2% compared with 2016 (29,080), (UNRWA, 2018).

PCC is widely recognized as a critical component of the MCH, it comprises a set of prevention and management interventions that aim to identify and modify risks to a woman's health or pregnancy outcome by emphasizing factors that must be acted on before, or early in, pregnancy in order to have maximal impact. PCC consists of six main components; health promotion, counselling, screening, periodic risk assessments, intervention and follow-up and regular folic acid supplementation (UNRWA, 2018). Couples receive counselling concerning the risks of 'too many, too often, too early and too late pregnancy' and on how to prepare for a healthy pregnancy. Women are assessed for risk factors, screened for HTN, DM, anemia, oral health diseases and are provided with medical care where relevant. They are given folic acid supplementation to prevent congenital malformation. Where necessary, couples may be advised to avoid or delay pregnancy using a modern reliable FP method.

Pre-conception risk assessment encompasses a wide range of areas including women's genetic risks, overall health status, reproductive history, exposure to environmental toxins, and lifestyle. Moreover, risk factors such as pre-existing health conditions, exposure to dangerous substances, and engagement in high-risk behaviors (e.g., substance use/abuse,

excessive weight gain, etc.) may increase the potential for adverse pregnancy and birth outcomes.

The comprehensive PCC were initially introduced in 2009 was scaled up in 2010 by consolidating services for couples planning a pregnancy whilst continuing its long standing activity in FP. PCC services became an integral component of the UNRWA health offer and services in 2011 and were operational and fully implemented in all Fields. The PCC program is now part of the maternal health care and fully integrated within the primary HCS.

1.5.6 PCC Services in UNRWA

Couples with conception intentions are counselled and provided with the necessary medical care in addition to folic acid supplementation to achieve several health objectives. The offered medical services aims at improving the overall knowledge, attitudes and behaviors of men and women regarding reproductive health in general, and PCC in particular, managing and controlling factors which contribute to poor birth outcomes before pregnancy, such as prevention and treatment of infections, in particular genital tract infections, management of anemia, controlling chronic medical conditions as DM and HTN, identification and counselling of parents with increased genetic risks, providing them with sufficient knowledge to make informed decisions about their reproductive options and helping them to avoid unwanted pregnancy and how to adjust their lifestyle accordingly, in order to ensure that all women of reproductive age enter pregnancy in optimal health. Once the woman gets pregnant she is further encouraged to have early registration in ANC in order to achieve further reduction in infant, child and maternal morbidity and mortality by preventing or minimizing health problems for the mother and her fetus during pregnancy.

In order to achieve cost-effective, efficient reliable service for all, we should also examine the current services to see whether it’s actually achieved the desired benefit from its establishment and implementation? Or it’s just a cost-time wastage and we shall replace it with another one of more potential developing power.

1.6 Definition of Terms

1.6.1 Preconception Period

PCC service is defined as "a set of interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management" (Centre of Diseases and Control-CDC, 2006).

The preconception period extends from approximately 3 months before to 3 months after conception. Since the average pregnancy lasts approximately 270 days, for the purpose of this study, the preconception period was calculated as the period between 180 and 360 days prior to child's date of birth (Riskin-Mashiah et al., 2014).

1.6.2 Preterm Delivery

Is delivery before completion of 37 weeks of gestation (UNRWA technical instruction 2009).

1.6.3 Low Birth Weight (LBW)

Is infant born to a mother with birth weight below 2500 gm (UNRWA technical instruction 2009).

1.6.4 Subfertility

Generally describes any form of reduced fertility with prolonged time of unwanted non-conception (Gnoth et al., 2005).

Chapter Two

Conceptual Framework and Literature Review

This chapter introduce the Conceptual Framework (CF) of the study, which presents the interlocking process of PCC service delivery and the intervening or influential factors which affect the delivery of service and its related outcomes. It also summarizes the arguments, claims and findings of other scholars, reports, and local studies in relation to PCC services and its impact on mother, and child health.

2.1 Conceptual Framework

As shown in figure 2.1, the researcher adopted the Donabedian model which is composed of a central core; input, process and outcome that side to side forming and interlocking and integrative pathway, that service to deliver the needed service in an appropriate high quality approach (Donabedian, 1988).

The researcher used the Donabedian framework through this study, as this model gives a better information to evaluate PCC service delivery, therefore we can understand it and its biggest impact.

Besides this central core, there are a several influential factors. That interact dynamically with the central core components, the relationship between the core components and the other parallel influential factors are further explained in the next coming section.

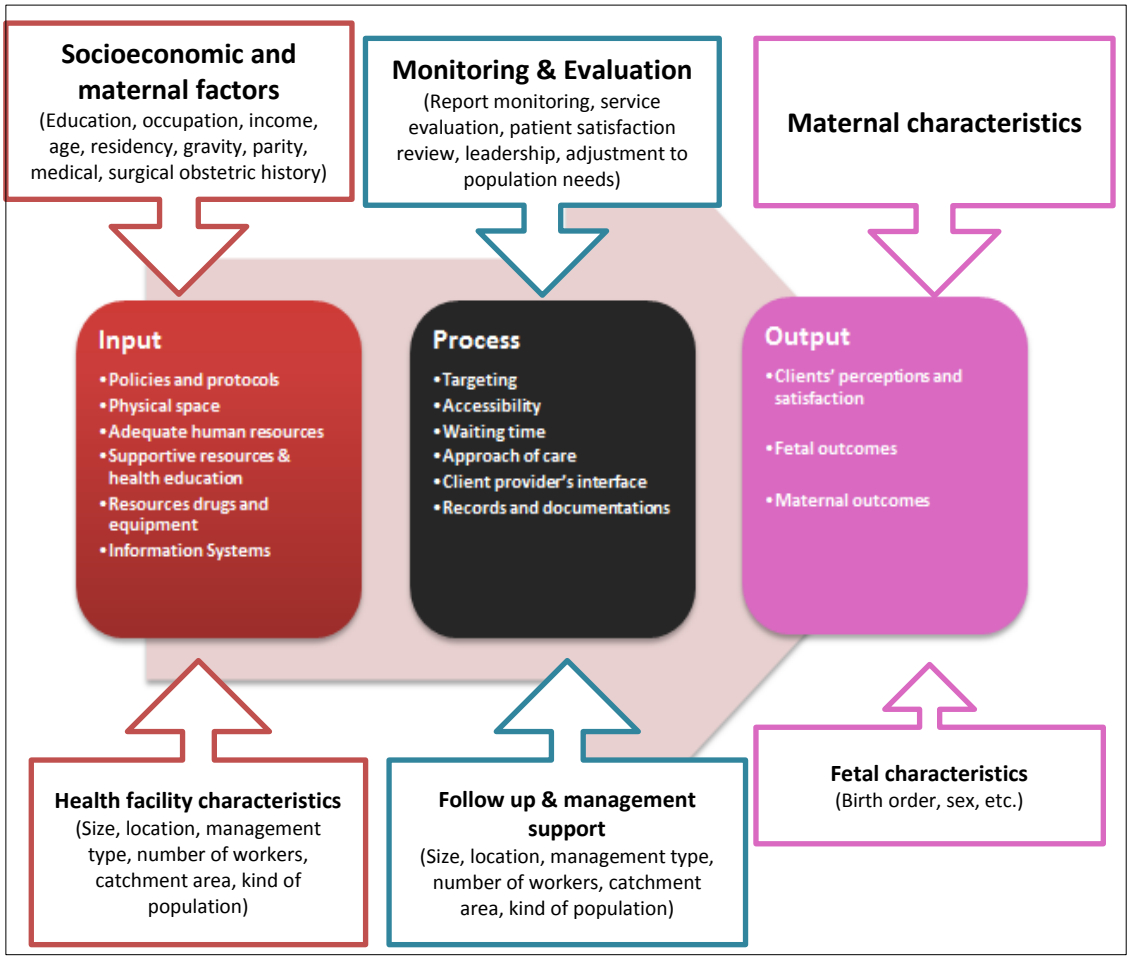

Figure (2.1): Conceptual Framework for PCC Effects According to Donabedian's Model

2.1.1 Core Components

2.1.1.1 Inputs

Include requirements that are necessary for strong performance of PCC. In this domain the researcher focus on the crude availability of inputs at the facility level and reflects whether the systems in place are functioning. Inputs include:

- **Policies and protocols:** Is defined as the complete & clear technical instructions regarding the service delivery. Polices & protocols are important for providing quality care therefore these will be explored in this study. The research considered several issues including: protocols and detailed technical instructions regarding service implementation, to whom the service is delivered, when, how and where to be introduced, when to refer and how to assess the clients and follow up strategy. This also includes technical instructions detailing the rule of each type of HCP, (e.g. midwife, doctor...etc.), standards on writing collective reports regarding the service for the purpose of monitoring and evaluation.

- **Physical space:** The physical space might has an influence on the quality of care delivered therefore the researcher considered it in this assessment. The researcher explored, the actual availability of facilities, including numbers of facilities, and the distribution of facilities, throughout the country. It also includes the quality of the available place, starting from cleanliness, to presence of adequate waiting area equipped with chairs and allows for keeping and protecting the clients' privacy during counselling, availability of entertaining and health promotional materials including brochures and posters.
- **Adequate human resources:** In different wording manpower including all staff members: (Senior Medical Officers-SMO, Senior Staff Nurses-SSN, doctors, nurses, midwives, laboratory technicians, pharmacists, etc.). The researcher explored the availability of a trained workforce, sufficient numbers of health personnel, and the right mix of staff that is well distributed geographically to promote equitable access for the population.
- **Resources drugs and equipment:** The availability of essential medicines for sure had an influence on the quality of acre delivered, the researcher assessed the avlaibility of essential medicines including folic acid, iron, multivitamins, anti-hypertensive drugs, insulin and Oral Hypoglycemic Agents (OHA), vaccines, reliable FP methods and commodities (e.g., urine cups, cotton gauze). It also includes measures of essential equipment, such as scales and thermometers.
- **Supportive resources & health education:** This means the other health promotive materials (posters, brochures, etc.) and the presence of a well-qualified and adequate number of specialized persons to support staff in implementing the service, the searcher measures the availability of a well trained staff at the facility level including gynecologist and psychosocial counselors, a number of easy understood wall paper drawings and health informative brochures that are well written in Arabic and are easily accessed by clients, also reflects the presence of a good referral system for further evaluation whenever needed by specialist gynecologist, or even in hospitals, this sub-domain also includes the establishment of a relationship between the direct HCP's and the psychosocial counselors in the clinic.
- **Information Systems:** The computer and networks systems that provide the information underpinnings for critical infrastructure and operations. The health information system should produce reliable, complete, and timely information that

allows for the use of data for performance management over time. The researcher explored the availability of infrastructure for information systems, including things like internet connectivity and information system hardware, such as computers.

2.1.1.2 Service Delivery Domain (Process)

The service delivery domain reflects the intersection of inputs components (providers, infrastructure, and supplies) and the outcomes side, the specific sub-domains included are:

- **Targeting:** It's the method that summarizes how we select the recipients of PCC from the pool of refugee's women in the reproductive age group to utilize the service. The researcher evaluated the targeting process, by addressing to whom service is delivered for e.g. Including all women in the reproductive age group, or in a precondition such as being married, or wishing to get pregnant, or targeting older aged women due to possibly higher risk of complications, or possibly women who seek FP services, or even visiting the clinic in an ordinary outpatient checkup visit how, and when; for e.g. after giving birth, or being diagnosed with a chronic disease especially HTN or DM.
- **Accessibility:** Access to health care services is the possibility of reaching health care facility and obtaining the required service including medications, and investigations and access to health related information. The researcher evaluated existence of several factors, including ability to afford transportation costs, and access to available drugs, including proper drug dispensing and accurate labeling, ability to cover external medications and needed laboratory investigations costs, and access to health related information. Also the researcher explored causes of being tuned back without receiving the service, physical access related barriers and gave much attention to evaluate clients perception on available physical amenities including adequate space, enough comfortable chairs, clean water for use, clean toilets.
- **Waiting and contact time:** Waiting time according to UNRWA official clinic indicators includes waiting time from registering with the clerk till meeting the doctor. The researcher analyzed in depth this collective indicator includes, waiting in different stages starting by registration officially with the clerk, meeting the Midwife, waiting in dentist clinic, waiting in laboratory for essential tests to be done, and lastly but not least waiting to be seen by the medical officer, lastly to be

returned for the midwife and possibly to the pharmacy, lastly evaluated the waiting time from clients' perspective. Contact time is defined as the time spent with HCP's both the doctor and midwife. The researcher evaluated clients' perception regarding contact time, appointment system efficiency and weather given appointments suites patients and respecting of staff to the appointments they give.

- **Approach of care:** This aspect evolves around the concept of People-Centered Care, the researcher explored issues like meeting clients expectations and needs, appropriateness of providers approach in terms keeping clients' privacy, respecting them through involving clients in the service delivered to them, and skillfulness of HCP's that includes several factors such as coordination and care continuity, information and management continuity, comprehensiveness, and safety besides use of best practice.
- **Client provider's interface:** This aspects means the communication between HCP's and the recipients of service. The researcher explored issues like the presence of competent, motivated providers at a health facility when patients seek care, communication between patient and health providers starting from welcoming and introducing themselves to clients, respect of clients including respect for dignity, autonomy and confidentiality, client orientation including prompt attention, keeping eye contact, minimizing interruptions in the sessions, providing adequate and clear explanation and consultations regarding one's health condition, providing them with needed health advices and allowing them to ask freely about their concerns, and protecting their right to choose among HCP's, and finally the researcher evaluated the overall satisfaction of clients' and their families on the care they received from each single HCP.
- **Records and documentations:** Safe care determines whether safe practices are being routinely followed.

2.1.1.3 Outcome Domain

PCC Outcomes are influenced by inputs & process. The PCC CF outcomes subdomains are:

- Positive clients' perceptions and satisfaction from the service: The researcher explored several issues like, clients' willingness to recommend service to others, perception of service importance, clients' overall impression about each

components of received service, clients overall satisfaction from each single provider, and the perceived health impact of the service upon recipient's and infant's health.

- Positive fetal outcomes: The researcher compared between both groups of respondents in terms of gestational age including a comparison between them in premature and postdate deliveries, existence of fetal distress and therefore the need for Neonatal Intensive Care Unit (NICU) admission, developing neonatal jaundice, presence of congenital anomalies, and also compared the birth weight of both groups with a special focus on percentage of LBW and macrosomia among infants of respondents in both groups.
- Positive maternal outcome: The researcher compared both groups of respondents in terms of emergence of complication during pregnancy like (anemia, genitourinary tract infection, etc.), percentage of delivery and post-delivery related complications like (obstruction, bleeding, etc.) and method of delivery with a special focus in need for C/S delivery.

2.1.2 Influential Factors

2.1.2.1 Follow up and Management Support

This factor includes effective leadership training and standardization of best practices.

2.1.2.2 Health Facility Characteristics

There are various characteristics that would affect people needs and perspectives, those factors might be related to the PHC facility location, size, type of facility, manger type, catchment area, kind of population served, size, and number of workers.

2.1.2.3 Socioeconomic Factors

Socioeconomic factors are the social and economic experiences and realities that help mold one's personality, attitudes, and lifestyle. This subdomain includes education as an indicator of socioeconomic status, occupation, income, poverty and wealth.

2.1.2.4 Monitoring and Evaluations

This subdomain includes the frequent monitoring and final evaluation of the implemented health care interventions. This includes monthly monitoring the newly registered to PCC

services, the researcher identified the factors that hinder people utilization of PCC service, or that might limit people involvement in implementing health interventions such as compliance with medical advice and cooperation in enhancing their own health status. In addition, evaluating health services through frequent measuring of clients' satisfaction levels and the extent of meeting their expectations and involving them in evaluating provider's performance.

Monitoring and evaluation enable the provision of effective services, and thus understanding the systems context is critical to explain determinants of PCC performance. System characteristics include:

- Leadership: This subdomain includes regularly disseminated policies that reflect the importance of PCC, policies that promote equity; quality management infrastructure, including licensing and accreditation, standards of care, consistency in standards of care, community engagement and social accountability.
- Adjustment to population health needs: This subdomain reflects the need for a PCC system to monitor and adapt to population needs. It includes specific areas such as disease surveillance, priority setting, and innovation and learning.

2.1.2.5 Maternal Related Issues

Other factors are related to clients themselves such as demographic characteristics, distance between health facility and their homes might have an effect on their utilization of the service, maternal age, general health status, gravity and parity status, history of complication in previous pregnancies, history of congenital malformations in one of her ex-born children, maternal level of education and occupation, living in a nuclear or extended family, previous obstetric experience.

2.1.2.6 Fetal Related Issues

This subdomain includes factors as birth order, and the sex of infant.

2.2 Literature Review

2.2.1 Definition and Scope of PCC Service

PCC is commonly used to described activities to determine and prevent pregnancy-related health problems, hence PCC could be defined as "the provision of biomedical and behavioral interventions prior to pregnancy in order to optimize women's wellness and subsequent pregnancy outcomes with the aim to improve not only fetal, infant, and maternal health, but also the health of the whole family and the future well-being of the offspring" (Berglund and Lindmark, 2016). Moreover, PCC concept involves every single action which might enhance the health status of female in the reproductive age which include clinical, educational and psychological counselling (Berglund and Lindmark, 2016).

The American College of Obstetricians and Gynecologists and American Academy of Pediatrics have identified the main components of PCC that are necessary for strong performance of PCC, under 4 groupings of interventions: maternal assessment, vaccinations, screening, and counseling and responsiveness to changing needs of clients (Atrash et al.,2006). The goal of the preconception visit is to recognize medical and social conditions that can be optimized before conception to promote the possibility of a favorable outcome (Jourabchi, 2018).

Responsive PCC program protects people from catastrophic impacts of illness and assures protection of people through a holistic and integrated lifecycle approach (Dudenhausen et al., 2013). PCC program that is more responsive to what people want and expect can also assure better utilization of health care services as people anticipate being treated well (Royal College of Obstetricians and Gynecologists -RCOG, 2017). There are seven elements of responsiveness titled by two main items; the first item is "respect for persons" which includes dignity, autonomy and confidentiality of information. The second item is "client-orientation" which includes communication, prompt attention, quality of basic amenities, access to social support networks during care and finally choice of care provider (Darby et al., 2000).

World Health Organization (WHO) has adopted a new policy brief regarding PCC (WHO, 2013), in which WHO had shade the light over important facts that must be taken into considerations in order to plan for a successful PCC program; approximately 4 out of 10

women report that their pregnancies are unplanned (Singh et al., 2010). As a result, essential health interventions provided once a woman and her partner decide to have a child will be too late in 40% of pregnancies (Singh et al., 2010). Thus PCC is considered the entry point to a healthy reproductive life (Jaaron, 2012).

During delivery of PCC the provider should know about patients' preferences, needs, and values. Also, enhancing patient-cooperativeness in PCC could start from understanding how patients view the care they receive from their PHC clinicians, how well that care is addressing their concerns, and what changes in practice would be most effective for them (RCOG, 2017). That's why PCC service providers who always eager to know and learn about people views and perspectives succeeds more in earning people trust and improve health care provided and allows for ongoing quality improvement in health care services (RCOG, 2017).

A high quality PCC plays an important role in promoting health, and improving maternal and neonatal outcomes and is fundamental service that links the pathway and completes the lifecycle approach (Dudenhausen et al., 2013). Indeed, PCC is widely recognized critical and essential health care component where empowering men and women in the reproductive age and thus embowering healthy lifestyles that will end up with a strong and healthy communities (Dudenhausen et al., 2013).

2.2.2 PCC Services Delivery Process

There are several factors that determine appropriateness of PCC delivery. Good communication between HCP's and patients is one of the important factors that motivate patients to utilize the service, and can achieve the desired outcome. It's the corner stone of quality medical care (Freeman, 2015). The importance of interpersonal relationship between providers and patients should guarantee privacy, confidentiality, informed choice, concern, empathy, honesty and sensitivity (Murray & McCrone, 2015). Therefore, HCP's should be talented and experts in the art of health care delivery and the way of interaction with recipients of health care in order to properly and effectively deliver the health messages and reach people minds and hearts. Respecting the clients who seek medical service is an important factor that indicates good relation between the health provider and the client (Murray & McCrone, 2015). People prefer to be talked to and their opinion to be appreciated whenever persons who can make decisions regarding their own health contact

them (Freeman, 2015). Therefore, a great respect and appreciation for their knowledge and feelings about their condition should be visible for them (Luxton, 2014). The technical or clinical performance alone is not sufficient, instead interpersonal relation between the patient and the provider side by side with the good clinical skills, is an important part in practitioners' performance (Luxton, 2014). The importance of communication rises from the fact that good interpersonal discussion gives the patient the chance to communicate the necessary information that will help the doctor in diagnosis as well as detecting clients' preferences. This will help in selecting the most appropriate methods of care; In addition, it allows the provider to clarify the nature of the illness and its management this would motivate the patient for active collaboration. Collaboration is the vehicle by which technical care is implemented and on which its success depends (Murray & McCrone, 2015).

Regarding health care services in Palestine, communication and information sharing is considered as weakness points that should be further worked on and improved in order to enhance interaction between health providers and patients (Hamad, 2009).

2.2.3 Accessibility

Another factor that reflects the appropriateness and the quality of PCC services, is access. Access is one of the important playing factors for the success of any program, and especially in the reproductive health services including PCC program (Jacobs et al., 2012); it's obvious that assuring proper access would enhance the relationship between clients and health facilities. Access to health facilities doesn't mean the ease of reaching the health facility only. But instead defined as patient centered access in different wording by the patients' feasibility to have the needed relevant medical intervention whenever required (Jacobs et al., 2012). They defined four main characteristics for patient-centered access, they were availability including physical and financial affordability, appropriateness which means obtaining proper levels of care without affecting medical technical standards, access to preferred provider or specific medical service, and finally timeliness (Jacobs et al., 2012). In their study they pointed that improving access according to their definition would enhance safety, effectiveness, patient centeredness, timeliness, efficiency and equitability of health care services delivery (Jacobs et al., 2012). Another important aspect of physical access is the approach of patient's reception in the PHC. It is an important determinant that could positively or negatively influence the physical access.

Generally, In GG there is a good physical access to UNRWA PHC health facilities as 22 clinics distributed all over the 5 governorates (UNRWA, 2016). However, people need more proper reception and treatment and it is well known that appropriate reception and comfort in health facility would increase the utilization of services through it. Furthermore, the cleanliness, comfort and availability of basic requirements (such as drinking water) is an important factor that could affect the physical access to clinics. Financial access is an important factor for access as well.

Knowing that UNRWA offers its services free of charge doesn't alone relief the clients from the heavy burden of the cost of health services, this should be considered as poverty levels have increased and it might affect on people ability to reach the clinics, or even afford the cost of transportations which dramatically will decrease utilization of health care services in general as well as reproductive health services and especially the PCC as its considered resembling to screening service. Recently, the sharp deterioration in economic levels for Gazans might affect on their ability to optimize their health through its effect on their access to PHC facilities (PNGO, 2009). Another important determinant of client-centered access is the access to information, it's defined as the ability of the clients to know the accurate, sufficient, clearly presented and honest information regarding their own health, people they care for and general public health concerns (Fenton et al., 2012). It is known that the extent to which routine medical consultations improve patient knowledge about their disease and treatment options is essential to assure implementation of health interventions (Fenton et al., 2012). Moreover, continuity of care depends on ensuring continuity of adequate information (Fenton et al., 2012).

2.2.4 Waiting Time

Another important factor that mirror image the excellence, appropriateness and the quality of healthcare services is the time factor (Murray & McCrone, 2015). In particular, people have the right to be cared and treated with dignity and have the right to expect that their needs will be met without unnecessary delays in waiting to be seen, examined, diagnosed and treated (Anderson et al., 2007). This will help to offer not only better health outcomes, but also will show respect for patients and to reduce their anxiety (Murray & McCrone, 2015). According to the access to health services survey, 29.5% of persons had to wait for too long before receiving the service (PCBS, 2004). Whenever patients have to wait for a long time, they feel that their time is un respected, in the other hand when some patients

does not have to wait too long as they have some sort of help, or know someone who can ease their entrance while others have no option but to wait; they feel angry and frustrated from lack of equity in health care facilities. Those emotions would definitely create feelings of disrespect of patient towards the HCP's (Anderson et al., 2007 and Luxton, 2014). Moreover, according to a study done by Murray & McCrone, (2015) long waiting times might decrease patients' access to the health facility this will hinder both registration as a new PCC service recipients and even will hinder follow up if a dangerous conditions necessitating more than one visit for a better control for e.g. Pre-pregnancy chronic diabetes or HTN. Patient's satisfaction could be further affected by long waiting times and this would have negative impact on the desired health outcomes (Eilers, 2004 and Luxton, 2014).

2.2.5 Approach of Care

This subdomain represents how raw inputs are transformed to provide PCC services. In this domain, we measure first the presence of competent, motivated providers at the health facility when patients seek care. Second, respect for persons including respect for dignity, autonomy and confidentiality. Then, client orientation including prompt attention, choice of provider and assures the quality of basic amenities. The researcher assessed the applicable factors that represent the responsiveness of HCS from clients' perspectives.

2.2.6 Client Providers Interface

In order to provide an optimal care and to enhance the quality of the PCC service provided, it's necessary to build on the participation of individuals and communities within the PCC program from the beginning (WHO, 2015). Considering engaging women and their partners in reproductive health care including PCC and FP is one of the domains of quality improvement of reproductive health services procedures (WHO, 2015).

The importance of this domain rises from the fact that individuals and communities play vital direct and indirect roles within HCS. For example, patients should work in partnership with health providers to manage their own care and adopt healthier choices to improve their health. By the end of the day, people decide what the acceptable and beneficial things in health care are and what the unacceptable things in the whole care process are. However, because of the over crowdedness within the UNRWA PHC context, and the need to deliver the service for all the clients visiting the clinic in a usual working

day, it seems that the interaction with patients "contact time" is still short, it's mentioned in the last UNRWA report that its improved it to 2.7 minutes (UNRWA, 2016), this time seems to be very minimal, and much yet needs to be done for further improvement. In addition, after the introduction of the family health team approach, there are low levels of clients participation in decisions related to choosing health provider as they are assigned to a team of HCP's and should fully receive their own health services, and the health services for their own family too through that team (UNRWA, 2016). This could hinders clients' autonomy where the client has the right to be involved in decisions related to his own health. Again because of multiple factors including heavy work load and long waiting time, people involvement in implementing health care interventions also is not considered. Which means that the service provisions ends at orally saying to the PCC recipient a few health advices, without sharing with the client what she knows or practice in her daily life, clients involvement is the way of sharing responsibility between health provider and the clients after providing them with the required information that assure their informed choice and good adherence to treatment plans (Luxton, 2014). In other terms, this could be described as clients' autonomy where the client has the right to be involved in decisions related to his/her own health. This can be devastating to the clients who need more attention as they are already healthy, and seeking to get pregnant, and are afraid of the potential problems that might occur during pregnancy. Another important aspect of client's involvement in health care services is sharing and involving them in evaluation by conducting sustainable satisfaction surveys to ensure representation of client's opinions about the services and evaluating providers' performance as well (Luxton, 2014). This is the key to detect people preferences and considering their needs which is an important determinant of the success of PCC service.

Knowledge and information about PCC in the academic literatures were assessed and consolidated by Hemsing, Greaves, & Poole (2017) using a scoping review methodology by identifying 29 interventions evaluations. Results revealed some progress regarding PCC interventions with most of assessed interventions found evidence of improvements in some of the evaluated health outcomes. On the other hand, there is a need or inclusion gender transformation principles in PCC which should include additional interventions design for men and other ways of how to deliver PCC.

2.2.7 Clients Satisfaction

WHO considers client's satisfaction from HCS an important indicator for evaluating their performance. It is well-known that recipients of health care services evaluate its quality according to the extent of meeting their needs and expectations, while health providers concentrate on technical performance and adherence to standards. Joining between recipients and providers' thoughts about quality of health services would increase the like hood of the desired health outcomes for individuals and populations (Bitton et al., 2018).

Meeting people's expectations increased their satisfaction and creating satisfied clients is an important indicator for the success of health services including PCC (Veillard et al., 2017). Meeting people expectations start with understanding what matters to patients and how their preferences affect their behavior (Veillard et al., 2017). Although people expectations differ, there are some common characteristics that most of them look for. Good diagnosis and adequate treatment in addition to receiving sufficient information on their health problems and treatment (Veillard et al., 2017). That's why clients centered practice became an important biller for quality improvement for health care services including PCC services.

2.2.8 Maternal Outcomes

The MMR is high in Palestine (UNICEF, UNFPA, WHO and The World Bank estimates, 2015). It has improved from more than 55 per 100,000 live births in 1999 to around 24 in 2014, these estimates rank Palestine 83rd among world countries and12th among Arab countries in MMR. Yet the rate of reduction in MMR is 3.6% per year, less than the Millennium Developmental Goal 5 target of 5.5% annual reduction. As mentioned earlier the reported MMR in Palestine in 2016 was 13.8 per 100,000 live births; 12.4 per 100,000 live births in WB and 15.5 per 100,000 live births in GS In 2016, the number of maternal deaths recorded in Palestine were18 cases, including 9 in WB and 9 in GS. While in 2015, the MMR reported in Palestine was 15.7 deaths per 100,000 live births; 7.2 per 100,000 live births in WB and 25.9 per 100,000 live births in GS. In 2014, the reported MMR in Palestine was 24.7 deaths per 100,000 live births. The majority of these deaths could have been prevented. (MOH, 2017).

MM is known to represent the "tip of the iceberg". There is a consensus that for each case of mortality, 30 cases of morbidity develop (UNRWA, 2015). To be considered increasing

maternal age is an independent and substantial risk factor for adverse perinatal and obstetric outcomes. The majority of adverse perinatal outcomes are associated with a maternal age ≥35 years as follows: older women appear to have increased incidence of adverse fetal outcomes including: increased incidence of LBW (Ziadeh & Yahaya 2001 and Gibbs C. et al., 2012), Special Care Baby Unit admission (SCBU), and low 1-minute Apgar score. LBW from growth retardation or prematurity is a risk factor for asphyxia, birth injuries, and susceptibility to infection (Koo et al., 2012), Down's Syndrome occurs at a higher rate in women aged >35y than those <25 y, the chance of its occurrence is 1 in 40 women & 1 in 400 women consecutively (Hultén M. A. et al., 2010). The maternal age effect originating from the accumulation of trisomy 21 oocytes with advancing maternal age (Ghosh S. et al., 2011). The chances of miscarriage for a woman under age 25 are only 1 in 400, after the age of 35, the rate jumps to 40 in 100 pregnancies (Prendiville, 2002 and Gibbs C. et al., 2012). As well as women aged ≥30 years had greater risks for adverse maternal outcomes such as: GDM, pre-eclampsia, and placenta previa (Koo et al., 2012). Older nulliparous had an increased incidence of mal-presentation, abnormal labor patterns, and cesarean delivery (Koo et al., 2012). Older multiparous were more likely to experience birth asphyxia, premature rupture of membranes, and antepartum vaginal bleeding (Jahromi, & Husseini, 2008; and Koo et al., 2012). Moreover, the maternal medical conditions that can affect mothers as well as their infants become more common as increasing maternal age for example, uncontrolled maternal diabetes, can lead to congenital malformations, and maternal HTN can cause fetal distress (Jahromi, & Husseini, 2008; and Koo et al., 2012).

