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Women's Perceptions of the Quality of Care and Health Related Information Provided by the Mother and Child Health E-Registry

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M. Sc. Thesis

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Dedication

I dedicate this dissertation to the spirit of my father who was always encouraged me to continue in my study

To my mother and family without them, I couldn't complete my study

To my husband for being the greatest source of unlimited support and encouragement

To my world ….my kids

I dedicate this research to all of them

Declaration

I certify that this thesis submitted for the degree of master is the result of my own research, except where otherwise acknowledged, and that this thesis or any of its parts has not been submitted for a higher degree to any other university or institution

Signed:

Hala Hamed Yousef Bahloul

Date: 10/06/2021

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Abstract

Antenatal care and postnatal care are important services provided to mothers in the childbearing period to reduce maternal morbidity and mortality. Both of them complement each other to get positive outcomes for both mother and her baby. The study aimed to assess the perception of women about the quality of care in the antenatal care and postnatal care in governmental primary health centers in the Gaza Strips, their satisfaction with obtaining electronic health registry and evaluate sending short message service messages in improving their outcome and the attendance on time. The study was conducted among eight health care centers in four governorates. The study design was a mixed-methods study: it involved both quantitative and qualitative data. The quantitative data was collected from mothers who utilize antenatal care, post natal care at governmental primary health centers. In total 400 women participated in the quantitative study. The qualitative data was collected through 3 focus group discussions with mothers about antenatal care, postnatal care services provided to 20 mothers. Key informant interviews were done with 10 health care providers (doctors, midwives). Analysis of quantitative data was conducted through the Statistical Package for the social sciences program, the analysis involved different types of statistical tests. For qualitative data, an open coding thematic analysis method was used.

The study results showed low utilization of Preconception care services as 41.6% was supplemented with folic acid. The percentage of early registration in pregnancy was 53.9% related to the mother's preference for late registration and health care provider's instructions for coming after 12weeks. PNC delayed receiving this service for more than 1 week among 63% of women due to the closure of clinics in COVID 19.

The highest mean in perceived quality was tangible perceived quality(81.4%) where Gaza governorate women participants reported a significantly higher level of tangible with a mean of 84.4% while the lowest mean was responsiveness perceived quality 75.8% where Rafah governorate women participants reported a statistically the lowest level of responsiveness with mean 71.6% that explained from health care providers due to overload and work pressure and staff shortage.

Gaza governorate women participants reported a significantly higher level of adherence to an appointment with a mean of 87.4% than Khan Younis governorate women participants with a mean of 79.6%. Sharing appointments for next visits was high in Alhurria health center women participants reported a significant the highest level of adherence to the appointment with a mean of 88.8% and Abasan Alkabeera women participants reported the lowest level of mean 75.2%. Bany Suhaila health center participants reported a significant the highest level of using mobile health application with a mean of 71.2% and Abasan Algadeeda women participants reported the lowest level of managing medical risks in pregnancy with a mean of 49.6%. Mothers confirm that sending SMS reminders was improved in increase adherence to appointments 81.8% and useful in reminding the appointment 83.3% especially in women with risk in pregnancy.

Conclusion; the present study concluded that the proportion of women utilizing preconception care was low that affects early registration in pregnancy. Most women utilize postnatal care after 1 week that considers late utilization in comparison to the World Health Organization recommendation. Recommendation: enhance the early utilization of maternal health care services to decrease maternal morbidity and mortality by increasing awareness of women for the importance of these services.

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Abbreviation

AN	Antenatal period
ANC	Antenatal Care
DM	Diabetes Mellitus
E-health	Electronic Health
EMR	Electronic Medical Record
E-REGISTRY	Electronic Registry
GDM	Gestational Diabetes Mellitus
GS	Gaza Strip
HB	Hemoglobin
HER	Health Electronic Record
IUGR	Intrauterine Growth Restriction
MCH	Maternal and Child Health
MCHH	Mother and Child Handbook
MoH	Ministry of Health
NGO	Non Governmental Organization
OGTT	Oral Glucose Tolerance Test
PCBS	Palestinian Central Bureau of Statistics.
PCC	Preconception Care
PHC	Primary Health Care
PIH	Pregnancy Induced Hypertension
PN	Postnatal period
PNC	Post Natal Care
SES	Socioeconomic Status
UNRWA	United Nation Relief and Work Agency for Palestinean Refugees
WB	West Bank
WHO	World Health Organization

Chapter One

Introduction

1.1 Background

Maternal and child health programs focus on health issues concerning women and child such as access to recommended maternal and well-child care, decrease maternal morbidity and mortality, child immunization and nutrition besides maternal and child mental health. These programs aim to improve the availability of and access to high quality preventive and primary health care for all children, and for the reproductive health care of all women and their partners, regardless of their ability to pay. Among Palestine refugees in Gaza, MMR has decreased from 23.4 per 100,000 live births in 2008 to 16.2 per 100,000 live births in 2019, infant mortality rate had slightly increased from 20.2 per 1,000 live births in 2008 to 22.7 per 1,000 live births in 2015 (UNRWA,2020).

Antenatal care (ANC) is a service provided by skilled healthcare professionals to pregnant women to ensure the mother and baby enjoy the best health conditions during pregnancy. The components of ANC include risk identification, prevention and management of pregnancy-related or concurrent diseases, health education and health promotion. Antenatal care reduces morbidity and mortality by early detection and management of diseases and complications related to pregnancy (WHO, 2016). Multiple risk factors affect pregnant women as gestational hypertension is a common disorder that occurs during pregnancy; it is characterized by the development of hypertension after 20 weeks of gestation. Gestational diabetes mellitus (GDM) has several risk factors such as the mother being over 35 years, having a family history of diabetes mellitus. Therefore, screening is done for them in the first visit (United Nations, 2013). It is diagnosed by a 75g OGTT of the following values fasting ≥92mg, 1 hour ≥180mg and 2 hours ≥153mg.

Postnatal care (PNC) is the care given to the mother and her newborn baby immediately after delivery and/or during the first six weeks of delivery. It is a very critical time for the mother and her newborn baby. The guideline of WHO focuses on the mother and her newborn baby in the low and middle-income countries to protect the mother from complications such as hemorrhage, infection, and anemia; and her newborn baby from neonatal morbidity, mortality and other outcomes including problems in growth and breastfeeding (WHO, 2013). According to a study in the West Bank, there is a lack of utilizing of postnatal care due to the socioeconomic status and the place of delivery.

Women who deliver their babies in private hospitals have higher utilization of services and receive information about the dangerous signs of their health and the health of their babies (Dhaher, Mikolajczyk, Maxwell, & Krämer, 2008a).

Quality of care given to patients is increasingly tending to include the evaluation of patient perception; and it is supported by involving them in decision-making, meeting their expectations and assessing the effects of financial status on accessibility to and quality of care. The evaluation of patient perceptions constitutes a positive approach that evaluates the quality in contrast to negative approaches that focus on the evaluation of inadequate processes or undesired outcomes (Haddad, Potvin, Roberge, Pineault, & Remondin, 2000). The women in Palestine face challenges that relate to health care providers in public hospitals. The latter work in difficult conditions, suffer from the limitation of resources and need midwives and nurses with evidence-based practices and knowledge in childbirth (Hassan-Bitar & Narrainen, 2011).

The electronic maternal and child health registry (MCH eRegistry) has been implemented in 182 governmental primary care clinics in Palestine. The MCH eRegistry contains data from antenatal to postpartum and newborn care. The aim of the eRegistry is to investigate whether the use of the eRegistry leads to changes in time-efficiency in health information management by the care providers, compared with the paper-based systems.

1.2 Research problem

Evidence has shown that poor quality of facility-based care for these women and newborns is one of the major contributing factors for their elevated rates of morbidity and mortality. Also late registration in pregnancy after 12 weeks had affect in early and managing any condentions related to their health so, the study will examine the main causes prevent earl registration. There is a lack of awareness among women about the medical risks in pregnancy and its threat to their lives and their fetus. Poor awareness results from poor communication with their health care providers regarding their health status, and poor compliance to treatment and attendance to the clinic on appointment. Neglecting the importance of involving women in managing their diseases, counseling their conditions and obligating them to follow up are challenges to managing their cases. In my opinion, the lack of communication and coordination, as well as the lack of joint reliable data between primary healthcare clinics and hospitals confuse mothers, causing them serious

complications such as pre-eclampsia. Lacking near-miss cases audit and analysis lead to an increase in maternal morbidity and mortality so that it needs a continuous follow-up and review (Kalhan, Singh, Punia, & Prakash, 2017). Regarding PNC it was estimated that three-quarters of women didn't receive postpartum care and this lead to about 60-80% of maternal death during this period and according to the annual report of the Ministry of Health(2020), PNC visits per physician at 13.4% of the reported live births. Electronic medical records were recently entered into the MoH primary clinics, but there is a lack of knowledge regarding its effect on pregnant women's conditions and health. Therefore, there is a need to evaluate the effect of this system on ANC services and to assess the satisfaction of clients and health care providers with the system to improve the quality of care and utilization of services. Examining the use of SMS messages as an appointment reminder shows an increase in women's attendance to healthcare centers unlike those who did not receive any reminders; however, there is a lack of studies to assess the satisfaction with this service, its safety and the adverse effects of mobile phone messaging reminders (Gurol-Urganci, de Jongh, Vodopivec-Jamsek, Atun, & Car, 2013a)

1.3 Justification of the study

E-health shows a good opportunity to improve maternal and child health care in low-resource countries by sharing knowledge and discussing the cases among different health care providers from different specializations for urgent techno consultation. Mobile phone usage has been rapidly increasing worldwide, but the evidence supporting its current effectiveness is still unclear except in asthmatic patient cases where its use shows mild improvement (Marcolino et al., 2018).

In this study, the researcher assesses the perception of women about the quality of care in the ANC and PNC to improve their maternal health. Also to detect factors and barriers that affect utilization of services that will give focus on real issues to be managed. Also, evaluate the quality of maternal health service and assess the perception of it from the point of view of health care providers and how can they improve these services

Besides determining their satisfaction with obtaining SMS reminders from an electronic health registry that help health care providers and women to manage their medical risks by increasing their compliance to the appointment, the research will study the extent of usage and effect of health information from social media on the health behaviors among mothers

and the role of ministry of information to control and supervised published information through multiple websites that may affect women and child health.

Finally, it could be beneficial for policymakers to improve the provided services to decrease pregnancy-related morbidities and mortalities.

1.4 General objective

The general objective of the study is to assess women's perception and satisfaction with maternal and child services and information related to their health.

1.5 Specific objectives

1. Identify women's satisfaction and perception of the quality of antenatal care at the governmental primary health center.
2. Identify women's satisfaction with the quality and perception of postnatal care at the governmental primary health center.
3. to examine the differences between the level of women's satisfaction and their place of residence and health centers.
4. determine the main points of strength and weakness of maternal health care services at governmental primary health centers.
5. Evaluate the effect of sending SMS messages on the attendance of women and improving the quality of services.
6. Suggest recommendations according to the study findings.

1.6 Research questions

1. Did the services achieve their outcome in improving the quality of care?
2. What is the efficacy of these services on women's health status and well-being?
3. What are the main factors that encourage women to utilize this service?
4. What are the challenges facing women in utilizing the service?
5. What is the extent of privacy and confidentiality to protect women from the harmful use of their mobile numbers?
6. What is the extent of satisfaction with information after providing an e-health registry?

7. What is the perception of women on the quality of health care?
8. What are the recommendations to improve and develop the quality of this service?

1.7 Context of study

1.7.1 Demographic context:

Palestine is an Arab country located in Asia on the eastern meditation coast. It has an area of about (27.5 km^2), bordered by Jordan to the East, Lebanon to the north and the Red Sea, Saini and Egypt to the south; it is located in the heart of the Middle East. In 2020, according to the Palestinian Central Bureau of Statistics (PCBS) Estimated, the population of Palestine was 5,101,152 of whom 2.59 million were males compared to 2.50 million females, while West Bank had 3.05 million inhabitants, 59.9 % of the total population of Palestine of which about 1.55 million were males Compared to 1.49 million females, while the population of Gaza Strip was 2.04 million, 40.1% of the total population of Palestine, of which about 1.03 million were males compared to 1.01 million were females (PCBS,2020)

Socioeconomic context:

Continued blockade and siege on Gaza led to the deterioration of the economic status. The percentage of the unemployment rate for both sexes was 25.3 that distributed as males in WB and GS was 21.1%,39.5% respectively and females in WB and GS was 25.8%,63.7% respectively (PCBS,2019), so the poverty rate in the GS is four times higher than that in the WB (53% in the GS and 13.9% in the WB). 33.7% of individuals in the GS suffer from extreme poverty while only 5.8% do in the WB (PCBS, 2017). In Palestine, poverty is widespread; in 2017, 29.2% of individuals were living below the poverty threshold and this is higher than the corresponding rate in 2011 which was 26%. Moreover, extreme poverty increased from nearly 13% in 2011 to 16.8% in 2017, and poverty in the WB declined by 22%, but it increased to almost 36% in the GS (PCBS, 2017).

1.7.2 Palestinian health care context:

The main provider of healthcare services in Palestine is the Ministry of Health, which controls other health sectors, such as the United Nations Relief and Work Agency, non-governmental organizations and the private sector.

1.7.2.1 Health care system:

- **Ministry of Health (MoH)**

The MoH provides primary, secondary, and tertiary services. The number of PHC centers in Palestine reached 749 in 2020. The number of MoH primary health care centers in Palestine increased from 203 at the end of 1994 to 475 in 2020, an increase of 134%. The MoH classifies PHC centers into four levels: 60 clinics are classified as level one, 251 clinics are classified as level two, 132 clinics are classified as level three, and 27 clinics are classified as level four (MoH, 2020). Five PHC mobile clinics provide health services in Jericho and Al Aghwar, Jerusalem, Bethlehem and Yatta Governorates (MoH, 2020).

- **United Nations Relief and Work Agency (UNRWA)**

It provides universal health coverage in its free-of-charge services that are made available to all Palestinian refugees. It continues to maintain strong maternal and child health indicators such as vaccination coverage, early registration for preventive care and a good percentage of pregnant women attending at least four antenatal care visits. All of these services are provided in 143 health centers operating across its five fields. In the GS, there are 22 health centers accessed by 88% of refugees, and 43 health centers in the WB accessed by 51%of refugees (UNRWA, 2019).