Considering again maternal age as a risk factor, the Palestinian community have high rate of child marriage and pregnancy. In the WB the legal age of marriage for girls is 14.5 (16.5 in Gaza) (PCBS, 2015). Among married women, 23% were girls younger than 18 (PCBS, 2015). The end result of this is that nearly 30% of girls in Gaza and 25% of girls in the WB are pregnant before they turn 18 and about half are mothers before age 20, (Miftah et al., 2015). Furthermore, one-third of marriages occur between first-degree relatives, which drives the country's relatively high rate of birth defects. (Miftah et al., 2015). Moreover, adolescents (particularly < 15) experience a maternal death rate 3 times greater than that of mothers aged 20–24 (Sundby, 2010). Common medical problems among adolescent mothers include poor weight gain, Pregnancy-Induced Hypertension (PIH), anemia, and cephalo-pelvic disproportion (Gibbs C. et al., 2012).

2.2.9 Effect of PCC on Maternal Outcomes

If a proper intervention to women were given in PCC at least 20% of MM worldwide that is attributed to maternal undernutrition and iron-deficiency anemia could be prevented (WHO, 2013), thus more efforts are needed to address the numerous potentially modifiable risk factors that can impact negatively on MCH, so that we can further reduce both IMR & MMR according to national plans. PCC offers mother an opportunity to discuss their potential risks before getting pregnant, including: maternal age, parity status, previous surgical, obstetric or medical history, and life style (activity level, eating habits, smoking, obesity, etc.).

A systematic review study was conducted by Hussein, Kai, and Qureshi (2016) to assess the effectiveness of preconception activities on enhancing reproductive health and maternal outcomes in a PHC facility. The authors reviewed and analyzed several studies form 1999 till 2015 and identified 8 eligible Randomized Controlled Trials (RCT) and conducted the subsequent appraisal and analysis. The level of interventions in these studies ranged from multifactorial or single maternal health risk assessment and counseling. The intensity of interventions ranged from daily to weekly sessions. The most important findings of such study revealed a moderate evidence that multifactorial and single risk activities have enhanced maternal knowledge, behavior and practices in addition to risk behaviors. Moreover, it was indicated that women who got preconception education and counseling demonstrated better and improved knowledge, self-efficacy and controlled health behaviors (Norita, Kai, and Qureshi 2016).

Another cross sectional study was conducted in Turkey by Yurtsever & Set (2018) to evaluate PCC counselling and status of pregnancy planning in order to identify its' correlation with folic acid knowledge and use among 199 pregnant women using a standardized questionnaire and interviews. Results of this study showed that 63.85% of women planned for a current pregnancy, also those on regular folic acid supplements was 62.8%, 10% of them started to use it before getting pregnant. Also, in pregnant women with preconception counselling; the rate of pregnancy planning, using folic acid before pregnancy and knowing that folic acid prevented birth defects were higher ($p<0,05$). The study indicated that there was no adequate PCC in the study setting so all HCP's should be advised to pursue delivering appropriate PCC services.

A systematic review and meta-analysis were conducted by Dean et al., (2013) in order to review relevant studies about the effectiveness of PCC on newborn and maternal outcomes in low income countries. The study reviewed several observational and RCTs. The most significant findings of this study found that women who received PCC services in either a primary or secondary health care facility demonstrated better maternal and neonatal clinical outcomes. Such outcomes included good consumption of folic acid, improved breastfeeding activities, good seeking of antenatal practices and decreased neonatal mortality. It was concluded that PCC is essential in enhancing pregnancy outcomes in a variety of contexts (Dean et al., 2013).

In Belgium, a cross sectional study was conducted by Goossens et al., (2018) to assess lifestyle modifications associated with preconception and other associated factors in order to examine the prevalence of risk factors of adverse pregnancy outcomes. The authors used secondary data to answer research questions through observing lifestyle changes in the first 5 days after delivery through applying the validated London Measure of Unplanned Pregnancy which assessed folic acid or multivitamin intake, smoking and alcohol stoppage, caffeine reduction, eating healthy foods, reducing weight, seeking health advice and any other told lifestyle modification. Results of this study showed that 83% of women indicated more than 1 lifestyle modification in preparing for pregnancy. Also nulliparous women, those with previously malformed baby and those with a past miscarriage demonstrated more readiness to be prepared for pregnancy however, women with difficult living conditions or with low education have a lower likelihood to be prepared for pregnancy. Results also revealed that 48% of women sought health advices regarding preconception and 86% sough such advice from HCP's. Also, 77% of women who did not have improved lifestyle before conceiving reported 1 or more risk factors of adverse pregnancy outcomes. The authors indicated that women who are nulliparous and those with low socioeconomic status were less possible to modify their lifestyles prior conception. Hence, plans to enhance preconception health among women should be responsive to their needs in order to be less resilient for changes (Goossens et al., 2018).

In Iran, a quasi-experimental study was conducted by Jourabchi et al., (2018) to assess the association of PCC with the risk of adverse delivery outcomes. The authors compared two groups which included maternal health care program of PCC and another group of standards maternal health program of women treated in maternal health clinics. Sample

size was 152 and 247 women aged from 16 to 35 years old who were registered in those clinics. The authors identified birth outcomes which included LBW, preterm, mother and new born adverse outcomes in addition to the delivery mode either vaginal or CS delivery. The most important results of this study showed a positive correlation between PCC and the risk of preterm birth where such care was related to reduced risk of preterm delivery, reduced risk of LBW, reduced maternal complications and reduced newborn complications. It was concluded that PCC has several advantages of reducing adverse delivery outcomes (Jourabchi et al., 2018).

Voorst et al., (2015) conducted a study to evaluate the effectiveness of PCC activities on improving pregnancy outcomes using a prospective cohort design in 14 area which have increased perinatal mortality and morbidity. The authors used Andersen s' model of health care utilization which assessed health care uptake from a social point of view which was done through targeting 839 women in the reproductive age from 18 to 41 years. The study sample have received 1 preliminary risk assessment and management in addition to 2 follow up consultations in order to evaluate the compliance with treatment management plan. Findings of this study showed a positive behavioral modification with using folic acid supplements, stopping smoking, alcohol and illegal drugs (Voorst et al., 2015).

2.2.10 Fetal Outcomes

A worldwide used indicator of the overall health of any nation is IMR. The Palestinian IMR is higher than the majority of other Middle East and Arab countries- (MEAC) and has remained relatively unchanged in the past decade (MICS, 2014), and remained at 20 deaths per 1000 live births (UNFPA, 2016). Reported IMR in Palestine in 2016 was 10.5 per 1,000 live births. (MOH, 2017).

Respiratory diseases, prematurity and LBW, and birth defects account for the majority of infant deaths in Palestine, and interventions aimed at improving ANC have not been able to substantially improve these outcomes (PCBS, 2013 and MOH, 2017).

Moreover, though IMR is declining significantly over time, a follow up study conducted in 2015 has revealed that the trend of IMR among Palestine refugees in Gaza slightly increased from 20.2 in 2008 to 21.3 in 2015. (UNRWA, Annual Health Report, 2017).

Although potential risks to the adolescent mother are serious, the risks to the infant she delivers are even greater, stillbirths are 50% higher among babies born to mothers < 20 years than those born to mothers aged 20–29 years, and the younger the mother, the higher the risk (WHO, 2015). Infants born to mothers <15 years of age are two times more likely to weigh less than 2,500 grams at birth, 3.4 times more likely to have a preterm birth and three times more likely to die in the first 28 days of life than infants born to older mothers (Rosengard et al., 2004 and Jourabchi et al., 2018). The incidence of sudden infant death syndrome is higher among infants of adolescents, and these infants also experience higher rates of illness and injuries (Malloy, 2004 and Jourabchi et al., 2018).

Its noticed that the proportion of the Palestinian population with some form of disability has increased significantly, about 1.4% of the Palestinian children in Gaza have a disability, congenital causes lies second to illness (PCBS, 2011), and is also the second leading cause of infant death in the GS according to the last study done by UNRWA in 2015. Moreover the incidence of Neural Tube Defects (NTD) was 3.3 before 2009, increased to 8.8 after the war on Gaza in 2008, thus the incidence of NTD is (4.99 per 10000) monitored between Jan- 2006 & April 2010 (Jadallah, 2010). Children with Disability (CWD) face many challenges, and experience multi-layered vulnerabilities and numerous developmental trajectories, they are pushed out from the community to an inferior position, thus limiting their opportunities for the future. Studies done by The Medical Research Council Vitamin Study Research Group (1991), suggest that folic acid administration before conception had a 72% protective effect among women at risk of a recurrence of NTD, thus its recommended to consume folic acid before conception and through the early months of pregnancy. A finding that led to the CDC recommendation that women with a history of NTDs who are planning another pregnancy take 4 milligrams of folic acid daily beginning 1 month before conception and continuing through the first 3 months of pregnancy (CDC, 1991). And was then recommended for all women (CDC, 1992).

2.2.11 Effect of PCC on Fetal Outcomes

Women seek ANC usually after missing one to two menstrual periods, missing the golden time for certain diagnostic and clinical interventions, during this time the conceptus has already completed a critical interval from implantation in the uterus, to organ development, and the opportunity for pre-pregnancy preparedness has already disappeared.

PCC offers the mothers an appropriate counseling and services that definitely decrease risk of IM and risk of LBW and reduce risks to the fetus and infant including spontaneous abortion, chromosomal defects, congenital malformations, fetal distress, and LBW (Dudenhausen et al., 2013).

In Iran, a study was conducted by Jourabchi et al., (2018) to assess the correlation between PCC and negative birth outcomes using a quasi-experimental design to compare 2 groups, the first group were incorporated in a comprehensive MCH program, in which women received PCC and the other from a standardized MCH program without receiving PCC in mother health clinic. The study sample included 152 and 247 women in the reproductive age from 16 to 35 years old. The authors measures birth outcomes which included LBW, preterm delivery, mother and new-born complications, and method of delivery using multiple logistic regression to identify the effect of PCC. Results revealed that PCC was associated with lower risk of preterm birth, LBW, maternal complications, and neonatal complications. The authors concluded that PCC had several advantages related to reducing negative birth outcomes (Jourabchi et al., 2018).

Chapter Three

Methodology

This chapter present information about the methods used in applying this study. It describes the design of the selected approach (methodology), study population, study setting, study period, and study sampling. It also describes the qualitative part, eligibility criteria, data collection tools, data collection procedure, data entry and analysis, scientific rigor, pilot study and ethical considerations.

3.1 Study Design

This study adopted a quasi-experimental mixed method design, in which data had been triangulated, combined both, quantitative and qualitative methods. It was used to ascertain the extent to which UNRWA PCC services had helped in promoting MCH outcomes and to evaluate if it was successful in reducing unwanted pregnancy outcomes to both mother and child. This triangulation of methods approach involved sequencing data collection: quantitative data were collected first (interviewed questionnaire with clients both recipients and non-recipients) and a comparison between both groups were done in terms of demographic, socioeconomic characteristics and then they were compared in reference to infant and maternal health related characteristics and outcomes for both mother and baby; The qualitative component carried out after the quantitative one in order to explore issues that emerge from the quantitative study and primary findings of the quantitative study were used to inform qualitative data collection (in depth interviews with key health providers and community leaders) to validate findings from one method with another, or to enhance understanding of the facts on the ground (Hamad, 2009).

This was also complemented by records checks, where each filled questionnaire was checked to validate respondents answers regarding several issues like, regularity and number of PCC visits, verification of care provided, aspects of received service, existence of previous medical conditions like (anemia, HTN, DM, etc.), review medications history and received supplements including iron and folic acid, to confirm emergence of complications in pregnancy like (anemia, PIH, GDM, etc.), medical records were also looked for to confirm and double check gestational age, birth weight of infant, existence of jaundice, any discovered congenital anomalies on newborn exam, and if the infant were admitted to NICU.

3.2 Study Population

The study includes several populations.

3.2.1 Quantitative Part

Refugee women in the reproductive age 15-49 who gave birth and came for vaccinating their most recent born child, within the study period and their electronic records. According to UNRWA Health Department Collective Report (2016), the no. of registered refugee's women is 39434, out of them 26% received PCC 10252 and the comparison group represents 74% those who didn't receive PCC before their conception 29182.

3.2.2 Qualitative Part

The first population is refugee women in the reproductive age 15-49, who gave birth and came for vaccinating their most recent born child, within the study period and their electronic records. The second population is HCP's and policy makers at UNRWA level.

3.3 Study Setting

The study took place 5 randomly selected UNRWA-PHC centers, one from each governorate.

3.4 Study Period

The study was initially proposed in 2018. The research proposal has been submitted to and defended in front the SPH assigned committee in May 2018. Then the researcher sought Helsinki approval, and got it, upon approval, the required tool was developed. The arbitration stage lasted for 11 weeks including refining of tools in the light of reviewer's and the academic supervisor's feedback. The tool was ready to go in June 2018, however the researcher waited for approval from UNRWA special research committee, the approval took 2 months period. In August 2018 the researcher has contracted 3 data collectors, they were medical students in their final year, and carried out the required training prior to piloting and field work. Piloting took place between 5 and 22 August 2018, Actual data collection started on first of September 2018 through 28 December 2018.

Initial analysis of quantitative data took place between December 2018 and January 2019, prior to the last stage of data collection and validation which took place in February and

March 2019 (Qualitative data collection stage). Compiling data results and reporting started before and in parallel to qualitative data collection. The researcher extracted findings, created descriptive tables and performed inferential statistical analysis, and then explained findings through linking them to relevant pieces of the literature and inputs obtained during the FGDs. The drafted report "thesis" has been frequently enriched and edited by the research supervisor. The final draft of the defense was handed on 15 April, 2019.

Annex (1) describes the activities of the research and the duration for each activity.

3.5 Inclusion Criteria

3.5.1 Recipients

Women are considered eligible if they:

1) Being a refugee woman, in the fertile age group 15-49, who gave birth during the study period 2018, and came to vaccinate their most recent born child
2) Was registered in the PCC program before conception and received the services for at least 3 months before conception.

3.5.2 Non-Recipients

Women are considered eligible if they:

1) Being a refugee woman, in the fertile age group 15-49, who gave birth in the study period 2018, and came to vaccinate their most recent born child.
2) Was not registered in the PCC program before conception.
3) Are comparable in age (a difference of 3 years was accepted) and (place of residency) to the intervention group.

3.6 Exclusion Criteria

All who didn't meet eligibility inclusion criteria.

3.7 Sample and Sampling

In order to calculate the required sample, the researcher used Epi-Info sample size statistical calculator and the results indicates that a representative sample should be at least

370 participants from PCC recipient's category and 379 from non-recipients (Annex 2 and 3). The researcher used the following parameters for sample calculation;

- A maximal acceptable percentage points of (confidence interval 5%)
- Confidence level 95%.
- Estimated percentage level of the dependent variable 50%.
- Total eligible PCC recipients' population 10252, and total eligible non-recipients population 29182.

The researcher increased the sample up to 400 participants from each group, to cover for possible non respondents and also to increase the statistical power.

For the quantitative part; stratified random sampling technique was used to select 5 PHC clinics from the 22 clinics. One in each Governorate). Both recipients and non-recipients were selected from the same chosen clinic at each governorate.

A total sample of 800, were divided to 400 from intervention group (PCC-recipients) vs 400 from the comparative group (non-recipients), clients were divided among GG areas according to their representation from the total number of deliveries (stratified sample). Then, the researcher systematically selected clients who are visiting the clinic (convenient sample) within three months.

For the qualitative part; a non-probability purposive sample of 11 KIs were selected. The KIs sample included two UNRWA health care policy makers to reflect people concerns and opinions and to figure out impact and sustainability, 9 KIIs direct HCP's to discuss program processes and dynamics.

Regarding beneficiaries, purposive sample composed of 60 participants, were selected and called on voluntary basis from both PCC recipients and non-recipients with variations in experiences with the program services and outcomes. Those were divided further into 6 different FGDs, 3 for beneficiaries and 3 for non-beneficiaries, each FGD contain 10 participants. The researcher paid attention to select women in a way that ensures they represent various fertile age groups, various gravity and parity categories, areas of residency, and focused also on presence of specific conditions such as chronic morbidity, illness, maternal complications necessitating hospitalization, near miss, history of

premature delivery, fetal death, disability or violence in the household and, where possible, overlap with respondents of the quantitative survey, to enhance data triangulation.

3.8 Data Collection Tools

3.8.1 Quantitative Part

The main tool that used is an Interviewed structured questionnaire for refugee women, composed of **190 question** that were self-constructed and consistently enriched by supervisors' inputs.

The questionnaire contains 3 main sections; the first were asked to both recipients and non-recipients and was further divided into subsections that included:

1. General information including sociodemographic and economic variables for clients.
2. Maternal medical and surgical history and obstetric related health characteristics of the mother including (any complications occurred in her last pregnancy, any complications occurred during the early postnatal period necessitating medical intervention).
3. Outcome of pregnancy to the mother and her child (gestational age, type of delivery, birth weight, hospitalization, baby status...).

The second and third sections were questioned to PCC recipients only. The second section contains 39 scale questions which come under 4 subsections. Questions seeks respondents' scale rating of their experiences, feelings and opinions related to the characteristics of the PCC service they received such as appropriateness of service delivery; continuity of care and care coordination; beneficiary provider interface; and barriers to the service. In addition this section includes 3 different subsections composed of questions to cover time related variables, accessibility and physical amenities.

The third part of the questionnaire contains questions that indicates the perceived health status of the PCC recipients, and the impact of PCC service on both mother and infant. Annex (5) shows the proposed questionnaire items.

The second tool used was medical records to generate information of service quality, to ensure better triangulation of data with what is being said from the interviewed sample. Also, records check include ascertaining respondents answers in items related to maternal

health and fetal health related issues, such as (HbG level, birth weight, jaundice, neonatal malformations, etc.).

3.8.2 Qualitative Part

A semi-structured schedule consist of 12 open ended questions (Annex 6) was designed based on the preliminary findings of the quantitative data. FGDs sought participant's views and opinions about PCC service, what does the concept mean for them? What's their first impression? What kind of experience they passed through and affected their health or their baby's health? What are their expectations and needs to realize the best health care? What else need to be done to promote this service? Those questions were asked by the researcher within both the FGDs with clients, to triangulate the initial findings concluded from the questionnaire analysis through digging to obtain multi perspective explanation from the FGDs participants.

A second semi-structured schedule consist of 11 questions were asked to the HCP's through the face to face in-depth KII (Annex7). The purpose of KII is to obtain HCP's perspective on the care they deliver and to discuss program processes and dynamics, in reference to all aspects of the service starting from targeting, health care process, technical instructions, guidelines, follow up and possibly ways forward for improvement.

3.9 Ethical and Administrative Considerations

In this study, maximum carefulness had been exercised to ensure that the rights of participants are protected. The researcher followed The Modified International Code of Ethics Principles (1975), known as the Declaration of Helsinki, which is adopted by the World Medical Assembly and an official letter of approval to conduct the research from Helsinki Committee-GGs was obtained and has been mentioned in (Annex 8). An administrative approval were sought from the Health Director of UNRWA in GG.

In accordance with the Principles of the Helsinki Ethical Declaration, and in order to guarantee participants rights are protected, a covering letter (Annex 9) explaining the research purpose, program, confidentiality and sponsorship. Every participant in the study knew that that the participation is voluntary. All clients who were selected from the clinics for the interviewed questionnaire were asked for their agreement to participate in the study through signing a consent form. A verbal consent was obtained from the women who

participated in the FGDs, additionally, a formal permission for taking notes and tab recording of the FGDs and KIIs were obtained. Furthermore in order to increase responses' credibility, anonymity and confidentiality were protected to maintain adherence to the Ethical code principles. The researcher assumed that other ethical rights were maintained through respect of people and truth.

3.10 Pilot Study

3.10.1 Quantitative Part

A two-stage piloting were conducted as follows: At stage one 20 respondents were interviewed to fill the questionnaire, this stage aimed to explore the appropriateness of the study instruments in reference to clarity of meaning, time taken to fill the questionnaire in and to expect response rate and let the researcher train for data collection. As a results of this stage, two questions were eliminated and further modifications of the tool including rephrasing or adding explanation to some other questions. Following this stage the team gathered twice; the first meeting summarized major concerns and reflected on faced obstacles, the second one aimed to familiarize the team with the modifications done on the questionnaire after considering the first stage feedback and having the tool adjusted accordingly. Filled questionnaire were excluded. The final form and template were designed and printed to make sure data collectors become familiar with them prior to field work. At the second stage 50 eligible respondent from the selected sample were interviewed, this stage aimed at ensuring the appropriateness of the tool and to validate the collected information. These questionnaire were also excluded from the final set of data.

3.10.2 Qualitative Part

One FGD was conducted with 5 female participants in Sabra clinic, as a result questions were considered simple and easily understood, but were ordered differently. A pilot KII interview was done to explore the appropriateness of the instrument and let the researcher train for data collection, this allowed for further improvement of the study validity and reliability. As a result questions were further modified and enriched and reordered accordingly.

3.11 Method of Data Collection

3.11.1 Quantitative Part

Following the two-stage piloting done jointly by the researcher and data collectors, the 3 well-trained data collectors started the field work. Prior to field work and piloting, data collectors received 12 training hours in a formal training sessions divided in 3 days, the training consist of three parts; a review on sampling and piking targeted respondents, the second part included orientation on study objectives explaining key concepts, terms, and ideas of the questionnaire in order to unify data collectors understandings, language and method as a step for quality assurance, the third part was devoted to train data collectors through practical training and role-play and one to one interviews to unify the way of presenting the study to respondents to obtain their voluntary consent. In addition a detailed instructions sheet was annexed to the questionnaire to guide data collection process. The required forms and templates were designed before starting the training so as to familiarize the data collectors with the tools before starting the field work.

The face to face interviews for clients took place at the selected PHC clinics and did also records checks side by side to the questionnaire for respondents (beneficiaries and non-beneficiaries), data were retrieved retrospectively from those mothers who attended for vaccination sessions. The interview duration ranged from 25 to 35 minutes (30 minutes in average). Privacy was maintained, data collectors assured and respected confidentiality. In the cases at which no responses were available (non-respondents or incomplete answers), data collectors skipped the questionnaire and selected another respondent in the same method used in piking targets.

3.11.2 Qualitative Part

The last stage of data collection and validation took place after the initial analysis of questionnaire results in January and February 2019. The researcher conducted 6 FGDs in February and March 2019. 3 with PCC recipients, and 3 with non-recipients in 3 clinics. 2 FGDs were conducted at each clinic (Al Rimal HC, Jabalia HC and Rafah HC). Prolonged engagement and probing techniques were used to make sure ideas are reasonably reflected. Each FGD lasted for 90 minutes in average and had 10 participants who are purposefully selected, the groups were encouraged to participate and give their opinion in interactive conversations. During the FGDs the researcher introduced the study objectives in short to

the participants, to the most possible extent the researcher and the note-taker ensured that everyone's inputs were expressed and that gestures and tones are noticed. Short notes were taken all through the FGDs and they were recorded to allow further capturing of information.

The second tool was **KII,** the researcher conducted 11 interviews starting by direct HCP's in clinics (2 midwifes, 3 doctors, 2 SSNs and 2 head health centers), then the researcher arrange for an appointment with the MCH responsible officer, and finally a permission from UNRWA Health Director in Gaza Field were obtained to perform the final KII. The researcher asked them about the service provided by the clinics, number of clients served, and many quality related questions. Each interview lasted from 20 to 30 minutes, Interviews were recorded after taking special permission and short notes were taken to insure capturing of all required information.

3.12 Response Rate

Voluntary participation and informed consent were obtained from all sample members before administration of any tool. For interviewed questionnaire response rate exceeded 96%. Also all interviewees who were asked to participate in FGDs had positively responded.

3.13 Scientific Rigor and Trustworthiness

3.13.1 Validity

3.13.1.1 Quantitative Part

The questionnaire were built and frequently enriched by advices from the supervisor, then the researcher had consulted a panel of 10 experts before finalization of the tool, to assess its relevance, 7 of them have responded and their comments were taken in consideration in further refinement of the tool. Also, a pilot study was conducted before the actual data collection to examine clients' responses to the questionnaire and how they understand it. The questionnaire was nicely formatted to ensure face validity. This includes appealing layout, logical sequence of questions, clarity of instructions such as skipping and professional production. This enhances the validity of the questionnaire after modifying it to be better understood.

3.13.1.2 Qualitative Part

The semi-structured schedule of the FGDs and KIIs was subjected to peer's review and the supervisor was consulted from the beginning to ensure relevance and convenience of the tools.

3.13.2 Reliability

3.13.2.1 Quantitative Part

The following steps were done to assure instruments reliability:

- Interviewing a large sample.
- Standardization of implementation through training of data collectors on the client interviewing steps and the way of asking questions. This assure standardization of questionnaire filling and to reduce filling errors.
- Checking the questionnaires have been done at the end of each data collection day, so error identification, correction and prevention were more feasible.
- Then, the data entry was done in the same day of data collection would allow possible interventions to check the data quality or to re-fill the missing's in the questionnaire when required.
- Re-entry test were done on 5% of the data after finishing data entry were assured correct entry procedure and decrease entry errors.

3.13.2.2 Qualitative Part

The following were done to assure the trustworthiness of the qualitative part in this study.

First, the supervisor had made large effort to review the semi-structured schedule in order to ensure relevance and convenience of the tool and also to suggest a sample, a peer check was done through health experts to revise the in-depth interview questions to assure that they cover all the required dimensions. A peer has assisted re-analyzing the data and recorded transcripts to assure accuracy and transparency minimize effect of the researcher's subjectivity. Prolonged engagement was done as the researcher tried to probe for answers and cover all the interview dimensions properly. In addition, minutes were taken and digital recording of the interviews and FGDs enhanced tracking up facts and re-check the accuracy of the transcripts.

Finally, all the transcripts and recordings were kept for tracking the information by others at any time (Audit trail).

3.14 Data entry and Analysis

3.14.1 Quantitative Part

During the data collection the researcher reviewed the questionnaires on a continuous basis. Before data entry the researcher also checked the filled questionnaire and corrections were made appropriately, Data entry model has been designed and questions and variables were coded and entered into the developed database, the researcher used version 20 of Statistical Package for Social Science program (SPSS) for data entry and analysis. The process of data entry was performed in the last ten days of data collection in the field, and lasted for an additional 10 days after the end of field work. Also re-entry test was performed on 5% of the entered data. Then data cleaning was performed through choking the frequency of all variables and looking for illogical values. General frequency tables were done to identify missing data for each question. Data re-coding have been performed, where negatively phrased questions have been converted and means were calculated. And also re-coding were performed for continuous variables that were changed to categorical like (mother age, income, etc.). Central tendency measures were performed including descriptive frequencies, mean, median, mode, Standard Deviation (SD) and frequency tables that show sample characteristics were done. Moreover, the researcher used inferential analysis to test the statistical significance of difference. An independent t-test was used to compare the total score of perception of PCC service statistics and plot differences between mean scores of in-dependent variables with two categories such as having chronic disease various. One way Analysis of Variance (ANOVA) test was used to compare the total perception about PCC means cores of the in-dependent variables with more than two options such as governorates. The statistical difference is regarded as significant when the P value equals or below 0.05.

3.14.2 Qualitative Part

Qualitative findings stemmed from open ended questions in FGDs and KIIs. Debriefing reports of the FGDs were done immediately after the end of each focus group. Also objective considerations of non-promoted intimations, group dynamics, non-verbal cues were noted and considered. Open coding thematic analysis method was used to analyze the

transcripts of the in-depth interviews and FGDs, The researcher would obtain the main findings from the transcripts of the interviews. Then, categorization of related ideas, and comparison and integration between the quantitative and the qualitative findings were done to create rich items for discussion and representation.

3.15 Study Limitations

The study included a sample from UNRWA clinics and there are no other PHC clinics in MOH or NGOs that have PCC services fully integrated in its clinics at time of study, thus they were not included. The study assessed client's perspectives post-delivery on the received PCC service that they took 3 months before conception, thus there was an increased risk of recall bias, the researcher triangulated and compared findings from records to overcome this issue. Also, this study included only clients visiting the PHC within the study period while the opinions of people who don't come to the PHC might be important to reflect better image for reality. The study assessed key HCP's perspectives by a purposive sample, not representative sample for all health providers. Despite of the aim of the current study which revealed the favourable impact on birth outcomes, we did not have the chance to evaluate health care staff competencies in providing PCC. Also, the study has excluded women with high risk of negative birth outcomes and did not assess some risk factors for such negative outcomes which might include dietary patterns, which may need to be considered in any future coming studies. Additionally, more research should also assess if the health education provided during the PCC was applied by the health staff is required. We intended to determine the effect of the MCH programs on pregnancy outcomes without any intervening variables such as HTN and other comorbid cases. Additionally the qualitative part helped in contextualizing the findings and increasing the credibility of conclusion, the researcher admits adding from her own experience and beliefs to data interpretations, this method had its strengths as well as weaknesses, thus the researcher doesn't claim that data interpretations and arguments suggested in this study are the sole possible explanation, nor the sole absolute truth. Finally contextual limitations include electricity cuts and limited access to international publications.

Chapter Four

Results and Discussion

The results of the current study have been consolidated from inputs obtained from the study participants, which have been also validated by a qualitative method which included deep discussions with selected persons who participated in 6 different FGDs and through KII with staff members.

The following sections in this chapter will present an overview (descriptive and inferential statistics) compiled together, to figure out whether significant variances amongst both groups of respondents in relation to perusing the PCC service and receiving it exist or not, and weather its related to people characteristics such as sociodemographic, economic, maternal and obstetric health, etc. Moreover, as the reader moves on this chapter, analytical results will clarify the significantly different variances and correlations in pregnancy, maternal, obstetric/gynecologic and infant health outcomes for both groups.
Chi-square, t-test, and ANOVA have been applied. Results were grouped based on relevance and compared with other global findings. Moreover, explanation of possibilities of certain findings as concluded from FGD and interpreted from the whole data.