1.7.2.2 Health care services:

According to the annual health report of the MoH, the number of women in reproductive age (from 15 to 49) were 1,262,314, accounting for 24.7% of the total population in 2020, in WB 766,264 which 25.1% of the total population in WB and 496,050 in GS which 24.2% of the total population in GS (MoH, 2020). The total fertility rate in Palestine is 3.8 births, 3.9 in Gaza Strip and 3.8 in West Bank (PCBS,2020)

The number of MoH hospitals in Palestine is 28 hospitals; with about 3,590 beds. There are 15 MoH hospitals in WB, with a capacity of 1,760 beds, equivalent to 49% of the total hospital beds of MOH, while there are 13 MoH hospitals in GS1,830 beds or 51% of the total MoH hospital beds in Palestine. the percentage of bed occupancy in MOH hospitals in WB was 95.9% and 95% in GS.The percentage of physicians per 100,000 is 22.4%, the percentage of midwives is 2.7% per 100,000 and nursing is 27.8% per 100,000. About 71.6% of normal vaginal deliveries were carried out in the MoH hospitals with an

increasing number of cesarean deliveries that reached 28.4of the total deliveries (MoH,2020).

The MoH provides maternal health care services during pregnancy and postnatal in their primary health centers. The total number of pregnant visits to PHC centers was 97,360. The total coverage of pregnant women registered (first visit) in the MOH PHC centers was 37.4% of pregnant women; the average visit rate for pregnant women to the centers during pregnancy was 3.4 visits. Pregnant women are classified into three groups according to their health conditions: low risk, moderate risk and high risk, the last one constituting 18.6% of the total number of pregnant women (MoH, 2020). The percentage of high-risk groups registered in UNRWA health care facilities in GS was 20.1% and 15.6% in WB of registered pregnant women (UNRWA, 2019). Regarding services provided by the UNRWA in 2019, UNRWA health care facilities covered 58.1 of all expected pregnancies of the served refugee population. In the GS, it covered 82.4% of the pregnancies, while in the WB it covered 56.3% only (UNRWA, 2019). MCH services include registration of newly pregnant, follow-up mother's status, comprehensive examination by midwives and doctors. Laboratory tests, ultrasound and follow-up the referred cases to the hospital.

Regarding anemia, the incidence of anemia registered among pregnant women in the MoH, PHC, was 25.5%. The incidence of anemia among high-risk pregnant women was 31.4% and 25.5 of normal pregnancies (MoH, 2020).

In postnatal care the percentage of visits by mothers to maternal and child centers in 2020 per physician at 13.4% of the reported live births and per nurse 68.6% of reported live births(MoH,2020). 91.1% of pregnant women received postnatal services within 6 weeks of delivery, with the highest rate in the GS 100 % and 91.4% in the WB (UNRWA, 2019).

Early registration is important for the early detection and management of diseases. The proportion of early registration in the first trimester is 80.7%. The average number of antenatal visits per client ranged from six to seven visits; in Gaza, it constitutes 97.4% while it constitutes 87.1% in the WB (UNRWA, 2019).

The prevalence of gestational diabetes in UNRWA health care facilities in agency-wide was 5.2% where the highest rate was 7.7% in the WB. The prevalence of hypertension

during pregnancy was 7.5%, the lowest rate was 5.9% in the WB and the highest rate was 9.7 % in the GS (UNRWA, 2019).

The maternal mortality ratio was 25.2 per 100,000 living births in Gaza; 0.0% in the WB (UNRWA, 2019). A report by the MoH in 2020 indicated that it was 24.3 in the GS, and 31.4 in the WB (MoH, 2020).

1.7.2.3 E-health at UNRWA

The e-Health system, introduced in 2009, has streamlined service provision and improved efficiency and enabled high-quality data collection. It was operational in all HCs in Gaza (22 HCs) and West Bank (43 HCs). The e-Health system has been further developed in collaboration with WHO to include mainly revision 11 of the International Classifications of Diseases (ICD-11). The full implementation of e-Health will improve patient care quality by swift access to medical records, improved appointment system, and better patient flow. Besides, it will support physical distancing, strengthen supervision of health services, and enhance monitoring and reporting capabilities.

1.8 Operational definition

1.8.1 Perceived quality of care:

The WHO defined 'quality of care' as care that is efficient, effective, accessible, acceptable, patient-centered, equitable and safe (WHO, 2006). The concept of perceived service quality has been described as "an overall judgment concerning the excellence or superiority of a product or service" Perceived service quality is conceptually different from consumer satisfaction/dissatisfaction (Koelemeijer, 1993).

1.8.2 E-registry:

The limited data available for maternal and child health care leads to increase morbidity and mortality rates among women and children so that global health agencies developed an electronic registry system to maintain high-quality data collection and management approach to promote mother's and children's health (Awwad et al., 2019). It is a type of electronic medical information to guide data collection, analysis and management.

1.8.3 patient satisfaction

Patient satisfaction is the extent to which patients are happy with their healthcare, both inside and outside of the doctor's office. A measure of care quality, patient satisfaction gives providers insights into various aspects of medicine, including the effectiveness of their care and their level of empathy.

1.8.4 contact time

The time spent by a health care provider with a mother.

Chapter Two

Conceptual framework and literature review

2.1 Conceptual framework

It is the conceptual underpinning of a study. Its purpose is to organize the work inefficient mechanisms to draw and summarize accumulated facts. In other words, it is a conceptual map that links all statements set together. The current study examined factors that affect women's perception of care about the services provided during the ANC, PNC period.

Quality of health care:

It measures variables related to multiple factors such as clinic infrastructure, waiting hall, the equipment, the cleanliness of staff and clinic. Services provided during ANC visits include medical history, examination, measurement of hemoglobin level (Hb), fasting blood glucose and blood pressure. Health care providers also give supplementation according to gestational age like folic acid to prevent congenital malformation and iron supplementation to reduce morbidity from anemia. PNC full examination of a mother is done by a midwife who also tests the Hb level and measures the BP. Besides, the number of visits and the appointment of the next visit are important for the early detection and management of any disorder during this period. Health care providers confirm the importance of these services to women as well as the effects of the quality of services. The continued training, improving knowledge, sharing needed information with women, involving them in decision making and increasing awareness of the importance of visits and follow-ups will build up trust and, hence, provision of confidential information with providers and use of effective contact time.

Service satisfaction:

It is an indicator for measuring the outcome of the ANC, PNC services. Women's satisfaction is achieved when their expectation of the service is met, they are treated by the health care provider respectfully and confidentially, and they are provided with proper management through early detection, diagnosis and treatment with the proper drug. A set of factors affects satisfaction with the provided health care which relate to socio-demographic factors such as the mother's age, parity, previous experience of past pregnancy which affects her perception, mother's level of education and the family income.

The health care provider also constitutes a factor that affects the satisfaction and perception of women: the communication, answering the client concerns, findings and questions.

Health care system:

Availability of women's services with accessibility and affordability affects the perception of women regarding the importance of care; a good health care system increases the motivation to utilize the service, but at the same time, some obstacles hinder utilizing the service such as environmental, social and financial factors. On the other side availability of guidelines, protocols and sufficient supply is important for training health care providers to unified management of medical risks in pregnancy but the implementation and update must be continuous follow-up and supervised to ensure safe practice in the delivery of the care.

Accessibility to health care depends on financial, organizational and social, or cultural barriers that limit the utilization of service. So, equity of access may be measured in terms of the availability, utilization, or outcomes of services.

Health care affordability describes whether a person or organization has sufficient income to pay for or provide for health care costs. When health care is more affordable, more people have access to health care.

Health-related information:

E-registry was applied in all governmental PHCs in order to provide information to women regarding their health during the AN, PN period to improve their health status and their babies'. It increases the compliance of mothers to their appointed visit by sending SMS reminders to mothers' mobiles for the booked visit of the ANC, PNC follow-up either for examination or checking correspondence to the women's gestational age.

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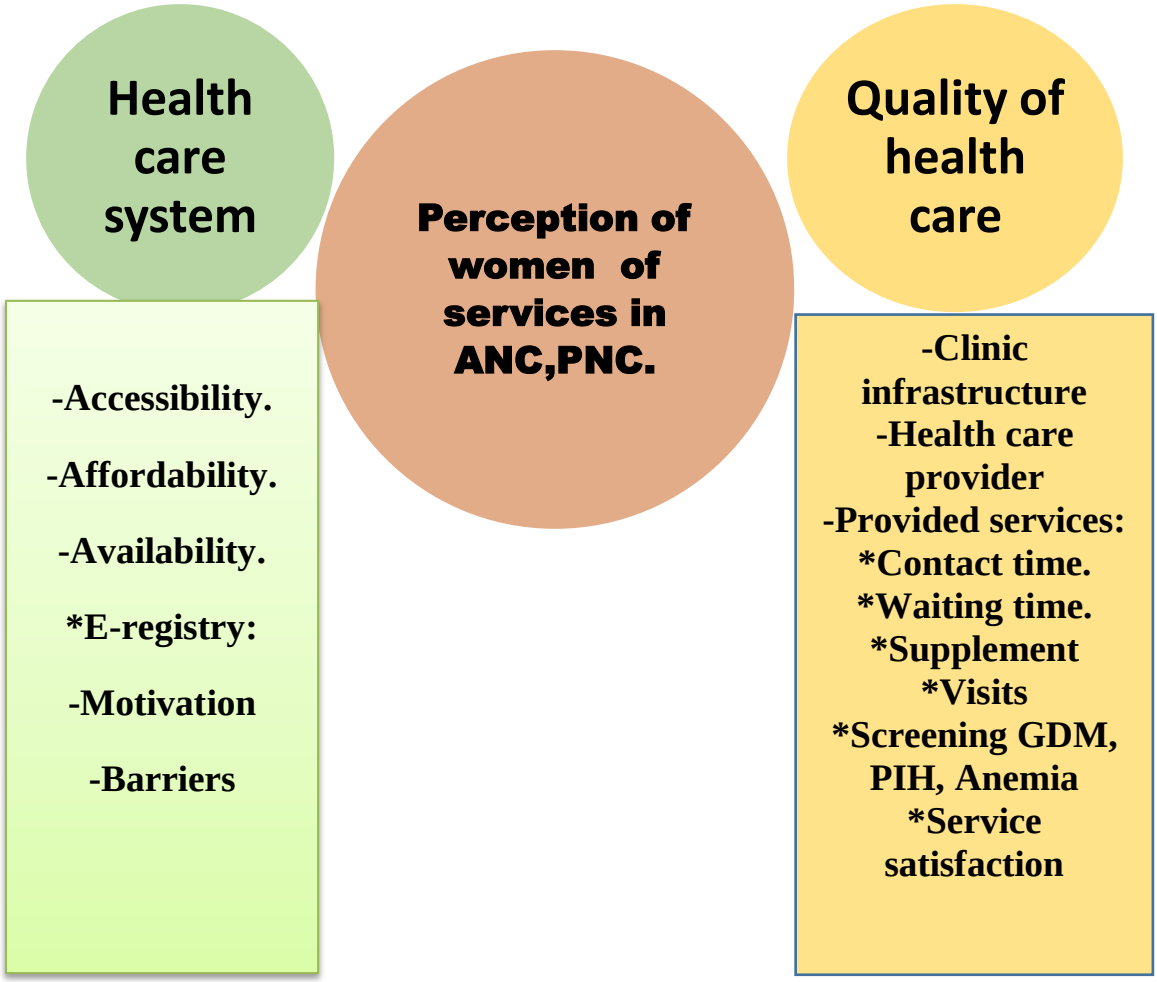

Figure (2.1): a conceptual framework

2.2 Literature review

2.2.1 Quality of MCH services:

2.2.1.1 Quality of ANC services:

The WHO recommends four visits for ANC at least. Regarding nutrition during pregnancy, in order to prevent anemia and malnutrition the WHO advises a 0.4 mg of folic acid supplementation to prevent congenital malformation in the fetus and a 30 to 60 mg dose of iron supplementation (WHO, 2016). Multiple indicators were used for measuring the quality of ANC services that were approved during the systematic review of articles that were published in the period 2002-2016 according to WHO guidelines. 52.2% of the articles reported iron and folic acid supplementation and the evaluation indicator in screening for GDM as 40.6% and measurement of blood pressure as 63.8% to improve the outcome of the mother and her baby; the number of ANC visits was evaluated in 65.2% of the articles (Morón-Duarte, Ramirez Varela, Segura, & Freitas da Silveira, 2018). Although ANC services are important components in MCH services, not all women receive them during pregnancy. For example, in Pakistan, only 50% of pregnant women enroll and a third of them drop out during follow-up visits in primary health care facilities (Majrooh, Hasnain, Akram, Siddiqui, & Memon, 2014). This underutilization of ANC services was evaluated in multiple countries such as Kenia where it reached 40.4 % as mothers prefer going to the central urban facilities over peripheral ones because they have more drugs, laboratory tests and good care (African & Journal, 2005). Also, a study assessing the quality of ANC services in Bangladesh found the absence of adequate services as there was an insufficient number of doctors and midwives and unequal distribution of the staff. It found in nine centers one doctor in each, five doctors in another, and not one doctor in one center and an NGO facility. Regarding physical facilities and instruments, they were unsatisfactory since they were found in 3 out of 13 centers with the percentage of 23.1% (Mansur, Rezaul, Mahmudul, & S, 2014). In Ghana, although women were satisfied with midwives' communication and attitude in health facilities, they were not satisfied with basic requirements such as the shortage of drugs. 14% of the 14 facilities have clean water, 36% have electricity, and 7% have an urgent referral by ambulance (Dalinjong, Wang, & Homer, 2018).

2.2.1.2 Determinants of ANC utilization:

In Ethiopia, public health facilities studied the early registration of ANC visits. The result was that more than half of registered women (60.5%) came after 16 weeks of gestational age despite the recommendation of the WHO about the importance of early registration. This contributed to the far-distance of the health center as many mothers need their husbands' company, and the long waiting time hinders mothers from carrying out their chores at home (Weldemariam et al., 2018). A cross-sectional study in Ethiopia in 2013 linked the mothers' absence from ANC to the lack of awareness regarding the importance of this service, and the mothers' workload at home so they cannot spend a long time waiting. The first visit of many mothers was during the 2nd and 3rd trimester of pregnancy and more than half of them preferred delivery at home due to nearby relatives and bad attitudes towards the health workers, although most of them believe that hospital delivery is safer for the mother and her baby. The husband's approval also affects the attendance of the mother as when he has a negative attitude towards ANC services, he does not allow her to visit the clinic (Birmeta, Dibaba, & Woldeyohannes, 2013). In addition, the family income affects the utilizing of maternal services; the high-income household prefers hospital delivery (Tel Kavalas., 2008). The preconception of care is also important in MCH services, but it also has obstacles. Although it is free in Latin American countries, mothers do not attend due to poverty and transportation difficulties (Paredes, Hidalgo, Chedraui, Palma, & Eugenio, 2005). In Punjab, the quality of ANC services was extremely poor due to the distant location of facilities, the attitude of medical staff and the insufficient facility resources. Only half of the women enrolled in the service and recorded a 32.9 % drop-out in follow-up visits (Majrooh et al., 2014).

The indicators of assessment of ANC visits are ill-defined and need more monitoring and evaluation since there is no clear definition of the quality of care and its assessment, thus it requires more assessment for improvement (Warren et al., 2014).