Table (4.1): Distribution of PCC recipient and non-recipients by demographic characteristics

Variable	Category	PCC Recipient		Non-Recipient		Factor	Value	Sig.
		No.	%	No.	%			
Age	15-19 Years	14	3.6%	32	8%	**Chi**	**19.905**	**0.001**
	19-25 Years	123	30.8%	156	39%			
	25-30 Years	157	39.3%	119	29.8%			
	30 Years & more	105	26.3%	93	23.2%			
	Total	399	100%	400	100%			
		M= 27.7		M= 26.6		**t**	**2.804**	**0.007**
Husband age	20-35 years	305	76.2%	303	76.7%	**Chi**	**0.075**	**0.963**
	35-50 years	88	22%	86	21.8%			
	50 years and more	7	1.8%	6	1.5%			
	Total	400	100%	395	100%			
		M= 31.9		M=31		**t**	**1.996**	**0.027**
Age at marriage	Less than 18 years	105	26.3%	113	28.2%	**Chi**	**1.947**	**0.584**
	18-25 years	252	63%	254	63.5%			
	25-30 years	30	7.5%	25	6.3%			
	30 years and more	13	3.2%	8	2%			
	Total	400	100%	400	100%			

Variable	Category	PCC Recipient		Non-Recipient		Factor	Value	Sig.
		No.	%	No.	%			
		M= 20.9		M= 20.5		t	1.321	0.210
Governorates	North	90	22.5%	81	20.3%	Chi	1.302	0.861
	Gaza	68	17%	79	19.7%			
	Dear Al Balah	81	20%	81	20.3%			
	Khanyonis	80	20%	79	19.7%			
	Rafah	80	20%	80	20%			
	Total	399	90.5%	400	100%			
Places of residence	Rural	38	9.8%	47	12.3%	Chi	2.814	0.245
	Urban	181	46.4%	188	49.2%			
	Camp	171	43.8%	147	38.5%			
	Total	390	100%	382	100%			
Family type	Nuclear Family	161	40.6%	112	28.4%	Chi	13.046	0.001
	Extended Family	236	59.4%	283	71.6%			
	Total	397	490.00%	1959	100%			
Kind of dwelling	House	37	9.3%	51	12.7%	Chi	3.113	0.347
	Apartment	269	67.8	262	65.5%			
	Separate Room	91	22.9%	87	21.8%			
	Total	397	100%	400	100%			
Number of people living in the same dwelling	3-5 members	203	51.1%	208	52.5%	Chi	4.783	0.091
	6-8 members	135	34%	111	28.1 %			
	9 and more	59	14.9%	77	19.4%			
	Total	397	100%	396	100%			
		M=5.9		M=5.7		t	0.610	0.593
Number of sleeping rooms	1 room	120	30%	126	31.5%	Chi	1.895	0.338
	2 rooms	137	34.2%	119	29.8%			
	3 & more rooms	143	35.8%	155	38.7%			
	Total	400	100%	400	100%			
		M= 2.1		M= 2.2		t	-1.208	0.019
Education level	Preparatory and less	49	12.2%	44	11%	Chi	6.440	0.040
	Secondary	179	44.9%	149	37.3%			
	University/college	171	42.9%	207	51.7%			
	Total	399	100%	400	100%			
Husband education level	Preparatory and less	69	17.3%	73	18.3%	Chi	0.214	0.898
	Secondary	158	39.7%	153	38.2%			
	University/college	171	43%	174	43.5%			
	Total	398	100%	400	100%			
Having a health insurance	Yes	349	87.9%	345	86.2%	Chi	0.487	0.227
	No	48	12.1%	55	13.8%			
	Total	397	100%	400	100%			

4.1 Demographic Characteristics

The surveyed population consisted of 800 ladies, divided in to two equal groups, 400 recipients of PCC services and 400 were non-recipients, as table 4.1 indicates that 39.3% of recipient's vs 29.8% of non-recipients were in the age group from 20-25 years at time of data collection, while 30.8% of recipients vs 39% of non-recipients were in the age group 19-25 years. Study results showed that there are a statistically significant differences between both groups in age (P value = 0.007), with recipients were older than non-recipients. Mean age among recipients was 27.7 years among and among non-recipient it was 26.6 years.

This may be possibly attributed to health center policy to focus on targeting and registering more risky women. Those risky women may be older, multiparous, had previous medical, surgical or obstetric complications. This was similar to findings from other studies, which suggest enhancing service provision for selected high-risk women. This includes being older, having chronic illnesses or previous encountered complications (Michael C. Lu, 2006). Another possible assumption for the above age differences could be related to lack of adequate awareness among newly married, as they are young and consider themselves as healthy women. Therefore they don't usually come to visit health center unless they are pregnant thus missing the opportunity to register in PCC. This was further consolidated in qualitative part of this study, a newly married woman aged 18 years old in FGD: *"I first came to the clinic after I was already in my third month of pregnancy, unfortunately I didn't knew about this service earlier".* This was consistent with previous studies findings (Michael C. Lu, 2006).

Around 76% of husbands in both group's recipient and non-recipients were in the age category between 20-35 years. Mean husband age among recipients is 31.9 years while it was 31 years among non-recipient. Study results showed that the differences between the two groups in reference to husband's age were statistically significant, with recipient's husbands were older (P value = 0.027).

In reference to age at marriage, study results showed that around 63% (majority) of both recipients and non-recipients were in the age group between 18-25 years. Around 26.3% of recipient's age at marriage were less than 18 years, in comparison to 28.2% of non-recipients. Study results showed that there are no statistically significant differences between both groups (P value = 0.210), although the later were a little younger.

Respondents from recipients were disbursed as across the GG by 22.5% for North, 17% for Gaza, 20% for Dear Al Balah, 20% for Khanyonis and 20%for Rafah, while respondents from non-recipient were disbursed as 20.2%, 19.7%, 20.2%, 19.7% and 20% respectively.

Study results from table 4.1 show that respondents from recipients were disbursed as 46.4% residing in urban communities, 43.8% in camps and 9.7% in rural areas; while non-recipients residency distribution were as follows 49.2%, 38.5% and 12.3% respectively. Study results showed that there are no statistically significant differences between both groups of respondents (P value = 0.245).

Findings of this study shows that most of both recipients (59.4%) and non-recipients (71.6%) were living in extended families, of notice a higher percentage of recipients 40.6% were living in nuclear family compared to 28.4% of non-recipients, the differences between the two groups in family type were statistically significant (P value = 0.001).

A possible assumption may suggest that woman in nuclear families are freer to register, but who lives in extended family may face more mobility restrictions. This was further clarified in FGDs with participants, a mother of 5 children said: *"I have too many burdens, and duties in my big extended family, I can barely find enough time to care with my own children, besides I had to take permission before going out, from my mother in law, with sorrow she said home comes first as she sighs in deeply".*

In regard to housing characteristics, study indicated that the majority of recipients 67.7% and comparably the majority of non-recipients 65.5% were living in apartments, there are no statistically significant differences exist between both groups (P value = 0.347).

As shown in table 4.1; around 51.1% of recipients and 52.5% of non-recipients lives in family composed of 3-5 members, there are no statistically significant differences between both groups of respondents (P value = 0.593). Mean of family size (nuclear family) for recipients and non-recipients were 5.9 and 5.7 members respectively. Study results indicated that 35.8% of recipients and 38.7% of non-recipients lives in houses contain 3 and more sleeping rooms, while 30% of recipient's vs. 31.5% of non-recipients lives in houses contains only 1 sleeping room, the differences between both groups were not statistically significant (P value = 0.338).

In reference to level of education; the study showed that the majority of recipients (57.1%) attained a secondary school education level or less. Also results showed that 51.7% of non-recipients vs 42.9% of recipients attained a higher education level (university or postgraduate education), differences between both groups of respondents were statistically

significant (P value = 0.040)**,** were recipients were less educated than non-recipients. This findings might be explained by the fact that females who are enrolled in college might have less time to attend to PCC sessions.

These findings were explained in two slightly different ways through qualitative part, one of the participants in FGD who is a teacher and a mother for 2 children said: "*Being educated help us not just in getting jobs, but also it enlightens us, education empowers women, for me whenever I plan for a new pregnancy, I start taking care of my food, practicing exercise and follow a dietary plan to help losing some extra weight, so that I can enter pregnancy in an optimal health, I even take folic acid tablets from outside and if it's necessary I go and have a chick up with my doctor to have ultrasound and other investigations".* On the other hand a woman aged 21 years and is still studying in university said: *"I was too busy with my study, I had to go to university on daily bases, and I had to prepare to my final exams. I was shocked by pregnancy, although I had heard from my relatives about the service and folic acid, I couldn't register or even finds an appropriate time to visit the clinic".* Findings of our study were consistent with results of the study conducted by Borges et al., (2016) who showed that Brazilian women who pursue the PCC service were less educated, than the other group who didn't. Moreover, our findings were in line with those reported by Jourabchi et al., (2018). However the findings of our study were inconsistent with those of Goossens et al., (2018). In their study it was concluded that women with low education level have a lower likelihood to be prepared for pregnancy.

Results in table 4.1 indicated that 87.9% of recipient's vs. 86.2% of non-recipients reported possessing medical insurance. There are no statistically significant differences exist between both groups (P value = 0.227).

Table (4.2): Distribution of PCC recipient and non-recipients by employment and income

Variable	Category	PCC-recipient		Non-recipient		Factor	Value	Sig.
		No.	%	No.	%			
Employment	Unemployed	369	92.2%	357	89.2%	**Chi**	**2.144**	**0.090**
	Employed	31	7.8%	43	10.8%			
	Total	400	100%	400	100%			
Husband's employment	Unemployed	156	39%	185	46.3%	**Chi**	**4.299**	**0.023**
	Employed	244	61%	215	53.7%			
	Total	400	100%	400	100%			
Monthly family income in NIS	500 NIS or less	207	55.5%	182	50.3%	**Chi**	**2.863**	**0.239**
	501-1000 NIS	94	25.2%	93	25.7%			
	More than 1000 NIS	72	19.3%	87	24%			

Variable	Category	PCC-recipient		Non-recipient		Factor	Value	Sig.
		No.	%	No.	%			
	Total	373	100%	362	100%			
		M= 687.5 SD=802.2 Median= 500		M=747.6 SD=832.3 Median= 500		**t**	**.338**	**-0.985**
Monthly expenditure	500 NIS or less	80	21.9%	104	29.5%	**Chi**	**10.852**	**0.004**
	501-1000 NIS	160	43.7%	113	32%			
	1001-1500 NIS	126	34.4%	136	38.5%			
	Total	366	100%	353	100%			
		M= 1127 SD=707.9 Median= 1000		M= 1145.8 SD= 1288.9 Median= 1000		**t**	**- 0.391**	**0.053**
Receiving social assistances	Yes	259	65.4%	211	54.5%	**Chi**	**9.659**	**0.002**
	No	137	34.6%	176	45.5%			
	Total	396	100%	387	100%			
Source of social assistance	MOSA	11	4.3%	5	2.4%	**Chi**	**2.306**	**0.511**
	UNRWA	235	90.7%	196	92.9%			
	Both	12	4.6%	7	3.3%			
	Others	1	0.4%	3	1.4%			
	Total	259	100%	211	100%			
Income enough to meet needs	Yes	57	14.5%	68	17.1%	**Chi**	**1.021**	**0.181**
	No	336	85.5%	329	82.9%			
	Total	393	100%	397	100%			

4.2 Employment Status and Source of Income

With regard to mother employment status, although study result found a higher percentage of PCC-recipients 92.5% than non-recipients 89.2% were unemployed, there were no statistically significant differences between both groups (P value = 0.090), interestingly though Non-PCC recipient's majority were unemployed, yet they didn't come to register in PCC services.

This was further explained in qualitative component from several aspects, one of the participants in FGDs with non-recipients, who is a housewife and a mother of 6 healthy children said: *"I had no problems at all in my previous pregnancies, and I think I had gained enough experience throughout all these years, I think that I have enough information and this service will add nothing. I believe in god and his well in protecting us, no person nor any action taken before pregnancy or during it can prevent harm if gods well is to have a congenitally malformed baby"*. From a very different prospective one participant said that: *"I wish I could have registered, but I can neither afford transportation costs nor my husband can",* with a sad tone she said: *"Both of us are unemployed"*. In the same line of this, a mother aged 42 years said: *"I was afraid to*

register, because I always miss my appointments, that's why whenever I came seeking treatment, the clerk will refuse to refer me unless I had my PCC appointment done first, this consumes time, and I do have another responsibilities, even though I am not working, I had to take care of my children". The findings of our study were inconsistent with those of Goossens et al., (2018), their study concluded that unemployed women with low socioeconomic status level, were less possible to modify their lifestyles prior conception.

The percentage of employed recipients was 7.5%, lower than non-recipients 10% this finding was further explored in FGD, one of the participants, aged 36 years working as a lawyer and a mother of three children said: *"I am trying my best to have balance in my life between my job and my home, I hardly can find enough time to take care of my-self, but at the end no one wins it all, I sacrifice my own health, to save enough time for my work and my children",* she laughs loudly and says*: "I can barely remember the last time I took a holiday, and even if I am in an official holiday, I need this time just to relax at home".*

Another woman aged 28 years, working in one of the NGOs said*: "I only came to vaccinate my baby, I didn't register in PCC even I had heard about it, and I also register lately in ANC, actually I prefer visiting my private doctor, as I have medical insurance and covered financially through my work".* The findings of our study were inconsistent with those of Jourabchi et al., (2018). Their study concluded that working women, were more likely to adapt a healthier lifestyles prior conception through seeking PCC advices and services.

Through KII with staff members this point was further explored, one SSN explained that working mothers, are always in rush to finish, she said*: "Employed women don't stand waiting in several stations to have the service accomplished, I think that this needs further cooperation between the family health team members, as they had to understand their client's expectations and try as much as they can to support this category by minimizing waiting time",* she also said that: *"Whenever a client's faces a trouble with time related issues, I exerts an extra effort to support my staff by sharing in delivering the service and motivating clients to have more patience, I explain to them that this service is indeed important and worth to wait a couple of extra minutes".* From the above mentioned findings we can conclude that, there are to some extent several difficulties facing working mothers in approaching health services in general and PCC service as well.

Study showed that a higher percentage of recipient's husbands were employed 60.8% compared to 53.7% of non-recipients, with a statistically significant differences between both groups (P value = 0.023).

Gross monthly income for more than 55.5% of recipients and 50.3% of non-recipients hardly reached 500 NIS, study results showed that mean monthly family income for recipient category is 687.5 NIS and for Non-PCC recipients is 747.6 NIS. There were no statistically significant differences between both groups in monthly income (P value = 0.985), though monthly income was higher slightly in non-recipients. The findings of our study were inconsistent with those of Goossens et al., (2018). Their study concluded that women with a lower socioeconomic conditions, were less likely to adapt a healthier lifestyle or to follow up with PCC services.

Study results showed that family expenditure was higher than average monthly income in both groups. Mean for total family expenditure in recipients is 1127 NIS, while 1145.8 NIS for non-recipients, with a statistical significant differences between both groups (P value = 0.053), with non-recipients expenditure were higher than recipients. Study results showed that most of both groups were receiving social assistance, a higher percentage of recipients 65.4% were receiving social assistance from different resources, than non-recipients 54.5% The differences between both groups were statistically significant (P value = 0.002).

Findings in table 4.2 indicated that the main source of social assistance for both recipients and non-recipients was UNRWA by 90.7% and 92.5% respectively. A percentage of 14.5% vs. 17.1% of recipients and non-recipients respectively considered their income was enough to meet basic needs, results found no statistically significant differences between groups of respondents (P value = 0.181).

Table (4.3): Distribution of recipients and non-recipients by maternal and obstetric health related variables

Variable	Category	Recipient		Non-Recipient		Factor	value	Sig.
		N	%	N	%			
Number of gravity	1-2	139	34.7%	178	44.5%			
	3-5	194	48.5%	148	37%	**Chi**	**11.333**	**0.003**
	6 and more	67	16.8%	74	18.5%			
	Total	400	100%	400	100%			
		M= 3.6		M= 3.4		**t**	**0.887**	**0.002**
Number of parity	1-2	170	42.5%	203	50.7%			
	3-5	192	48%	147	36.8%	**Chi**	**10.529**	**0.005**
	6 and more	38	9.5%	50	12.5%			
	Total	400	100%	400	100%			
		M=3.1		M= 3		**t**	**0.689**	**0.024**
Number of abortion	1	89	65%	80	73.4%			
	2-3	41	29.9%	25	22.9%	**Chi**	**2.015**	**0.365**
	4 and more	7	5.1%	4	3.7%			
	Total	137	100%	109	100%			
		M= 0.5		M= 0.4		**t**	**1.770**	**0.044**
Number of living children	1-2	176	44.1%	201	50.8%			
	3-5	87	46.9%	148	37.4%	**Chi**	**7.645**	**0.022**
	6 and more	36	9%	47	11.9%			
	Total	399	100%	396	100%			
		M= 3.1		M= 2.9		**t**	**0.750**	**0.042**
History of subfertility	Yes	82	20.6%	58	14.8%			
	No	316	79.4%	334	85.2%	**Chi**	**4.567**	**0.040**
	Total	398	100%	392	100%			
Mean years of subfertility		M= 3.7		M= 11.3		**t**	**-2.026**	**0.001**
Having any chronic disease	Yes	38	9.5%	22	5.5%			
	No	362	90.5%	378	94.5%	**Chi**	**4.613**	**0.043**
	Total	400	100%	400	100%			
Having uterine surgeries	Yes	61	15.5%	43	11.1%			
	No	332	84.5%	346	88.9%	**Chi**	**3.384**	**0.041**
	Total	393	100%	389	100%			
Planning for pregnancy soon	Yes	132	33.2%	116	29.1%			
	No	214	54%	261	65.6%	**Chi**	**18.182**	**0.001**
	Not decided yet	51	12.8%	21	5.3%			
	Total	397	100%	398	100%			
Previously used FP methods	Yes	188	47.8%	126	31.8%	**Chi**	**21.126**	**0.001**
	No	205	52.2%	270	68.2%			

Variable	Category	Recipient		Non-Recipient		Factor	value	Sig.
		N	%	N	%			
	Total	393	100%	396	100%			
Method of FP	Pills	30	15.9%	19	15.1%	**Chi**	**23.964**	**0.001**
	Condoms	30	15.9%	20	15.8%			
	IUD	88	46.8%	22	17.5%			
	Natural	38	20.3%	63	50%			
	Injections	2	1.1%	2	1.6%			
	Total	188	100%	126	100%			
Intake of Folic acid before conception	Yes	364	92.2%	59	15.1%	**Chi**	**470.47**	**0.001**
	No	31	7.8%	333	84.9%			
	Total	395	100%	392	100%			
Duration of folic acid intake before conception in months	< 1 month	72	19.8%	26	44.1%	**Chi**	**5.798**	**0.055**
	1-2 months	70	19.2%	12	20.3%			
	2 months and more	222	61%	21	35.6%			
	total	364	100%	59	100%			
		Mean 4		Mean 3.3		**t**	**1.057**	**0.625**
Receiving Folic acid during pregnancy	Yes	382	95.5%	348	87%	**Chi**	**18.098**	**0.001**
	No.	18	4.5%	52	13%			
	Total	400	100%	400	100%			
Length of period of folic acid intake in pregnancy in days	1-30 days	11	2.9%	52	14.9%	**Chi**	**44.353**	**0.001**
	30-60 days	9	2.4%	25	7.3%			
	60-90 days	323	84.5%	233	66.9%			
	90 and more	39	10.2%	38	10.9%			
	Total	382	100%	348	100%			
		M= 96.2		M= 85.3		**t**	**3.960**	**0.087**
Receiving supplements during pregnancy	Yes	382	98.7%	373	95.2%	**Chi**	**8.242**	**0.003**
	No.	5	1.3%	19	4.8%			
	Total	387	100%	392	100%			
Experiencing complications in the last pregnancy	Yes	230	57.9%	269	67.4%	**Chi**	**7.653**	**0.004**
	No	167	42.1%	130	32.6%			
	Total	397	100%	399	100%			
Type of complication								
HTN/PIH	Yes	39	17%	46	17.1%	**Chi**	**0.002**	**0.531**
	No	191	83%	223	82.9%			
	Total	230	100%	269	100%			
GDM	Yes	13	5.7%	20	7.5%	**Chi**	**0.674**	**0.262**
	No	217	94.3%	247	92.5%			
	Total	230	100%	269	100%			
Severe vaginal bleeding	Yes	10	4.3%	15	5.6%	**Chi**	**0.393**	**0.681**
	No	220	95.7%	254	94.4%			
	Total	230	100%	269	100%			

Variable	Category	Recipient		Non-Recipient		Factor	value	Sig.
		N	%	N	%			
Swelling in face	Yes	8	3.5%	8	3%			
	No	222	96.5%	261	97%	**Chi**	**0.012**	**0.803**
	Total	230	100%	269	100%			
Anemia	Yes	119	51.7%	192	71.4%			
	No	111	48.3%	77	28.6%	**Chi**	**20.360**	**0.000**
	Total	230	100%	269	100%			
Urinary or genital tract infection	Yes	122	53%	150	55.8%			
	No	108	47%	119	44.2%	**Chi**	**2.734**	**0.052**
	Total	230	100%	269	100%			
Taking medications during the last pregnancy	Yes	205	61.6%	187	47.1%			
	No	192	48.4%	210	52.9%	**Chi**	**1.633**	**0.228**
	Total	397	100%	397	100%			
Medication prescription	Physician	202	98.5%	180	96.3%			
	Relatives	2	1%	5	2.6%			
	Self-administered	1	0.5%	2	1.1%	**Chi**	**1.968**	**0.347**
	Total	205	100%	187	100%			
Mode of last delivery	Normal delivery	299	74.8%	328	82%			
	Cesarian section	101	25.2%	72	18%	**Chi**	**6.203**	**0.008**
	Total	399	100%	400	100%			
Experience complications during or after last delivery	Yes	91	22.8%	130	32.5%			
	No	308	77.2%	270	67.5%	**Chi**	**9.379**	**0.002**
	Total	399	100%	400	100%			
Type of complication during or after last delivery								
Obstructed	Yes	16	17.6%	19	14.6%	**Chi**	**0.247**	**0.578**
	No	75	82.4%	111	85.4%			
	Total	91	100%	130	100%			
Bleeding	Yes	33	36.3%	67	51.5%	**Chi**	**13.117**	**0.001**
	No	58	63.7	63	48.5%			
	Total	91	100%	130	100%			
Fetal distress	Yes	27	29.7%	36	27.7%	**Chi**	**0.802**	**0.222**
	No	64	70.3%	94	72.3%			
	Total	91	100%	130	100%			
Receiving MCH services from any other HCP's	Yes	170	42.5%	181	45.3%			
	No	230	57.5%	219	54.7%	**Chi**	**0.614**	**0.238**
	Total	400	100%	400	100%			

4.3 Maternal and Obstetric Health Characteristics

As indicated in table 4.3 there number of gravity is higher in recipients than non-recipients, mean number of gravity for recipients is 3.6, while for non-recipients is 3.4 with a statistically significant differences amongst respondents from both groups (P value = 0.002). Study results also showed that mean number of parity for recipients is 3.1 vs 3 for non-recipients. The differences between both groups were statistically significant (P value = 0.024). Study results were consistent with the results concluded by Goossens et al., (2018). In their study women who are multiparous were more likely to adapt a healthy lifestyle prior conception thus they sought PCC services more.

The above findings were further compared and matched to qualitative part findings, a SMO in KII said: *"Multigravida and multiparous women in the fertile age group frequently attend to health center for their children. They come for curative, follow up of growth and vaccination sessions, thus they appear to have a greater chance of being captured and introduced in this service"*.

A woman in FGD said*: "Whenever I visit the clinic, even if the visit was not for me for e.g. for my little daughter, my doctor asks me about my plans for pregnancy. I refused as I already have 5 children and I had completed the desired family size, she offered me FP, and I was afraid of using any of the available methods, and finally she convinced me to have a PCC file as long as I am in the fertile age, and pregnancy could possibly occur with natural FP methods".* A doctor further explains that these women are usually having more risk factors for pregnancy, she said during KII with her*: "I never miss a chance to classify my patient's files, all women in fertile age group who are following up in my team should have either a FP or a PCC file, multigravida and multiparous women have an increased risk if they got pregnant without prior preparation, considering they are vulnerable over tasked and carry the heavy burden of their houses, and they usually pay little attention to their-selves, thus I exerts much effort to help them minimizing this risk, PCC services offer them screening for DM, HTN, anemia and dental screening, lifestyle advices, folic acid and iron supplementations, plus the added benefit of receiving curative interventions if any health problem is discovered, thus even if they don't seek pregnancy, I recommend this service to them as long as they are not using any FP method".*

Table 4.3 shows that mean number of Abortions for recipients was .5 while it was .4 for non-recipients, were the differences between both groups were statistically significant (P value = 0.044). Our study findings were similar to those concluded by Goosense et al., (2018). In their study women with a past miscarriage demonstrated more readiness to be prepared for pregnancy. These findings were consolidated during KIIs, as one of the doctors said: "*Whenever an antenatal file is being closed due to abortion, the woman is offered PCC directly, especially if she was seeking pregnancy".*

Study results indicated that the mean number of living children for recipients was 3.1, while for non-recipients was 2.9, and the differences between both groups were statistically significant (P value = 0.022). Results of this study are consistent with previous studies which assisted PCC and counselling for preventable risks, it concluded that, favorable pregnancy outcomes cannot be granted, however, when a pregnancy is planned, many risk factors can be modified to enhance pregnancy outcomes (Chandranipapongse et al., 2013).

Study results indicated that 20.6% of recipients had history of subfertility vs 14.8% of non-recipients, the differences between both groups were statistically significant (P value = 0.040), as subfertility was higher in recipients. These findings were more clarified in the qualitative results wherein most of interviewed KIs indicated that women were encouraged by their families to seek curative services if their pregnancy were delayed, one of the MW in KII said: *"If a newly married woman was unlucky to conceive early after marriage, her family starts to arouse her fertility concerns, thus she comes to the clinic for medical consultation and to find a possible solution to her problem, she is then advised by staff members to open a PCC file"*. From her point of view the midwife propose that UNRWA needs to expand the current PCC service and mainly inclusion of infertility services in PHC's, as she said: *"There are lack of some services provided within our PCC package, such as services for infertile patients or those with recurrent abortions. Since we do not have enough number of specialists and some specific laboratory examinations. Thus we are obliged to refer these cases to hospitals".* At the same line, PCC services contribute in maximizing pregnancy potentials in PCC recipients and help in reducing expected health risks and hazards. *"I had infertility for almost 5 years, I was starting to lose hope, so when I heard about PCC service, I hurried up and registered, they gave me folic acid supplements and I took it beside other treatments prescribed by my doctor after thorough investigations. I got pregnant after a while, so PCC services helped me to get my baby in a*

normal way, I am grateful to all". As mentioned by a woman aged 36 years old in one of the FGDs. Our study results were consistent with those of Goossens et al., (2018). Their study concluded that nulliparous women and women who had subfertility demonstrated more readiness to be prepared for pregnancy.

It's obvious from the above-mentioned figures that the program targets older age mothers, with high gravity, parity and abortions, as they are riskier to get pregnant. Again these findings were confirmed by qualitative findings, as women with risk factors for pregnancy or history of any medical, surgical, gynecological and/or previous obstetric problem were advised and encouraged to open PCC files. For example a woman with repeated abortions once her antenatal file is closed, she was referred for pursuing the service, regardless of her intention for getting pregnancy. As revealed by the FGDs and KI interviews, women with increased risk factors were greatly encouraged to join the service. As mentioned by a SSN during KI sessions: *"PCC services aims at making a woman ready to enter pregnancy safely and help to correct any health problems before she gets pregnant, we advise all married women in fertile age group to register, but our main focus is on high risk mothers, those older, multiparous, with history of complications in pregnancy or having chronic diseases"*.

These findings were similar to other previous studies findings, which proposed that PCC should be universally available to all women between pregnancies, but it may be particularly more beneficial for high-risk mothers, such as older aged, multiparous and who lack adequate spacing in between their pregnancies, as PCC offers an opportunity for risk reduction before their next pregnancy (Michael, 2006).

The same applies to women who have a chronic disease and who have a history of uterine surgeries other than caesarian section. As study results found that 9.5% of recipients vs 5.5% of non-recipients suffered from at least one chronic disease. The differences between both groups were statistically significant (P value = 0.043), were recipients have chronic diseases more than non-recipients. Also as shown in our study 15.5% of recipients vs 11.1% of non-recipients had history or uterine surgery, the differences between both groups were statistically significant (P value = 0.041). This may be explained by staff members exerting more effort to register those risky females in PCC, if they don't want FP, this finding was more consolidated in qualitative part, as women in FGDs revealed that the second main reason for PCC-registration was health center policy, and the necessity to

open a PCC file before approaching any other health service, especially if the woman have any chronic illness, she is not allowed to seek Non-Communicable Disease (NCD) services neither nor outpatient services unless her fertility options were known either FP or PCC, no third option were allowed. *"PCC service is about doing clinical assessment for the woman if is it fit for her to conceive and if there will be any risks or hazards for her and her baby which is considered one of our utmost priorities, we offer advices, treatment and prevention for all women and particularly focusing on those with high risk for pregnancy".* As mentioned by a doctor through KII.

The results of our study were consistent with what other studies had concluded, PCC offers an opportunity for wellness promotion, particularly among women with chronic health conditions such as DM or HTN, women with uterine surgeries or prior adverse pregnancy outcomes. Many of these women will have little or no access to healthcare between pregnancies. PCC can help close the gap in healthcare for these women. (Chandranipapongse et al., 2013).

Recipients and non-recipients were suffering from different types of chronic diseases as indicated in graph 4.1 below.

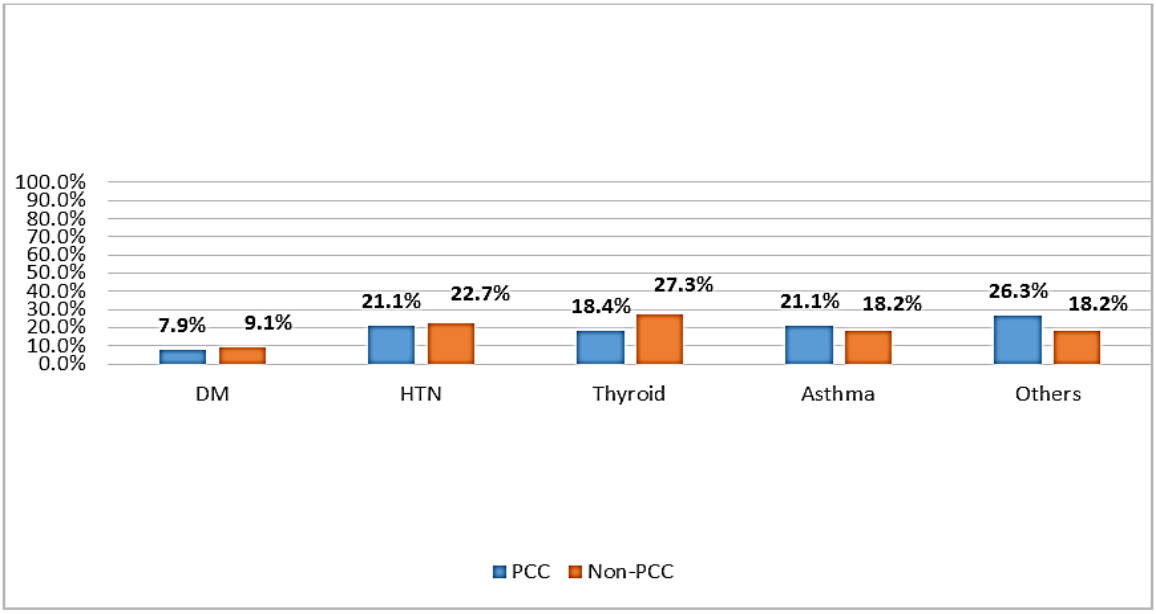

Figure (4.1): Distribution of chronic diseases among study participants

Results of the current study showed that the most common chronic disease among study participants was HTN as of 21.1% for recipients and 22.7% for non-recipients followed by

thyroid with 18.4% and 27.3%, and asthma with 21.1% and 18.25 for recipients and non-recipients respectively. This was further promoted during interviews with KIs who indicated that HTN, thyroid and asthma are among the most common comorbid diseases experienced by PCC recipients. As mentioned by a midwife in KII: *"We have discovered several new cases suffering from DM and thyroid who did not know they had it before, also we identified new cases with HTN and they received proper care and medications".*

The study results also showed that almost one third (33.2%) of PCC-recipients were planning for getting pregnancy soon again, 12.8% not decided yet, more than half (54%) were against, while 29.1% of non-recipients were planning to get new pregnancy soon, 5.3% of non-recipients not decided yet whether to get pregnancy or not, and almost two thirds of non-recipients (65.6%) were against getting pregnancy soon, with statistically significant differences amongst both (P value = 0.001).