2.2.1.3 Priorities to provide qualified care to every woman, everywhere (Souza et al., 2014):

Accessible to local needs and emerging challenges: the important step is to prevent unwanted pregnancy that has poor results for the mother and her baby so the accessibility to contraceptive method is necessary and can prevent 29% of maternal deaths. Solutions are the responsibility of policy decision-makers, who detect the challenges that differ from one area to another, depending on whatever the cause is, either financial, geographical, or the availability of infrastructure.

Universal health coverage of quality maternal health services is important to achieve equity even to the most vulnerable group. Different barriers, such as geographical, financial and gender inequality, affect the equal distribution of services. Studies show recurrent events of gender-based violence occurring during pregnancy. Also, a poor family does not use the services due to the cost of transportation in distant areas.

Improve facility infrastructure and increase capability of more human resources to support the health system: some institutions have low numbers of health providers as in Sub-Saharan Africa; only 2 health providers serve 1000 pregnancies.

Ensure and secure continuous funding for perinatal and maternal care: there is a good achievement of reducing infant and maternal mortality rate, but it is not sustainable due to the high cost of coverage; it costs around 72.1 million USD (Stenberg et al., 2014).

Rapid progress through continuous follow-up, accountability and advocacy: maternal and the neonatal mortality rate is used to measure the effectiveness of services, but it has limited effect in the areas that have a weak civil registration system and infrastructure to collect necessary and high-quality data. Global strategy advises participation of multiple sectors, stakeholders, and community engagement for achieving the outcome and accountability for the results.

2.2.1.4 Quality of postnatal care:

A study among women in a rural area in Nepal presents that one-third of them (34%) received postnatal care and 19% received the care within 48 hours after delivery. This was contributed to the lack of awareness as the main barrier for utilizing the service (Dhakal et

al., 2007). Also, among studies in Ethiopia, less than one-third of postnatal women (28.3%) completed their visits and they referred the cause to being healthy and in no need for more visits (Akibu, Tsegaye, Megersa, & Nurgi, 2018). Random control trial for women to compare hospital-based postnatal and home-based postnatal, it was found that they preferred home-based care group with more visits from midwives; however, the result was more admission to hospital for this infant in the first 6 months (Boulvain et al., 2004). In the assessment of PNC among UNRWA clinics, it was found that 97% of the services were directed to the newborns' health (Najjar, 2008).

2.2.1.5 Determinants of utilization postnatal care:

The result of the study to determine the cause of low utilization care among more than half of the mothers (63%) in Nigeria was ANC use, accessibility, education and place of delivery and wealth status (Somefun & Ibisomi, 2016). In a cross-section study of clinics in the WB, only 36% receive PNC, although more than half (66.1%) recognized the importance of this service and referred the causes to not feeling sick, not being followed by their doctors who did not tell them to come back to the PNC service. The study also showed that the use of this service was higher among women who delivered via caesarian sections and those who delivered in private hospitals (Dhaher, Mikolajczyk, Maxwell, & Krämer, 2008[b]).

2.2.1.6 WHO recommendations for postnatal care (WHO, 2013) :

After normal vaginal delivery without any complications, the mother should receive the care 24 hours after delivery in a health facility but if she delivers at home she must receive the service as early as possible and within 24 hours after birth. The mother should pay three additional visits on day 3, 7-14 days after birth and six weeks after delivery. Home visits in the first week after birth are recommended for the care of the mother and her newborn. Assessment of the general condition of the baby and exclusive breastfeeding is important in the content of the PNC service. Also caring for the cord is important through applying daily chlorhexidine during the first weak especially for women who deliver at home and should be counseled to keep the cord clean and dry. The bathing of a newborn should be delayed 24 hours after delivery and if not accepted by a parent, it should at least be postponed 6 hours after delivery. Regular assessment of the mother’s health during the first 24 hours after birth is necessary to check vaginal bleeding, uterine contraction and

vital signs. Also, assessment of danger signs beyond 24 hours must do. Breastfeeding progress and the mother's wellbeing with psychological support to prevent postpartum depression should be assessed at each postnatal contact. Supplementation such as iron and folic is important to prevent micronutrient diseases, and antibiotic prophylactic is recommended to prevent wound infection and prevent endometritis.

2.2.2 Women satisfaction with the quality of care:

2.2.2.1 Relation between women satisfaction and age:

There is a consistent relationship between age and women's satisfaction as in the study that was carried out in Central Ethiopia maternal health center. It showed that younger women and short-period marriages are less satisfied with the waiting time, cost of services and health staff attitude due to the high level of expectations regarding the service with lack of experience. In contrast, old-aged women are more satisfied with the attitude and communication of healthcare staff but less satisfied with the outcome (Birhanu et al., 2010). Another study in Nigeria showed the same results that young women are less likely to use ANC services due to the lack of knowledge about the advantages of these services, yet it is inconsistent among women aged 30 due to bad experience and unpleased history of service utilization (Access, 2015). However, another study in Kerala showed that there was no association between the age of the mother and the utilization of services (Sumithra et al., 2006). Regarding PNC in the WB, the utilization of the service was higher among women who are over 21 years. They know from an early stage the complications and dangerous signs that could affect their health and the health of their babies in the post-delivery period, so they take care during this period (Dhaher et al., 2008[b]).

2.2.2.2 Satisfaction and socioeconomic status (SES):

A cross-sectional study in Central Ethiopia showed that there was no consistent relationship between women's satisfaction and SES as it is considered individualistic and dynamic (Birhanu et al., 2010). Another study in South Africa about the satisfaction with the health care provider showed that people with high SES had excellent services; 1.41 more likely than low-income people. It may be related to clients' value and their expectations from the health care provider (Myburgh, Solanki, Smith, & Lalloo, 2005). In contrast, the results of a study in Iran showed people with low SES more satisfied than high SES (Maharlouei et al., 2017). In India, around half of poor women (45%) delivered

at home due to lak of accessibility to and affordability of health care facilities, and three-fourth of them had delivered without a skilled health provider (Salam & Siddiqui, 2006).

2.2.2.3 Satisfaction and women education:

As for the cost of services, Nigerian women who were illiterate were less satisfied than educated ones who also had the power of making decisions related to their health which led to receiving good-quality care (Emelumadu et al., 2014a). In contrast to India and Bangladesh, highly educated women had less satisfaction with MCH services due to high expectations of care and not tolerating long waiting time like housewives (Banerjee & Others, 2003); (Hasan, 2007).

2.2.3 Women perception of the quality of care:

2.2.3.1 Matches with providers:

In India, a qualitative descriptive study was conducted. The focus group discussed the availability of health providers, cleanliness of the facility, the availability of drugs and interaction between doctors and patients were pinpointed as major themes; women's expectations about the quality of care were high which requires further efforts to be achieved. In contrast, health providers attributed their absenteeism to the crowded outpatient clinics and the absence of female doctors related to the unstable security situation. Regarding the drugs, doctors said that the drugs are for free and they ask the patient to buy the drugs only if it is out of stock, and sometimes when they need drugs that are not available in the facility. Regarding the cleanness of the place and the hygiene, they have the same opinion, but sometimes there is a shortage of cleaning materials (Bhattacharyya et al., 2018).

2.2.3.2 Perception of postnatal care:

In a cross-section study in Western Australia to assess women's perception of the evaluation of midwives in postnatal services at hospitals and home, the results showed that the majority of women were satisfied with the service provided to them. Such services included being given information, physical care and assistance in breastfeeding. However, they had comments on emotional care and preparation for life at home with the new baby. In addition, the women showed more satisfaction with midwives at home than at the

hospital (Fenwick, Butt, Dhaliwal, Hauck, & Schmied, 2010). In an in-depth interview with the health care providers in rural southern Tanzania, the women's perception of antenatal care and postnatal care was positive but the service needed to focus more on geographical issues and access to the services and encourage them to deliver by a skilled attendant (Mrisho et al., 2009).

2.2.4 Conditions during pregnancy:

2.2.4.1 Gestational diabetes mellitus (GDM):

According to the criteria of the WHO, the diagnosis of hyperglycemia that is first detected during pregnancy is classified into GDM or diabetes mellitus in pregnancy (WHO, 2013). G.D.M incidence is 2-9% of all pregnancies (Hoffman, Nolan, Wilson, Oats, & Simmons, 1998). Increased carbohydrate intake leads to worse complications during delivery as most of these cases are delivered by C.S and increase association of preeclampsia, macrosomia and need of phototherapy (Sermer et al., 1995). In a study that focused on women with a past history of GDM, investigators examined women after 6 weeks to 28 years of delivery and found that D.M type 2 developed at the peak of the period after 5 years of delivery and appears to plateau after 10 years of delivery. In cases of GDM the risk of developing type 2 DM in their life long 50%. Therefore, GDM is considered a risk factor to develop D.M type 2. For this reason, they should screen for F.B.G on the first visit on the next pregnancy (Kim, Newton, & Knopp, 2002). Treatment of GDM decreases the risk of complications in the neonate as shoulder dystocia, respiratory distress syndrome and injuries. The follow-up to the mother for three months after delivery improves her life quality and decreases the risk of postpartum depression (Crowther et al., 2005). Therefore, increasing the knowledge and raising the awareness of mothers, who had G.D.M, about the risk of developing D.M type 2, and the necessity to follow a healthy lifestyle may prevent or decrease the risk of diseases (Bellamy, Casas, Hingorani, & Williams, 2009).

2.2.4.2 Gestational hypertension:

Gestational hypertension is a common disorder among pregnant women. Serious conditions occur in the age before 35. Women develop severe hypertension as it has serious complications on mothers' life and could cause perinatal complications (Sibai, 2003). Preeclampsia is associated with serious complications and increases the risk of maternal morbidity and mortality. This risk is more alarming in primigravida independent

mother age (Villar et al., 2006). The risk of complications affected the fetus and the mother's life in 5-10% of all pregnancies (Walker, 2000). According to the severity of the condition, induction of labor is preferred as severe gestational hypertension had the risk of increased incidence of preterm labor and delivery of a small baby (Buchbinder et al., 2002). In Sub-Sahara Africa, it was the cause of 30% of maternal mortality (The Partnership For Maternal & Child Health., Adegboyega, Ba-Nguz, Bahl, & Begkoyian, 2010). This is the cause of perinatal mortality rate among pregnancies: 37.9 per 1000 births compared to normotensive mothers 17.2 per 1000 births due to placenta infarction in 42% of the cases (Naeye & Friedman, 1979). There is an increased incidence of gestational hypertension and preeclampsia by 1.5 times in women with GDM with the outcome of serious complications (Bryson, Ioannou, Rulyak, & Critchlow, 2003).

Asking a mother about family history of hypertension and preeclampsia during the first visit is important for the role of genetic inheritance. The result of a study in Swedish twins the effect of genetic factors in developing hypertension and preeclampsia (Salonen Ros, Lichtenstein, Lipworth, & Cnattingius, 2000). The risk of gestational hypertension is low when the mother's diet contains fatty acids as in fish because its effect in preventing preeclampsia has been proved without indications for the importance of intaking calcium, folic acid, and vitamins C, D, and E (Oken et al., 2007).

2.2.4.3 Anemia in pregnancy:

According to the WHO, the prevalence of anemia during pregnancy was 38% with severe anemia, 5% of which more common in Africa and South-East Asia, so it should be early detected and managed to prevent maternal and neonatal mortality (WHO, 2013). In general, women appreciate hemoglobin tests during pregnancy, but this is not the case in low and middle-income countries which consider the shortages in resources and consider it an additional cost and unnecessary. Anemia is the most common, frequent condition among pregnant women. Mainly, iron deficiency anemia appears with 75%, folate-deficiency anemia occurs in poor diet with iron and folic acid in the perinatal period. The most common complications occur with severe anemia with a hemoglobin level that is less than 6 gr/dl. These complications are low birth weight, fetal distress and severe maternal anemia (Sifakis & Pharmakides, 2006). Before pregnancy, the level of serum ferritin can predict the incidence of anemia during pregnancy as 60% of pregnant women get anemic at the 2nd trimester when serum iron stores less than 20 µg/dl but those with good ferritin

store do not develop anemia (Casanueva et al., 2003). Anemia during pregnancy reduces iron stores in neonates so they develop anemia during the first year of life, thus shows the importance of iron supplementation during pregnancy (Allen, 2000). Using cluster sample design in a population survey (1990-1994), the results were that the majority of pregnant women were anemic with hemoglobin that is less than 11gr/dl (86.1%) and that contributes to 34.5% of all maternal deaths and 31.2 of prematurity (Sarin, 1995). Therefore, iron supplementation is important in the perinatal period not only during pregnancy because its deficiency affects mental development in children in one to two-year-olds (Li et al., 2009). Cases with iron deficiency anemia that treated with intravenous iron had a better prognosis in improving serum ferritin level than cases treated with oral iron (Al et al., 2005).

2.2.5 Health information system (HIS):

2.2.5.1 Examples of HIS:

a. Electronic medical record (EMR) and electronic health record (EHR): EHR has the advantage of sharing information with different specialists, offering investigations and identifying treatments.
b. Practice management software: helps in determining the cost of services and scheduling the task of health care providers.
c. Master patient index: each patient has a private record that includes all data related to her as it helps reduce duplication of files.
d. Remote patient monitoring: also known as telehealth, allows sharing the data with health professionals and the conditions that need rapid interventions.

2.2.5.2 Effect of mobile phones in improving maternal health:

There is a shortage in researches that examine the effects of electronic health in improving maternal care; however, there is a common attitude that access to health information is an important component in improving maternal health services (Noordam, Kuepper, Stekelenburg, & Milen, 2011). The analysis of data collected from the MCH electronic health system in the WB and antenatal care health facility linked with governmental hospitals assure the continuity of care and good quality outcome of all cases in general with specialty to cases of anemia, GDM and hypertension. Using the data in these studies is to improve the health system in Palestine (Isbeih et al., 2019). Using text message applications in primary health centers in Zanzibar to measure attendance of ANC visits, it

was found that the attendance for four or more ANC visits in the intervention group was 44% in comparison to the control group 31% (Lund et al., 2014). In the literature reviewing of multiple websites to assess the role of SMS messages in improving the quality of ANC services, there is a positive relation in increasing uptake of services in the experimental group by 74% increase in visits and 82% skilled birth attendance (Wagnew et al., 2018). In a randomized control trial to assess attendance by SMS reminder in eight published kinds of research, it was found in seven studies that moderate-quality improvement in attendance had a similar impact of phone call reminder; the difference was its smaller cost. Regarding adverse effects, one study revealed that there were no adverse effects such as violating patients' privacy (Gurol-Urganci, de Jongh, Vodopivec-Jamsek, Atun, & Car, 2013b).