Results of qualitative part have been matched with the above findings, a woman aged 35 years, participated in FGDs with PCC recipients said: "*I think that PCC service is a good chance for me to be prepared for my intended new pregnancy since it is about making me ready for pregnancy so as to have a healthy baby and to prevent any complications".*

The above results were further discussed with KIs, to figure out why almost half of recipients were not planning for pregnancy, yet they registered in PCC. a SMO explained that: *"Though a huge number of recipients were against pregnancy, they were registered in PCC, this might be attributed to the huge effort exerted by our staff to promote clients health, especially if the women were not using any FP method, they could possibly get pregnant, and this was the scenario with these women included in the study. Another possible explanations is that recently the daily target for new PCC registries, reached 9 new cases daily, this might encouraged staff members to work more efficiently as to reach the target".*

The above results were also matched with the results of FGDs with non-recipients, to figure out why these women didn't register in PCC despite planning for pregnancy. A woman who didn't receive PCC in the past pregnancy said: *"I was for sure planning for pregnancy, as I am newly married, but I didn't hear before about this service, I think many women are just like me, we need more education sessions on this subject for sure".* It's thus indeed a chance for this service to grow, and for this portion of women who did never

registered in or previously heard of PCC to be promoted and to be engaged in this service in order to be well prepared for an upcoming pregnancy.

Findings of this study were consistent with results reported by (Yurtsever & Set, 2017), who found significant differences ($p<0,05$) between pregnants with preconception counseling and those without preconception counselling; regarding rate of pregnancy planning, using folic acid before pregnancy and knowing that folic acid prevents birth defects, wherein these outcomes were higher among women who received PCC than those who did not. These results could be related to the effect of PCC counseling on enhancing the knowledge base of women who receive PCC.

Equally noticeable almost half of recipients (47.8%) were using FP methods previously, while less than one third (31.8%) of non-recipients previously used them, the differences between both groups were statistically significant (P value = 0.001).

These result were interesting when connecting the level of education to the awareness in use of FP method, as mentioned previously almost 57.1% of PCC recipients have secondary education level degree or less. As regardless of their lower level of education in comparison to non-recipients, they were more aware of the service. And using it more often than women who have a higher education level.

Additionally, the strange finding that while almost two thirds of non-recipients (65.6%) were against getting pregnancy soon, less than one third of them have ever used FP methods (31.8%), this contradicts with their higher level of education (as mentioned previously 51.7% of them were having university level degree, thus it was expected for them to be better educated and having a greater awareness on how to plan for pregnancy and how to control their family size, but yet they appear to be somehow lost and vague in decision.

This gap between actual desire and willing to have FP and real life practice may be partially attributed to age at marriage, that females that marry after completion of university are seeking to complete their families in a faster pace than those who married at a younger age, thus they didn't use any FP methods, this was the case with non-recipients who had a higher education level. Guided by the findings above it seems that younger aged women have the chance to achieve the precise family size they want and they thus seek FP services more often.

The study reported that recipients and non-recipients used different forms of FP as indicated in table 4.3, there are a statistically significant differences in the method used amongst groups of respondents. The commonest FP method used by recipients was IUCD with 46.8% vs. 17.5% for non-recipients. While the commonest method for non-recipients was natural method 50%.

It's crucial to indicate that 92.2% out of PCC-recipients took folic acid before pregnancy, in comparison only 15.1% of non-recipients admitted taking folic acid before conception. The differences between both groups were statistically significant (P value = 0.001). The results of our study were better than those reported by Yurtsever & Set, (2017). Their study indicated that only 10% of women with PCC counselling started to take folic acid before conception which could be related to the inadequate level of PCC counseling given for women. Our study results were also better than findings reported by Borges et al., (2016) who indicated that only 5.6% of women who received preconception counselling, reported folic acid intake prior to conception. At the same line of this, in Lebanon Tamim et al., (2009) indicated that the prevalence of folic acid intake before conception was 14% among women who took preconception counseling which might be related to the limited national awareness campaigns about PCC and limitation in the implanted PCC program, including absence of sufficient staff motivation.

Our findings were also better than those reported by Al-Darzi et al., (2014). In their study they indicated that 18.8% of pregnant women reported taking folic acid in the current pregnancy; and 8.8% had taken it before pregnancy. This might be related to the low level of awareness regarding PCC in Egypt. The explanation for our better results in comparison to other studies, might include that PCC in UNRWA is well enhanced with further attention by HCP's to follow up and health counseling for women regarding PCC.

These findings were more consolidated within FGDs with PCC recipients where most of them indicated that they were instructed to take folic acid before getting pregnant. *"I have received folic acid supplements before getting pregnant and have received health counseling by the midwife regarding how to use it and when to take it, I think this had helped to maintain my health and to decrease any possible pregnancy related complications".* As mentioned by a 32 years old woman.

Also, 61% of recipients vs. 35.6% of non-recipient's received folic acid for more than 2 months before conception, the differences between both groups were statistically

significant (P value = 0.055). Mean length for the period of folic acid intake before conception in recipients is 4 months vs. 3.3 months for non-recipients.

Study results in table 4.3, indicated that 95.5% vs. 87% of recipients and non-recipients took folic acid during pregnancy, with a statistically significant differences between both groups (P value = 0.001). Also study showed that out of those who took folic acid during pregnancy 94.7% of recipient's vs. 77.8% of non-recipients took it for more than 2 months, the differences between both groups were statistically significant (P value = 0.001). Mean duration of folic acid intake during pregnancy in days is 96.2 in recipients, vs. 85.3 in non-recipients. As mentioned earlier our study results were better than those reported by Al-Darzi et al., (2014).

Also 98.7% of recipient's vs. 95.2% of non-recipients took one or more of the several supplements types, with a statistically significant differences amongst both groups (P value = 0.003). It was also visible that recipients took each one of the other kinds of supplements in a higher percentage than non-recipients as illustrated in graph 4.2. This was also greatly reflected in FGDs with PCC recipients who showed that they all had received folic acid when registered with PCC. Furthermore the results were matched with KII's findings. *"Women receive several clinical examinations and health messages which included dietary education, breast examination, basic laboratory investigations, folic acid supplements by midwife, cases also are being categorized and received subsequent treatment and interventions based on this categorization".* As mentioned through a KII with the SMO.

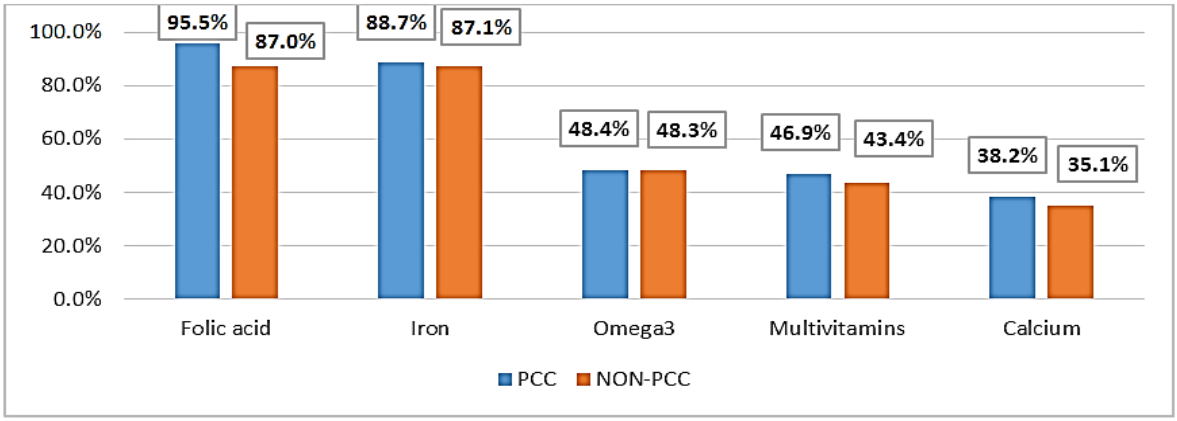

Figure (4.2): Supplements received in pregnancy

Figure 4.2 showed that the most common used supplement in pregnancy was folic acid with 95.5% for recipients vs. 87% of non-recipients, followed by iron with 88.7% for

recipients and 87.1% for non-recipients, followed by omega 3 with 48.4% and 48.3% and multivitamins with 49.9% and 43.4% for PCC recipients and non-recipients respectively however, these supplements were not all available for use by patients as was further showed within FGDs with PCC recipients. *"My physician prescribed me some medications as multivitamins and calcium, however I do not have money to buy it, so making such medications available, will make me more satisfied".* A 33 years old PCC recipient.

Study results in table 4.4 showed that 57.9% of PCC-recipients vs. 67.4% of non-recipients faced complications during their last pregnancy. The differences between both groups were statistically significant (P value = 0.004). This may be attributed to the care they received during PCC. It's acknowledged that receiving PCC is associated with a better progression throughout pregnancy (WHO, 2013). These findings were similar to those reported by Jourabchi et al., (2018) who indicated that women who received PCC were less likely to experience maternal complications with 18.4% while it was 35.3% for those who did not receive PCC. Moreover, this was also demonstrated during the FGDs wherein most of women who received PCC service perceive the positive effects of the PCC in decreasing complications during pregnancy. *"I have joined PCC service newly, and I think that it is such a good service because it helped me to take care of my health. I had anemia in all my previous pregnancies, and I had received blood transfusion a couple of times during pregnancy or delivery, except for the last pregnancy. Thanks to PCC as my anemia was managed properly prior to conception, PCC had really helped".* A 40 years old woman who received PCC service. Therefore, more engagement of women in PCC could enhance their health at the individual level and could be beneficial to the society at large.

Remarkably noticed recipients possess a lower percentage than non-recipients of each individual complication occurring in pregnancy as shown in table 4.3 above. Accordingly, most of the interviewed KIs indicated that they felt a significant positive effect of PCC service over women health. A SMO during KII said*: "Based on my work experience with PCC service and ANC and after considering maternal indicators and outcomes in the clinic, I think that PCC service is an essential service just like ANC service, as it helps a lot in alleviating health risks and complications".* Also when questioning the SMO about what first came to his mind when he hears the word PCC?. He answered: *"The first thing that comes to my mind when I hear PCC is that, it is a comprehensive service delivered to the mother to make her ready to pass pregnancy safely and to deliver a healthy baby".*

Results of this study also showed that genitourinary tract infection occurred in 53% of PCC recipients and 55.8% of non-recipients, with a statistically significant differences between both groups (P value = 0.052). Results also showed that 51.7% of recipients suffered from anemia vs. 71.4% of non-recipients, and the differences between both groups were statistically significant (P value = 0.000). This confirms the beneficial effects of the PCC service which was further reinforced during FGDs with PCC recipients. *"I had anemia, after doing blood tests in the clinic, the doctor prescribed to me iron tablets, and I took it which improved my HbG level, so as to have a safe delivery for me and my baby".* A 29 woman in a FGDs. Moreover, PCC service also indicated the rule of health counseling for women in the reproductive age. "*With PCC service, I have received several follow-ups and examinations in addition to the health advices and health information which helped me to maintain my health and my baby's' health".* As mentioned during FGDs by a 27 years old woman.

Our study results were consistent with other previous studies, that indicated that 10.2% of women who took preconception counseling suffered from anemia (P value = 0.0124), compared to 24.5% of women who didn't (D'Angelo D et al., 2007).

A larger percentage of recipients 61.6% than non-recipients 47.1% were taking medication during pregnancy, the difference between both groups were not statistically significant (P value = 0.228). This may be attributed to the pre-pregnancy health status of recipients. One possible explanation for this strange finding is that; health center policy to focus their effort and increase targeting of risky NCD patients who are in the fertile age group, as they were already more risky than non-recipients, and already having more chronic diseases, therefore they were taking medication before and during pregnancy more than non-recipients. This was further demonstrated during interviews with KIs who stressed out the importance of giving more consideration for women with risky health conditions than other patients to have a planned rather than a haphazard pregnancy, as mentioned by one of the SMO during KII: *"PCC service is related to giving folic acid supplements to the women in addition to doing categorizations of cases based on their risk to conceive. Risk categorization helps us to act accordingly. Also, I think that the ultimate goal of PCC service is to prepare a woman for pregnancy instead of having a haphazard pregnancy. So*

we try to engage all women in fertile age group to register, and particularly focus on NCD patients, as they are considered more risky".

When talking about each drug category one important finding that should be noticed, is that of those who took antibiotics during pregnancy, 14.7% of recipients took it in the first trimester, in comparison to 27.1% of non-recipients, this difference may be due to non-recipients were not planning for pregnancy and thus were unaware when they started to take antibiotics till they discovered pregnancy. Another possible explanation is that non-recipients were suffering from untreated infections like genitourinary tract infections, which become more revealed by pregnancy, and thus necessitating treatment.

Recipients and non-recipients took several medications in pregnancy as shown in figure 4.4 below.

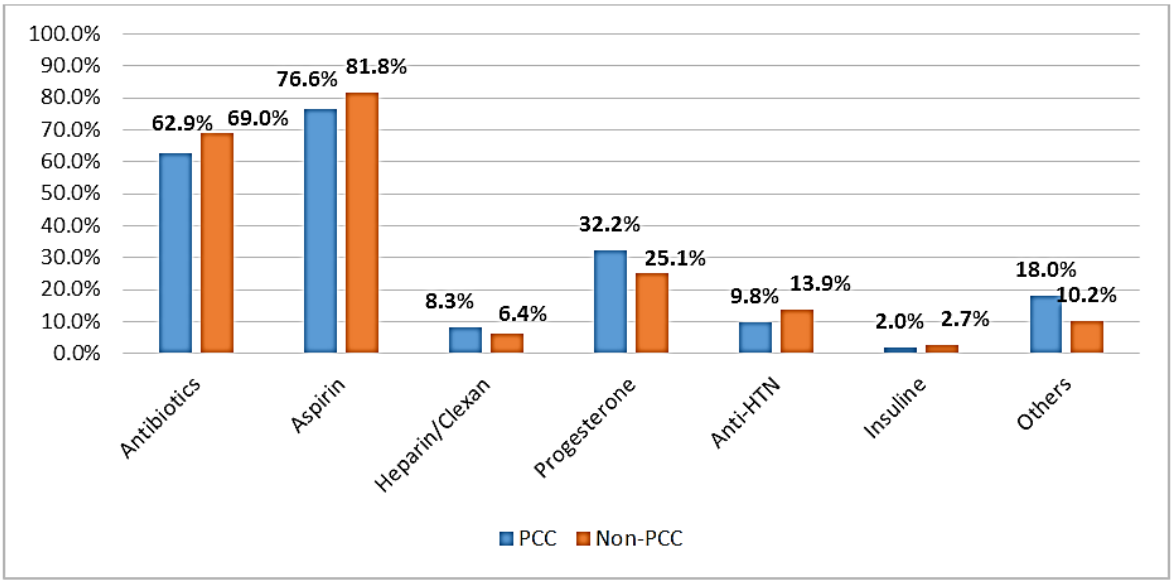

Figure (4.3): Medications taken during pregnancy

As illustrated in figure 4.3, results showed that the most taken medications during pregnancy included Aspirin with 76.6% vs. 81.8% followed by antibiotic with 62.9% vs. 69% and progesterone with 32.2% vs. 25.1% for PCC recipients and non-recipients respectively.

Study results indicated that 98.5% of recipients vs. 96.3% of non-recipients reported that the medications they took were prescribed by a physician, 1.5% of recipient's vs. 3.7% of

non-recipients reported that they were prescribed treatment either by a relative or self-administered (combined).

The majority of deliveries for both recipients (74.7%) and non-recipients (82%) were by NSVD, study results showed significant differences between both groups (P value = 0.008). Were the percentage of NSVD was lower in recipients than non-recipients. Results of our study were not consistent with those reported by Jourabchi et al., (2018). In their study about 54.8% of PCC recipient's vs. 45.6% of non-recipient's delivered by NSVD. The percentage of women who delivered by CS was higher in recipients than non-recipients, 25.3% vs. 18% respectively (P value = 0.008). These results were inconsistent with those reported by Jourabchi et al., (2018) who showed that CS delivery was lower among women who received PCC with 45.2%, than who did not receive PCC with 54.4%. The higher CS delivery rates in our study could be possibly because of their pre-pregnancy health related characteristics for example recipients being more risky thus necessitating timed elective CS. This finding was further explored with KIs during interviews. Most of them relates this strange finding to that PCC recipients could be more risky; or their babies are considered precious babies after a long duration of infertility, that is why they were delivered by CS: "*This result could be interpreted by the fact that PCC recipient was an infertile case, then the concepetus is considered as a precious baby so, the preferred delivery method is CS".* As mentioned by the SMO during KII.

Study results in table 4.4 indicated that about 22.8% of PCC-recipients vs. 32.5% of non-recipients faced complications during their last delivery. The differences between both groups were statistically significant (P value = 0.002). Results of our study were consistent with results from other previous studies conducted by Jourabchi et al., (2018) and Goossens et al., (2018), which assessed the impact of PCC over pregnancy, delivery and delivery related complications. These findings were also consolidated during interviews with KIs. *"I think that PCC service is very important for all women it's a corner stone in our health services and should be further improved, since it helped a lot in avoiding any pregnancy and delivery related complications, our clients understand why they came for*

the service and do value its importance in preventing any pregnancy related problems". As mentioned by a midwife during KII.

As shown in table 4.3, the most common complication after the last delivery included bleeding with 36.3% and 51.5% for PCC recipients and non-recipients respectively (P value = 0.001). Fetal distress was the second most common complication with 29.7% and 27.7% for PCC recipients and non-recipients respectively. Our study results were consistent with what have been mentioned in literature. As it was indicated that planning and preparation before starting pregnancy help to manage modifiable risk factors such as anemia, leading to a more favorable pregnancy outcomes and lessens complications in pregnancy and delivery as well (Chandranipapongse et al., 2013).

Results of this study indicated that 42.5% of recipient's vs. 45.3% of non-recipients were receiving MCH services from other HCP's. The differences between both groups were statistically significant (P value = 0.238). Were a slightly higher portion of non-recipients were receiving MCH services from other sources. This may explain to a little degree why non-recipients didn't register in PCC in UNRWA. The study findings indicated that the main source for providing MCH services beside UNRWA was private sector for both recipients and non-recipients by 88.3% and 80.7% respectively.

Table (4.4): Distribution of responses of recipients and non-recipient by infant health related characteristics

Variable	Category	PCC-Recipient		Non-Recipient		Factor	Value	Sig.
		N	%	N	%			
Gender of infant	Male	213	53.5%	196	50.4%	**Chi**	**0.773**	**0.210**
	Female	185	46.5%	193	49.6%			
Gestational age	Premature	21	5.3%	19	4.7%	**Chi**	**1.249**	**0.535**
	Full term	254	63.7%	269	67.4%			
	Postdate	124	31%	111	27.8%			
	Total	399	100%	399	100%			
		M= 276.5		M= 276.6		**t**	**-.069**	**0.237**
Birth weight in grams	<2500 gm	44	11.1%	31	7.8%	**Chi**	**10.537**	**0.005**
	2501-3500	223	56 %	268	67.2%			
	3501-4500	131	32.9%	100	25.1%			
	Total	398	100%	399	100%			

Variable	Category	PCC-Recipient		Non-Recipient		Factor	Value	Sig.
		N	%	N	%			
		M= 3274.5		M= 3225.4		t	1.262	0.342
Admission to NICU	Yes	54	13.6%	47	11.8%	Chi	0.576	0.254
	No	344	86.4%	352	88.2%			
	Total	398	100%	399	100%			
Neonatal jaundice	Yes	188	47%	207	51.8%	Chi	4.224	0.024
	No	212	53%	193	48.2%			
	Total	400	100%	398	100%			
Mean duration neonatal jaundice in days		M= 6.9		M= 9.9		t	0.936	0.032
Presence of congenital anomalies in newborn	Yes	15	3.8%	10	2.5%	Chi	1.085	0.201
	No	380	96.2%	389	87.5%			
	Total	395	100%	399	100%			
Congenital anomalies among other children	Yes	27	6.8%	19	4.8%	Chi	1.498	0.142
	No	372	93.2%	381	95.2%			
	Total	399	100%	400	100%			
Exposure to a serious birth related trauma	Yes	3	0.8%	0	0%			
	No	393	99.2%	399	100%			
	Total	396	100%	399	100%			

4.4 Infant Health Characteristics

Results of this study indicated that 53.5% of recipient's vs. 50.4% of non-recipients have a male baby borne (P value = 0.210).

Study results showed that the majority of recipients 63.7% and a slightly higher percentage of non-recipients 67.4% have full term pregnancy, interestingly higher percentage approximately 5.3% of recipients vs. 4.8% of non-recipients delivered prematurely, our results also showed that postdate delivery occurred in 31.1% of PCC service recipients vs 27.8% in non-recipients deliveries. However differences between both groups in terms of gestational age were not statistically significant (P value = 0.535). The findings in our study were inconsistent with the findings reported by Beckmann, Widmer, & Bolton (2014). In their study they revealed that women who received PCC service in Australia showed a lower incidence of both preterm and postdate delivery reflecting the significant effect of PCC. Our study results were also inconsistent with the results concluded by Dean et al., (2013). Their study concluded that PCC address several risk factors through preventing adolescent pregnancy, preventing unintended pregnancies, promoting optimal

birth spacing, optimizing pre-pregnancy weight and nutritional status this for sure decreased incidence of prematurity. Our study results were better than those reported by D'Angelo D et al., (2007), who studied PCC impact on mothers and infants in 26 area in United States, he reported that preterm delivery occurred in 10.4% of woman who received PCC.

Study results also showed that 11.1% of PCC recipients vs. 7.8% of non-recipients have newborns with LBW (<2500 gm). Also results showed that 88.9% of recipients' vs. 91.8% of non-recipients have babies with average birth weight (2500-4500 gm). The differences between both groups were statistically significant (P value = 0.005). These findings were inconsistent with those reported by Williams et al., (2012) who indicated that a lower percentage (5.8%) of women who received PCC vs. (12.5%) of those who didn't receive it had a LBW infant.

Considering birth weight as a continuous variable (without being grouped), study results showed that mean birth weight for recipients' newborns was (3274.5 gm) vs. (3225.4 gm) for non-recipients. The results showed statistically significant differences between both groups (P value = 0.342), though average birth weight was slightly higher in recipients.

Interestingly, a slightly higher percentage of recipients' babies 13.6% were admitted to NICU, compared to 11.8% of non-recipients, but the differences were not statistically significant (P value = 0.254). Mean duration of admission to NICU for recipients is 4.8 days in comparison it was 9.2 days for non-recipients (P value = 0.825), these results were inconsistent with those reported by Jourabchi et al., (2018) who showed that there were a significant differences between women who received PCC and who didn't, wherein those who received PCC were less likely to develop neonatal complications necessitating NICU admission by 17.7% while those who did not receive PCC were more pruned to develop neonatal complications and therefore a higher incidence of NICU admission by 31.2%.

Quantitative results of this study were further discussed with a senior manager, during the interview with her, she explained that in the light of this study, PCC recipients were having a slightly higher percentage of chronic health conditions, this possibly affected their own health and thus influenced fetal growth directly or indirectly. For example chronic HTN, leads to premature delivery, and thus a baby with LBW, this increase the need for NICU admission. *"Women who already have a chronic disease, when registered in PCC, their*

health will be optimized, as their HTN is controlled, their blood sugar level is controlled, and this will sure lower their risk for developing complications in pregnancy, but nothing can guarantee that it will protect the baby, the impact of the chronic disease is far beyond this, and may not be changed, as already her blood vessels will be affected, our goal for this year is to offer a higher quality PCC to all mothers, PCC means a holistic continuous care, I think for sure the results could be worst to mothers as well as to their infants if PCC services were not offered at all".

Study results showed that neonatal jaundice developed in 47% of recipient's babies, compared to 51.8% of non-recipients, with a statistically significant differences amongst both groups (P value = 0.024), as shown in table 4.4, the most common cause of jaundice was physiologic in 91.5% among PCC recipients and 88.4% among non-recipients (P value = 0.067). Mean duration in days for jaundice in recipients is 6.9 vs 9.9 in non-recipients (P value = 0.032) according to t-test.

Interestingly study results founds that the percentage of recipients who gave birth to a baby with congenital anomaly was slightly higher than non-recipients 3.8% vs. 2.5% respectively, though the differences between both groups were not statistically significant (P value = 0.201). These findings were discussed with KIs, one of the doctors said: "*PCC can't prevent all kind of anomalies, as folic acid prevents NTD only, even if PCC recipients have a higher percentage of anomalies in their babies, those anomalies could be other than NTD"*. The findings of this study contradicts with what other studied had found, congenital anomalies were less likely to occur in women who had PCC than those who didn't according to a study conducted by Williams et al., (2012).

Noteworthy also the percentage of congenital anomalies among previous children was slightly higher in recipients 6.8% vs. 4.8% of non-recipients. The differences between both groups were not statistically significant (P value = 0.142). Presence of a previously malformed baby could be a promoting factor for their mothers to seek PCC services. Results of this study were consistent with those reported by Goossens et al., (2018). In their study they showed that women with a previously malformed baby demonstrated more readiness to be prepared for pregnancy.

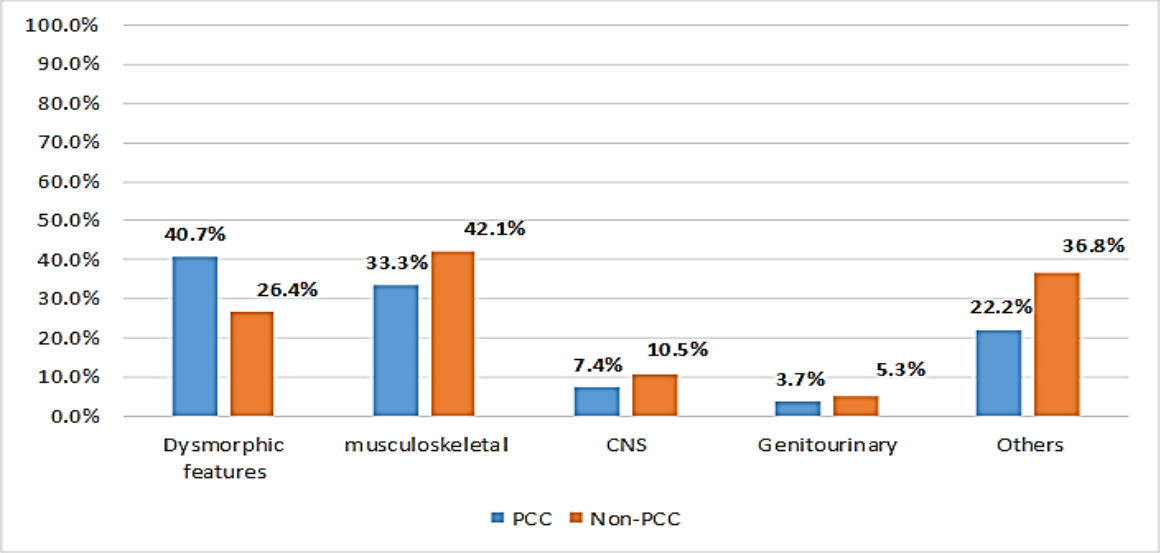

Figure (4.4): Type of congenital anomaly among other children

Regarding type of congenital anomaly among other children, results showed that dysmorphic features was the most common anomaly in PCC recipients and non-recipient's with 40.7% vs. 26.4% respectively, followed by musculoskeletal deformities with 33.3% in recipients and 42.1% in non-recipients.

All of the reported values in table 4.4, regarding (gestational age, birth weight in grams, NICU admission, presence of jaundice, presence of any congenital anomaly, family history of a child with anomaly) were double checked by looking in depth at the e-health records.

Table (4.5): Distribution of Responses by receiving preconception care characteristics (N=800)

Independent variable	Category	Recipient		Non-recipient		Factor	Value	Sig.
		N	%	N	%			
Recommending this service to others	Yes	342	85.5%	293	73.2%	**Chi**	**20.737**	**0.001**
	No	58	14.5%	107	26.8%			
	Total	400	100%	400	100%			
Perceiving PCC service as important	Yes	346	86.5%	294	73.5%	**Chi**	**23.117**	**0.001**
	No	54	13.5%	106	26.5%			
	Total	400	100%	400	100%			

4.5 Preconception Care Received Characteristics

The questionnaire asked about previous experience of PCC services, results showed that 11 ladies out of 400 non-recipients approximately 2.8% have previously registered in PCC before the last pregnancy.

Results of the current study indicated that 83.2% of PCC recipients reported that this was their first PCC experience, 11.3% reported that it was their second experience as they took it once before the last pregnancy, and 5.5% reported that the last experience was their third one.

Study results indicated that 85.5% of recipient's vs. 73.2% of non-recipients are willing to recommend the service to others. The differences between both groups were statistically significant (P value = 0.001). Also quantitative results were matched with results from FGDs, most of PCC recipients expressed the significance of PCC service in enhancing their own health and their babies' health. *"I think that PCC service is greatly important for the mother and helps to maintain her health. For me after my abortion, the midwife registered me in PCC, I had received health education and counseling in addition to the much appreciated psychological support".* A 28 years old woman during FGDs. Moreover, most of women who received PCC service recommend it to those who did not join it. *"I do recommend any woman in the reproductive age to join the PCC services, because, I think that it is very important since it include a full examination by health staff and include some important investigations and follow ups in addition to giving supplements and conducting health counseling in order to prepare a woman for a healthy and safe pregnancy".* A 35 years old woman during FGDs with PCC recipients. This finding was inconsistent with those reported by Tuomainen et al., (2013) who showed that women's awareness of preconception health were modest or poor with a little evidence of any received wisdom or prevailing culture of preparing for pregnancy. Also it was inconsistent with those reported by Sohni et al., (2014) who investigating women's information sources, behavior, expectations, knowledge and level of satisfaction on advices received about diet and supplements before and during pregnancy, in their study they concluded that women misunderstanding of the concept of PCC made them less satisfied with the service they received.

It's noteworthy to mention that a higher percentage of recipients 86.9% than non-recipients 73.7% stated that PCC services are important. Study showed that differences between both groups were statistically significant (P value = 0.001). These findings were illustrated more during FGDs with PCC recipients who perceive that PCC services are important for achieving better maternal and newborn outcomes. *"PCC service is very important for making woman ready for safe pregnancy since it helps in preventing maternal and neonatal risks and problems, as I heard from my physician and midwife, so making woman fit for this experience is the most important part of PCC service".* A woman aged 27 years old during FGDs. At the same line of this, our results regarding women perception of the importance of PCC were better than those reported by Al-Darzi et al., (2014) who showed that only 12.0% women in Egypt knew that it is important to receive PCC service particularly to take folic acid which might be related to the low PCC awareness amongst these women.

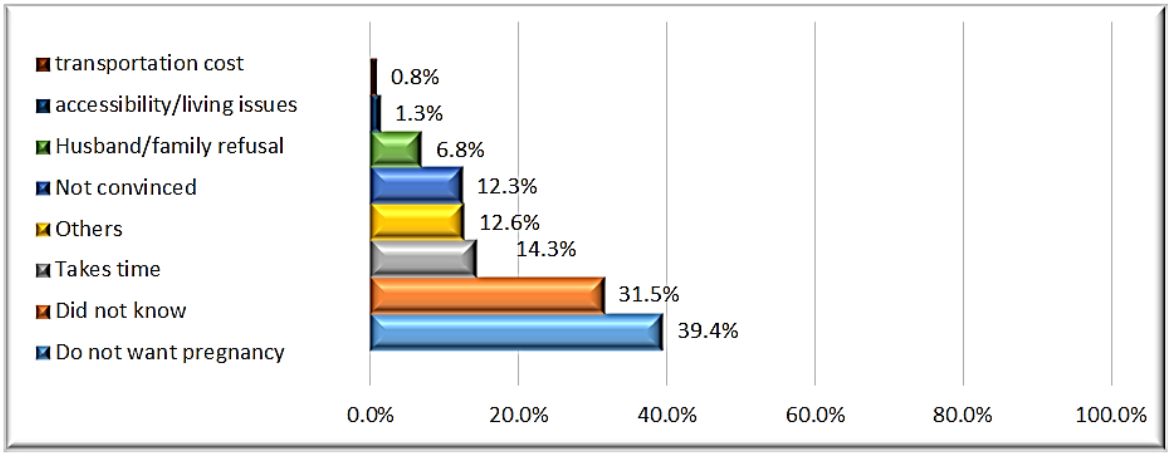

Figure (4.5): Reasons of not receiving PCC

The reason behind not registering in PCC in past pregnancy for 39.4% of respondent was not planning for pregnancy, 31.5% was due to being ignorant about PCC service existence and lack of knowledge about it, 14.3% of non-recipients answered that they knew about PCC, but it takes too much time. Approximately 12.6% didn't register due to following up with private doctors, 12.3% were not convinced with its benefits, 6.8% due to family/husband refusal.

Table (4.6): Distribution of beneficiaries' responses regarding knowing about of PCC services and motives for utilization

Variable	Category	N	(%)
Way of knowing about the PCC services	Midwife/SSN	188	47%
	Doctor	94	23.5%
	Relative	65	16.2%
	Poster in clinic	15	3.7%
	Friend	12	3%
	Nurse	10	2.5%
	Internet	7	1.8%
	Others	7	1.8%
	Health education activities	2	0.5%
	Total	400	100%
Person referred you to the PCC services	Midwife	156	39%
	Self-referred	112	28%
	Doctor	64	16%
	Nurse	52	13%
	SSN	8	2%
	Private doctor	4	1%
	Others	4	1%
	Total	400	100%
Reasons for joining the PCC services	Planning for pregnancy	177	44.1%
	Is part of the routine clinic protocol	133	42%
	To promote my health status	125	31.2%
	To promote the health status of my child	97	24.2%
	HCP referred me	24	6%
	Subfertility problem	16	4%
	Serious health problems	15	3.7%
	History of congenital anomalies	11	2.7%
	Do not know	9	2.2%
	Have not been told	9	2.2%
	Having a chronic disease	7	1.7%
	Complications in previous pregnancy or delivery	3	0.7%
Quality of the PCC service in general	Good	280	70.5%
	Uncertain	97	24.5%
	Bad	20	5%
	Total	397	100%

4.6 PCC Service

Study results indicated that there were several ways of knowing about the PCC service as indicated in table 4.6, near half of recipients knew about the service through clinic MW, this finding was expected as midwives works very close to women and she meets them more often either through pregnancy follow up, post-natal visits or even in FP, almost one quarter heard about it from doctors, 16.2% from a relative, 3.7% from posters distributed in health center, 3% from friends, 2.5% through nurses in both NCD and vaccination stations (combined), and 1.8% through internet, an extremely small percentage about 0.5% educational activities.

These findings guides us to exert more effort in educational activities either through posters or active health promotion sessions or even through outreach activities that should be more frequent and to target young mothers in several places, including kindergartens, schools, mosques, etc. Also it gives an idea for forward developing steps to activate the role of nurses in marketing this service to women attending to the health center.

When asking about the person who referred the recipient's only one option was allowed, study results indicated that 39.3% of recipients were referred to register and therefore actually opened PCC file by clinic midwife, while almost half of the recipients first informed by the same midwife, this red flag information indicated that telling the clients about the service existence was not enough, extra effort should be exerted on explaining the benefits of the service and more work to convince the women by the importance of registration and receiving it, in order not to miss any opportunity to save a woman life. This findings was also consolidated in qualitative part, one lady aged 25 years in FGD said: *"It's well known that our doctors and midwifes are well qualified, but this is not enough, as they had to show more attention and enough respect to patients and to their duties, they are our only mean for getting health services in this difficult social and challenging economic circumstances that we are passing through"*. Table 4.6 shows that more than one quarter of recipients were self-referred to the service, of notice only 16% of recipients were referred via doctors, while almost one quarter of recipients were first informed about the service by doctors again this gap between informing the patient and advising her about the service, and then following up with her along the right path and finally convincing her to receive the service needs more strengthening. Interestingly 13.1% of recipients were referred by clinic NCD nurse, an explanation for this finding was

clarified by KII with providers, as mentioned by a SSN during an interview: " *Staff tried to work more on NCD patients as they are considered being more risky and several initiatives were implemented either by SSN or doctors in clinics, to collect all NCD female patients who are in the fertile age group from e-health system in one list, then to allocate each woman to its team, as to make it easier for doctors to target this group in either FP or PCC. Another initiative was to highlight the remarks box in e-health of each NCD patient by SNN, so that whenever this lady comes to the clinic she will be noticed as requested to attend to midwife before commencing the service she came for".* Also in FGD with recipients this finding was consolidated but somehow in a different manner, E.H, 42 year old lady, suffering from diabetes type II said: "*Despite I completed my family, and I didn't plan to get pregnancy, I was offered to open either a PCC or FP file, otherwise my services in the clinic will stop".*

Respondents were allowed to choose more than one possible answer when we asked recipients about the reasons for registration, thus summation of percentages for different variables was >100%, as demonstrated in table 4.6, the most common reason for registration was seeking pregnancy and planning for it by 44.1%. Worthy noticeable that a large portion of recipients 42% reported that the reason behind registration was complying to the routine clinic protocol. Another large proportion of recipient 31.2% were registered to promote their health status, 24.2% sought PCC to promote the health of their babies, 5.4% registered in PCC due to presence of a serious health related problem and having a chronic disease (combined), 4% were due to infertility problem, 2.7% were related to the presence of congenital anomalies in their previous children.

Table (4.7): Distribution of responses by services received during PCC sessions

Variable	Category	N	%	Impression about received service		
Services received in PCC				**good**	**Uncertain**	**bad**
Advices	Yes	248	62.3%	49%	19.2%	31.8%
	No	150	37.7%			
	Total	398	100%			
HTN screening & follow up	Yes	395	99%	88.4%	7.1%	4.5%
	No	4	1%			
	Total	399	100%			
DM screening & follow up	Yes	389	97.5%	84.3%	9.3%	6.4%
	No	10	2.5%			
	Total	399	100%			

Variable	Category	N	%	Impression about received service		
Anemia screening & follow up	Yes	396	99.2%	86.1%	9.3%	4.6%
	No	3	0.8%			
	Total	399	100%			
Dental Services screening & follow up	Yes	394	99%	70.6%	11.9%	17.5%
	No	4	1%			
	Total	398	100%			
Folic acid	Yes	397	99.5%	78.1%	6.8%	15.1%
	No	2	0.5%			
	Total	399	100%			
Medications	Yes	62	17.3%%	35.5%	25.8%	38.7%
	No	297	82.7%			
	Total	359	100%			
Availability of the prescribed drug in the clinic	Yes, all of them	33	53.2%			
	Yes, some of them	10	16.1%			
	Yes, most of them	6	9.8%			
	Not at all	13	20.9%			
	Total	62	100%			
Advices given (N=248)						
Folic acid intake importance		204	82.3%			
When and how to take folic acid		173	69.7%			
Healthy diets		162	65.3%			
Fluid intake		158	63.7%			
Supplementations		120	48.4%			
BP monitoring		99	39.9%			
Personal hygiene		96	38.7%			
Unnecessary or harmful medication avoidance		86	34.7%			
Smoking cessation		81	32.7%			
Follow up		58	23.4%			
Danger signs of pregnancy		58	23.4%			
Danger signs of labour		42	16.9%			
Danger signs of post-partum		32	12.9%			
Danger signs of neonates		21	8.5%			
Understanding health provider advises	Yes	223	91%			
	No	25	9%			
	Total	248	100%			
Being given the information you	Yes, to great extent	130	32.7%			

Variable	Category	N	%	Impression about received service		
wanted today	Yes, to some extent	171	43.1%			
	No	96	24.2%			
	Total	397	100%			
Value of health information you received	Yes, to great extent	98	32.5%			
	Yes, to some extent	189	62.8%			
	No	14	4.7%			
	Total	301	100%			
Being given written information (Brouchures)	Yes	41	10.3%			
	No	358	89.7%			
	Total	399	100%			
Given written information is being enough	Yes, to great extent	17	41.5%			
	Yes, to some extent	15	36.6%			
	No	9	21.9%			
	Total	41	100%			
Ability to ask about the information you want	Yes	329	84.8%			
	No	59	84.8%			
	Total	388	15.2%			
Staff explained the information you asked about clearly	Yes, very clear messages	275	83.6%			
	Yes, but not all the time	43	13.1%			
	No	11	3.3%			
	Total	329	100%			
Main source of health related Information	HC clinic physician	143	36%			
	HC midwife	85	21.4%			
	HC nurse	50	12.6%			
	HC pharmacist	1	0.3%			
	Community pharmacies	58	14.6%			
	Friends/family	20	5%			
	Social media	40	10.1%			
	Total	397	100%			
Number of folic acid tab taken	1-30 tab	97	24.2%			
	31-60 tab	66	16.5%			
	61-90 tab	115	28.8%			
	91 and more	122	30.5			
	Total	400	100%			
	M=113.1, median =90					
Compliance with instruction in taking the pills	Yes	291	75.8%			
	No	93	24.2%			
	Total	384	100%			

Variable	Category	N	%	Impression about received service		
Number of visits/sessions you receive PCC in the past pregnancy	1 visit	77	19.3%			
	2 visits	74	18.5%			
	3-4 visits	145	36.2%			
	5 and more	104	26%			
	Total	400	100%			
		M= 3.8				
Duration of registration period in PCC	1-30 days	74	18.5%			
	31-60 days	72	18%			
	61 & more	254	63.5%			
	Total	400	100%			
		M=121.9				

4.7 PCC Services Received

Results of the current study also showed that 62.3% of recipients indicated that they received health advices as part of PCC services, 49% out of those had a good impression about receiving such advices, these findings were better than those reported by Goossens et al., (2018). In their study they showed that, 48% of women received advice services during PCC. Also, our results showed that 19.2% were uncertain about received advices and 31.8% had a bad impression about received advices. These findings were also consolidated by qualitative research, participants opinions were sliced into almost two equal portions; those who were satisfied about advices they received; and those who were not, as one of the participants in FGDs said: *"When I received PCC service in the clinic, I felt appreciated and I felt cared for and that my health status matters for the health team".* On the other hand almost an equal portion in FGDs were not satisfied by the service they received especially from lack of adequate advices. one of the participants in FGDs aged 34 years said: "*Neither midwifes, nor doctors cared and listened attentively, they were giving minimal attention and focus on us compared to woman registered in ANC, nothing was done in follow up visits, only folic acid distribution*". At the same line of this, most of interviewed KIs thought that the level of delivered care for women during PCC needs enhancement, and indeed PCC service quality is not of parallel to the quality of service delivered during ANC, as mentioned by a senior manager during an interview with her: *"Because ANC is implemented since long years there had been a continuous training to staff members both midwives and doctors, therefore its implemented by the midwives and doctors as a second nature, a clear follow up plan exist, beside the ongoing monitoring and evaluation of cases by all involved staff members, however the concept of PCC is still*

premature, it is only seen as giving folic acid supplementations in people's perception, thus the role of staff is to enrich people with information, to deliver the complete message. PCC is very effective in promoting mother's and baby's health and in reducing complications. There are trials in UNRWA centers to activate the PCC in order to function in a more efficient way, this year we are particularly focusing on the quality of PCC, it is seen by UNRWA high level management as a priority area, so we are trying to achieve the highest possible quality of PCC services for all women in the reproductive age".

At the same line of this, 99% of recipients indicated that they received screening and follow up for HTN, out of them 88.4% had a good impression about receiving such services. Also, 97.5% of recipients showed that they received screening and follow up for diabetes, 84.3% of them indicated that they had a good impression about receiving such services. Some women in FGDs said they were first discovered to have DM through this service, and they are grateful, for patience and support they received, also they described the care as holistic by all means covering both the physical and mental spheres.

Most of PCC recipients indicated that they felt satisfied about received health services by health care staff. One of the women in FGDs said: *"I have joined the PCC service and I felt comfortable and satisfied about the service, firstly and after registration, I went to the midwife she measured my BP, weight and height, then she referred me to the laboratory where I had some investigations, then I was referred to the dentist, who examined my teeth, then I was referred to the doctor who examined me, also I have received many health information by my lovely midwife and doctor".*

Results also revealed that 99.2% of recipients showed that they received anemia screening and follow up services, out of them 86.1% have a good impression about receiving this service. At the same line of this, some patients confirm the positive effects they got from PCC. For example, a woman aged 29 years old interviewed within FGDs said: *"I had anemia, after doing blood tests in the clinic, the doctor prescribed to me iron tablets, and I took it which improved my HbG level, so as to have a safe delivery for me and my baby".* Also, more patients indicated the positive effects of received treatments for their anaemia. As mentioned by a woman aged 28 years in FGDs: *"I had a daughter with anemia, however, I did not have PCC service during my pregnancy with that daughter, however my youngest daughter is in a very good condition and do not have anemia or other health*

problems, this is because I was following up in UNRWA clinic with PCC service and have all exanimations and laboratory investigations done, I received vitamins and was better prepared".

Results showed that 99% of recipients received dental services screening and follow up, out of them 70.6% hold a good impression about receiving such services and only 17.5% of them hold a bad impression about such services. However, this contradicts with what had been concluded by qualitative research, participants in FGDs, indicated that dental services were useless, they only provide screening, and management is delayed, and sometimes is not available. *"Whenever I referred to the dentist I waited for a very long time, and when my turn came finally, I only had examination, he did nothing, so I felt disappointed and angry for the wasted time"* A 32 years old woman interviewed during FGDs.

Results also showed that 99.5% of recipients showed that they received folic acid. This finding was better than those reported by Borges et al., (2016) who showed that only 47% of women in Brazil with planned pregnancy received folic acid. This could be explained by the mal practice of folic acid intake among Brazilian women due to lack of enough awareness. Moreover, our findings were in line with those reported by Jourabchi et al., (2018) who showed that most mothers were given folic acid during PCC. This could be explained by the good perception of women regarding significance of folic acid in addition to the very good attention of health policy maker about PCC.

Also, our study showed that 78.1% of recipients, hold a good impression about receiving folic acid prior to conception, while 15.1% hold a bad impression about receiving folic acid. Accordingly, most of women during FGDs with recipients confirmed receiving folic acid and health instructions. *"I have received folic acid in PCC and I was counseled by the midwife on how to take it and when, I think this helped to keep me healthy and decreased any possible complications".* A woman aged 26 years old in FGDs.

Results also showed that only 17.3% of recipients showed that they received medications as part of their PCC services, which Is considered good, of them, only 35.5% hold a good impression about receiving medications. This was also confirmed during FGDs with interviewed women. *"My impression about PCC service is about making my body ready for pregnancy. PCC is about making follow up appointments with my doctor and having a*

complete examination, and if necessary medications". A woman aged 32 years old in FGDs. Also, of those who received medications 53.2% indicated that they found all the prescribed drugs in the clinic while 20.9% indicated that they did not found any of those prescribed medications in the clinic.

This was further shown during FGDs with PCC recipients as mentioned by a 35 years old woman during FGDs: *"My physician prescribed to me some medications as multivitamins and calcium, however I did not have money to buy it, so making such medications available, will make me more satisfied".*

As previously mentioned 62.3% of recipients were taking health related advices; out of them 82.3% indicated that they had doctor counseling about folic acid benefits; also 69.7% have been given instructions about when and how to take folic acid. These findings were consistent with those reported by Tamim et al., (2009) who showed that 71.9% of women in Lebanon receives information about folic acid and its' benefits before conception which might be related to the good awareness and knowledge base of those women. These findings were also better consolidated by qualitative research, participant in FGDs said that MWs and doctors explained the importance of folic acid intake for the health of the mother and baby. *"Actually when I first registered in PCC, I didn't take the folic acid that I received, but after 3 sessions, I was convinced to take it. Each time my midwife and doctor asked me about it and if I used it or not, the doctor said to me it's all up to you, if you desire to have a healthy baby, you should take it, and she explained its significance in preventing health problems and risks. I felt more responsible and started using it, PCC service is about good counseling, advices and follow up, and folic acid supplements alone is not equal to PCC*". A woman aged 24 years old during FGDs.

Study results also indicated that 65.3% of respondent received advices about healthy diet, 63.7% about adequate fluid intake, 48.4% about supplementations, 39.9% about BP monitoring, 38.7% about personal hygiene, 34.7% about unnecessary or harmful medications avoidance, 32.7% about avoiding smoking and passive smoking, 23.4% about importance of follow up visits.

As shown in table 4.7, 91% of those who received health related advices, understood them. This was demonstrated during FGDs with PCC recipients. *"PCC service helped me to further maintain my health, through PCC I discovered that I had a dental caries, and my*

doctor advised me to have a dental appointment in order to get treatment, before conception, and I did it, also I was overweight, so I was advised to follow a diet, in order to reach ideal body weight, and to have better pregnancy outcomes, and I responded to the advices given to me and then my weight was decreased". A woman aged 28 years old.

Also, 32.7% of recipients reported receiving the information they wanted to a great extent, 43.1% to some extent, and 24.2% were not given the information they asked about.

Around one third (32.5%) of recipients indicated that they value the health information they received to a great extent, which was shown during FGDs. *"I think that PCC service is greatly important for both the mother and the baby, it helped to maintain my health in a good way, through the advices and counseling I received, I had the chance to be better. As I adapted a healthy diet and I stopped eating salty food. I had previously troubles with recurrent urinary infections, but after my midwife and doctor instructed me and advised me to drink adequate amount of water and to take the medication I am better now".* A woman aged 28 years old in one of the FGDs. Also, 62.8% indicated that they value the health information they received to some extent and 4.7% found no value to the health information they received. These findings were better than those concluded by Borges et al., (2016).

Moreover, the current study showed that only 10.3% of recipients indicated that they received a written information (brochures). Of them, 41.5% indicated that the given written information is being enough to great extent, 36.6% to some extent and 21.9% indicated that it was not enough. These findings were inconsistent with that reported by Robbins et al., (2016) who showed that the percentage of having written instructions as for example advices and health related information for women involved in PCC was 29%, which might be related to the good level of funding devoted for such clinics.

Also 84.8% of recipients were able to ask about the information they want. Of them 83.6% reported that staff explained the information they asked about clearly all the times which was demonstrated during FGDs. *"I married my cousins, therefore I was fearful to have a consanguinity related complication, so when I have heard about PCC service, I joined the health center and have started receiving a complete health counseling and supplements by the midwife in a clear way, I also received laboratory investigations because I knew that this service will help me to avoid any possible congenital deformities".* A woman aged 28

years old. Also, only 3.3% indicated that staff did not explain the information they asked about clearly.

Our results also showed that 36% of recipients indicated that the main source of health-related information was HC physician. This finding was inconsistent with those reported by Al-Darzi et al., (2014) who showed that 92% of women showed that the main source of information regarding PCC service and folic acid was the doctor. The present study also showed that the other sources of health related information was health center midwife with 21.4%, 12.6% was health center nurse, 0.3% was health center pharmacist, 14.6% was community pharmacies, 5% was friends/family, and 10.1% was social media. These findings were inconsistent with those reported by Al-Darzi et al., (2014) who showed that 8% of women had sources of knowledge from family, nurses, pharmacists, media, books and the Internet.

The mean and median of the number of folic acid tablets taken by recipients was 113.1 and 90 respectively. Moreover 30.5% of recipients indicated that they took more than 91 folic acid tablets while 28.8% took from 61 to 90 tablets and only 24.2% took from 1 to 30 tablets.

Interestingly 75.8% of PCC recipients were compliant to take the folic acid. This result could be related to the good awareness level among women who received PCC. Moreover, our results were in line with those reported by Beckmann, Widmer, & Bolton (2014), who found that pregnant women in Australia who attended PCC were more likely to have received adequate pre-conceptual folic acid which might be related to the comprehensive approach of PCC services.

On the other hand, 24.2% were non-compliant, of those 30.1% showed that they were busy, while 26.8% did not know about its benefits, 20.4% did not take it because of gastritis and hyperacidity, 10.8% because of carelessness about its benefits, 5.4% because of husband/family refusal and 5.4% due to fear of taking any medications during pregnancy or planning for it as shown in figure 4.6 below.

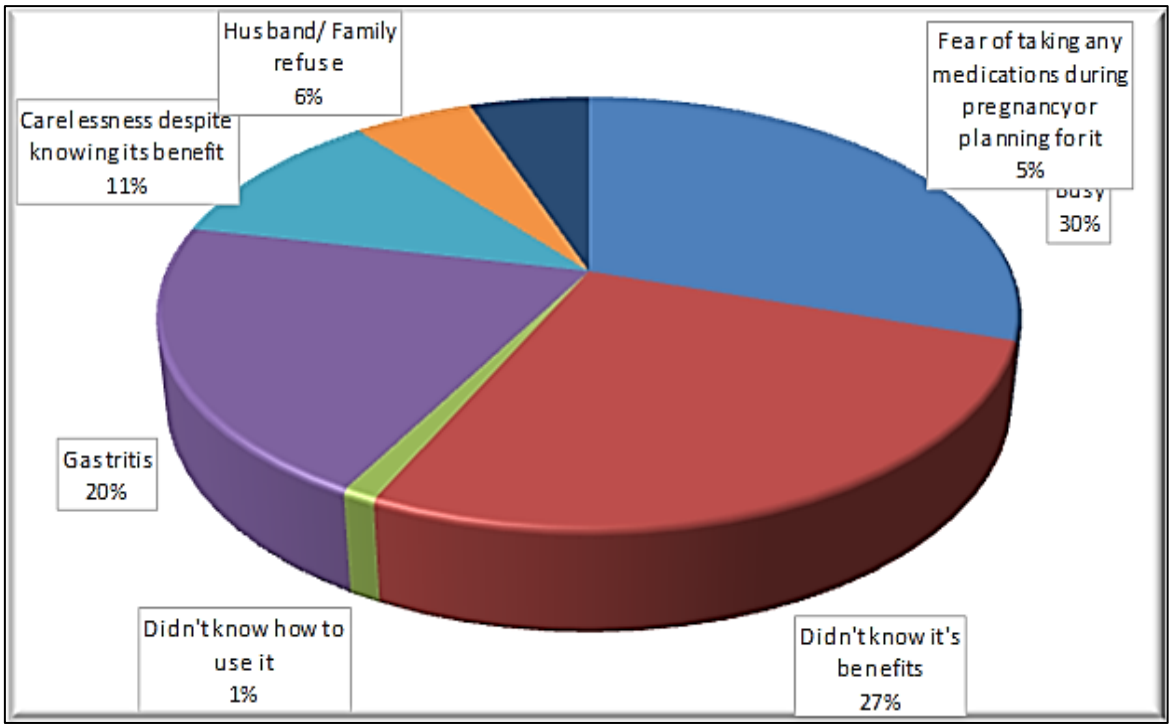

Figure (4.6): Reasons for non-compliance

As indicated in table 4.7 that 19.3% of recipients received at least 1 session before getting pregnant, 18.5% had at least 2 sessions, 36.2% had 3-4 visits, 26% had 5 and more visits. Mean for number of visits is 3.8. Almost two thirds of recipients were registered for 61 days and more, 18% were registered for 31-60 days, and 18.5% were registered for at least 30 days.

Table 4.7 showed, that when we asked women about who was involved in providing the PCC services.

92.5% of recipients indicated that doctors have been involved in providing PCC services, 99.2% indicated that nurses have been involved in the service, 28.3% indicated that clerks have been involved, 92% indicated that laboratory technicians have been involved, and 92.2% indicated that dentists have been involved.

This was illustrated during FGDs with most of PCC recipients who indicated that at least the doctor and midwife were involved in their care. *"I have joined PCC service and received health advices and examination by the midwife that included, measuring my BP, weight and breast examination in addition to full examination by the physician in addition I was referred to the dentist".* A 27 years old woman in FGDs. *"When I came across all stations in the clinic, I received a good care and communication from all staff, so I feel satisfied about received services here".* A 23 years old woman during FGDs.

Table (4.8): Distribution of beneficiaries' responses about appropriateness of PCC services

Variable	Category	N	(%)
Needs met	Agree	229	57.3%
	Uncertain	117	29.2%
	Do not agree	54	13.5%
	Total	400	100%
Expectations met	Agree	217	54.3%
	Uncertain	121	30.2%
	Do not agree	62	15.5%
	Total	400	100%
Adequacy of staff to serve patients	Agree	161	40.3%
	Uncertain	114	28.5%
	Do not agree	125	31.2%
	Total	400	100%
Appropriateness of providers approach	Agree	262	65.7%
	Uncertain	106	26.6%
	Do not agree	31	7.7%
	Total	399	100%
PCC services are needed	Agree	222	55.8%
	Uncertain	146	36.7%
	Do not agree	30	7.5%
	Total	398	100%
Involvement in the care provided	Agree	191	47.9%
	Uncertain	152	38.1%
	Do not agree	56	14%
	Total	399	100%
Privacy had been maintained	Agree	327	82%
	Uncertain	50	12.5%
	Do not agree	22	5.5%
	Total	399	100%
Service providers were skillful	Agree	301	75.4%
	Uncertain	87	21.8%
	Do not agree	11	2.8%
	Total	399	100%
Total score	73.8%		

4.8 Distribution of Beneficiaries' Responses about Appropriateness of PCC Services

As illustrated in table 4.8, the total score for the appropriateness of PCC services was 73.8%.

This was calculated by using SPSS, general frequencies were done to figure the responses and to identify missing data for each question. Data recoding as follows, (agree = 2, uncertain = 1, do not agree = 0), negatively phrased questions have been converted when means were calculated, thus the overall scaling went in a logical direction, higher values indicated positive situations (e.g. presence of favorable items like privacy maintained, or absence of unfavorable items no privacy). And then computation have been performed through summations of the scores for the 8 question for each participant, the equation was then divided by the maximum score "16", and then multiplied by 100%, then the mean for the new variable "appropriateness score" was taken.

The weakest component of service appropriateness was from clients previews is adequacy of staff to serve patients (40.25% agreed). This was further explored in FGDs, where almost 70 percent of FGD participants showed that the number of staff was in adequate, they had to wait for too long in each station. *"In each station I had to wait for a long time, I will be more satisfied if there was a separate PCC station, moreover, waiting for my turn in the midwife or doctor stations is tiresome, I wish that the number of staff were increased as to cover all clients in a shorter duration".* A 32 years old woman interviewed during FGDs.

Recipients were asked if their needs have been met 57.3% of them agreed that their needs have been met, more than half of recipients 54.3% agreed that their expectations were met. These findings were similar to those reported by Beckmann, Widmer, & Bolton (2014), who showed that nearly 60% of women expectations and needs were met. And inconsistent with those reported by Borges et al., (2016). As in their study they showed that less than 20% of women expectations were met.

Results also showed that 65.7% agreed that staff uses an appropriate approach. Interestingly 55.8 % of recipients indicated that PCC services are needed.

Results in table 4.8 also revealed that 47.9% of recipients indicate that they were involved in the provided care. Results also showed that 82% of recipients indicated that their privacy had been maintained. The results were also compared and matched to what was said in FGDs; while a large portion of participants agreed that privacy was kept, as

mentioned by a 23 years old woman: *"My midwife close the door, she don't allow any body to enter the room while she examines us, I feel free and I can tell her anything, she also knew about my difficult home situation, she helped me a lot in overcoming stressful conditions, I do really respect her"*; another smaller portion disagreed, a woman aged 28 years said with anger: *"I had several interruptions to my session in doctor station, she didn't close the door, one of the patients asked about her turn, she should have better kept my privacy".* Study results also showed that around three quarters of recipients 75.4% agreed that HCP's were skillful. This was in line with results concluded by Jourabchi et al., (2018).

Table (4.9): Distribution of beneficiaries' responses about coordination and continuity of PCC Services

Coordination and continuity of care	Category	N	(%)
PCC are provided by the same provider	Agree	279	70.3%
	Uncertain	59	14.9%
	Do not agree	59	14.9%
	Total	397	100%
Smooth transition between providers	Agree	173	43.6%
	Uncertain	121	30.5%
	Do not agree	103	25.9%
	Total	397	100%
Receiving a clear information when referred to other care provider	Agree	230	57.8%
	Uncertain	133	33.4%
	Do not agree	35	8.8%
	Total	398	100%
Good coordination among providers to the best interests of the client	Agree	242	60.7%
	Uncertain	119	29.8%
	Do not agree	38	9.5%
	Total	399	100%
Receiving a coherent service	Agree	231	57.9%
	Uncertain	138	34.6%
	Do not agree	30	7.5%
	Total	399	100%
Receiving smooth care (for each single provider)	Agree	215	53.9%
	Uncertain	152	38.1%
	Do not agree	32	8%
	Total	399	100%
Discontinuities in service provision	Agree	79	19.9%
	Uncertain	216	54.4%
	Do not agree	102	25.7%
	Total	397	100%
Total score	69.7%		

4.9 Distribution of Beneficiaries' Responses about Coordination and Continuity of PCC Services

As shown in table 4.9, the total score for the continuity of care and care coordination of PCC services was 69.7%. This was calculated by using SPSS, general frequency were done to figure the responses and to identify missing data for each question. Data recoding as follows, (agree = 2, uncertain = 1, do not agree = 0), negatively phrased questions have been converted when means were calculated, thus the overall scaling went in a logical direction, higher values indicated positive situations (e.g. presence of favorable items like receiving a coherent service, or absence of unfavorable items discontinuity in service). And then computation have been performed through summations of the scores for the 7 question for each participant, the equation was then divided by the maximum score "14", and then multiplied by 100%, then the mean for the new variable "coordination and continuity of care" was taken.

Results also showed that 70.3% of recipients indicated that PCC are provided by the same provider. Table 4.9 shows that 43.6% of recipients indicated that there was a smooth transition between providers. This was further demonstrated during FGDs with most of PCC recipients. *"I feel very satisfied about services I have received in the center since all HCP's were very cooperative and supportive to me and have provided me with proper health counseling and health education".* A woman aged 32 years.

Also 57.8% of recipients indicate that they received a clear information when referred to other HCP's. Moreover 60.7% of recipients agreed that there was a good coordination among providers to the best interest of the client.

Results of this study showed that 57.9% of PCC recipients agreed that they receive a coherent service. Results indicated that 53.9% of recipients consider that they received a smooth care for each single provider. This was also consolidated in the FGDs with PCC recipients: *"In PCC service, I was examined by the doctor, midwife and have a comprehensive set of examinations and analysis including dental, HbG, RBG, urine tests, however there are long waiting time for patients until they get treatments and interventions".* A woman aged 25 years old.

Table (4.10): Distribution of Responses about barriers in receiving the PCC

Variable	Category	N	%
Facing any barriers during receiving service	Yes	241	60.4%
	No	158	39.6%
	Total	399	100%
Kind of barriers (N = 241)			
Waiting time is too long	Yes	169	70.1%
Far place of clinic	Yes	76	31.5%%
In adequate space	Yes	59	24.5%
Having to see several HCP's (dentist, doctor, Midwife, lap, pharmacy)	Yes	48	19.9%
Flow of service is cumbersome	Yes	45	18.7%
Gender of provider is not appropriate	Yes	21	8.7%
Inconvenient appointments	Yes	18	7.5%
Problematic family doctor approach (mixed category of patients to the same doctor)	Yes	10	4.1%
Being assigned to a specific team, not of your choice	Yes	9	3.7%
Others	Yes	4	1.7%
E-health complicates the process	Yes	3	1.2%
Total barriers score	17.5%		

4.10 Distribution of Beneficiaries' Responses about Barriers they face in PCC Services

As shown in table 4.10, the total score of barriers to the PCC services was 17.5%. This was calculated by using SPSS, general frequency were done to figure the responses and to identify missing data for each question. Data recoding as follows, (yes = 1, no = 0), were higher values indicated more barriers (e.g. presence of unfavorable items like far place of clinic). And then computation have been performed through summations of the scores for the 11 question and then divided by 2, multiplied by 100%, then the mean for the new variable "barriers to PCC" was taken.