A cross-sectional study in Ghana was carried out to detect the determinant of insurance coverage for SMS reminders. The result showed in urban areas people were highly educated and informal employees so there was no need for this service to be covered by insurance and advised to use it in a rural area (Boaheng, Amporfu, Ansong, & Osei-Fosu, 2019). In a literature review to assess the impact of using mobile on health in low and middle-income countries, it was found that there was an improvement in the efficiency of this application in keeping cases adherent to the appointment system and providing a good database to get information about health status, but it is not efficient for quality and quantity of the evidence-base (C. S. Hall, Fottrell, Wilkinson, & Byass, 2014). In a household survey in Nigeria to detect the accessibility to the services by mobile phones, the results showed that women with E-Health had better utilization of the antenatal care services and skilled delivery (Jennings, Omoni, Akerele, Ibrahim, & Ekanem, 2015). In an intervention study by using applications between parents and hospital staff to support them after mothers' discharge, the nurses highlighted the parents' satisfaction it easy access to information and support.

2.2.5.3 Barriers of implementation of health technology in care service:

Around the world, there was a 50% failure in utilizing electronic medical records (Willyard, 2010). Barriers related to a health professional: in a cross-section study in Ethiopia hospitals assessed the readiness of health care providers of EMR. About half of them had the readiness to implement it. Males expressed their readiness with 1.84 more than females, and 46.1% were the actual users of EMR. The majority of health

professionals (71.3%) had knowledge that was reflected in a good attitude toward using computers. Young health professionals aged 30 to 34 were excited and motivated more than older ones due to their experience in computer programming and having the skills to use it. Participate health professionals in implementing EMR and give them the awareness of technical infrastructure effect 1.78 times for implement this system (Biruk, Yilma, Andualem, & Tilahun, 2014). Another factor is the fear of changing into a new system which contributes to resisting the implementation of an EHR that requires raising awareness and training stakeholders to highlight the importance of this system (Gesulga et al.,2017).

Barriers related to data resources: in the literature review privacy, security and confidentiality of data had sensitivity issues and should be managed properly to get data with good quality (Gesulga et al., 2017). Regarding the internet connection, there was a lack of network communication infrastructure and recurrent cuts of networks which affected the implementation of the system (Gesulga et al., 2017). In the same study, factors related to financial resources were found to play an important role. Examples are the lack of policy support and the high cost of implementation, technical infrastructure, skills and return on investment.

Chapter three
Methodology

Introduction:

The chapter presents the methodology of mixed design quantitative, and qualitative research and data. This chapter aims to measure different aspects of ANC services and e-registry system and their effect on screening and management of pregnant women's health. In addition, it presents sample size, validity and reliability of the study instruments, data collection and ethical consideration of the study.

3.1 Study design

The study is a mixed method of quantitative and qualitative data. Using a triangulation method gives an explanation for the theory and the basis of the result found that help to work out a new theory (Östlund, Kidd, Wengström, & Rowa-Dewar, 2011). In addition, the triangulation method functions as a bridge between qualitative and quantitative research and helps the researcher to be more accurate (Denzin, 2015). The quantitative part was a cross-sectional analytic one as it allows to study different interesting variables at the same time with a vast collection of data (Setia, 2016). The qualitative part was focus on a group that would be asked about their perceptions towards ANC services, attitude and the concept of this service. The benefit of the focus group is flexible in design to allow getting more information from participants that permit decision-makers to take into their considerations the people's opinions and knowledge (Gigi Devault, 2018.). Key informant is used when we need recommendations to be used by decision-makers and interpreting the research findings and allow for idea generation due to smoothing and flow of ideas (United States Agency for International Development, 1996).

3.2 Study population

The population is pregnant women attending governmental primary health centers and registered in MCH registry was 10000 women that was obtained from excel sheet that had average nombers of pregnant women registered at governmental primary health centers.

Women are in the postpartum period and utilize PNC service.

ANC care providers at the selected governmental primary health centers.

3.3 Study setting

WHO recommendations were carried out the study in the same governmental primary health care centers whose title is the effects of targeted client communication on pregnant women's worries and views of antenatal care and postnatal care. So the study was conducted at PHC of MoH that covered main health centers provided MCH services and applied SMS service as in North Gaza was Abushback and Alhorya Health centers. In Gaza governorate was Aldarag health center. In the south of GS, the clinics from Khan Younes were Abasan Alkabeera and Abasan Algadeeda, Bany Suhaila and Jorat Allout health centers while in Rafah was Tal Al Sultan health center.

3.4 Study period

The study has started after having approved the proposal and after obtaining the ethical approval from the Helsinki Committee in June 2019 as shown in **Annex (1)**. A pilot study was conducted in October 2019. Data collection was carried out from September 2020 till November 2020. Data entry was performed at the time of data collection and data was analyzed after completed data collection. Focus groups and in-depth interviews were done after completed data analysis of the quantitative part in February 2021. The study final report was completed in April 2021.

3.5 Eligibility criteria

3.5.1 Inclusion criteria:

Quantitative part:

Pregnant women utilized ANC services and enrolled in the e-registry system from previously mentioned governmental health centers.

Women utilized PNC services from selected governmentsl primary health centers.

Qualitative part

Key informant in governmental primary health centers and worked for more than 1 year.

Focus groups with pregnant women who utilized ANC services and enrolled in the e-registry system from previously mentioned governmental health centers.

Focus groups with women utilized PNC.

3.5.2 Exclusion criteria:

Quantitative part:

Pregnant women not utilized ANC services and not enrolled in the e-registry system.

Women not utilized PNC services.

Qualitative part:

Key informant in governmental primary health centers and worked less than 1 year.

Pregnant women not utilized ANC services and not enrolled in the e-registry system.

Women didn't utilize PNC services.

3.6 Sampling

3.6.1 Sample size:

Quantitative sample:

A simple random sample of mothers was selected according to proportional ratio as a represented sample between clinics. In order to calculate the sample size, the epi info program was used and result in a sample size of at least 370 cases and the researcher increased the sample size to 400 cases divided 200 pregnant women and 200 postnatal women into a represented sample at 95% confidence interval and 5% margin error as in **Annex(3**). But due to COVID 19 and the closure of health centers, the random sample was 245 ANC and 155 PNC.

Qualitative sample:

The perception of three focus groups regarding the ANC and PNC services was discussed; groups consist of 7 mothers in the antenatal and postnatal period.

The key informant interview was done with 10 health care providers that were randomly selected constitute from midwives and doctors.

3.7 Instruments of the study

3.7.1 Quantitative part:

A semi-structured questionnaire was collected data from 8 PHC that covered the following items: **Annex (4)**

1. Demographic background.
2. Satisfaction of mothers regarding the provided ANC, PNC services.
3. Perception and belief of ANC, PNC services.
4. Accessibility, availability, and barriers to utilizing ANC services.
5. Effectiveness of SMS reminder in improving pregnant women's health.
6. Worries and concerns through Cambridge worry scale
7. Maternal knowledge about certain components of ANC.
8. The scale of dimensions for assessing the quality of care to measure: tangible, responsiveness, empathy, reliability and assurance. (Parasuraman, A., Zeithaml, V., Berry, 1988). The measuring of every dimension as follows :

A. Tangible: clinic facilities, equipment and the appearance of staff to be suitable and clean.
B. Reliability: ability to provide an accurate performance of service on time and problem solution.
C. Responsiveness: readiness to help a customer and advance good service.
D. Assurance: building trust and gain the confidence of people by providing good knowledge to them.
E. Empathy: studiousness to customers and give them individualized attention.

3.7.2 Qualitative part:

Focus groups interview with pregnant women was to collect data about their perception of the quality of care in AN, PN services that would cover four main themes: **Annex (5)**

1. The practice of health care providers: information related to pregnancy and postnatal period given to mother, respect of the mother, sufficient contact time, good support, empathy to mother and good general examination and follow up.

2. ANC clinic provision services: good management of disease by doctors in relates to proper diagnosis and prescription of drugs is related to the quality of recovery.
3. Resources in the clinic: appropriate waiting area, availability of drugs, sufficient antenatal staff and equipment.
4. Accessibility to centers: distance and cost to reach the center.

We asked questions about their perception and quality of maternal health services provided to women. Also, evaluate the effectiveness of e-registry, assessment, strong and weak points in this system beside recommendations to develop and implement this system.

Pilot study

Regarding the quantitative study, a pilot study was conducted at governmental primary health centers. A total of 30 questionnaires were done to explore the relevance of the study instruments and allow the researcher to train for data collection. There was a limitation in transport and collecting data due to the COVID19 pandemic so qualitative wasn't conducted.

3.8 Scientific rigors: quantitative part

3.8.1 Reliability:

To measure the stability of the instrument of the test, retesting was applied over time. Decrease of reliability arises from the divergence of researcher assistant or instruments of the questionnaire, the researcher's assistant was trained to ensure collecting reliable data of standardized and implementing questionnaire, choose the participants in the study randomly, asked questions and filled the questionnaire, then applied the same instrument in two separate sessions and compared the results to be similar in every session. To verify the reliability of the test every time 5% of data was reentered.

The researcher used Cronbach's alpha to measure the internal consistency of categorized questions to measure the correlation between the two tests and the accepted value of more than 0.7 **(table 3.1)**

Table (3.1): Cronbach alpha coefficient for perceived quality and satisfaction domains

Items	No. of items	Cronbach's alpha
Perceived quality and satisfaction domains	37	0.914
SMS items	22	0.833

Cronbach's alpha coefficient shows that the questionnaire reliable for application and data collection from participants

3.8.2 Validity:

Face validity

It refers to the smooth form of a questionnaire to be filled, the ease of collecting of data and being reviewed by experts. The questionnaire was organized to be in comfortable form until the final version looks good.

Content validity

It was evaluated by experts to evaluate how well the supposed questions in the questionnaire covered the topic of interest. Their comments were taken into consideration.(Annex 6)

3.9 Scientific rigors: qualitative part

Trustworthiness:

Cuba and Lanolin assessed the validity and reliability in qualitative research through trustworthiness (Paradigms, 1994). It had been divided into credibility which corresponds to the concept of internal validity, dependability which is related to reliability, transferability, which is related to external validity, and conformability which is the issue of presentation. However, to ensure correct analysis of data besides assuring no threatening on dependability and credibility, the researcher used member checking and peer checking (Sandelowski, 1993).

3.10 Ethical and administrative issues

The academic approval of the research title was obtained from the school of public health at Al-Quds University. The e-registry trial was gained ethical approval from the Palestinian Health Research council, a regional committee for Health Research Ethics, an official letter conducted by the Helsinki Committee in GS for data collection **Annex (1**). The Palestinian ministry of health's approval is important since the trial would be undertaken in their care services and its rights in the e-registry database owner so the researcher measured data related to outcome measures **Annex(2)**. To guarantee the participants' rights of confidence, the covering letter of the informed consent explained that participation in the questionnaire would be voluntary and data secured and maintained. To assure this point approval of filling questionnaire was obtained from each participant. Data analysis and interpretation were done honestly.

3.11 Data Entry and Analysis

It was done by the researcher to get meaningful information from raw data. Regarding quantitative data, data preparation steps include data validation, data editing, data coding and data computing, the data was analyzed statistical package for social sciences (SPSS) version 22. Descriptive statistics for mean, percentage and frequency. Inferential statistics included regression to predict the relationship between two variables and correlation to describe the relationship between two continuous variables. Regarding qualitative data the researcher was familiar with the data and revised the objectives to get the important data during a discussion as in a focus group with the presence of a researcher assistant also, in the key informant interview, then did the framework for broad ideas and notes presented during a discussion then headlights the answers of the group for most common response and findings. In group discussion and key informant, interview approval was taken from participants before recording.

3.12 Limitation of the study

1- Restricted study to MoH primary health clinics and not covers other clinics rather than public as UNRWA clinics due to its cover high percentage of pregnant women.
2- Recall bias for ANC services receives while pregnant when an interview in the postnatal period.

3- Bad economic status and poor family income lead to psychological stress that may affect the expectations and satisfaction of women.
4- Closure of governmental primary health centers clinics and stopped SMS reminder program due to COVID 19 epidemic.

Chapter Four

Results and Discussion

This chapter presents the main findings of the quantitative and qualitative data collected about women's perception and utilization of both ANC and PNC services in multiple clinics across the Gaza Strip. It also shows the effect of SMS on the health outcomes of pregnant women. Finally, it compares the messages service with the mobile application and discusses the satisfaction of women with this service.

4.1 Distribution of participating centers and the percentage of study respondents in each center

The sample was collected from the MoH primary health centers that applied the SMS service for pregnant women. Table (4.1) shows that about 13.3% of the study sample were from Abasan Alkabeera health center with similar percentages taken from other health centers.

Table (4.1): The percentages of the study participants in healthcare centers(N=8)

Health center	Frequency	%
Abushback	50	12.5
Alhuria	50	12.5
Aldarag	49	12.3
Abasan alkabeera	53	13.3
Abasan alsageera	50	12.5
Bany suhaila	51	12.8
Jorat allout	48	12
Tal Alsultan	49	12.3
Total	400	100

4.2 Distribution of women according to socioeconomic and demographic factors

Table (4.2), shows the demographic characteristics of the participating mothers. Regarding the mother's age, the mean age of the participants is 27.25 years (SD 6.16). The minimum age was 17 and the maximum was 45 years old. This is considered the reproductive age of

Palestinian women, as was previously reported by the Palestinian Central Bureau of Statistics (PCBS, 2015).

The majority of women are married at the time of data collection (96.8%). Most of the participants (50.5%) are from Khan Younis, in which data were collected from four clinics

Table (4.2): Distribution of women according to socioeconomic and demographic factors (n=400)

Variable		Number	Frequency (%)
Mother's age group	17-24	145	36.2
	25-34	191	47.8
	More than 35	64	16
Mean 27.25 SD 6.16			
Current marital status	Married	387	96.8
	Divorced	9	2.2
	Widow	4	1.0
Place of residence	Gaza	72	18
	North Gaza	77	19.3
	Khan Younis	202	50.5
	Rafah	49	12.2
Education level of mothers	Primary	50	12.5
	Secondary	147	36.8
	University	203	50.7
Family structure	Extended	123	31
	Nuclear	274	69
Refugee status	Refugee	73	18.5
	Not refugee	321	81.5
Family size	2-4	174	43.5
	5-8	153	38.3
	More than 8	73	18.2
Mean 5.6 SD 2.8			
Mother's work	Working	46	11.5
	Not working	354	88.5
Income	Under poverty line	361	90.7
	Above poverty line	37	9.3
Mean=1064 SD=915.4			

Table (4.2) shows the demographic characteristics of participated mothers. Regarding age, the mean age of participated women is 27.25 years old with a standard deviation of 6.16,

the minimum age was 17 years old and the maximum one is 41 years old and is considered the reproductive age of Palestinian women (PCBS,2019). According to the PCBS, the education level among women ranges in primary, lower secondary and upper secondary education. In 2019, the percentages were 9.5%, 96.8%, and 73.2%, respectively (PCBS, 2019). The study shows that more than half of the sample have university education (50.7%), while 12.5% and 36.8% have primary education and secondary education, respectively. In addition, the study shows that the majority of them do not work (88.5%). The female participation rate in the labor force is 19% of the total females, with an average daily wage of 84.6 NIS (PCBS, 2018). 90.7% of women participants under the poverty line with a mean income of 1064 new Shikles. The majority of participants were citizenship and lived in nuclear family structures with a mean family size of 4 persons.