Interestingly results indicated that clients referred the bulk of barriers to registering in the service to the long waiting time 70.1%. This was shown by PCC recipients during FGDs. *"Whenever I came for my PCC visit, I had to wait for so long until I get the service, if HCP's helped us in decreasing waiting time it will increase my own satisfaction as well as other women s' satisfaction from the service".* A woman aged 30 years old.

The next barrier was far place of clinic 31.5%. Also, 24.5% considered space inadequacy in waiting areas as a barrier, followed by having to see several HCP's 19.9%. Around 18.7% indicated that the flow of service was cumbersome: *"When I came to the clinic, they have registered me in a health team upstairs, through my visit I had to go up and down stairs several times, which caused miscarriage for me several times before. However, in my last pregnancy I preferred to go to a private doctor to get my treatments and care to maintain my pregnancy".* A woman aged 23 years old during FGDs. This point was also more explored. A woman aged 30 years during FGDs said: *"I think that access to laboratory is difficult because it is far from the doctor room, also toilets are far because if I want to get a urine sample, I have to walk downstairs so as I can get my things done".*

The remaining barriers were as follows: about 8.7% indicate that gender of provider was not appropriate, around 7.5% indicated that the barrier is the inconvenient appointments, 4.1% said that the barrier is the problematic family doctor approach, this was contradicting with what women said in FGDs, as mentioned by a woman aged 35 years old: *"I love the family team I am assigned to. My doctor is really amazing also the midwife, she knows us and knows our children too, they take care of us very well, whenever I go to the clinic, and see my doctor there, I feel safe and relieved, as she already understands my complaints and I feel that as if I were visiting a private doctor"*. Around 3.7% indicated that the barrier was because of being assigned to a specific team not of their choice. Results also showed that only 1.2% indicated that e-health complicates the process.

Also among existing barriers to PCC service as revealed by KIs, wherein most of them expressed the need for developing a special PCC training and capacity building. *"Till now, we do not have a clear technical instructions regarding screening or follow up protocol for PCC clients, which affect the quality and continuity of care for both the mother and the newborn, and thus outcomes and creates a loose system and inconsistent medical practice among staff, we should have a clear treatment and follow up guidelines for a better and more efficient service implementation".* As mentioned by the SMO in one of the KIIs. At the same line of this, some KIs indicated the need of integrating other necessary services like infertility clinic so as to provide treatment and screening for infertile cases, the interviewed doctor said: "*I perceive PCC service as an important dimension of maternal health services however there are still missing components which should be made available as developing protocols, infertility services, in addition to adding other*

necessary laboratory investigations and designing training for all staff about PCC service and its' different components like other components of care delivered in UNRWA clinics and facilities".

Table (4.11): Distribution of beneficiaries' responses by their interface with service provider related variables

Variable	Category	N	%
Health care providers in their office	Yes, most of the times	270	67.7%
	Yes, sometimes	121	30.3%
	No	8	2%
	Total	399	100%
Being asked to have a seat in the beginning	Yes, most of the times	284	71.4%
	Yes, sometimes	71	17.8%
	No	43	10.8%
	Total	398	100%
Provider keep eye contact	Yes, most of the times	185	46.5%
	Yes, sometimes	155	38.9%
	No	58	14.6%
	Total	398	100%
Interruptions in the session	Yes, most of the times	62	15.5%
	Yes, sometimes	167	41.9%
	No	170	42.6%
	Total	399	100%
Kind of interruptions (N= 229)			
Having another patient		128	55.9%
Clinic phone		113	49.3%
Network problem		94	41.1%
Staff member		66	28.8%
Provider mobile		17	9.8%
Others		6	2.6%
Being answered when you ask in clearly and in a timely stated manner	Yes, all the times	293	73.4%
	Yes, sometimes	85	21.3%
	No	21	5.3%
	Total	399	100%
Taking feedback about lab results (HbG level, RBG, Urine test)	Yes, all the times	265	66.6%
	Yes, sometimes	101	25.4%
	No	32	8%
	Total	398	100%
Provider consult you about your health condition	Yes, all the times	137	34.4%
	Yes, sometimes	187	47%
	No	74	18.6%
	Total	398	100%
Having ever been asked about the quality of PCC services before	Yes, all the times	73	18.4%
	Yes, sometimes	131	33%
	No	193	48.6%
	Total	397	100%

Variable	Category	N	%
Extent of satisfaction of you and your family members by PCC services	Yes, to high extent	152	38.1%
	Yes, to some extent	192	48.1%
	No	55	13.8%
	Total	399	100%
Perceiving staff as being "caring" and "willing to go the extra mile" to meet customer's needs	Yes, to high extent	151	37.8%
	Yes, to some extent	178	44.6%
	No	70	17.5%
	Total	399	100%
Overall interaction of the doctors with you	Good	251	63.1%
	Uncertain	105	26.4%
	Bad	42	10.6%
	Total	398	100%
Overall interaction of the midwives/nurses with you	Good	299	75.1%
	Uncertain	85	21.4%
	Bad	14	3.5%
Overall interaction of the dentists with you	Good	195	49.2%
	Uncertain	163	41.2%
	Bad	38	9.6%
	Total	396	100%
Overall interaction of the lab technicians with you	Good	207	51.8%
	Uncertain	165	41.5%
	Bad	27	6.8%
	Total	398	100%
Total score	63.4%		

4.11 Distribution of Beneficiaries' Responses by their Interface with Service Provider Related Variables

Results of this study indicated that 67.7% of recipients reported that they found HCP in their office most of the time which was demonstrated during FGDs with PCC recipients. *"I think that there is a system in the clinic and in each station, I can find out the HCP's easily and I received the service easily all through registration, laboratory analysis and treatments".* A woman aged 25 years old during FGDs. Results also showed that 30.3% of recipients indicated that they found HCP's at their office sometimes and 2% indicated that they did not find HCP's at their office.

Table 4.10 shows that around 71.4% of recipients reported that they are being asked to have a seat in the beginning of the sessions. Results were matched with what was discussed through FGDs, one of the participants said: *"When I enter to the midwife room, she welcomes me and asks me to have a seat, she then gives me some advices and do measure my BP"*. The majority of participants agreed with this approach, only few didn't agree, one of the participants said: *"I came to PCC in 5 visits, only in the first one, I were asked to sit, and had all examination, but the other visits were less than a minute, merely folic acid given to me"*. Moreover 46.5% of recipients indicated that HCP's kept eye contact with

them most of the times. During KII with HCP's, one of the doctors said: *"I try as much as I can to pay attention to all details, I focus on the patient since entrance to the room, asks her to close the door as to keep her privacy, I don't type anything on her e-health record till she finishes her complain and I do listen attentively to my patient, and then examine her, I prefer to keep eye contact all through the session, I know it's difficult considering the time and the number of people waiting for their turns, but through daily practice I managed to make this as a daily routine, even my patients adapted and they enter one by one, and do respect each other privacy".* This contrast to what some FGDs participants mentioned, a 34 y old woman said: *"My doctor starts by welcoming and asks me to sit, but she doesn't pay enough attention, she keeps typing on the computer, and rarely looks attentively to me".*

Moreover, results showed that 15.5% of recipients indicated that they had interruptions in the session most of the time, 41.9% indicated that there were interruptions sometimes, and 42.6% showed that they did not had any interruptions during the sessions.

As shown in table 4.11, the highest score among interruption's causes was due to having another patient by 55.9%, the second commonest cause of interruptions was because of clinic phone by 49.3%, followed by presence of a network problem 41.1%, followed by a staff member by 28.8%, results indicated that 9.8% because of a provider mobile and 2.6% for other causes.

During KII, one of the midwifes said: *"People expect that they will finish as soon as they arrive, waiting bothers them, especially they do have to wait in several stations, starting from clerk and ending by the pharmacy. For me I think closing the door is not enough, people eager to finish as quick as they can, sometimes they do knock the door, sometimes they want just to ask a question. This do interfere with the work, and indeed can affect the quality of delivered service. Still we are trying as hard as we can to deliver the best quality service, and at the end people behavior will change".*

- **General Perceptions about the Quality of the Services**

Table 4.11 also showed that the total score of beneficiary provider interface is 63.4%.

This was calculated by using SPSS, general frequency were done to figure the responses and to identify missing data for each question. Data recoding as follows, (good = 2, uncertain = 1, bad = 0), the overall scaling went in a logical direction, higher values indicated better perception (e.g. presence of favorable situation like perceiving staff as

being cared, willing to go extra mile). And then computation have been performed through summations of the scores for the 13 question for each participant, the equation was then divided by the maximum score "26", and then multiplied by 100%, then the mean for the new variable "beneficiary provider interface" was taken.

Results showed that 73.4% of recipients were answered in clearly and a timely stated manner all the times which was shown also during FGDs with most of PCC recipients. "*With PCC I received several appointments for follow up in each visit the midwife kept reminding me of healthy food and exercise, whenever I asked my midwife she answers my questions and calms down my concerns, her advices were helpful to me, I stopped eating chocolate, and actually managed to lose extra weight, that's why I am grateful to her".* A woman aged 27 years old during FGDs. Results also showed that 21.3% stated that their questions had been answered sometimes and 5.3% were not answered at all.

Results in table 4.11 indicated that 66.6% of recipients reported that HCP's had given them feedback regarding laboratory results every time, while 25.4% of them had received such feedback sometimes and 8% never took any feedback. These findings were further explored with KI during interviews. One of the doctors said: *"It's not enough to request the test for the patient, she should be informed about the purpose, I do tell her in short what is the test name, and why I am requesting it, in this way she feel more secure and comply more with instructions and treatments I prescribe to her".*

Also, 34.4% of recipients indicated that HCP's consult them about their condition all the times which was demonstrated during FGDs with PCC recipients. Results also showed that 47% have consulted them sometimes. *"Whenever I came to the clinic for my PCC appointments, I had a very good communication with all staff, then I were examined by my doctor and my midwife, they gave me supplements in addition to the health messages I received, all of this left a good impression in my mind about the PCC service".* As mentioned by a woman aged 27 years old. While 18.6% stated that they did not receive any consultations about their health condition.

Moreover, results showed that almost half of recipients (48.6%) have never been asked about the quality of the service, around one third (33%) have been asked sometimes only 18.4% indicated that they have been asked about the quality of PCC services before all the times.

Also, 38.1% of recipients and their families were highly satisfied by received PCC service, which was shown during FGDs. Results also showed that 48.1% of recipients and their families were satisfied to some extent. *"I feel very satisfied about PCC services, my husband too was happy to hear that my anemia is well treated before conception, he encouraged me and reminded me with my appointments*". As mentioned by a woman aged 25 years old. These findings were similar to those reported by Beckmann, Widmer, & Bolton (2014).Who showed that good counselling prior to conception alters women behavior in a positive way and make them more satisfied. Results also showed that 13.8% were not satisfied at all which was demonstrated in FGDs with some PCC recipients. *"I came across a doctor room for examination, however she only asked me for some information she didn't examine me as I expected, so I think this is unacceptable of how a doctor should deal with the patients"*. A woman aged 20 years. Our findings were better than those concluded Borges et al.., (2016). In their study they showed that majority of women were not satisfied from the counselling they received.

Results also showed that 37.8% of recipients agreed to high extent, that staff are caring and willing to go to an extra mile in order to meet their needs, and 44.6% perceived staff as being caring to some extent, one of the participants in FGDs said: *"My doctor took good care of me, especially I had diabetes, and was concerned to help me get my blood sugar controlled, she also advised me to delay pregnancy and offered a temporary FP till my health is optimized. Also when my husband refused FP, she gave an appointment for both of us, she explained to him what are the consequences of uncontrolled diabetes, and then he accepted FP, I wonder what would happened if I didn't have such support. I think me and the baby would suffered from diabetes complications*". These findings were similar to the results concluded by Jourabchi et al., (2018). Study results showed that 17.5% of participants did not perceived staff as being caring at all.

Also 63.1% of PCC recipients described the overall interaction of doctors with them as good, 26.4% were uncertain. Results also showed that only 10.6% described such interaction as a bad which was shown during FGDs. *"Doctors working here in the clinic are very bad and do not deal in a respectful way with patients, as they can leave patients wait and go outside for a long time, so I had a negative experience in dealing with them".* A woman aged 30 years old during FGDs.

Regarding interaction of midwife with clients, 75.1% of recipients described it as being good which was shown during FGDs with PCC recipients. *"I received health messages and information from midwife about importance of taking folic acid on enhancing the general health and preventing any congenital anomalies in any coming pregnancy. I rate my satisfaction as 9 out of 10 points scale about the service".* A woman aged 28 years old. Results also showed that 21.4% were uncertain and only 3.5% described it as being bad.

Results also showed that 49.2% of recipients described the overall interaction of dentists with them as good, 41.2% were uncertain and 9.6% described such interaction as bad. *"I recommend to expand the dental services provided in UNRWA, we can't wait to book an appointment sometimes the pain is so serve, and we can't afford private doctor cost. In the clinic they don't deal with difficult cases and as I have no enough money I had to undergo molar extraction instead of preserving it, indeed it's a loss, and I wish I could have the chance for a better intervention".*

Moreover almost half of recipients (51.8%) reported good interaction of lab technician with them, 41.5% were uncertain and 6.8% described such interaction as bad.

Table (4.12): Distribution of beneficiaries' responses about the accessibility to PCC services

Variable	Category	N	%
Distance to reach the center	Far	106	26.5%
	Reasonable	187	46.7%
	Close	107	26.8%
	Total	400	100%
Affordability of transportation cost from home to and from the facility	Affordable	285	71.3%
	Not affordable	115	28.7%
	Total	400	100%
Being asked to pay for any external drugs/ lab results	Yes	74	18.6%
	No	323	81.4%
	Total	397	100%
Being ever tuned back without receiving the services you came for	Yes	51	12.9%
	No	344	87.1%
	Total	395	100%

Reasons for tuning back client (N=51)			
No drugs available		23	45.1%
No laboratory services		17	33.3%
No time		9	17.6%
Absent PCC provider		2	3.9%
Presence of any accessibility related barriers	Yes	140	35.2%
	No	258	64.8%
	Total	398	100%
Kind of barriers to access (N=140)			
Lack of transportation		45	32.1%
Presence of physical barriers		39	27.9%
Social –family not convienced		27	19.3%
Lack of expert health staff		12	8.6%
Lack of medication		5	3.6%
Others		31	22.1%

4.12 Responses of Recipients about Accessibility to the PCC

As shown in table 4.12, results showed that 26.5% indicated that distance to reach the health center is far, 46.7% indicated that it is reasonable and 26.8% indicated that distance is close. Approximately three quarters (71.3%) reported that they were able to afford transportation cost while the remaining 28.7% reported that transportation cost was not affordable.

Study results indicated that 18.6% of recipients were asked to pay for external drugs/laboratory results. And 12.9% of recipients were tuned back without receiving the services they came for. Of them 45.1% were tuned back because of no drugs available, which was illustrated during FGDs with PCC recipients. *"I came to the doctor and explained that I suffer from muscle cramps in night and pain in my legs, with frequent twitches in the face, stiffness and contractions in hands, the doctor first requested to investigate vitamin D level in the blood then vitamin D supplements were prescribed by him after that, however it was not available in the clinic and I had to buy it from my own pocket".* A woman aged 36 years old.

Results also showed that 33.3% were tuned back because of lack of some laboratory services, and 17.6% due to lack of time as shown during FGDs. *"I think that PCC service*

is very important since it includes a full examination and includes conducting some important investigations and follow up in addition to recieving supplements, but I did not join it because I do not have enough time". A woman aged 35 years old during FGDs. Results also showed that only 3.9% were tuned back due to absent PCC provider.

Regarding existence of accessibility related barriers 35.2% reported presence of one or more of the following barriers: 32.1% of them were due to lack of transportation, 27.9% of recipients admitted the presence of a physical barriers, 19.3% reported the existence of a social/family issue (not convienced), 8.6% because of lack of expert health satff, 3.6 % because of lack of medication, 2.1% because of lack of transportation.

Table (4.13): Distribution of beneficiaries' responses by physical amenities of the PCC services

Variable	Category	N	%
Place at which the PCC services are provided is favorable	Yes	366	92.2%
	No	31	7.8%
	Total	397	100%
Availability of a chair to sit at the PCC	Yes	351	88%
	No	48	22%
	Total	399	100%
Presence of enough space for people in the clinic (As to stay in regular rows)	Yes	331	82.8%
	No	69	17.2%
	Total	400	100%
Adequacy of ventilation of clinic	Yes	338	84.5%
	No	62	15.5%
	Total	400	100%
Presence of a clean toilet	Yes	168	42.2%
	No	230	57.8%
	Total	398	100%
Availability of drinking water	Yes	77	19.3%
	No	321	80.7%
	Total	398	100%
Available water being clean for use	Yes	49	63.6%
	No	28	36.4%
	Total	77	100%

4.13 Responses of recipients about physical amenities

As shown in table 4.13, results of this study showed that 92.2% of recipients liked the place at which the PCC services are provided. Also 88% of recipients reported that they found a chair available to sit at the PCC. 84.5% of recipients indicated there is adequate ventilation in the clinic. Only 42.2% indicated that they found a clean toilet. 19.3% of recipients indicated that drinking water was available, out of those around 63.6% said that the water was clean for use.

Table (4.14): Distribution of beneficiaries' responses by waiting and contact time related to PCC

Variable	Category	N	%
Waiting time in minutes	<15 minutes	52	13%
	16-30 minutes	157	39.2%
	31-45 minutes	22	5.5%
	46-60 minutes	111	27.8%
	61 and more	58	14.5%
	Total	400	100%
	M= 47.8		
Perceiving waiting time	Short	22	5.6%
	Reasonable	158	39.9%
	Long	216	54.5%
	Total	396	100%
Contact time in minutes (first visit)	<5 minutes	193	48.3%
	6-10 minutes	141	35.3%
	11-15 minutes	52	13%
	16-20 minutes	7	1.7%
	21 minutes & more	7	1.7%
	Total	400	100%
	M= 8.3		
Perceiving contact time	Short	95	24.3%
	Reasonable	295	75.4%
	Long	1	0.3%
	Total	391	100%
Being given any follow up appointment	Yes, all the times	350	87.5%
	Yes, sometimes	45	11.3%
	No	5	1.2%
	Total	400	100%
Having to wait too long to make an appointment	Yes, all the time	44	11.1%
	Yes, sometimes	34	8.6%
	No	317	80.3%
	Total	395	100%
Making an appointment is easy/simple	Yes, all the time	365	92.4%
	Yes, sometimes	24	6.1%
	No	6	1.5%
	Total	395	100%

Variable	Category	N	%
Being asked about the best time that siuts you for PCC appointments	Yes, all the time	326	82.5%
	Yes, sometimes	29	7.3%
	No	40	10.2%
	Total	395	100%
Committmment of care provider to the appointment they give	Yes, all the times	283	71.6%
	Yes, sometimes	79	20%
	No	33	8.4%
	Total	395	100%
Stations or waiting area with long stayed period N=400			
Doctor		148	37%
Midwife		124	31%
Lab		83	20.8%
Pharmacy		46	11.5%
Clerk		37	9.3%
Dentist		12	3%
Wait for a provider that is not in his/her position in minutes	Zero minutes	315	78.7%
	1-10 minutes	55	13.8%
	11 minutes & more	30	7.5%
	Total	40	100%
	M= 1.2		
Spending enough time with the health provider	Yes, all the times	264	66.5%
	Yes, sometimes	76	19.1%
	No	57	14.4%
	Total	397	100%

4.14 Responses of Beneficiaries' about Time Consumed in PCC

As shown in table 4.14, results also showed that the mean of waiting time was 47.8 minutes, and 39.2% of PCC recipients had a waiting time of 16 to 30 minutes, 27.8% had from 46 to 60 minutes and only 13% had a waiting time of less than 15 minutes. Also, 54.5% of recipients perceived waiting time as being long, 39.9% as reasonable and only 5.6% as short. The results were further discussed with FGDs participants, one of the woman said: *"I came to the clinic to register in PCC as I had problems in my first pregnancy, the service is actually good, except for the long waiting, I had to wait in every station from 5 to10 minutes, I have other duties in home to accomplish, so I didn't return back on the next appointment"*.

Results of the study showed that that the mean for contact time in first visit was 8.3 minutes. Almost half (48.3%) of recipients indicated that contact time was less than 5 minutes, and more than one third of recipients (35.3%) indicated it was ranging from 6-10 minutes. Also, 75.4% of recipients perceived contact time as reasonable and 24.3% perceive it as short time. During FGDs a woman said: *"I had barely enough time to*

measure my BP and weight, I wanted to ask some other questions, but there was too many women waiting their turns in front of the midwife door, I think I didn't had enough time". On the other hand some participants indicated that they have a totally different experience, they liked the way they are being talked to, one mother aged 39 years said: *"I realized that there are too many people outside, and wanted to leave early, but my doctor told me that it's your chance to ask, and you have the right to be respected, you didn't came here just for medication, and I spent enough time to be examined and received all the information I wanted".*

Also, 87.5% of recipients were given follow up appointments all the times which have been demonstrated during FGDs with most of PCC recipients*: "I am following up with PCC services for approximately one year and every time I receive an appointment to my visit. I can have it easily all the times and I have found out that it is very important in maintaining my health and my newborn health as well, since I had a complete clinical examination, blood test and received supplements".* A woman aged 30 years during FGDs. Results also showed that 11.3% were given follow up appointments sometimes and 1.2% were not given any follow up appointments. Moreover, 80.3% indicated that they didn't have to wait too long to make an appointment while only 11.1% had to wait too long.

Also, 92.4% of recipients indicated that making an appointment is easy/simple all the times while only 1.5% said it was not easy or simple. At the same line of this, 82.5% of recipients indicated that they were asked about the best time that suits them for PCC appointments all the times. This was evident during FGDs wherein most of the recipients showed that they were asked about the best time that suits them for the next appointment. "*Whenever I came for my appointment, my midwife asked about the best time that suits me for the next visit, the scheduled visits make me more comfortable and committed to my appointment".* A woman aged 30 years old during FGDs. Also 7.3% were asked sometimes and 10.2% were never asked. 71.6% of recipients found HCP's committed to the appointment they gave all the time, 20% sometimes and 8.4% were not committed at all.

Regarding stations or waiting areas that recipients stayed in for a longer period, they are arranged as follows from the longest to the shortest, doctors comes first, followed by midwifes, laboratory, pharmacy, and the shortest waiting time were spent in dental screening station.

Interestingly 78.7% of recipients indicated that they wait for zero minutes for a HCP that is not in his/her position, 13.8% waited for 1 to 10 minutes and 7.5% waited for 11 minutes and more. Also, 66.5% of recipients indicated that they spent enough time with the HCP's all the time, 19.1% for sometimes and only 14.4% of recipients did not spend enough time with them.

Table (4.15): Distribution of beneficiaries' responses by perceived health impacts (mother & pregnancy outcomes) of PCC Services

Variable	Category	N	%
Extent to which the program enhanced your quality of life	Yes, to great extent	126	33.3%
	Yes, to some extent	114	30.2%
	Not, at all	138	36.5%
	Total	378	100%
Your health being positively affected by the program	Yes, to great extent	121	32.1%
	Yes, to some extent	122	32.4%
	Not, at all	134	35.5%
	Total	377	100%
Aspects positively affected for mothers (N = 243)			
Prevented anemia		142	58.4%
Treated a current anemia		58	23.9%
To discover any blood related disorder		62	25.5%
To avoid premature delivery		32	13.2%
To avoid postnatal depression		8	3.3%
To decrease your risk of having CS delivery		21	8.6%
Your child' health being positively affected by the program	Yes, to great extent	136	36.4%
	Yes, to some extent	147	39.3%
	No	91	24.3%
	Total	374	100%
Aspects positively affected for newborn (N = 283)			
Decreased baby chance of having congenital anomaly	Yes	253	89.4%
Reduce premature delivery	Yes	27	9.5%
Reduced LBW	Yes	33	11.7%
Decreased your baby chance of NICU admission	Yes	34	12%
Reduced your child risk of anemia	Yes	49	17.3%

4.15 Responses of Recipients about Perceived Health Impacts of PCC Services on both Mother and Pregnancy Outcome

As shown in table 4.15, results showed that around one third of recipients indicated that the PCC program have enhanced their quality of life to great extent, 30.2% to some extent, and 36.5% indicated that the program did not enhance their quality of life. Also, 32.1% of recipients indicated that their health being positively affected by the program to a great extent which was demonstrated during FGDs. *"When we take folic acid. We feel that we are in a good health condition, for example, hair, nails and sight will be better and we feel to be more prepared to get pregnant".* A woman aged 28 years old. Results also showed that, 32.4 % indicated that their health being positively affected by the program to some extent and 35.5% indicated that their health were not enhanced by the program.

Out of those who reported positive effect on their health, 58.4% indicated that the program was successful in preventing anemia, 23.9% indicated that it was successful in treating a current anemia. These findings were illustrated during FGDs with PCC recipients. A woman aged 35 years old said: *"I had a positive benefits for my health as a result of the PCC service, since it prepared my body for a healthy and safe pregnancy, since I had calcium deficiency and anemia, and my doctor prescribed calcium, iron and folic acid supplements for me, so that my health will be more enhanced and ready for pregnancy".* Results also showed that 25.5% indicated that the program has discovered a blood related disorder. Also, 13.2% indicated that the program helped them to avoid a premature delivery, 3.3% indicated that the program helped them to avoid postnatal depression, 8.6% reported that the program decreased the risk of having CS delivery.

Moreover, 36.4% of recipients indicated that their child health being positively affected by the program to great extent evidenced by FGDs with PCC recipients. *"I have a son and a daughter and I did not have the chance to receive PCC service when I was pregnant with them, unfortunately after their delivery they suffered from several health problems my son have sight problem and my daughter had problems in her legs, however in my previous pregnancy, in which I received PCC my last baby had no health problems and was in a very good health condition, this is because I received PCC service, I think that my baby health is much better with PCC service".* A woman aged 25 years old. Results also showed

that, 39.3% agreed to some extent, however 24.3% indicated that their child health was not affected by the program at all. Out of those with positive effect over their child s' health, 89.4% indicated that the program decreased baby chance of having a congenital anomaly. These findings were consistent with those reported by Beckmann, Widmer, & Bolton, (2014). Whose study showed that women in Australia who attended PCC reported decreased incidence of fetal anomalies. Moreover, our results showed that the PCC program decreased premature delivery by 9.5%, which was in line with results reported by Williams et al., (2012), who showed that only 6.8% of women received PCC have delivered a preterm infant. These findings were also in line with those reported by Beckmann, Widmer, & Bolton, (2014), who showed that women in Australia who attended PCC reported less preterm deliveries. Accordingly, our results were similar to those reported by Jourabchi et al., (2018). In their study they showed that preterm birth was significantly lower among Iranian women who received PCC with 4% compared to those who did not with 12.4%. Our results also showed that the PCC program reduced the chance of LBW by 11.7%. These results also were similar to that reported by Williams et al., (2012). Their study indicated that women who received PCC had a lower incidence of LBW by 5.8%. At the same line of this, our results were consistent with those concluded by Jourabchi et al., (2018). As their study showed that LBW was significantly lower among Iranian women who received PCC with 5% while it was higher among those who did not receive PCC with 11.4%.

Our results also showed that among positive effect of PCC program over their child s' health, 12% indicated that it decreased their baby chance of NICU admission and 17.3% reduced their child risk of anemia.

Table (4.16): Differences in overall perception of PCC service in reference to sociodemographic and economic characteristics of beneficiaries respondents (recipients only)

Variable	Category	N	Mean	SD	Factor	Value	Sig.
Age	15-19 Years	14	62.6%	17.7	**F**	**1.138**	**0.333**
	19-25 Years	123	68.4%	18.3			
	25-30 Years	157	67.3%	17.8			
	30 Years & more	105	70.4%	17.1			
	Total	399	68.3%	17.8			
Age at marriage	Less than 18 years	105	67.4%	16.6	**F**	**0.441**	**0.724**
	18-25 years	252	68.2%	18.4			
	25-30 years	30	70.7%	15.5			
	30 years and more	13	71.9%	20.3			
	Total	400	68.3%	17.8			
Governorates	North	90	62.7%	15.5	**F**	**10.937**	**0.001**
	Gaza	68	60.3%	19.2			
	Dear Al Balah	81	75.4%	15.9			
	Khanyonis	80	70.9%	18.3			
	Rafah	80	71.6%	16.3			
	Total	399	68.3%	17.8			
Places of residence	Rural	38	74.9%	16.5	**F**	**6.397**	**0.002**
	Urban	181	65.1%	18.2			
	Camp	171	69.9%	16.6			
	Total	390	68.1%	17.6			
Family type	Nuclear Family	161	69.4%	18.7	**t**	**1.118**	**0.637**
	Extended Family	236	67.4%	17.1			
Number of people living in the same dwelling	3-5 members	203	70.6%	16.5	**F**	**5.752**	**0.003**
	6-8 members	135	67.9%	18.9			
	9 and more	59	61.8%	17.4			
	Total	397	68.4%	17.7			
Education level	Preparatory and less	49	72.2%	15.7	**F**	**1.652**	**0.193**
	Secondary	179	67.1%	17.9			
	University/college	171	68.5%	18.2			
	Total	399	68.3%	17.8			
Employment	Unemployed	369	68.3%	17.8	**t**	**0.215**	**0.968**
	Employed	31	67.6%	18.2			
Monthly family income in NIS	500 NIS or less	207	68.2%	17.9	**F**	**0.001**	**0.999**
	501-1000 NIS	94	68.2%	18.8			
	More than 1000 NIS	72	68.2%	15.9			

4.16 Differences in Perception of PCC Services in Reference to Sociodemographic and Economic Aspects

The total perception of service score, was calculated by using SPSS, general frequency were done to figure the responses and to identify missing data for each question out of the 39 used to calculate the score, that came under the 4 main domains mentioned previously; "Appropriateness of service, coordination's and continuity of care, barriers to PCC, beneficiary provider interface domain". Data recoding as follows, (agree = 2, uncertain = 1, do not agree = 0), negatively phrased questions have been converted when means were calculated, thus the overall scaling went in a logical direction, higher values indicated positive situations (e.g. presence of favorable situation like privacy maintained, or absence of unfavorable situation like discontinuity in service provision). And then computation have been performed through summations of the scores for all questions for each participant), and then divided by the maximum score which is 67 point, then the mean for the new variable "total perception score" was taken.

Results from table 4.16 showed that that the overall perception regarding the PCC service was 70.4% in women aged 30 years and more, while it was 62.6% in women whose age between 15-19 years. The differences between recipients in reference to age groups were not statistically significant (P value = 0.333), yet it was slightly higher in the older women. This was discussed with KI, one possible explanation assumed by one of the doctors during the interview: *"Women who are younger perceive their health to be well, and don't think they need any intervention, but older women, especially if were multiparous may process several health problems, that's why they appreciate any health intervention more than those who are young and healthy"*.

Results of the study showed that the overall perception regarding the PCC service was (67.4%) in women whose marriage age was less than 18 years, while it was (71.9%), in women whose marriage age was 30 years and more. The difference in overall perception in reference to age at marriage (grouped) were not statistically significant (P value = 0.724). Although women with older age at marriage have a slightly higher scores. This was evident during FGDs. One of the women aged 35-year-old during FGD said: *"I do believe in the benefits of PCC service which improve pregnancy outcomes as it also includes folic acid supplements and proper care, which helped in preventing several miscarriage and congenital anomalies, so it helps baby and mother to get a safe delivery outcome"*.