4.3 Distribution of women according to obstetric characteristics

Table (4.3): Distribution of women according to obstetric characteristics

Gravida	Primi gravida	95	23.8
	Multi gravida	305	76.2
Mean= 3.72 SD=2.46			
Parity	First time	78	19.5
	Multipara	268	67
	Not delivered before	54	13.5
Mean=2.86 SD=2.19			
No. of living children	Less than 3	213	61.5
	More than 3	133	38.5
Mean=2.84 SD=2.18			
Place of last delivery	Governmental	324	93.6
	Private	22	6.4
No. of abortions		61	15.3
Mean=1.28 SD=0.55			
No. of IUFDs		31	7.8
Mean=1.16 SD=0.37			
Gestational age in ANC	Less or equal to 12w	82	33.6
	12-20w	80	32.6
	More than 20w	83	33.8
Mean 18.60 SD 6.82			

The fertility rate is 3.6 births per woman in Palestine with a crude birth rate of 30.2 births per 1000 of the population in the Gaza Strip (PCBS, 2019). The majority of participants are multigravida 76.2%, with the highest percentage of women having four and three children with percentages of 15.3% and 15%, respectively. Regarding parity, the highest number is that of women who have one child (19.5%). 17% have two children and 16.5% have three children. Regarding the gestational age of the fetus, the mean age of gestation is 18.6 weeks with a standard deviation of 6.82 with equal distribution between gestation categories. Most deliveries (78.4%) are performed in MoH hospitals, (MoH, 2018). The percentage in my study was found 81%. The minimum gestational age is 8 weeks and the maximum gestational age is 40 weeks.

4.4 Services provided in preconception care

Table 4.4 shows the services provided in preconception care. Regarding services provided in preconception care, only 41.6% stated receiving folic acid supplements, while in UNRWA Gaza clinics 99.5% did. Only 39.2% of women receive breast examination, although it was an important recommendation as part of the physical examination in PCC (Lu, 2007). 30.2% received counseling for health behavior, and about 25.3% had health education for lifestyle, compared with 83% in a cross-sectional study at Belgium hospitals (Goossens, Beeckman, Van Hecke, Delbaere, & Verhaeghe, 2018) and 62.3% at Gaza's UNRWA clinics.

Table (4.4): Services provided in preconception care(n=155)

Items	No	percent
Health education(healthy diet, exercise,hiegine)	62	25.3
Breast examination	96	39.2
Counseling for the importance of PCC	74	30.2
Folic acid supplementation	102	41.6
Hemoglobin level measurement	38	15.5
Blood group	63	25.7
Blood glucose level measurement	39	15.9

The nutritional assessment and investigation for micronutrient deficiency is important, especially testing for anemia as it is found in 40% of women in PCC (Dean, Lassi, Imam, & Bhutta, 2014). This study shows that hemoglobin level was tested in only 15.5% of the participants. Controlled DM in PCC decreases fetal anomaly to 1.6%, compared with 6.5% among those who do not receive the service. Therefore, blood glucose level control improves pregnancy outcomes (Willhoite et al., 1993), but findings of this investigation show it was done for 15.9% of women.

Low utilization of this service 41.6 % explained by a doctor the cost of this service and it doesn't provide free for women nither folic acid nor investigations. "*PCC was provided two years ago with two-course training that was not enough for working. The training material was one page, and its content was not updated*" the doctor said. Despite the presence of updated protocol for PCC service, midwives in other clinics confirm receiving enough training to apply this service, but there are no available protocols for revising or updating the training material. The service is important and very useful for women, as it gives them the chance to ask and clarify their questions related to their health. Mother's interview Mothers at this clinic did not hear anything about this service, as it has not been applied yet. A mother saw the room for PCC in another clinic, but nobody told them about this service or discussed its importance.

The disadvantage of this service is that it is merged with family planning services at the same station. Therefore, women do not take their right in counseling and examination in this service. There is also no privacy and no contact time to communicate with them. The investigations are not available all the time, and the service is not free and the folic acid is not free. There are no special files or reports to record the mother's name or contact number, leading to difficult follow-up for the case and loss of her investigation. On the other side, another clinic had a PCC file for registration and it was distributed across the clinic.

There are success stories of mothers with congenital anomaly who were supplied with folic acid at the family planning station and women with anemia who were provided with iron supplements and managed to improve their HB level before pregnancy. There was another story of an old mother with hypertension. Her sons passed away during the war, and she wanted to be pregnant. The advice was given and close control was provided. When she became pregnant, she was closely followed up until delivery with a good outcome for both the mother and her baby.

4.5 Content of antenatal care (ANC) provided

Table (4.5): Content of antenatal care (ANC) provided (n=155)

Variable	Categories	Frequency	%
ANC provider	Doctor only	13	5.3
	Midwife only	12	4.8
	Both	220	89.7
Initiation of ANC visits	Less and equal 12w	132	53.9
	13-28w	93	38
	More than 28w	20	8.1
No. of visits according to WHO standards	<8 visits	243	99.2
	≥8 visits	2	0.8
No. of visits according to national guidelines	<4 visits	180	73.5
	≥4visits	65	26.5
Risk during this pregnancy	Mothers said yes	125	51
	GDM	26	20.8
	PIH	49	39.2
	Anemia	53	44.8
	IUGR	3	2.4
	DVT	13	10.4
	UTI	70	56
	twins	2	1.6

Table (4.5) shows the content of ANC provided to pregnant women. Most of them (89.7%) are followed up by both a doctor and a midwife. Regarding the initiation of ANC, the majority of women (53.9%) initiate the ANC during the first 12 weeks of gestation, 38% initiate between 12-28 weeks and 8.1% after 28 weeks. This late registration in pregnancy (46%) reflects the importance of PCC in increase awareness of early registration in early detection and treatment of fetal and neonatal abnormalities. As for the causes of late registration: it was found that 43.6% prefer to attend after 12 weeks, which is also perceived by healthcare providers in South Africa clinics as late attendance (Jinga, Mongwenyana, Moolla, Malete, & Onoya, 2019); 38.8% had social factors; 19.4% did not think that early registration was necessary; 15.5% had financial reasons; and 10.6% did not know they were pregnant, which was also a cause of this major public health problem in Ethiopia (Wolde, Tsegaye, & Sisay, 2019). In New Zeeland, results showed that barriers were related to social deprivation and inadequate social support (Corbett, Chelimo, & Okesene-Gafa, 2014). From the mother's interview, a mother said, *"Here, early registration was forbidden and the midwife refused to register me before 12 weeks, although the clinic is far from my home*." New courage for early registration is appreciated at this clinic after a change in the entire medical staff. Most of the times, the medications we needed were not available in the clinic, so there was no need to come early. Women

with previous pregnancies knew that the time for registration at the clinic is after 12 weeks, so they find no need for early registration. "*They told us to come after the third month for registration"*, a mother said. Another mother was also afraid of the staff nurse because she shouted at her. She said, "O*ne of the nurses shouted at me after reopening the clinic after the closure during COVID-19. She said: "Why did you come? Are you not afraid of corona?""*

The importance of early registration lies in early detection, recognition and treatment of diseases and modification of risk factors (Patel, Rupani&Patel, 2013). The majority of women (99.2%) made less than 8 visits and 0.8% more. This does not resemble the WHO guidelines (WHO, 2016). Most women (73.5%) made less than four visits 73.5%, while only 26.5% made more than four visits. However, these results are due to the closure of primary healthcare clinics during the COVID-19 pandemic, as most of their services were stopped to prevent the spread of the disease.

The main risk in pregnancy was the UTI that base on the mother's questionnaire, which was present in 56% of women. This finding resembles the conclusion of a study carried out at a women's health center in Poland, where UTI was the most common type of infection during pregnancy (Easmon CS, Hastings MJ, 2016). Anemia was also detected in a high percentage of women (44.8%) and is the commonest nutritional deficiency during pregnancy (Toteja et al., 2006). Other detected conditions include PIH (39.2%). PIH prevalence was 19.4 % in Zimbabwe, poor knowledge of management of PIH and inadequate resources are a threat to the proper management of PIH (Muti, Tshimanga, Notion, Bangure, & Chonzi, 2015), GDM (20.8%). The total incidence of GDM in mainland China was 14.8% (Gao, Sun, Lu, Liu, & Yuan, 2019), DVT (10.4%), among women in India (40%) had venous thromboembolism risk factors that would require DVT prophylaxis during and/or postpartum period (Varre et al., 2020), IUGR (2.4%), a critical review of studies identified from searches in Europe prevalence was 8.9% (A, 2013) and twins (1.6%). The percentage of women who followed up somewhere else was 18.4%, and the reasons included diseases and risks during pregnancy such as anemia, PIH, previous C.S delivery and regular follow-up.

Note: some pregnant mothers had multiple risk factors.

4.6 ANC services provided during visits

"The service at governmental health clinics is 100-times better than that at private clinics. All services are provided to the mother, she goes to a private clinic to know the sex of the baby", one midwife said. The service starts with welcoming the mother, opening an ANC file, taking history, performing investigations, counseling, and providing ultrasound imaging three times, and if needed, this is done on every visit until after the delivery. *"I was very satisfied with my work and with the services provided to pregnant women, but during the COVID-19 outbreak, I am worried due to disturbance in the follow-up schedule for women"*, a doctor said. Blood pressure, fetal heart and other routine tests must be done for all women even if there is not an appointment for the examination. All women are satisfied with this service. From the mother's perception in general, there was a good service. *"For five years, I have believed that ANC follow-up was not important, but this has changed now as I am pregnant and I find it necessary"*, One mother said. Mothers used to complain about wrong laboratory results. Most of the time, laboratory equipment needed repair, and women had to do these investigations outside, but they cannot afford that. Another mother said, "*I preferred the service at governmental health centers over that at private clinics because here, they closely follow up all the details related to my pregnancy and the service is free."* Also *In the past, the quality of ANC service was bad. They showed no respect to mothers' emotions, as a mother said, "During my follow-up, the doctor directly told me without finding a good way to break the bad news, "your son has congenital anomaly". Mothers confirm the importance of follow-up during pregnancy to have a positive outcome for them and their babies, but they deny receiving health education related to their health. However, midwives confirm that pregnant women receive this information. Asking about the content of the mother and child handbook, they answered with its content, but they said this book was just given to them without explaining anything. Other women confirmed receiving health education related to their condition such as diet, but they did not tell me that by themselves spontaneously. Mothers now approve that the ANC service is excellent and that the medical staff gives good attention to both mother's and newborn's health.*

The table (4.6) showed a history was taken for most pregnant women, as a high percentage of them (90.2%) were asked about the history of current pregnancy and a lower percentage (75.1%) were asked about any health conditions.

Table (4.6): ANC services provided during visits (n=245)

Variables	Yes		No		Yes on every visit	
History taken	No.	%	No.	%	No.	%
Asked about history of a previous delivery	196	80	46	18.8	3	1.6
Asked about history of complications	190	77.	51	20.8	4	1.6
Asked about history of any health conditions	184	75.1	55	22.4	6	2.4
Asked about history of any health conditions aggravated by the pregnancy	208	84.9	29	11.8	8	3.3
Asked about history of current pregnancy	221	90.2	11	4.5	13	5.3
Investigations						
Was your blood pressure measured?	202	82.4	4	1.6	39	16
Was your blood glucose measured?	216	88.2	20	8.2	9	3.7
Did you give a urine sample for examination?	224	91.4	9	3.7	12	4.9
Did you give a blood sample for investigation?	227	92.7	9	3.7	9	3.7
Health education						
Importance of folic acid	213	86.9	9	3.7	23	9.4
Importance of iron	201	82.4	8	3.3	35	14.3
Were you advised on the diet?	190	77.6	34	13.9	21	8.6
Were you advised to rest?	177	72.2	45	18.4	23	9.4
Were you told about danger signs in pregnancy? (alarming)	148	60.4	83	33.9	14	5.7
Were you advised on practices of personal hygiene?	133	54.3	99	40.4	13	5.3
Were you advised on dental hygiene?	138	56.3	98	40	9	3.7
Were you advised against practices of harmful habits?	138	56.3	93	38	14	5.7
Were you counsel for the use of medications during pregnancy?	162	66.1	57	23.3	26	10.6
Did you receive health promotion for breastfeeding?	171	69.8	55	22.4	19	7.8
Were you informed of the content of the mother and child health handbook?	176	71.8	53	21.6	16	6.5
Were you told about the mother and child health handbook importance?	170	69.4	59	24.1	16	6.5
Was it important for you to attend all the scheduled antenatal care visits?	236	96.3	8	3.2	1	0.4
Are you always confident of when your next antenatal care visit is?	223	91	15	6.1	6	2.4
Are you well informed about the purpose of the tests by health staff?	231	94.2	9	3.6	4	1.6
Did you face barriers during the ANC period?	22	8.9	223	91.1	0	0

Recommended investigations for pregnant women such as blood glucose were done for 88.2% of women. This was essential to early diagnose and manage GDM, as it has increased prevalence among pregnant women (Hunt & Schuller, 2007). 92.75% have had their blood HB tested to early manage anemic cases, as anemia had a significant effect on

maternal and fetal death (Suryanarayana, Chandrappa, Santhuram, Prathima, & Sheela, 2017). Blood pressure was measured for most women (82.4%), but only 16% reported having their blood pressure measured on every visit that was denied by midwives and ensure blood pressure measurement for every case. As for urine samples, 91.4% reported having urine analysis, but only 4.9% had it on every visit. Both tests are important for the early detection of signs of preeclampsia and different disorders with different etiologies (Davey & MacGillivray, 1988).

The importance of folic acid in pregnancy in preventing neural tube defects was accurately reported by 86.9% of women, but they needed recommendations on timing and dose of supplementation (Malek, Umberger, Makrides, & Zhou, 2016). For health education on iron supplementation, 14.3% received it on every visit, so it needs to be strengthened and assessed with health promotion on every visit (Assefa, Abebe, & Sisay, 2019).

Personal hygiene practices were reported by 54.3% of women, who had a significant appreciation of a healthy life and decreased diseases (Imtiaz et al., 2015). Counseling for drug safety was received by 76.7%, which indicates the need for more education and awareness among women of childbearing age (Ibrahim Kureshee & Pravin Dhande, 2013). Health promotion of breastfeeding is important for newborns' health to prevent multiple diseases (Wolf, 2007). Findings show that 76.6% received such advice, but there is a need for more counseling as early as possible during antenatal visits rather than waiting until after delivery (Shetty & K., 2013).

Poor knowledge of dental hygiene and gum diseases that occur during pregnancy was found among 59.3% of the sample. Therefore, awareness of oral health should be increased to get better pregnancy outcomes (Nagi, Sahu, & Nagaraju, 2016). Only 8.6% of the women were advised on a healthy diet on every visit, although it is important; as was proved by an intervention study for nutritional education, in which post-intervention had statistically significant results ($p<0.00$) (Blondin & LoGiudice, 2018). From a midwife's perspective, women deny being informed and said, *"Did you tell me this information?"* In addition, some women hide their situation, and we discover it by chance. Sometimes, work pressure and overload lead to decreased contact time with women, but most of the time we provide women with the necessary information. Also, the mother's educational level affects her access to information. Sometimes, we repeat the information more than twice to ensure

it is delivered. Workshops and community service outside increase awareness of women on issues such as the healthy diet and iron and folic acid supplementation.

More than half of the women (60.4%) were informed about dangerous alarming signs. However, only 5.7% of women received advice on these signs in pregnancy on every visit. A study at Ethiopian health facilities showed that only 24% of pregnant women were aware of dangerous signs (Abdurashid, Ishaq, Ayele, & Ashenafi, 2018), while another study on Malaysian mothers showed that about half of them had inadequate information about these signs (Teng, Zuo, Jummaat, & Keng, 2015). Also A longitudinal study in Southern Ethiopia health facilities findings The most frequently identified problems were inability to take full history, lack of proper counseling, poor healthcare provider and client interaction, and improper registration (Tadesse Berehe & Modibia, 2020)

The maternal and child handbook (MCHH) had an important role in improving mother and child health behavior in Kenya (Kawakatsu et al., 2015), and played an important role in ANC, TT immunization and family planning utilization in Indonesia (Kusumayati & Nakamura, 2007). In my study, 21.6% of the participants did not know the components and topics of the handbook, while 24.1% did not know its importance for follow-up during pregnancy and vaccination of her baby.

Enhancing attendance to scheduled ANC visits is important to decrease adverse effects on the mother and the newborn such as neonatal and fetal death (Raatikainen, Heiskanen, & Heinonen, 2007). This study shows adherence by 96.7% of participants, which should be increased and maintained high by midwives through seeing things from women's perspective, booking appointments that are appropriate for mothers (Carolan & Cassar, 2007) and assessing barriers preventing mothers from attendance such as physical barrier or inadequate health facilities (Alanazy, Rance, & Brown, 2019a).

Barriers during pregnancy were reported by 8.9% of participants, with the most common cause (77.2%) being lack of money for transport. The same cause was reported in Rwanda, requiring improved access to health facilities (Nisingizwe, Tuyisenge, Hategeka, & Karim, 2020). About 9% of the participants were not aware of this service, although social support is very important to improve mental wellbeing during pregnancy (Ginja et al., 2018). 4.5% did not like the long waiting time and felt well, so they felt no need for this service. Therefore, a future effort is needed to improve the quality and perception of care through a

strong doctor-patient relationship to overcome the main barrier facing the delivery of this service (Uldbjerg, Schramm, Kaducu, Ovuga, & Sodemann, 2020).

4.7 Content of postnatal care (PNC)

Table (4.7): Content of postnatal care (PNC)

Variable	Category	Frequency (%)	
		No.	**%**
PNC provider	Doctor only	0	0
	Midwife only	98	63.2
	Both	57	36.8
Place of PNC	Health center	152	98.1
	Hospital	1	0.6
	Home	2	1.3
Time of the first visit for PNC services	Within 1 week	58	37
	Within 6 weeks	97	63
	Less than 9 days	63	40.9
	More than 9 days	92	59.1
No. of visits according to WHO standards	<8 visits	148	95.5
	≥8visits	7	4.5
No. of visits according to national guidelines	<4visits	86	55.5
	≥4visits	69	44.5
Risk during the PNC period		89	61.3
	PIH	66	74.1
	Premature delivery	12	13.4
	APH	9	10.1
	Uterine rupture	7	7.8
	Anemia	7	7.8
	PPH	24	26.9

The table shows the PNC services provided to women. 63.2% of women were examined by a midwife, as it was the first station for those women; while 36.8% were followed up by both a doctor and a midwife. The WHO recommends that the postnatal timing should be within at least 24 hours after delivery if the mother delivers at a health facility and as soon as possible if she delivers at home (WHO, 2013). Women who received PNC at clinics were 98.1% of the participants, but less than half of them (37%) received the service within one week and 59.1% received it more than 9 days later due to the closure of primary

healthcare clinics during the COVID-19 pandemic. The study shows that only 4.5% had ANC visits equal to or more than eight as per the WHO standards (WHO, 2016), and 44.5% had equal to or more than four visits according to the national guidelines with a mean of 3.43 and SD of 1.87.

The main risk during the PNC period is PIH (74.1%), which must be prevented and treated as it can lead to maternal morbidity and mortality (Sharma & Kilpatrick, 2017). PPH was found in 26.9% of participants and is estimated to cause 25% of all maternal deaths (Khan, Wojdyla, Say, Gülmezoglu, & Van Look, 2006). The study shows that 13.4% had premature delivery, which is considered a serious problem that has increased over the years (Slattery & Morrison, 2002). The prevalence of anemia was high among postnatal mothers (76.3%) in Urban Puducherry (Selvaraj et al., 2019), but in this study, the percentage was 7.8%. APH are the major causes of IUFD in 42.8% and 24.2% of cases complicated PPH Nigerian hospitals (Takai, Sayyadi, & Galadanci, 2017), but the percentage in my study was only 10.1%. Uterine rupture, a major cause of perinatal morbidity and mortality worldwide especially in scarred uterus, was found in 7.8% of the participants (Turner, 2002). Note: some mothers had multiple risks factors.

4.8 PNC services provided during visits

WHO recommends that the PNC services as in table (4.8) include measuring the mother's temperature (88.4%), fundus high examination (85.2%) during the first 24 hours and scar examination of the episiotomy and the C.S after 24 hours (27.6% and 94.7% respectively). Normal delivery comprised 76% of the cases, while 24% were C.S delivered, according to the MoH report which indicated that the majority of deliveries were normal (MoH,2018). Of the women, 73.4 % were asked about breast problems and 74.8% were asked about the family planning service that should be discussed for contraceptive methods (WHO, 2013), mothers refuse and escape family planning service, as they want to be pregnant. Another cause is the overcrowded waiting area, although midwives provide counseling and keep family planning files. The increased rate of unwanted pregnancies also leads to decreasing the rate of family planning. Women answered this service was not provided at this clinic. Asking mothers if they receive instructions for the preferred method, they said no one told them about it during any visit.

Table (4.8): PNC services provided during visits

Items	YES		NO	
Mother health	**No.**	**%**	**No.**	**%**
Was your temperature measured?	137	88.4	18	4.5
Was your fundus height examined?	132	85.2	23	5.8
Do you have an episiotomy? If yes, was your episiotomy examined?	76	49	79	51
	21	27.6	55	72.4
Do you have C.S scar? If yes, was your C.S scar examined?	38	24	117	76
	36	94.7	2	5.3
Where did you ask about breast engorgement or other problems?	114	73.4	86	26.5
Was your breast examined?	121	78.1	34	21.9
Did you receive counseling about family planning services?	116	74.8	39	25.2
Newborn health				
Was the newborn's temperature measured?	152	98.1	3	1.9
Was the newborn weight measured?	154	99.4	1	0.6
Was the newborn height measured?	154	99.4	1	0.6
Was the newborn's head circumference measured?	155	100	0	0
Was the newborn's umbilicus examined?	155	100	0	0
Was your baby examined by a doctor?	155	100	0	0
Did you receive counseling for newborn care?	155	100	0	0
Were you educated about the proper technique of breastfeeding with the help of a midwife?	153	98.7	2	1.3
Does the H.C.P explain the mother and child health handbook content?	116	87.7	36	12.3
Do you know the content of the mother and child health handbook?	136	87.7	19	12.3
Provided services				
Do you believe that postnatal services are important to the mother's health?	104	99.4	1	0.6
Do you believe that postnatal services are important to the newborn's health?	104	99.4	1	0.6
Would you recommend postnatal care to others?	102	98.1	3	1.9
Did you face barriers to attend to PNC services	22	14.1	133	85.9

There were 25 women in Abasan Algaddeda not receiving PNC as the availability of newborn vaccine at another health center where the service provided for the newborn only and no caring for mother health at that health center.

High coverage of newborn care was achieved during the baby assessment including cord care and training for the best breastfeeding technique as per the WHO's recommendations (WHO, 2013). 87.75% of the participants had MCHH, which had a positive outcome in decreasing infant mortality rate and enhanced pregnancy outcome. Therefore, the importance of MCHH should be confirmed as a health promotion tool (Takeuchi, Sakagami, & Perez, 2016). In addition, MCHH has increased the chances of receiving medical tests and knowledge about topics of ANC among pregnant women in the Gaza strip (Kitabayashi, Chiang, Al-Shoaibi, Hirakawa, & Aoyama, 2017).

Good access to and coverage of P.N.C services related to mothers' and newborns' health. Even if the baby is at the hospital, follow-up is made to check on their health. Also after opening the clinic after the COVID-19 closure, a schedule was made for all women after delivery and enforced with more staff to finish the delayed workload.

Perception of women to the importance of PNC services to their health and health of their newborn was high 99.4% and also mothers in Ethiopia had a high level of awareness about the necessity of this service utilization (Tesfahun, Worku, Mazengiya, & Kifle, 2014) but 14.1% face barriers in obtaining this service, the most common cause 45.4% lack of money for transport, 22.7% not aware about this service, 13.6% long waiting time and feeling well so no need for this service, 4.5% family control which needs multi-systemic co-ordination individual, community and health system to easily access this service (Akter, Davies, Rich, & Inder, 2020) and also resemble study findings among women in Kenya (Mikaelsdotter & Westerling, 2019). A mother said, "*In every pregnancy, I had PIH and no counseling was given to me. I heard about the importance of follow-up after delivering my first child*". Recently, mothers have been examined after delivery. This service was provided only to newborns in the past. It was explained by a staff nurse that this PNC service was provided at another clinic distant from this clinic to newborns only, but that clinic was not responsible for examining the mother.

Gaps in the provision of service are related to the mother's health such as the C.S delivery in addition to the social and financial factors. Not all women can access health centers

early after delivery especially after the home visits program was stopped due to COVID-19.

4.9 Distribution of the study participants according to their perceived tangibles

Table (4.9): Distribution of the study participants according to their perceived tangibles

Items	strongly disagree		disagree		Neutral		Strongly agree		agree			
	N	%	N	%	N	%	N	%	N	%	mean	Weight mean
The physical appearance of the health center is visually appealing and attractive	3	8	14	3.5	63	15.8	286	71.5	34	8.6	3.83	76.6%
The health center is clean on every visit	2	0.5	5	1.3	45	11.3	271	67.8	77	19.3	4.04	80.8%
Seats are spaced and protected from sun and rain	4	1	6	1.5	41	10.3	282	70.5	67	46.8	4.01	80.1%
The health center is equipped with modern and up-to-date equipment	2	0.5	2	0.5	29	7.2	280	70	87	21.8	4.12	82.4%
The health service providers are well dressed and neat	2	0.5	3	0.8	26	6.5	256	64	113	28.2	4.19	83.7%
The center operating hours are convenient to patients	2	0.5	1	0.3	30	7.5	263	65.8	104	26	4.17	83.3%
Booking an appointment is easy	5	1.3	6	1.5	19	4.8	263	65.8	107	26.8	4.15	83.0%
Mean 4.07 wt. mean 81.4 SD 0.48												

Perceived tangibles

As shown in table (4.9), most participants agree that the health service providers are well dressed and appear neat with a high weight mean of 83.7%. This is significantly important for patients' trust and confidence in the healthcare provider, as it enables them to share their psychosocial problems (Rehman, Nietert, Cope, & Kilpatrick, 2005) and improves patients' satisfaction and adherence to treatment (Petrilli et al., 2018). On the other hand, the lowest weight mean was that of the physical appearance of the health center (76.6%) which is considered an important factor of the positive evaluation of doctors and nurses and the patient's satisfaction with the service (Lasater, Richards, Dandapani, Burns, & McHugh, 2019), beside the physical service environment plays a significant role in customers' evaluation of their service experience, and influences their evaluation of service delivery, as well as service quality perceptions which reflect the need of reform the buildings to appear more attractable (de Jager, Roux, & Mokhola, 2014).

4.10 Distribution of the study participants according to their perceived empathy

Table (4.10): Distribution of the study participants according to their perceived empathy

Items	strongly disagree		disagree		neutral		Strongly agree		agree		mean	Wt.mean
	N	%	N	%	N	%	N	%	N	%		
Healthcare providers are polite and deal with patients in a friendly manner	1	0.3	2	0.5	48	12	261	65.3	88	22	4.08	81.6%
Healthcare providers pay attention to patients	0	0	5	1.3	55	13.8	250	62.5	90	22.5	4.00	81.2%
Healthcare providers pay attention to the patient's beliefs and emotions	2	0.5	10	2.5	57	14.2	247	61.8	48	24	4.00	80.0%
Healthcare providers consider the patient's interest	0	0	8	2	54	13.5	250	62.5	88	22	4.05	80.0%
Healthcare providers understand the needs of the patients	1	0.3	2	0.5	49	12.3	254	63.5	49	23.5	4.10	81.9%
Mean=4.05 SD=0.58 wt. mean 81%												

Perceived empathy

Findings show that understanding patients' needs had a high weight mean of 81.9%. The lowest weight mean was that of the attention of healthcare providers to their beliefs and emotions, with the same result for considering their interests 80% that may be related to overcrowdedness which didn't allow good communication with women to listen to their problems and their emotions. Also measuring service quality perception in Greece the analysis showed that there were gaps in all quality domains but the largest gap was detected in empathy because of differences in patients' perceptions rather than expectations (Papanikolaou & Zygiaris, 2014). A systematic review to study nonverbal expressions of empathy varied across cultural groups and impacted the quality of communication and care, findings showed the impact of nonverbal communication on patient satisfaction, affective tone, information exchange, visit length, and expression (Lorié, Reinero, Phillips, Zhang, & Riess, 2017). Positive associations with provider empathy scores were found for those who reported knowing their provider, non-verbal communication and perceived technical competency (Z, T, M, & S, 2012).