Results from table 4.16 shows that Dear Al Balah elicited 75.4% in the overall perception of PCC services score, while Gaza elicited 60.3%. Differences between governorate were statistically significant (P value = 0.001), were Gaza score was the lowest, and Dear AL Balah score was the highest. The Least Significant Difference (LSD) test shows that the differences occurred in Gaza compared to all other governorates were statistically significant except to the North.

This have been demonstrated during FGDs wherein most of PCC recipients in Gaza area showed a modest perception regarding the benefits of PCC service. *"I think that PCC service does not help so much in maintaining the health of the mother and her baby, because it's only restricted on giving folic acid supplements, measuring BP and some simple laboratory tests with no other advanced investigations, treatments".* A woman aged 32 years old. This finding is not wearied, possibly whenever closer to the center there are higher standards of living, as people always compare between what they have with what others do, this is consistent with other global literature which presents similar arguments between expectation levels, challenging conditions and between perception and satisfaction levels (Wilson, 1967; Mulderg, 2013).

Regarding place of residence study results showed that the overall perception of PCC service was 74.9% for women who resides in rural areas vs 69.9% for those who lives in camps, and it was 65.1% for those from urban areas. Significant differences in overall perception about PCC services between 3 groups do exist (P value = 0.002), as women from rural areas have a higher overall perception than the women from the other groups.

Results from table 4.16 shows that the overall perception of women who lives in nuclear families was 69.4%, while it was 67.4% for women who lives in extended families. Differences between both groups were not statistically significant (P value = 0.637), although overall perception of PCC services score was slightly higher in the first group.

FGDs explains this findings much better, as women who lives in extended family may be unable to peruse the service due to heavy burdens over her, and also she is familiar with such issues from older women in the family. This have been well shown during FGDs. "*I think that PCC service hold great benefits for the mother and newborn health because it will prevent occurrence of any adverse health problems as malformation or congenital anomalies, it will also keep mother HbG within normal limit and will preserve her overall health condition, I am oriented over these points because we live with my husbands' family*

and his mother always advise me about benefits of PCC and its' importance in promoting pregnancy outcomes". A woman aged 27 years old. But in contrast women from nuclear families, have no such support from other older females in the family, so they better appreciate the care they received and thus had a better overall perception.

In our study family size was grouped into 3 groups, families consist of 3-5 members, families consist of 6-8 members, and families of 9 or more members, the overall perception scores were 70.6% ,67.9% and 61.8% respectively. Results from table 4.17 showed that there was a statistically significant difference among the 3 groups (P value = 0.003), where females from smaller families 3-5 members reported higher levels of perception (70.6%) about the PCC services they received compared to others. This was further demonstrated during FGDs with PCC recipients. *"I am following up for PCC service during my previous three pregnancies wherein I think that PCC service holds several health advantages for the mothers and their newborn and will improve their health condition to reach safe delivery without any complications".* Woman aged 30 years old who lives in a small family composed of 4 members.

The findings listed in table 4.16 illustrates that the overall perception about the PCC service was 72.2% in women who attained preparatory education level of less, while it was 68.5% in women who attained a university degree level or higher. Study results showed no statistically significant differences in overall perception of PCC service in relation to the level of education (P value = 0.193), though it was slightly higher in the former group. The study results were consistent with qualitative part conclusion, as these finding were discussed with KII, one of the doctors said: *"Women who attained a lower level of education appreciate the services much better, they are easier to be convinced with the services, they accept the provided services, and are more adaptable to health advices, and they respect appointments much better than who possess a higher education level, those might have enough information or have better access to it, they are less likely to convey to the advices given".* As mentioned previously findings of our study were consistent with results of the study conducted by Borges et al., (2016) and in line with those reported by Jourabchi et al., (2018). As their studies provided similar arguments. However the findings of our study were inconsistent with those of Goossens et al., (2018).

Results in table 4.16 showed that unemployed women elicited 68.3% in the overall perception about the PCC service, while employed women scored 67.6%, there are no

statistically significant differences between both groups (P value = 0.968), although overall perception was slightly higher among unemployed women.

These findings were further consolidated with FGDs results. As women both employed and unemployed expressed a positive and good perception regarding PCC and its significance, however employed women explained the reason behind their lower perception was related to waiting time. A housewife woman aged 33 years during FGDs said: *"I had infertility for 5 years, so when I heard about PCC service, I hurried up and registered, they gave me folic acid supplements and I took it besides other treatments prescribed by my doctor after thorough investigations and interventions, and I am gratefully that I got pregnant after a while, so PCC service helped me to get my baby in a normal way".* A participant in FGDs aged 30 years and worked as a teacher said: *"PCC is a vital service for woman and her baby because it includes several examinations in addition to dispensing folic acid and iron supplements which help in preventing several possible anomalies for my baby, however waiting time was problematic".*

In reference to monthly income, results of this study showed no impact on the overall level of perception (P value = 0.999), according to ANOVA test. As mentioned earlier the findings of our study were inconsistent with those of Goossens et al., (2018) in reference to income level and employment.

Table (4.17): Differences in overall perception of PCC service in reference to health and maternal health characteristics of respondents (recipients only)

Variable	Category	N	Mean	SD	Factor	Value	Sig.
Number of gravity	1-2	139	68%	18.1	**F**	**0.151**	**0.860**
	3-5	194	68.1%	17.1			
	6 and more	67	69.4%	19.5			
	Total	400	68.3%	17.8			
Number of parity	1-2	170	67.9%	18.6	**F**	**0.056**	**0.945**
	3-5	192	68.2%	16.9			
	6 and more	38	68.9%	18.7			
	Total	400	68.3%	17.8			
History of subfertility	Yes	82	68.1%	18.1	**t**	**-0.100**	**0.840**
	No	316	68.3%	17.7			
Having any chronic disease	Yes	38	67.2%	20.6	**t**	**-0.399**	**0.229**
	No	362	68.4%	17.5			
Planning for pregnancy soon	Yes	132	63.1%	17.2	**F**	**14.889**	**0.001**
	No	214	72.6%	17.4			
	Not decided yet	51	63.2%	16.9			
	Total	397	68.2%	17.9			

Variable	Category	N	Mean	SD	Factor	Value	Sig.
Previously used FP methods	Yes	188	65.9%	17.3	**t**	**-4.958**	**0.447**
	No	205	70.8%	17.4			
Intake of folic acid before conception	Yes	364	68.4%	17.6	**t**	**0.612**	**-0.823**
	No	31	71.1%	17.7			
Receiving folic acid during pregnancy	Yes	382	68.4%	17.7	**t**	**0.597**	**0.686**
	No.	18	65.8%	19.5			
Receiving supplements during pregnancy	Yes	382	68.9%	17.3	**t**	**1.480**	**0.498**
	No.	5	57.3%	23.1			
Experiencing complications in the last pregnancy	Yes	230	69.6%	17.9	**t**	**1.860**	**0.561**
	No	167	66.2%	17.4			
Mode of last delivery	Normal delivery	299	67.9%	18.1	**t**	**0.710**	**0.205**
	Cesarian section	101	69.4%	16.9			
Experience complications during or after last delivery	Yes	91	70.5%	16.6	**t**	**1.353**	**0.091**
	No	308	67.7%	18.1			
Receiving MCH services from any other HCP's	Yes	170	66.2%	18.1	**t**	**-1.951**	**0.352**
	No	230	69.8%	17.4			

4.17 Differences in Perception of PCC Services in Reference to Health and Maternal Health Aspects

Results of the study showed that neither gravity (P value = 0.860) nor parity (P value = 0.954) have impact on the overall perception of received PCC services, according to the ANOVA tests done. Although the overall perceptions were slightly higher among women with 6 or more gravity and parity numbers. This was further demonstrated during FGDs with PCC recipients. *"When I was advised to register in PCC service, I felt that I was filled with a strong hope, and that my pregnancy will be safe and I will have a better maternal and newborn outcomes".* A woman aged 22 years old during FGDs who is a prime-gravida. At the same line of this, another woman aged 22 years, who was a mother to 3 children, aged 28 years old interviewed during FGDs showed also a very good perception of PCC. *"PCC is about providing the appropriate care for women in the reproductive age to reach a safe delivery and avoid any possible complications which is very important in preventing congenital anomalies among babies and will prevent maternal complications".* Our study findings were similar to those concluded by Goosense et al., (2018).

Findings of this study showed that the overall perception of service has not been influenced by presence of history of subfertility, women who had subfertility history scored 68.1%, vs 68.3% for women who didn't have previous subfertility history (P value = 0.840), according to t-test. It was expected that woman who have infertility history will have a higher overall perception regarding received PCC services, however those with no previous subfertility history had scored slightly higher. These strange findings were further explored during KIIs. One of the doctors said: *"When we register a woman with infertility we provide the minimum available investigations, as urine analysis, CBC, RBG, she needs further investigations, and at least an ultrasound to rule out any uterine or ovarian abnormality , thus she is referred to the hospital, and her follow up with us become nothing more than regular health counselling , advices and folic acid, I wish we can offer help to those portion of people, especially they are poor and vulnerable, if we can contract a hospital or to provide another specific investigations, probably they will appreciate our PCC service more".* These results were dissimilar to previous studies conducted by Goosense et al., (2018).

It's worth to mention that data showed that women with a history of chronic disease have elicited 67.2% in overall perception of PCC services, while those who don't have any chronic disease scored 68.4%. Our study results indicated that their were no significant differences in overall perception of PCC between both groups (P value = 0.229). It was expected that woman who have chronic disease and wishing to become pregnant will be more satisfied about the service, and will have a higher perception score, however, those who didn't have any chronic disease scored a little bit higher.

Again this strange finding was explored in FGDs, women revealed that they were referred to the service because they could possibly become pregnant especially they weren't using any FP methods, one of the women aged 41 years, who had HTN said: *"I came to take my HTN treatment, though the doctor refused, she said I am obligate to choose either to have a FP method or PCC file, I didn't want to have any one of the offered FP method, I suffered from IUCD, and it caused me anemia, I also forget to take pills, I told the doctor, my last child is 9 years old, but the doctor insisted that as longs as I have no safe FP method, I should be prepared for unwanted pregnancy, and I opened a PCC file, I miss my appointments, and I don't take the folic acid either".* Findings from our study were inconsistent with those reported by Williams et al., (2012). In their study they indicated

that women with chronic disease appreciate and well perceive the PCC services much more than women who don't have any chronic illness.

Interestingly women who were not planning for pregnancy had higher overall perception (72.6%) than those who planned for it (63.1%) and higher than those who didn't decide yet (63.2%), according to ANOVA test (P value = 0.001). These findings were compared to FGDs results. As the qualitative data showed a slightly different findings. As one of the FGDs participants' said: *"I was totally against registration in PCC, I was not planning for pregnancy I didn't have enough time, I just came to vaccinate my child, and I felt healthy, and in the clinic they advised me to register, and the shock was that I discovered I had diabetes, the doctor was very kind, she supported me and gave me all the information I wanted, she also was phoning me if I missed my appointments, she took good care of me, I received approximately 6 PCC visits, after one year, I got pregnant, I was sacred, but the support and care was beyond expectations, I completed my pregnancy, and here's is my healthy baby"*. These findings were similar to those reported by Williams et al., (2012). Their study indicated that women with unintended pregnancy had much lower level of perception toward PCC than women with planned pregnancy.

Study shows that the overall perception of woman who previously used FP method was 65.9%, slightly lower than those who didn't used it 70.8%, although the differences amongst both groups were not statistically significant (P value = 0.447), as mentioned by a woman who had two children: *"I married at 16 years old, I had my first baby at age 17, my husband refused FP, despite I tried to convince him, I came to the clinic and they offered me PCC, in registration I found that I had anemia and they gave me iron, after two months my headache and dizziness improved, I conceived and thanks to all staff, I would for sure suffered if I were not treated before pregnancy"* .

As data in table 4.18 shows that overall perception of PCC services was not affected by taking folic acid before conception, those who took folic acid before conception scored 68.4% and who didn't scored 71.1%, as derived from the t-test, (P value = 0.823). Again there were no statistically significant differences amongst both groups, those who received folic acid during pregnancy and those who didn't (P value = 0.686). This is also true for receiving supplements during pregnancy (P value = 0.498).

Women who experienced complications in last pregnancy have 69.6% in the total perception score of PCC and women who didn't scored 66.2%, study shows no significant variance in overall perception. The differences between both groups were not statistically significant (P value 0.561). It was expected to have a higher overall perception of PCC services among women who didn't develop any complications in pregnancy, however, it was slightly higher in hose who developed complications in pregnancy. Our study results were inconsistent with those reported by Williams et al., (2012), and with those concluded by (Jourabchi et al., 2018).

During FGDs this strange finding was further explored. One of the woman said: *"I had chronic HTN, and during registration in PCC and follow up my BP was controlled, my doctor changed the medications, as to avoid harm to the baby, she also advised me to use FP instead but I insisted on pregnancy, during follow up in pregnancy, I was referred to the specialist, she also took good care of me, but when I was about to deliver, my BP started to become uncontrolled despite increasing the dose, I gave birth and my baby was healthy, and didn't need nursery admission. In hospital they told me, that if I didn't change my treatment and didn't have my HTN controlled my baby weight would be lower, or he could be malformed from the previous medications, thanks to all staff in clinic".*

Findings of the study that women who delivered by NSVD had scored 67.9% vs. 69.4% for those who delivered by CS in the total perception of PCC service, there were no statistically significant differences between both groups (P value = 0.205). It was expected that women who delivered by NSVD would score higher than those delivered by CS, however the latter group scored slightly higher. In KII interview the director of MCH services explained this finding, from her opinion she said: *"Delivery mood is decided much by the hospital team in the majority of cases, and receiving PCC doesn't alone determine the delivery mood, many intervening factors exist, age of the mother, history of chronic disease, pregnancy related complications, etc.. PCC for sure improved maternal health, and no one can blame PCC or ANC services for delivering by CS".*

Study results also showed that women who experienced complications during or after last delivery had slightly higher perception score regarding PCC 70.5%, while those who didn't face any delivery or post-delivery related complications scored 67.7%, but the difference were not statistically significant (P value = 0.091). This is also true for those who received

MCH services from another source and who didn't as there were significant differences between both groups, as derived from the t-test, (P value = 0.532).

Table (4.18): Differences in overall perception of PCC service in reference to infant health characteristics of respondents (recipients only)

Variable	Category	N	Mean	SD	Factor	Value	Sig.
Gender of infant	Male	213	67.6%	17.7	**t**	**-0.957**	**0.718**
	Female	185	69.3%	17.7			
Gestational age	Premature	21	68.9%	18.3	**F**	**0.220**	**0.802**
	Full term	254	68.7%	17.9			
	Postdate	124	67.4%	17.7			
	Total	399	68.3%	17.8			
Birth weight in grams	<2500 gm	44	67.9%	18.1	**F**	**2.325**	**0.099**
	2501-3500	223	70.1%	16.7			
	>3500	131	65.8%	19.2			
	Total	398	68.4%	17.7			
NICU Admission	Yes	54	66.9%	15.7	**t**	**-0.621**	**0.180**
	No	344	68.6%	18.1			
Neonatal jaundice	Yes	188	65.6%	17.9	**t**	**-2.910**	**0.464**
	No	212	70.7%	17.3			
Presence of abnormalities in newborn	Yes	15	62.6%	17.2	**t**	**-1.298**	**0.843**
	No	380	68.7%	17.8			

4.18 Differences in perception of PCC services in reference to infant health related aspects.

Results from table 4.18 indicates that women who had male baby born showed no variance in overall perception than those who gave birth to a female baby.

Study results showed that women who delivered prematurely had 68.9% in the total perception score regarding PCC, in comparison woman who had delivered a full term baby scored 68.7%, while those who had post-date delivery scored 67.4%, as shown in table 4.18 no significant variance in overall perception about PCC services in reference to gestational age (grouped), (P value = 0.802) according to ANOVA test.

Women who had a baby with average birth weight between 2500-3500 gm., had higher perception about PCC services (70.1%) than those with a baby's birth weight below 2500 gm. (67.9%) in total perception score regarding PCC, though the differences related to birth weight were not statistically significant as indicated by ANOVA test (P value = 0.099). One of the woman in FGDs, who is a mother for 3 children said: *"My previous babies' birth weight was low, when I registered in PCC, my doctor prescribed to me multivitamins and omega, I also took folic acid, the birth weight improved, my last child birth weight reached 3000 gm."*.

Study results shows that the total perception score of PCC service is 66.9% in women who had a child who was admitted to NICU, slightly lower than those whose baby was not admitted to NICU as their score was 68.6%, though the differences were not statistically significant (P value = 0.180). One woman in FGDs said: *"I registered in PCC and also followed up in ANC, but I faced troubles in my delivery and the baby was taken to nursery, I wonder why this happened"*. In the other hand a woman aged 36 years in the same FGDs who had 5 children said: *"I registered with PCC services, I always need blood transfusion, and my BP elevates during delivery, this made me suffer and my previous children were born before I completed my pregnancy, some of them at the end of 7th month of gestation and the others in the mid of the 8th month, and I was admitted to ICU after all previous deliveries, my babies too were small, their birth weight was <2500 gm. and was taken to nursery, however in the last pregnancy, my doctor opened a PCC file, and discovered that I had chronic HTN, that became more uncontrolled in pregnancy, she gave me treatment and thanks to god I didn't suffer as before, and my baby was healthy weighted 3000 gm. and didn't need hospitalization"*.

Study results showed that the total perception score of PCC service is 65.6% in women whose babies developed neonatal jaundice, lower than those whose baby didn't develop jaundice as their score was 70.7%, however the differences were not statistically significant (P value = 0.464).

As indicated by data in table 4.18, women who had a newborn with congenital anomalies had lower total perception score regarding PCC services about 62.6%, while those who didn't scored 68.7%, yet the differences were not statistically significant among both groups (P value = 0.843). One of the participants in FGDs said: *"I delivered, and they told me that the baby had a problem in his heart, he was admitted to nursery, when I came to*

vaccinate him I asked the doctor about the cause, , I told her that I am sad and that although I received PCC my child had problems, she said that even if you had PCC and ANC, some congenital anomalies can't be prevented, we try as much as we can to optimize your health, some anomalies are congenital, some are very rare, but can still occur".

Table (4.19): Differences among participants in the 5 governorates by receiving PCC characteristics

Dependent variable	Distribution per governorates	N	Mean	SD	Factor	Value	Sig.
Appropriateness of PCC Services	North	90	67.1%	18.9	**F**	**8.766**	**0.001**
	Gaza	68	64.9%	24.1			
	Dear Al Balah	81	79.7%	19.2			
	Khanyonis	80	78.1%	22.7			
	Rafah	80	78.6%	20.9			
	Total	399	73.8%	21.9			
Continuity of care and care coordination	North	90	62.1%	19.6	**F**	**10.108**	**0.001**
	Gaza	68	60.5%	24.4			
	Dear Al Balah	81	75.4%	17.9			
	Khanyonis	80	73.7%	23.6			
	Rafah	80	75.9%	20.1			
	Total	399	69.7%	22.1			
Beneficiary provider interface	North	90	59.8%	173	**F**	**7.886**	**0.001**
	Gaza	68	56.9%	18.9			
	Dear Al Balah	81	72.1%	17.6			
	Khanyonis	80	63.9%	19.5			
	Rafah	80	63.6%	17.2			
	Total	399	63.4%	18.7			
Barriers to PCC service	North	63	17.6%	8.3	**F**	**20.120**	**0.001**
	Gaza	54	23.7%	10.1			
	Dear Al Balah	45	13.3%	7.4			
	Khanyonis	40	14.3%	7.3			
	Rafah	39	16.8%	7.9			
	Total	241	17.5%	9.1			

4.19 Differences in Perception of PCC Services in Reference Several Aspects of the Received PCC Services

As table 4.19 shows that the total appropriateness score was 73.8%, lowest in Gaza 64.9% and North 67%, while highest in Dear Al Balah 79.7%, followed by Rafah 78.6% then Khanyounis 78.1%. People perception about appropriateness of the service varies among governorates significantly (P value = 0.001), according to ANOVA test, the LSD test shows significant variance between North and Gaza, and the other governorates, no significant variance exist in between Rafah, Khanyounis and Dear al Balah.

As shown in table 4.19, the total continuity of care and care coordination score was 69.7%, lowest in Gaza 60.5% and North 62.1%, while highest in Rafah 75.9%, followed by Dear Al Balah 75.4% then Khanyounis 73.7%, people perception about of continuity of care and care coordination varies among governorates significantly (P value = 0.001), according to ANOVA test. The LSD test founds no statistically significant variance exist in between North and Gaza, nor variance exist between Rafah, Khanyonis and Dear AL Balah, while there is a significant difference between Gaza & North and the other governorates.

Study results in table 4.19, showed that the total beneficiary provider interface score was 63.4%, and it was also lowest in Gaza 56.9%, highest in Dear al Balah 72.1%, there is a statistically significant variance among the governorates, according to ANOVA test, (P value = 0.001). The LSD test shows that Dear al Balah showed significant higher total beneficiary provider interface score in comparison to all other governorates, and Gaza and north had significantly lower scores compared to other governorates, but no variance in between both.

In the same line, the total barrier score was 17.5%, a similar finding to what mentioned before Gaza showed the highest barriers score amongst other governorates 23.7%, compared to 13.3% in Dear Al Balah, the study found that the difference was significant as indicated by ANOVA test, (P value = 0.001), The LSD test indicates that Gaza differs significantly from all other governorates, and there were no significant differences in between Rafah, Kahnyounis and Dear Al Balah.

As was mentioned previously it’s not strange to see Gaza scores lower than other governorates. People always compare what they have to what other have, its related to their innate nature, whenever closer to the center there are higher standards of living, this is similar to with other global literature had concluded about challenging conditions and expectation levels (Wilson, 1967; Mulderg, 2013).

Chapter Five

Conclusion and Recommendations

5.1 Conclusion

The study conclusions were presented and built in this chapter after assessing the findings and results of evaluation of the PCC service in UNRWA clinics.

Up to knowledge of the researcher, this is the first study that evaluated a program that integrated PCC into MCH in Gaza and in Palestine with favourable impact on decreasing risk of negative birth outcomes. Most of past studies evaluated only single intervention of PCC, however in the real-life scenarios, care delivery involves several interventions. The WHO has recommended that PCC interventions should include interventions that promote maternal health in order to avoid any adverse health problems, such intervention should include screening for anemia and diabetes, Supplementing iron and folic acid, Information, education and counselling, Monitoring nutritional status, Supplementing energy- and nutrient-dense food, Management of diabetes, including counselling people with DM, Promoting exercise, FP, Assessing psychosocial problems, providing educational and psychosocial counselling before and during pregnancy, Counselling, treating and managing depression in women planning pregnancy and other women of childbearing age (WHO, 2013).

In conclusion, we found that the PCC provided in UNRWA clinics in GS, is well implemented, as it achieved more favourable care; the improved system of maternal care with enhanced preconception health had led to beneficial health outcomes. Despite the mentioned limitations, this study has significant implications for mother and new-born health program planning and implementation and future coming studies. The current findings can be used as a basis for establishing enhanced programs of MCH. The author proposed that since PCC information for mothers is significant, future coming studies should also highlight PCC in women who are at high risk of negative birth outcomes, particularly those with pre-existing chronic health conditions.

By using the Donapedian model the tool were built to obtain quantitative results about each single component in structure, process and finally outcome of the program, which then have been validated and explained with clients in FGD and staff members in KII. Special

focus was drawn towards assessing client's satisfaction about the various components of PCC service.

Main results indicated that PCC recipients were younger, attained a lower education level and are more unemployed than non-recipients. A higher percentage of recipients than non-recipients lived in nuclear families, to maximize the positive impact of this service, we must work more on targeting; we should use channels that have the best chances of uptake and target the groups likely to be most receptive, such as adolescent health programs and vertical programs (e.g. vaccination, nutrition). We must also work both within and outside the health sector and use a variety of settings, the mass media and popular technologies such as electronic and mobile technology; religious institutions and other community-based organizations, if we want to achieve changes in, for example, family behavior. Those channels must be considered carefully in the planning process. There is a risk that men may be left out. To minimize this risk, we must focus on the health of couples and involve men in preconception programs.

Study results indicated that both recipients and non-recipients live under very difficult socioeconomic circumstances, though recipients seems to suffer more, as they have lower percentage in employment, a higher percentage of people who have monthly income below 500 NIS, a higher income-expenditure gab, and thus received social assistance more than non-recipients, people render under poverty and chronic need, and the added heavy burden imposed by political instability, blockade increase their suffering. Therefore UNRWA might be the only mean for health access to those vulnerable people, despite the hardship our people goes through, the scarcity of resources was a motive for them to seek a better health, and this should of course inspire service providers as well, it should be a motive for delivering the best care that people deserve not an excuse.

Its noteworthy that results indicate that PCC recipients have better outcomes in terms of low pregnancy related complications, despite being riskier before conception, they also experienced lower delivery related complications, besides that PCC impact were reflected on newborns, as recipients have better infant health outcomes in terms of birth weight and existence of jaundice.

Results also showed that people perception about appropriateness of the service varies among governorates, the weakest components of service appropriateness were from

clients' previews is adequacy of staff to serve patients. Half of client's needs, and expectations were met, to maximize those two component, preconception programs should be implemented with care, and communication about preconception should be done with care. HCP's may perceive preconception as an optional extra and may not give it their support and focused attention. To minimize this risk, they must be well trained.

Study results indicated that the total score of continuity of care and care coordination was lower in Gaza and North, than other governorates, there is a risk that systems and workers already under pressure may be overwhelmed. If synergized, collaborative and right delivery mechanisms are not used, we will not get the desired results. To maximize the positive impact of this service, we must work more on in-service training on PCC within existing capacity-building efforts, including through distance education.

In order to maximize this impact, current gaps in the PCC should be bridged. This gap is mainly related to the building capacity of staff to enhance their knowledge and skills about PCC and to keep them posted of latest updates about PCC technical instructions especially that related to follow up of PCC cases. We also should use both existing and innovative mechanisms to convince clients to demand this service, by trying to integrate PCC into ongoing programs such as FP programs; present PCC as part of the continuum rather than on its own – it should be layered on top of maternal and newborn care.

Study results showed that there are many barriers to PCC service, interestingly results indicated that clients referred the bulk of barrier to registering in the service to the long waiting time. Results also showed the next barrier was far place of clinic, to minimize barriers we should include activities on PCC in community-level activities in addition to clinic-level activities if we are to reach more people despite distance or any other obstacles, and then to build positive attitudes and personal responsibility to help people learn that it really worth to wait in one of the clinics to receive such an amazing comprehensive caring service; use every opportunity of a woman contacting a health facility to provide preconception messages and interventions especially in waiting areas, it's very easy and cheap way, further more we should identify and build on the preconception activities that are under way in several clinics. Importantly, we must make sure that we do not overburden community health workers, who already have a lot to do.

Study results indicated that the beneficiary provider interface still needs extra effort, in terms of welcoming of patients and making them comfortable, paying attention and keeping eye contact, and minimizing interruption, despite being minor issues they interfere vigorously in patient's privacy and stand as a barrier for achieving the best quality service we seek to deliver.

Preconception care is a multi-faceted concept, and interventions aiming at improving it must be multi-sectoral. There is always a chance for better achievement, by including and integration issues such as mental health and environmental health, people behavior can change, culture is not static, it's in a continuous dynamic change, though it's a slow process, but is possible and can be achieved.

The term, definition and framework of PCC must be simple and clear so it can be communicated to different stakeholders, we should raise and build advocacy for our smart program, through informing and engaging key stakeholders at the global, regional and country level to support integration of the PCC at all levels.

Performance and behavior are contagious, therefore staff capacity building, continuous monitoring, accountability, positive rewards to active high achiever employees and complementing and supporting positive attitudes and best performance among staff, will help the others to be proactive, and for sure they will lead the process to the right way and achieve the target in both spheres quantity and quality.

5.2 Recommendations

5.2.1 General Recommendations

In the light of our study, it's obvious that PCC had made a significant difference for mothers, as it decreased the incidence of both pregnancy and delivery related complications, yet gaps still exist in achieving better fetal outcomes. Therefore, it has been concluded that in order to maximize health gains, PCC should be delivered in a more comprehensive way to all women wishing to become pregnant.

UNRWA did well by introduction a basic PCC services package, however, it is important to complement the current package with other supportive interventions. The expanded PCC package should contain the following:

- Micronutrient supplementation other than folic acid and iron, in addition to education on nutrition.
- Mental health problems; intimate partner and sexual violence.
- Screening, counseling and clinical interventions for infections (ToRCH), genetic disorders.
- Improving contracts to hospitals to include discovered cases of infertility to help them if possible.
- Incorporate gymnasium in a modern way in clinics, due to its benefits to clients, especially after categorization of obesity among group B risk category.
- Incorporate men, to work on both couples in a more focused, compassionate way.
- Facilitate inside clinic referral to specialist to some in need cases.
- Integrate nursery units close or even incorporated to the health centers, in order to help working mothers to gain extra time to register in those services.

5.2.2 Specific Recommendations

- This study could constitute a baseline for future interventions, monitoring and evaluation purposes. It is important to monitor how the program evolves by time.
- Appropriateness of service provision domain elicited high score, and efforts to reinforce that are essential.
- Continuity of service and care coordination, and beneficiary provider interface domains have elicited relatively high scores and efforts to improve them are essential especially for bridging concerns in both spheres; achieving higher quantity and better quality.
- Barriers to the service and time related issues (contact time, waiting time) were problematic, therefore it requires urgent measures to mitigate its negative impacts on the quality of delivered service.
- The study suggests that it would be useful to provide further training on technical instructions, guidelines and training tools.
- Monitoring and evaluation functions need to be further developed for collecting information and creating databases for PCC analyses to guide evaluation and monitoring of activities.

- Promote clients centeredness of service, by including greater participation in planning, implementation and evaluation of program with prompt feedback and complaints system, reducing waiting time and increasing contact time.
- Targeting is an issue that requires more attention. UNRWA needs to revisit the current targeting approach in order to serve more women who plan to get pregnant.
- Many clients are not aware about the program, therefore it is advised to develop a more effective marketing strategy.
- It is essential to reorient the staff about the technical instructions especially regarding number of visits required and the care provided in these visits.

5.2.3 Recommendations for New Areas of Research

- A large scale in-depth qualitative study about PCC reality and its impacts is needed.
- Exploring why the anticipated fetal outcomes are not realized.
- Conducting studies on specific areas of PCC like counselling, satisfaction, interactions.
- Conducting a follow up study in the coming 2 to 3 years.

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Annexes:

Annex (1) Study activities time table

Activity	Duration	April	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb.	Mar..	April	May
	1 month														
	3 month														
	2 months														
	3 months														
	4 months														
	3 months														
	4 months														
	5 month														

Annex (2) Sample size calculation (Recipients)

Population survey or descriptive study
For simple random sampling, leave design effect and clusters equal to 1.

Population size:	10252	
Expected frequency:	50 %	
Acceptable Margin of Error:	5 %	
Design effect:	1.0	
Clusters:	1	

Confidence Level	Cluster Size	Total Sample
80%	162	162
90%	264	264
95%	370	370
97%	450	450
99%	623	623
99.9%	979	979
99.99%	1319	1319

Annex (3) Sample size calculation (Non-recipients)

Population survey or descriptive study
For simple random sampling, leave design effect and clusters equal to 1.

Population size:	29182	
Expected frequency:	50 %	
Acceptable Margin of Error:	5 %	
Design effect:	1.0	
Clusters:	1	

Confidence Level	Cluster Size	Total Sample
80%	163	163
90%	268	268
95%	379	379
97%	463	463
99%	649	649
99.9%	1044	1044
99.99%	1439	1439

Annex (4) Study questionnaire

☐ PCC recipient	☐ PCC Non-recipient
Sociodemographic and economic characters (for all participants)	
1) UNRWA registration card No.	2) Date of interview D /M /Y
3) Name ----------	
4) Telephone ---------- --	5) Mobile----------
6) Residency 1.North 2.Gaza 3.Deir Al Balah 4.Khanyounis 5.Rafah	
7) Locality Type: 1.Rural 2.Urban 3.Camp	
8) Exact Address including neighborhood, town---------- ---	
9) Type of the family 1.Nuclear family 2.Extended family	
10) Number of people lives in the same dwelling? ----------	
11) What kind of dwelling unit does the family live in?	
1-Villa	5-Separate Room
2-House	6-Tent-Caravan
3-Apartment	7-Others, specify
4-Marginal	----------
12) How many sleeping rooms are used in your dwelling (Exclude Kitchen and living room even if it is used for sleeping)? ----------	
13) Current mother age -------	14) Father age-------
15) Mother age at marriage ------- --	16) Order of concerned infant among sibling --------
17) What is the time space between this child and preceding child in months? -------- ------	18) Mother age at the time of delivery? ---------- --
19) Mother education attained 1. Illiterate 2. Semi-literate 3. Elementary	20) Father education attained 1. Illiterate 2. Semi-literate 3. Elementary

4. Preparatory 5. Secondary 6. University/college	4. Preparatory 5. Secondary 6. University/college
21) What is Father occupation Employment Status: 1. Unemployed 2. Employer 3. Self employed 4. Waged employee	22) What is Mother occupation Employment Status: 1. Unemployed 2. Employer 3. Self employed 4. Waged employee
23) Mother Occupation----------	24) Father Occupation ----------
25) Does your family receive social assistance? 1.Yes 2.No (go to question 27)	26) If yes the source is 1.MOSA 2.UNRWA 3.Other specify ----------
27) Monthly Family income in NIS from all sources ----------	28) Monthly Family expenditure in NIS ----------
29) Do you think that your income is enough to meet your family needs? 1.Yes 2.No	
30) Do you think that you have enough resources to meet your family health needs? 1.Yes 2.No	
31) Are you medically insured? 1.Yes 2.No	

Maternal and obstatreic health (for all participants)		
32) Do you have any chronic disease	1. Yes	2. No (go to q 34)
33) If yes You can choose more than one option 1. Diabetes 2. Hypertension 3. Thyroid 4. Peptic ulcer 5. Cardiac	6. Cancer 7. Renal disease 8. Hepatic disease 9. Asthma 10. Connective tissue diseases 11. Other **specify** ----------	
34) Do you receive MCH services from any other HCP's-other than this centre? 1. Yes 2. No (go to question 36)	35) If yes, where you seek MCH health services? 1. MOH 2. Other UNRWA clinic	

	3. NGOs 4. Private 5. Others ----------

Obstetric/ Gynecological history

36) No. Gravity------	37) No. Parity----	38) No. Abortion---	39) No. of living children---

40) History of infertility 1. Yes, years---------- 2. No	41) Having any uterine surgery other than C/S? 1. Yes, specify---------- 2. No

42) Are you pregnant now?	1. Yes	2. No	3. Don't know

43) Do you plan to get pregnant soon 1. Yes, when---------- 2. No 3. Havent decided yet	44) Are you using any family planning methods? 1. Yes, specify ---------- 2. No

45) Have you experienced any complication or illness during your last pregnancy

1.Yes 2.No (go t question 48)

46) If yes, in which trimester 1. First 2. Second 3.Third

47) If yes, you can choose more than one option 1. Trauma 2. Severe vaginal bleeding 3. Hypertension 4. Swelling in the face or body 5. Severe headache 6. Upper abdominal pain	7. Non-febrile convulsions 8. Painful micturition 9. Severe difficulty breathing 10. Anemia 11. Urinary tract infection or genital 12. L. Rheumatic conditions 13. Hemorrhage 14. High fever 15. Others, specify----------

48) Did you take any medications during the past pregnancy? 1. Yes 2. No (go to 51)

49) Medication	**1.Yes**	**2.No**	**Which trimester**	**Duration**
Antibiotics **specify**				
Aspirin				
Heparin or clexan				
Progesterone				
Anti-hypertensive				

Insulin				
Oral hypoglycemic				
Other specify				

50) Who prescribed this medication for you?

1.Physician 2.Relative 3.self-administered 4.other specify

51) Did you take folic acid before pregnancy 1.Yes 2.No (go to question 53)

52) If yes for how long in months? ----------

53) Did you have any supplements during pregnancy? 1.Yes 2.No (go to q 60)

You can choose more than one option

Supplement	1-Yes, 2- No	Which trimester	For how long
54) Folic Acid			
55) Iron			
56) Omega 3			
57) Multivitamins			
58) Calcium			
59) Other **(specify)**			

60) Date of last delivery ----------	61) Gender of infant 1.Male 2.Female

62) What was the mode of last delivery

1. Caesarian section……
2. Assisted vaginal delivery by ventos
3. Normal delivery assisted by forceps
4. Normal delivery with induction……
5. Normal spontaneous vaginal delivery

63) Did you develop any complications during your last delivery? □ Yes □ No (go to q 65)

64 If yes: 1.Obstructed 2.Bleeding 3.Fetal distress 4.Convulsions 5.Others----------

Infant health

65) Gestational age in weeks ----------

66) Gestational age 1. Premature 2.Full term 3.Postdate

67)Birth weight in grams----------	68) Was the infant admitted to NICU? 1.Yes 2.No (go to q 71)

69) If yes for how long in days? ----------

70) If yes, what is the cause of admission to NICU

1. Sepsis
2. Respiratory distress
3. Asphyxia
4. DK
5. Others----------

71) Did the infant need mechanical ventilation? 1.Yes 2.No (go to q 67)	72) If yes for MV how long in days? ----------

73) Did the infant had neonatal jaundice? 1.Yes 2.No (go to q 77)

74) If yes, for how long in weeks? ----------

75) What was the cause of jaundice?

1. Physiological 2. breast feeding 3. Rh incompatibility 4. infection	5. head trauma 6. other **specify** 7. Unknown

76) If yes, how it was treated?

1.Conservative 2.Phototherapy 3.Blood exchange 4.Others **specify**

77) Does the infant have any abnormalities 1.Yes 2.No (go to q 79)

78) If yes, specify where?	
1. Head and neck (hydrocephalus, anencephaly, microcephaly, flat occiput, synclytisim) 2. Eye (infection, lacrimation, redness ...) 3. Nose (atresia, septal deviation, malformation) 4. Ears 5. Face 6. Mouth 7. Musculoskeletal (spina-Bifida, weakness, paralysis….)	8. Hip (dislocation…etc.) 9. Abdominal wall and abdominal viscera 10. Umbilicus 11. Skin 12. CNS 13. Heart 14. Chest 15. Genetalia

79) Does any of your children had any congenital anomalies	1. Yes	2. No

80) If yes, which anomaly? (You can choose more than one obtion)

1. Dysmorphic features 2. Head & neck 3. Eyes 4. Nose 5. Ears 6. mouth 7. Chest wall 8. Abdominal wall and abdominal viscera	9. Umbilicus 10. Gastrointestinal 11. Musculoskeletal 12. Hip 13. CNS 14. Genetourinary 15. Dermatologic 16. Others, specify------

81) Did the child have major infant illness (first month) 1.Yes 2.No (go to q84)	82) If yes	83) At which age	84) Admitted to Hospital 1. Yes 2. No
	1. Sepsis		
	2. Encephalitis		
	3. Pneumonia		
	4. Meningitis		
	5. Otitis media		
	6. Convulsions		
	7. Vomiting		
	8. Diarrhea		
	9. Other **specify**		

85) Did the infant expose to a serious birth related trauma? 1. Yes 2. No (go to 1 86)
86) If yes, please specify
87) Had your child received antibiotic during the first 2 week of his/her life? 1.Yes 2.No (go to q 89)
88) If yes, how many times? ----------
89) If yes, do you know the name of antibiotics?

For both PCC recipients and non-recipients:

90) Did you ever receive PCC care	1. Yes, how many times ----	2. No (go to q 91)	
91) If yes, have you received PCC in the past pregnancy	1. Yes, how many times ----- (go to q 92)	2. No	
92) In no, why you didn't receive PCC	1. Didn't know about it 2. Not convinced about its benefits 3. No time 4. Fear to try new things 5. Husband/family refused 6. Costs of transportaion 7. Accessibility issues/living far 8. Don't want to get pregnant 9. Others, specify ……..		
93) What do you think about the quality of the service? (if you had registered before)	1. Good	2. Unceratin	3. Bad
94) Do you think that PCC service are important?	1. Yes	2. No	
95) Are you recommending this service to others	1. Yes	2. No	

For PCC recipients only:

Health service provision		
Targeting		
96) Is this your first PCC visit?	1. Yes	2. No
97) How you knew about the PCC services? 1. A friend 2. Relative 3. Doctor 4. Midwife/Nurse/Senior staff nurse 5. Health education activities 6. Posters in clinic 7. Internet 8. Media 9. Others …….	98) Who referred you to the PCC services? 1. Clinic doctor 2. Clinic nurse 3. Clinic MW 4. Clinic SSN 5. Specialist 6. Private doctor 7. Self-referred 8. Others, specify …….	
99) Reasons for registration with the PCC services?		

1. Part of the rotuine care 2. To promote my health status- 3. To promote the health status of my child 4. Planning for a pregnancy 5. Complications in previous pregnancy or delivery 6. History of a conginetaly anomlies 7. Serious health problem/ illness	8. Infertility problem (years ……) 9. Having a chronic disease (as aroutine of care) 10. Its part of the clinic protocol 11. Health care provider referred me 12. Don't know 13. Havent' been told

Appropriateness			
100) Your needs were met?	1. Agree	2. Uncertain	3. Don't agree
101) Your expectations were met	1. Agree	2. Uncertain	3. Don't agree
102) Staffing level was adequate to serve you	1. Agree	2. Uncertain	3. Don't agree
103) Health care providers approach was appropriate	1. Agree	2. Uncertain	3. Don't agree
104) You think that the PCC Services are needed	1. Agree	2. Uncertain	3. Don't agree
105) You have been involved in the care provided to you	1. Agree	2. Uncertain	3. Don't agree
106) Your privacy were maintained	1. Agree	2. Uncertain	3. Don't agree
107) Service providers are skillful	1. Agree	2. Uncertain	3. Don't agree
Continuity of care and care coordination			
108) PCC are provided by the same provider?	1. Agree	2. Uncertain	3. Don't agree
109) Transition between providers is smooth?	1. Agree	2. Uncertain	3. Don't agree
110) You received a clear information when referred to other care provider?	1. Agree	2. Uncertain	3. Don't agree
111) There was a good coordination	1. Agree	2. Uncertain	3. Don't agree

among providers to the best interests of the client			
112) You think that the care you received is coherent	1. Agree	2. Uncertain	3. Don't agree
113) You think that the care you received is smooth care	1. Agree	2. Uncertain	3. Don't agree
114) You think that there were discontinuities in service provision	1. Agree	2. Uncertain	3. Don't agree

For PCC recipients:

Barriers to the PCC service		
115) Had you faced any barriers during receiving the PCC service?	1. Yes	2. No (go to q 115)

116) If yes, which one of the following (you may chose more than one option)

1. Place of clinic is too far
2. Waiting time is too long
3. The space in clinic is not adequate
4. You have to see several health care providers (dentist, doctor, Midwife, lap, pharmacy)
5. Family doctor approach is a problematic (mixed category of patients to the same doctor)
6. Appointments are not convenient
7. Being assigned to a specific team, not of your choice
8. E-health complicates the process
9. Gender of provider is not appropriate
10. Flow of service is cumbersome
11. Others……..

For PCC recipients:

Beneficary provider interface			
117) Do you find the health care provider at the SDP?	1. Yes, most of the time	2. Yes, sometimes	3. No
118) Did the provider introduced him/her self for you?			

Doctor Nurse Midwife Senior Staff Nurse	1. Yes 1. Yes 1. Yes 1. Yes	2. No 2. No 2. No 2. No		
119) Did the provider ask you to have a seat before starting taking care of you?		1. Yes, most of the time	2. Yes, sometimes	3. No
120) Did the care provider keep eye contact with you? Or not		1. Yes, most of the time	2. Yes, sometimes	3. No
121) Were there any interruptions in the session?		1. Yes, most of the time	2. Yes, sometimes	3. No (go to q 121)
122) If yes in previous question, please specify what kind of?		1. Clinic Telephone	2. Provider Mobile	
		3. Another patient	4. Staff member	
		5. Network problem	6. Others, specify	
123) Does the provider answer your questions clearly and in a timely stated manner?		1. Yes, all the time	2.Yes, sometimes	3. No
124) Did the care provider give you a feedback about your lap results? (Hgb level, FBG, Urine test)		1. Yes, all the time	2.Yes, sometimes	3. No
125) Did health care provider consult you about your health condition		1. Yes, all the time	2.Yes, sometimes	3. No
126) Can you choose between health providers if there are more than one?		1. Yes		2. No
127) Have you ever been asked about the quality of PCC services before?		1. Yes		2. No
128) To what extent are you and family members satisfied with the services you receive?		1. Yes, to high extent	2. Yes to some extent	3. No
129) To what extent do you and your family members perceive staff as being "caring" and "willing to go the extra mile" to meet your' care needs?		1. Yes, to high extent	2. Yes to some extent	3. No

130) Overall, how you regard the interaction of the service providers with you			
1. Doctors	1. Good	2. Uncertain	3. Bad
2. Midwives/nurses	1. Good	2. Uncertain	3. Bad
3. Dentist	1. Good	2. Uncertain	3. Bad
4. Paramedical staff	1. Good	2. Uncertain	3. Bad
5. Others	1. Good	2.Uncertain	3.Bad

Services you received during sessions	
131) For how long you have been registered in PCC? ----------days/months	
132) How many PCC sessions you received in total? ----------	131) How much each session lasts? ----------
133) Who was involved in providing PCC services (You can choose more than one option)	
1. Doctor 2. Nurse/Midwife/SSN 3. Clark	4. Lap clinician 5. Dentist 6. Others

134) What services did you receive in PCC?	**135) Impressions about the service**		
1. Screening for HTN	1. Good	2. Uncertain	3. Bad
2. Screening for DM	1. Good	2. Uncertain	3. Bad
3. Screening for anemia	1. Good	2. Uncertain	3. Bad
4. Dental screening	1. Good	2. Uncertain	3. Bad
5. Folic acid, for how long	1. Good	2. Uncertain	3. Bad
6. Advices	1. Good	2. Uncertain	3. Bad
7. Medications	1. Good	2. Uncertain	3. Bad

136) Has the doctor prescribed medications to you?	1. Yes	2. No (go to q 137)
137) Did you find the prescribed drug in the facility?	1. Yes, all of them	2. Yes, some of them
	3. Yes, most of them	4. Not at all

138) How many PCC visits did you received? ----------visit		
139) Did the provider gave folic acid for you?	1. Yes	2. No
140) Did the doctor counseled you about folic acid benefits?	1. Yes	2. No
141) Are you given instructions regrading when to take it? And how?	1. Yes	2. No
142) How much tab did you take? ----------tablet.		
143) For how long ---------- days.		
144) Did you comply with instructions in taking the pill?	1. Yes	2. No

145) Reasons for compliance	146) Reasons for non-compliance
1. Had child with spina bifida 2. Had a child with anencephaly 3. Afraid of congenital anomalies 4. To improve hemoglobin level 5. Following doctor advice 6. Has no side effects 7. It's a type of vitamins 8. Others, specify----------	1) Busy 2) Didn't know its benefit 3) Didn't know how to use it 4) Didn't know for what its being given 5) Gastritis and hyperacidity 6) Carelessness despite knowing its benefit 7) Husband refuse 8) Fear of taking any medications during pregnancy or planning for it 9) Others, specify----------

Accessibility

147) How do you describe the distance to reach the center?

1. Far 2. Reasonable 3. Close

148) How do you perceive the affordability of transportation cost from home to and from the facility?	1. Afford able	2. Not affordable
149) Were you asked to pay for any external drugs/ lap results	1. Yes	2. No
150) Have you been tuned back without receiving the services you came to receive?	1. Yes	2. No (go to q 151)
151) If yes why	1. No time 2. No laporatory services avaliabel 3. Abscent PCC provider	

	4. No drugs avaliabel 5. Lack of appointmnet	
152) Have you experience any accessibility related barriers	1. Yes	2. No
153) If yes	1. Physical 2. Lack of transporation 3. Social –family not convienced 4. Lack of expert health staff 5. Lack of medication 6. Others, specify……	
Physical amenities		
154) Did you liked the place at which the PCC services are provided	1. Yes	2. No
155) Did you find a chair to sit at the PCC?	1. Yes	2. No
156) Was there an enough space for people in the clinic? (As to stay in regular rows?)	1. Yes	2. No
157) Was the place adequately ventilated?	1. Yes	2. No
158) Did you find a clean toilet	1. Yes	2. No
159) Was the drinking water available?	1. Yes	2. No
160) If yes, was it clean for use?	1. Yes	2. No
Time		
161) Waiting time in minutes----------	162) How you perceive waiting time 1. Short 2. Reasonable 3. Long	
163) Contact time ----------	164) How you perceive contact time	

	1. Short 2. Reasonable 3. Long	
165) Did you received an appointment?	1. Yes	2. No
166) Do you think that people wait too long to make appointment?	1. Yes, all the time 2. Yes, sometimes, specify…. 3. No.	
167) How much did you wait for a provider that is not in his/her position?---------- minutes		
168) Is it easy to make an appointment? 1. Yes, all the time 2. Yes, sometimes, specify…. 3. No		
169) Did the provider asked you about the time that siuts you?	1. Yes	2. No.

170) Are your care provider comitted to the appointment they give to you?	1. Yes, all the time	2. Yes, sometimes	3. No
171) In what station or waiting area you think you had to stay for a longer period?	1. Clark	4. Lap	
	2. Nurse	5. Dentist	
	3. Doctor	6. Pharmacy	
172) Are you given any follow up appointment?	1. Yes	2. No	
173) If yes in previous question, did the care provider discussed the best time that suits you? 1. Yes, several times 2. Yes, once 3. No			
174) Do you think you've spent enough time with the health provider?	1. Yes	2. No	

For PCC recipients:

Behavioral change and Communications		
175) Does the care provider give you any advices related to your condition?	1. Yes	2. No (go to q 177)
176) If yes advices were received, regard which one of the following?		

1. Smoking cessation 2. Healthy diets 3. Fluid intake 4. BP monitoring 5. Personal hygiene 6. Unnecessary or harmful medication	8. Supplementations 9. Smoking cessation 10. Follow up 11. Danger signs of pregnancy 12. Danger signs of labour 13. Danger signs of post-partum

avoidance 7. Folic acid intake	Danger signs of neonates		
177) If yes did you understand health provider advises?	1. Yes	2. No	
178) Were you given the information you wanted today?	1. Yes, to great extent	2. Yes	3. No
179) How you regard the value of health information you received	1. Yes, to great extent	2. Yes	3. No
180) Have you been given written information?	1. Yes	2. No	
181) If yes, what was given?			
1. Life style advices 2. Lap test reqiuested from outside 3. Lap results completed	4. Drug prescrition 5. Appointments for follow up visits 6. Others, specify ……		
182) Do you think it is enough?	1. Yes, to great extent	2. Yes	3. No
183) Were you able to ask about the information you want?	1. Yes	2. No	
184) What is your main source of health related Information?			
1. HC clinic physician 2. HC nurse 3. HC pharmacist	4. Community pharmacies 5. Others ----------		
185) Did you feel that the staff explained the information clearly? 1. Yes, very clear messages 2. Yes, but not all the time specify---------- 3. No			
Perceived Health impacts (mother, pregnancy outcome, family)			
186) To what extent does the program enhance your quality of life?	1. yes, to great extent	2. Yes, to some extent	3. Not at all
187) Has the program generally affected your health positively?	1. yes, to great extent	2. Yes, to some extent	3. Not at all (Go to q 188)
188) If yes			

1. Prevent anemia 2. Treated a current anemia 3. To discover any blood related disorder	4. To avoid premature delivery 5. To avoid post-natal depression 6. To decrease your risk of having CS delivery		
189) Has the program generally affected your child' health positively?	1. yes, to great extent	2. Yes, to some extent	3. Not at all
190) If yes	1. Decreased baby chance of having congenital anomaly 2. Reduce premature delivery 3. Reduced low birth. 4. Decreased your baby chance of NICU admission 5. Reduced your child risk of anemia 6. Others, specify----------		

Annex (5) FGD schedule

Focused Groups Discussion on PCC services in UNRWA clinics/ Semi-structured schedule

Welcoming and introduction

1. Tell me about your impressions about PCC, what comes to your mind first when we mention PCC?

2. Tell me about the PCC care provided at your center, typically what the woman receive at this center, do you involve other family members, men?

3. How you describe the importance of PCC, is it really needed? What we will lose if we don't provide it, how care is now different in comparison to the pre-PCC era give examples?

4. How PCC is evolving at your center, tell me about trends in quantity and quality in relation to PCC?

5. What do you think about the quality of PCC services at UNRWA, probe for targeting, access, coverage, technical competence, resources (human and non-human), interactions, and the other dimensions of quality? Give real examples from the field.

6. What are the strengths of the provided PCC services? What are the remaining gaps?

7. To what extent polices, resources, supportive services are available? How PCC is synergize, harmonize with other services, does it contradicts with other services?

8. From your perspectives, what are the main effects of the PCC program (on the clients, babies, other services and the health care system)? Reflect on the positive and negative effects, short and long term, positive and negative, intended and unintended effects. Give examples about these effects from your work?

9. How PCC services are perceived? How satisfied the clients, staff, policy makers are about the services, interactions with providers?

10. Our quantitative research indicates that XXX, how you perceive that?

11. To promote PCC services, what should be done on terms of human resources, supervision, process management/flow, approach of care, targeting, and registration?

12. Other comments

Annex (6) KII schedule

Focused Groups Discussion on PCC services in UNRWA clinics/ Semi-structured schedule

Welcoming and introduction

1. Tell me about your impressions about PCC, what comes to your mind first when we mention PCC?
2. Tell me about the PCC care provided at your center, typically what the woman receive at this center, do you involve other family members, men?
3. How you describe the importance of PCC, is it really needed? What we will lose if we don't provide it, how care is now different in comparison to the pre-PCC era give examples?
4. How PCC is evolving at your center, tell me about trends in quantity and quality in relation to PCC?
5. What do you think about the quality of PCC services at UNRWA, probe for targeting, access, coverage, technical competence, resources (human and non-human), interactions, and the other dimensions of quality? Give real examples from the field.
6. What are the strengths of the provided PCC services? What are the remaining gaps?
7. To what extent polices, resources, supportive services are available? How PCC is synergize, harmonize with other services, does it contradicts with other services?
8. From your perspectives, what are the main effects of the PCC program (on the clients, babies, other services and the health care system)? Reflect on the positive and negative effects, short and long term, positive and negative, intended and unintended effects. Give examples about these effects from your work?
9. How PCC services are perceived? How satisfied the clients, staff, policy makers are about the services, interactions with providers?
10. Our quantitative research indicates that XXX, how you perceive that?
11. To promote PCC services, what should be done on terms of human resources, supervision, process management/flow, approach of care, targeting, and registration?

Annex (7) Covering letter explaining research purpose and consent form

Preconception Care: Does it make a Difference in Pregnancy Outcomes?

Dear participant:

I am Maha Timraz, working in UNRWA Al-Sapra Clinic, conducting a research as a part of the fulfillment of the requirements for the master degree of public health at Al Quds University about Preconception Care (PCC) and its effect on pregnancy outcomes for both mother and their babies in the GS.

Thank you for taking the time to participate in this endeavors. The data that will be collected will provide useful information regarding the PCC quality of services and will ultimately provide HCP's with recommendations that can help in improving the service in the future.

Approximately 800 mothers will participate in the study, and you have been selected randomly because you are a beneficiary of UNRWA Maternal and child health care services and you met the selection criteria.

If you agree to participate, you will be asked to respond to an interviewed questionnaire. We will collect data about your previous pregnancy. This will require approximately 20 minutes of your valuable time; the data you provide will remain confidential.

Your participation is highly appreciated and it's strictly voluntary and you may choose not to participate at any time. If you choose to participate in this study, please answer all questions as honestly as possible there may be some words that you do not understand. Your answers will not affect the services you receive from the clinic. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them.

If you require additional information or have questions, please contact me at the number listed below.

Sincerely,

Dr.Maha Timraz

(Mobile: 05954848282, Email: m_batninji@hotmail.com)

Annex (8) An official letter of approval from the Helsinki Committee in the GS

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة 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: 05/02/2018 **Number:** PHRC/HC/336/18

Name: MAHA B. TIMRAZ 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:

Preconception Care: Does it make a Difference in Pregnancy outcomes?.

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/336/18 in its meeting on 05/02/2018

و قد قررت الموافقة على البحث المذكور عاليه 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:-

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العيون

دراسة حول برنامج رعاية ما قبل الحمل المقدم في مراكز الأونروا الصحية للرعاية الأولية في قطاع غزة: هل يحدث فرقا؟

إعداد: د.مها تمراز

إشراف: د.بسام أبو حمد

ملخص الدراسة

تضم رعاية ما قبل الحمل مزيجا من التدخلات الوقائية و العلاجية التي تهدف إلى الكشف المبكر عن المخاطر التي قد تؤثر على صحة المرأة و الطفل و علاجها من خلال تحديد العوامل التي يجب العمل عليها قبل، أو في وقت مبكر من الحمل. تبحث هذه الدراسة عن تأثير برنامج رعاية ما قبل الحمل المقدم في مراكز الأونروا الصحية للرعاية الأولية على نتائج الحمل.

أجريت هذه الدراسة الشبه تجريبية بطريقة التثليث الكمي و الكيفي، و أسفرت عملية أخذ العينات العشوائية الطبقية عن اختيار 5 عيادات رعاية أولية للأونروا لتمثل مختلف محافظات قطاع غزة، حيث شاركت 800 سيدة من خلال اجراء مقابلات معهن (400 سيدة تلقين خدمة رعاية ما قبل الحمل و 400 سيدة لم تتلق نفس الخدمة). وأجريت مقابلة مع عينة مستهدفة مكونة من 11 موظف من مقدمي الخدمة بالإضافة إلى عمل 6 مجموعات بؤرية ضمت 60 سيدة تم اختيارهن لأسباب متنوعة (30 من المستفيدات من الخدمة و 30 من غير المستفيدات منها) و ذلك بغرض إثراء و تفسير بعض النتائج. من الجدير بالذكر أن الأداة الرئيسية التي استخدمت في الجزء الكمي للدراسة هي عبارة عن استبيان تم تصميمه من قبل الباحث بإشراف مباشر من مشرف البحث بالإضافة لاستعراض السجلات الرقمية لكل من السيدات المشاركات في البحث، في حين تم استخدام بروتوكول شبه منظم للطريقة النوعية. تم تحليل البيانات الكمية باستخدام الحزمة الإحصائية للعلوم الاجتماعية وتم استخدام تقنية الترميز المفتوح لتحليل الجزء النوعي.

أظهرت النتائج أن 47% من السيدات المستفيدات من البرنامج قد عرفوا عن الخدمة من خلال القابلات، 44.1 ٪ قد التحقوا فعليا بالبرنامج لأنهن كن يخططن للحمل. بالنسبة لغير المستفيدات من البرنامج، أفادت 31.5٪ من السيدات إلى أن سبب عدم التحاقهن ببرنامج رعاية ما قبل الحمل يعود لعدم معرفتهن بوجود هذه الخدمة. فيما يتعلق بالخدمات المقدمة في إطار برنامج رعاية ما قبل الحمل، أفادت 71.7 ٪ من السيدات الملتحقات بالبرنامج بأنهن قد تلقين النصائح الصحية، بينما تلقت حوالي 99 ٪ من السيدات فحوصات مثل قياس ضغط الدم و فحص نسبة السكر في الدم و فحص مشاكل الأسنان وأيضا تلقين حمض الفوليك، وأفادت 82.3 ٪ من السيدات بأنهن أخذن معلومات حول أهمية حمض الفوليك. ومع ذلك 75.8 ٪ من المستفيدات قد التزمن بشكل مستمر باستعمال حمض الفوليك. أظهرت النتائج أن 92.2 ٪ من المستفيدات من برنامج رعاية ما قبل الحمل أخذن حمض الفوليك قبل الحمل بينما فقط 15.1 ٪ من غير المستفيدات قد تناولن حمض الفوليك.

بلغت النتيجة الإجمالية التي تعكس التصورات حول مدى ملاءمة الخدمات المقدمة 73.8٪ ، حيث أشار 47.9٪ من المستفيدات إلى أنه تمت مشاركتهن في الخدمة المقدمة لهن. وبلغت النتيجة الإجمالية التي تعكس مدى التنسيق وسلاسة الخدمة 69.7 ٪. كان متوسط وقت الانتظار 47.8 دقيقة ، وقد وصفت 54.5 ٪ من المستفيدات وقت الانتظار على أنه طويل و 48.3 ٪ أشرن إلى أن وقت تلقي الخدمة الفعلي كان أقل من 5 دقائق.

فيما يتعلق بتأثيرات البرنامج ، فإن 57.9 ٪ من المستفيدات من برنامج رعاية قبل الحمل و 67.4 ٪ من غير المستفيدات واجهن مضاعفات خلال فترة حملهن الأخيرة، حيث أصيبت 53 ٪ من المستفيدات بينما حوالي 55.8 ٪ من غير المستفيدات بالتهاب في الجهاز البولي التناسلي، تجدر الإشارة بأن 51.7 ٪ من الملتحقات بالبرنامج قد تعرضن للإصابة بفقر الدم مقابل 71.4 ٪ من غير المستفيدات وكانت الفروقات السابقة الذكر ذات دلالة إحصائية. كانت نسبة النساء اللاتي ولدن عن طريق الولادة القيصرية 25.3 ٪ بين المستفيدات من البرنامج و 18 ٪ بين غير المستفيدات منه. أفادت الدراسة بأن 22.8% من متلقي خدمة رعاية ما قبل الحمل مقابل 32.5 ٪ من غير المستفيدات واجهن مضاعفات خلال الولادة الأخيرة ، وخاصة النزيف (36.3 ٪ و 51.5 ٪ للمستفيدات من برنامج رعاية ما قبل الحمل وغير المستفيدات على التوالي). حوالي 63.7٪ من المستفيدات من البرنامج مقابل 67.4٪ من غير المستفيدات أتممن كامل مدة الحمل، بلغ متوسط وزن المواليد للسيدات المستفيدات من البرنامج 3274.5 بينما 3225.4 لغير المستفيدات. بلغت نسبة التشوهات الخلقية بين المواليد للسيدات المستفيدات من البرنامج 3.8 ٪ مقابل 2.5 ٪ لغير المستفيدات. قد تعزى الاختلافات السابقة و الغير متوقعة إلى حقيقة أن البرنامج يستهدف السيدات المعرضات للخطر بشكل خاص لغرض تحسين النتائج، والتي يمكن أن تكون أسوأ من دون البرنامج.

وخلصت الدراسة إلى أن برنامج رعاية ما قبل الحمل المقدم قد أحرز نتائج أفضل للأمهات، لكنه ما زال يحتاج إلى مزيد من التعزيز لتحقيق نتائج أفضل. لذلك يجب التحسين و الاستثمار في عدد من المجالات من بينها آلية الاستهداف للمستفيدات وتفاعل الموظفين مع المستفيدات والامتثال للتعليمات الفنية الخاصة بالاستشارات و الفحوصات. ومن المهم أيضا تعزيز المراقبة والإشراف.