4.11 Distribution of the study participants according to their perceived reliability

Table (4.11): Distribution of the study participants according to their perceived reliability

Items	strongly disagree		disagree		neutral		Strongly agree		agree		mean	Wt.mean
	N	%	N	%	N	%	N	%	N	%		
Healthcare providers respect patient appointments	0	0	2	0.5	66	16.5	261	65.3	71	17.8	4.00	80.5%
Healthcare providers provide patients with appropriate timely services	1	0.3	3	0.8	63	15.8	261	65.3	72	18	4.00	80.0%
Healthcare providers address all your concerns	2	0.5	9	2.3	60	15	255	63.7	74	18.5	3.98	79.5%
Healthcare providers respond to your questions and requests	1	0.3	2	0.5	53	13.3	251	62.7	93	23	4.02	81.6%
Mean=4.01 SD=0.56 wt. mean 80.2%												

As shown in table (4.11), the weight mean of the reliability domain is 80.2%, in which the highest mean was that of the response of healthcare providers to mothers' questions and requests (81.6%) this result resembles a study in Australian primary health centers women described doctors who listened, understood and were thorough as providing good care, and maternal, child and family health nurses were valued for providing support, advice and encouragement (Corr, Rowe, & Fisher, 2015). On the other hand, the lowest mean was that of addressing all mothers' concerns (79.5%). In an exploration of health concerns in pregnant women over age 35 years old the majority of childbearing women (86%) reported engaging in multiple health-promotion behaviors focusing on daily nutritional intake, lifestyle activities, and rest patterns. Participants reported conscientious decisions to eliminate substances recognized as harmful and to alter exercise, employment, or daily responsibilities to accommodate physical changes during pregnancy (Ayoola et al., 2016).

4.12 Distribution of the study participants according to their perceived responsiveness

Table (4.12) shows the lowest findings among the domains in which the mean is 75.2%. The highest one was that of understanding the specific needs of mothers by healthcare providers (81.7%). On the other hand, the lowest mean was that of healthcare providers' response to mothers' non-health-related needs (63.1%). These results explained by work pressure leads to long waiting time, so women cannot tolerate this waiting. Every woman wants to receive her service rapidly and return home. "*Women need a lot of things, so whatever you provide is not appreciated although we provide a lot of services for them",* one doctor said.

Table (4.12): Distribution of the study participants according to their perceived responsiveness

Items	strongly disagree		disagree		neutral		Strongly agree		agree			
	N	%	N	%	N	%	N	%	N	%	mean	Weight mean
Healthcare providers promptly respond to patients' health needs	10	2.5	5	1.3	52	13	235	58.8	98	24.5	4.02	80.3%
Healthcare providers promptly respond to patients' non-health related needs	79	19.8	60	15	43	10.8	156	39	62	15.5	3.16	63.1%
Healthcare providers understand the specific needs of patients	7	1.8	5	1.3	46	11.5	231	57.8	111	27.8	4.09	81.7%
Healthcare providers are too busy to respond to patients' requests	55	13.8	5	1.3	82	20.5	202	50.5	56	14	3.50	69.9%
Healthcare providers treat all patients equally	8	2	6	1.5	86	21.5	194	48.5	106	26.5	0.85	79.2%
Healthcare providers are always willing to help clients	4	1.0	3	0.8	61	15.3	229	57.3	103	25.8	4.06	81.2%
Mean=3.79 SD=0.61 wt. mean =75.2%												

Overcoming this problem requires increasing manpower and separating large rooms to increase contact time, save privacy, provide good counseling to mothers and increase adherence of mothers to appointments that allows health care providers to arrange their agenda so they can give women their rights in receiving the service. Also, prompt attention, autonomy, communication and access were identified as priority areas for actions to improve the responsiveness of healthcare services as in the South Africa cross-section study (Peltzer & Phaswana-Mafuya, 2012).

4.13 Distribution of the study participants according to their perceived assurance

Regarding assurance in a table (4.13), the majority of women (81.2%) asserted that healthcare providers had good experience and knowledge to manage their condition. The results were opposite among a study in Lao rural and urban areas where less than a quarter of pregnant women were treated with kindness and respect with an appreciation of the knowledge and communication skills of health care providers (Phommachanh, Essink, Wright, Broerse, & Mayxay, 2019).

Table (4.13): Distribution of the study participants according to their perceived assurance

Items	strongly disagree		disagree		neutral		Strongly agree		agree		mean	Weight mean
	N	%	N	%	N	%	N	%	N	%		
Healthcare providers promote your self-confidence	2	0.5	2	0.5	50	12.5	279	69.8	67	16.8	4.02	80.3%
Healthcare providers make you feel safe	2	0.5	0	0	54	13.5	275	68.8	69	17.3	4.02	80.3%
Healthcare providers are consistently considerate with you	2	0.5	1	0.3	56	14	272	68	69	17.3	4.01	80.2%
Healthcare providers involve you in decision making	2	0.5	1	0.3	58	14.5	266	66.5	73	18.3	4.02	80.3%
Healthcare providers provide you with services that improve your daily activities	2	0.5	1	0.3	58	14.5	266	66.5	73	18.3	4.02	80.3%
Healthcare providers provide you with services that alleviate your symptoms	3	0.8	2	0.5	47	11.8	271	67.8	77	19.3	4.04	80.8%
Healthcare providers had the knowledge and skills to manage your condition	3	0.8	1	0.3	48	12	264	66	84	21	4.06	81.2%
Mean=4.02 SD=0.52 wt. mean =80.4%												

On the other hand, 80.2% of women found that healthcare providers were consistently considerate to mothers were influenced by their perceptions of provider competence and the quality of interactions also described general practitioners who listened, understood and were thorough as providing good care, and maternal, child and family health nurses were valued for providing support, advice and encouragement (Corr, Rowe, Fisher, et al., 2015).

4.14 Distribution of the study participants according to their perceived satisfaction

Table (4.14): Distribution of the study participants according to their perceived satisfaction

Items	strongly disagree		disagree		neutral		Strongly agree		Agree		mean	Weight mean
	N	%	N	%	N	%	N	%	N	%		
Making appointments for follow-up visits	6	1.5	4	1	67	16.8	260	65	63	15.8	3.93	78.5%
Waiting time	6	1.5	19	4.8	84	21	233	58.3	58	14.5	3.80	75.9%
The convenience of the waiting area	9	2.3	14	3.5	86	21.5	232	58	59	14.8	3.80	75.9%
The area of the examination room is appropriate	4	1	13	3.3	69	17.3	249	62.3	65	16.3	3.90	77.9%
Welcoming and greetings of service providers	3	0.8	11	2.8	58	14.5	266	66.5	62	15.5	3.93	78.6%
The time that health providers spent with you	4	1.0	13	3.3	51	12.8	270	67.5	62	15.5	3.93	78.6%
The service providers' explanations about maternal services	2	0.5	7	1.8	50	12.5	268	67	73	18.3	4.01	80.1%
The service providers respect your privacy	1	0.3	2	0.5	50	12.5	267	66.8	80	20	4.06	81.1%
The overall performance of health providers	1	0.3	4	1.0	51	12.8	258	64.5	86	21.5	4.06	81.1%
The needed medication is always available at the center's pharmacy	3	0.8	4	1.0	39	9.8	249	62.3	105	26.3	4.12	82.4%
Folic acid and iron are always available for you	2	0.5	2	0.5	20	5.0	251	62.7	125	31.3	4.24	84.7%
Your general satisfaction with the MCH services that have been provided from the health center	1	0.3	3	0.8	30	7.5	190	47.5	176	44	4.34	86.8%
Mean=4.0 SD=0.52 wt. mean=80.4%												

The findings show in a table (4.14), 86.8% had positive general satisfaction for MCH services that have been provided from the health center which also found among a study in Ethiopia that more than 60% were satisfied with the focused antenatal care service (Chemir, Alemseged, & Workneh, 2014) while 75.8% not satisfied with waiting time and waiting area which the lowest mean which may reflect a long time in which patient spent

waiting for the service. These results are inconsistent with a study in Nigeria, the majority of pregnant women were satisfied with waiting time (84.1%) and generally satisfied with MCH services (89.7%) (Emelumadu et al., 2014b). It is important to mention that women were not satisfied with the examination room (77.9%), this point due to the small area of the room and multiple mothers with different services provided in the same room which affects mothers privacy during the consultation with their health care providers and their overall performance (81.1%). This uncomfortable work environment reflect on communication and welcoming health care providers and women and insufficient contact time with them (78.6) which may be inappropriate appointments schedule for the next visit (78.5%).

4.15 Distribution of the study participants according to their perceived quality and satisfaction

Table (4.15): Distribution of the study participants according to their perceived quality and satisfaction

	Domain	**Weighted mean**	**Median**	**SD**
1	Tangibles	81.4%	4.00	0.48
2	Empathy	81%	4.00	0.58
3	Reliability	80.2%	4.00	0.56
4	Responsiveness	75.8%	4.00	0.61
5	Assurance	80.4%	4.00	0.52
6	Satisfaction	80%	4.00	0.52
7	Overall	79.8%	4.01	0.40

In the study results (4.15), 79.8% of study participants perceived that MCH services provided by governmental primary health centers as of good quality and 80% of them are satisfied with these services. The highest weight mean among tangibles perceived quality domain 81.4%, Swan, et al. (2003) found that patients in attractive hospital rooms evaluated doctors and nurses more positively and reported higher overall satisfaction compared with those in typical hospital rooms (JE, LD, & JD, 2003), so perceived healthcare service quality, patient satisfaction, and behavioral intentions are closely related

to each other, and high-quality services lead to satisfied patients who further exhibit positive behavioral intentions (Singh & Dixit, 2020). While the lowest weight mean in responsiveness perceived quality domain 75.8% which resemble the results of an outpatient survey in Tehran participants reporting poor responsiveness mainly among the young age group (Forouzan et al., 2016). In comparison to a study to assess patient perception in Iran's hospitals, the highest perception was in the assurance dimension and the highest expectation was in responsiveness and assurance dimensions. Also, the lowest perception was in the responsiveness dimension and the lowest expectation was about empathy (Aghamolaei et al., 2014).

4.16 Distributions of women according to their worries and concerns using Cambridge worry scale

The highest worry mean for mothers was giving birth (51.6%), which is also related to internal examination during labor 40%. On the other hand, the lowest worry mean was the health of someone close to her 6.6%. This result resembles the findings among Swedish women, where giving birth had the highest score (Öhman, Grunewald, & Waldenström, 2003). The results are also similar among German mothers, as the process of giving birth had the highest score, followed by something wrong being related to the fetus (Petersen, Paulitsch, Guethlin, Gensichen, & Jahn, 2009). So, mothers' worries during pregnancy should be evaluated to decrease the risk to her and her fetus' health (Penacoba-Puente, Monge, & Morales, 2011). Also, another study had the same results women were most worried about something being wrong with the baby, giving birth and the risk of miscarriage d]\especially in depressed women so caregivers must be sensitive to the presence of underlying fears or depressive symptoms and act to refer women to treatment or support (Hildingsson & Larsson, 2021)

Regarding mothers' worries about closure, the health center Closure of the clinic did not affect mothers' health. A mother said, *"Either way, I buy the medication from outside, so I never worried about this closure."* Other mothers confirmed that the closure of the clinic affected their follow-up and delayed registration, making them worry about their health and leading to overcrowdedness when the clinic was reopened. It did not affect the contact time with the specialist, but it took a long waiting time, *"The doctor gives every mother her needed time in this service"*, a mother said. Regarding multivitamins and folic acid, mothers confirm receiving extra amounts due to this situation.

Table (4.16): Distribution of women according to their worries and concerns

Worries and concerns	No worries		1		2		3		4		5		mean	wt. mean
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
own health	174	43.5	6	1.5	12	3	35	8.8	37	9.3	136	34	2.41	40
The possibility of something being wrong with the baby	193	48.3	4	1.0	8	2.0	21	5.3	28	7.0	144	36	2.3	38.3
relationship with husband	337	84.3	15	3.8	7	1.8	5	1.3	3	0.8	33	8.3	0.55	9.16
relationship with your family and friends	346	87.3	11	2.8	6	1.5	5	1.3	4	1.0	5	28	0.49	8.16
housing	349	87.3	10	2.5	7	1.8	5	1.3	3	0.8	26	6.5	0.45	7.5
The health of someone close to you	355	88.8	7	1.8	6	1.5	6	1.5	3	0.8	22	5.5	0.40	6.66
Employment problems	337	84.3	5	1.3	8	2.0	14	3.5	11	2.8	25	6.3	0.58	9.66
Money problems	278	69.5	4	1.0	2	0.5	10	2.5	17	4.3	88	22	1.37	22.8
The possibility of stillbirth	260	65	6	1.5	3	0.8	11	2.8	11	2.8	109	27.3	1.59	26.5
Going to hospital	287	71.8	3	0.8	13	3.3	14	3.5	15	3.8	68	16.8	1.17	19.5
Internal examinations	174	43.5	7.0	1.8	23	5.8	28	7.0	16	4.0	152	38.0	2.40	40
Giving birth	216	54.0	9	2.3	12	3.0	19	4.8	26	6.5	118	29.5	3.10	51.6
Coping with the new baby	134	33.5	4	1.0	5	1.3	22	5.5	12	3.0	223	55.5	1.96	32.6

Worries of health care providers during the closure of health center in COVID19 was *"I do not think it affected women's health, because the clinic was only closed for two weeks"*, a midwife said. There was no communication with women because there is not a mobile in the clinic to contact them. Women with good income followed up at private clinics, but they also returned to follow up at our clinic. "W*e lose contact with the mother, and late registration of the mother delays follow-up, which might hinder the early discovery of any risk factors"*, a doctor said. At another clinic, a midwife said, "*Closure of the clinic affects women's health, as women are not provided with an iron supplement, information, and some drugs that are not available elsewhere such as Aldomin for PIH cases. At first, we*

did not have communication with women, but later on, we called the high-risk pregnancy cases via the SMS reminder program."

4.17 Distribution of the study women according to receiving SMS messages

Table (4.17): Distribution of the study women according to receiving SMS messages

Items	**Yes**		**No**	
	No.	%	No.	%
Do you have a mobile or free access to mobile?	305	76.3	95	23.8
Did you receive messages from your health center about your pregnancy?	174	57	131	43
Did you read the content of the messages carefully?	168	96.6	6	3.4
Do you like to receive SMS reminders?	108	82.4	23	17.6
Do you think it will increase your adherence?	103	78.6	28	21.4
What are the barriers that face receiving SMS messages?	husband rejection		6	4.5
	Not having a mobile		6	4.5
	social rejection		4	3.0
	cannot read messages		2	1.5
	I think it is not secure		78	59.5
Concept	Oral		174	100
	Written		0	0
	None		0	0

Most women (76.3%) had free access to mobiles; a percentage similar to that of Palestinian women in general (83%) (PCBS, 2018). This is positively associated with the utilization of skilled birth attendance, postnatal care and family planning services (Mohan et al., 2020). Another study confirmed that women's ownership of a mobile phone had a better effect on maternal and child healthcare (Lefevre et al., 2020). SMS was received by 57% of women, most of which (96.6%) carefully read the content of the messages, thus increasing awareness of their health. Sending SMS increases adherence of mothers to the treatment of HIV disease during pregnancy (Mushamiri, Luo, Iiams-Hauser, & Ben Amor, 2015). Additionally, medication text messaging increases compliance (Schwebel & Larimer, 2018). The main barriers to receiving SMS services, as informed by the women, were thinking that their data are not secure and private and not having a mobile phone (Norton et al., 2014). Also, not having a mobile especially in developing countries is attributed to financial factors. However, it is found to play a role in preserving the mother's health and making use of skilled facility services.

Health care provider’s opinions for SMS service it was useful for reminding the mother of the time of investigations and giving advice to women. However, sometimes wrong appointments were given and some mothers worried that the information was not detailed. This wasted the healthcare provider's time. Some mothers also did not have mobiles, which limits communication. At first, the barriers included difficulty in using computers and programs, but then it became easy. There is also the refusal of some husbands to receive SMS.

4.18 Distribution of mothers according to their satisfaction with the SMS service

Findings show table (4.18), that 87.7% of women confirmed that sending text messages increased adherence to their appointments, according to a study conducted at a pediatric clinic, which showed that reminders increased adherence (Lin, Mistry, Boneh, Li, & Lazebnik, 2016) and reduced non-attendance among HIV patients (Mayer & Fontelo, 2017). 83.6% of them reported that SMS affected the frequency of their visits to the clinic. "My adherence to appointments increased after receiving SMS", accords to one mother. Additionally, mothers confirm the importance of messages they receive with their useful information and accurate appointments More than 90% confirmed that SMS had fully detailed appointments, and 86.7% confirmed being involved in scheduling appropriate appointments for them. Sending SMS before 3 days of their appointment is preferred among women over sending SMS on the day before the appointment with percentages of 97.2% and 89.7%, respectively.

Regarding data security, the majority approved that their data were secure. This privacy can be increased through making standardized hardware and software systems (W. Brown et al., 2018). The majority of women (90.7%) prefer telephonic reminders over text and voice messages (81.8%). Both text messages and telephonic reminders are effective in improving attendance, but messages are more cost-effective than telephonic reminders (Chen, Fang, Chen, & Dai, 2008). Email reminders had significantly improved attendance compared with telephonic reminders and SMS reminders respectively (Bos, Hoogstraten, & Prahl-Andersen, 2005). Telephonic reminders have also proved their importance in medication compliance rates (Sidney et al., 2012).

Table (4.18): Distribution of mothers according to their satisfaction with SMS service.

Items	Strongly disagree		Disagree		Neutral		Agree		Strongly agree			
Adherence to appointments	**No.**	**%**	**No**	**%**	**No.**	**%**	**No**	**%**	**no**	**%**	**mean**	**Wt. mean**
Sending SMS messages improves your adherence to appointments	0	0	3	1.7	19	10.6	112	64.8	41	22.9	4.09	81.8%
sending SMS is useful in reminding you about appointments	0	0	0	0	13	7.4	122	69.7	40	22.9	4.15	83%
SMS messages are fully detailed about the appointments	0	0	0	0	16	9.2	120	69	39	21.8	4.13	82.6%
Appropriate time												
Sharing in detecting the appropriate time for you	1	0.6	1	0.6	22	12.5	106	60.9	45	25.3	4.10	82%
sending SMS 3 days before your appointment is enough for you	5	2.9	15	8.6	20	11.4	85	68.6	50	28.6	3.91	78.2%
Sending SMS had an effect on the frequency of your visits to health providers	1	0.6	3	1.7	25	14.3	94	53.9	52	29.7	4.10	82%
You prefer the sending time to be on the day before the appointment	1	0.6	6	3.4	11	6.3	74	42.3	83	47.4	4.33	86.5%
Data and preferred way for reminding												
your data is secure	0	0	0	0	11	6.3	97	55.4	67	38.3	4.32	86.4%
Your data is private	0	0	0	0	10	5.7	92	52.6	73	41.7	4.36	87.2%
Prefer telephonic reminder than SMS	7	4.4	6	3.8	2	1.3	54	33.8	91	56.9	4.35	87%
Prefer voice messaging	5	2.9	12	6.9	15	8.6	89	50.9	54	30.9	4.0	80%
You will be more satisfied if there are incentives for coming	0	0	1	0.6	9	5.1	71	40.6	94	53.7	4.47	89.4%
Risks in pregnancy												
In case of G.D.M, SMS reminders improve your control of blood glucose	1	0.6	1	0.6	6	3.5	100	57.8	65	37.6	4.31	86.2%
In the case of PIH, SMS reminders improve blood pressure control	1	0.6	1	0.6	8	4.6	105	60	60	34.3	4.27	85.3%

Table (4.18) Continued

Items	Strongly disagree		Disagree		Neutral		Agree		Strongly agree			
Risks in pregnancy	**No.**	**%**	**No**	**%**	**No.**	**%**	**No**	**%**	**no**	**%**	**mean**	**Wt. mean**
In case of anemia, SMS reminders improve hemoglobin level control	1	0.6	1	0.6	9	5.1	113	64.5	51	29.1	4.21	84.2%
Your feedback is regularly monitored by a healthcare provider	0	0	2	1.1	16	9.1	101	57.7	56	32	4.21	84.1%
Sending SMS had impact on your health outcome	2	1.1	3	1.7	12	6.8	91	51.4	69	39	4.25	85.4%
Mean=4.17 SD=0.54 wt. mean 83.4%												

As for diseases associated with pregnancy, the majority of cases confirm that SMS improved their adherence to treatment and investigations such as in GDM, PIH and anemia (95.4%, 94.3% and 93.6% respectively). In Rwanda, SMS showed the success of tracking mothers' and children's outcomes and increased attendance to follow-up appointments at the clinic from 72% to 92% in one year (Ngabo et al., 2012). In Australia, the use of a reminder system such as the mobile phone and SMS in postpartum GDM follow-up reduced the incidence of DM type-2, which is also a public health issue (Heatley, Middleton, Hague, & Crowther, 2013). The screening rates for OGTT postpartum among those who receive reminders were double those of usual medical care (Kapustin, 2008). Although both healthcare providers and patients confirmed the importance of screening after delivery, not all mothers do this test due to time pressure. From the perspective of healthcare providers, no postpartum visits are made to the clinic for any reason, so sending the reminder helps mothers adhere to follow-up (Middleton & Crowther, 2014).

Closure of the clinic due to COVID-19 led to disturbances in the appointment system, "*I cannot send a pregnant woman home without examination, because I am afraid of serious problems. In addition, sometimes the lack of compliance is related to the mother's personality itself and I cannot change it",* one midwife said

Regular feedback to SMS services by healthcare providers was very important as it enhances patients' feeling of being supported in their management and strengthens the

doctor-patient relationship (Barsky et al., 2019). Findings showed that the majority of women (89.7%) confirmed that their continuous feedback was recorded by healthcare providers.

SMS led to positive health outcomes among 90.4% of women through improving adherence to appointments and medications. This was approved by asthmatic patients (Strandbygaard, Thomsen, & Backer, 2010). Adherence to a healthy diet also improved among cardiovascular patients (Akhu-Zaheya & Shiyab, 2017).

4.19 Distribution of the study women according to receiving social media messages

Table (4.19): Distribution of the study women according to receiving social media messages

Items	**Strongly disagree**		**Disagree**		**Neutral**		**Agree**		**Strongly agree**			
Is the application providing you with sufficient and useful information for a healthy lifestyle?	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**mean**	**Wt. mean**
	21	7.6	30	10.8	93	33.5	125	45	11	3.2	3.26	65.1%
Is the application affecting your health behavior?	14	5	31	11.1	94	33.6	130	74.1	11	3.2	3.33	66.5%
You have family support and encourage to receive this service	19	6.8	48	17.2	78	28	110	39.1	22	9	3.26	65.1%
You receive awareness information on your heath	17	6.1	27	9.4	78	27.7	135	48.6	23	8.3	3.44	68.7
Mean=3.3 SD=0.85 wt. mean 66.35%												

In what form do you prefer the content to be?	video		picture		articles		Others	
	No.	%	No.	%	No	%	No.	%
	160	57.1	51	18.2	32	11.4	37	13.2
Do you face barriers to get the health information you want?	**yes**				**no**			
	no		**%**		**No.**		**%**	
	46		17.3		220		82.7	
How did the frequency of your visits to health providers change after using media?	decrease		increase		same			
	No.	%	No.	%	No.		%	
	26	9.3	195	69.4	60		21.4	
Information quality through social media	benefit		Some benefit		Dangerous			
	No.	%	No.	%	No.		%	
	78	27.8	196	69.8	7		2.5	
Health information preferred	H.C.P		Social media		No difference			
	No.	%	No.	%	no		%	
	259	92.2	8	2.8	14		5.0	

Table (4.19), shows that mobile applications are useful for 48.2% of women in providing important information for mother and child healthcare and should be developed by

professional healthcare providers (Lee & Moon, 2016). Besides, smartphone applications increase patients' awareness of their disease and methods of monitoring their conditions (Mosa, Yoo, & Sheets, 2012).

Usage of mobile phone applications affects 78.3% of women's behavior through obtaining information on diet, exercise and fetal development (Wang, Deng, Wen, Ding, & He, 2019). However, one must receive awareness of these applications, because some of them are of high quality and women should be aware of them (H. M. Brown, Bucher, Collins, & Rollo, 2019). Another study that reviewed applications on Play Store revealed the same result (H. M. Brown, Bucher, Collins, & Rollo, 2020). Less than half of the women (48.1%) had familial support to use mobile applications, and this may be due to fear of social sharing with unprofessional individuals in addition to their personal opinions (Peyton, Poole, Reddy, Kraschnewski, & Chuang, 2014). Awareness and self-care are confirmed by 56.9% of women, who also reported their need for sufficient media and health literacy in order to achieve safe outcomes (Tabatabaei, Tabatabaei, Ghaedi, Khonsaraki, & Talebi, 2019). More than half of the women (57.1%) prefer receiving information as videos, while 18.2% prefer pictures such as breastfeeding education for new mothers (Okasha, 2018), which is higher than that of women preferring paper handouts (Raines & Robinson, 2020).

Barriers in using mobile applications face 17.3% of the women. The main cause is that women do not know how to access information on applications. In order to overcome this difficulty for women focus groups and health providers, an application can be designed to facilitate women's access to information (Gazmararian et al., 2014). Other barriers faced by the women were financial (21.3%), social (4.3%) and others (31.9%).

The majority of women prefer to receive information from healthcare professionals (92.2%), but they also consider that information from social media gives them some benefit. About 69.8% of the women stated being involved in decision-making, thus empowering their relationship with healthcare professionals (Benetoli, Chen, & Aslani, 2018).

"*Using social media and the internet is not always useful, because it gives me wrong information that may be harmful to me and my children",* a mother said. So, they approved the importance of getting information from the health care providers.

What changes made by the health center contributed to your healthcare improvement?

The sample women expressed their overall satisfaction with the healthcare providers, as they feel comfortable with them. They confirm benefiting from the health education sessions, which adds to their information and increases their awareness of their specific conditions. They appreciated the continuous communication with the healthcare professionals, as they provided useful guidance and instructions and answered all their questions; especially during the COVID-19 outbreak. Women also commended the comprehensive care they received and said that their self-confidence was strengthened.

Many women confirmed that healthcare centers contributed to the improvement of their physical and mental health during pregnancy. Personal hygiene instructions also changed some women's health behaviors and taught them how to breastfeed and deal with their babies. They also appreciated the laboratory investigations and the provision of family planning instructions and postnatal care. Women with GDM and other high-risk pregnancies commended the continuous follow-up that helped them maintain a healthy lifestyle.

If the health center was closed, how would it affect your health?

The women expressed true concern if the services provided by the center were cut off. Many said that it would cause them to lose the healthcare service altogether, as they would not afford to follow up at private clinics or buy the supplements and medications received for free at the center. While some said they would turn to hospitals, others said they would turn to traditional methods of healthcare. Some women described it as a disaster or a humanitarian catastrophe, as the center provided them with everything they would need throughout their pregnancy. They also said they would be constantly worried about not

receiving information and reassurance from the experienced staff at the center, which might increase diseases among pregnant women and children as well.

4.20 The relationship between some of the study participants' characteristics and their perception of the quality of services and its domains

Governorate in comparison with women perceived tangibles

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among participants in different governorates groups in relation to the tangibles quality domain. The results revealed a statistically significant across the four governorates and tangible quality domain with (F=4,884, P=0.002). Gaza governorate women participant reported a significantly higher level of tangible with a mean of 84.4% and Khan Younis governorate women participants reported the lowest level of mean 79.8%

The difference was a statistical difference, Post hoc Scheffe test has revealed that women participants in Khan Younis governorate perceived quality services with fewer tangibles with 3.99 than Gaza governorate participants of 4.24.p=0.004

Table (4.20): The relationship between perceived quality, satisfaction and governorates

domain	Governorate	No.	Mean	SD	F	Sig
tangible	North Gaza	77	4.11	0.60	4.884	0.002
	Gaza	72	4.24	0.41		
	Khan Younis	202	3.99	0.45		
	Rafah	49	4.05	0.48		
	total	400	4.07	0.48		
empathy	North Gaza	77	4.05	0.64	4.723	0.003
	Gaza	72	4.27	0.54		
	Khan Younis	202	3.98	0.57		
	Rafah	49	4.04	0.46		
	total	400	4.05	0.58		
reliability	North Gaza	77	4.00	0.57	6.972	0.000
	Gaza	72	4.26	0.58		
	Khan Younis	202	3.97	0.52		
	Rafah	49	3.84	0.55		
	total	400	4.01	0.56		

Table (4.20) Continued

responsiveness	North Gaza	77	3.76	0.61	2.607	0.051
	Gaza	72	3.88	0.45		
	Khan Younis	202	3.82	0.68		
	Rafah	49	3.58	0.51		
	total	400	3.79	0.61		
assurance	North Gaza	77	4.04	0.53	5.454	0.001
	Gaza	72	4.24	0.49		
	Khan Younis	202	3.96	0.53		
	Rafah	49	3.95	0.48		
	total	400	4.02	0.52		
satisfaction	North Gaza	77	4.04	0.56	5.479	0.001
	Gaza	72	4.20	0.49		
	Khan Younis	202	3.92	0.49		
	Rafah	49	3.98	0.49		
	total	400	4.00	0.52		
Overall	North Gaza	77	4.00	0.48	7.448	0.000
	Gaza	72	4.18	0.35		
	Khan Younis	202	3.94	0.39		
	Rafah	49	3.91	0.31		
	total	400	3.99	0.40		

Governorate in comparison with women perceive empathy

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in different governorates groups in relation to the empathy quality domain. The result revealed a statistically significant across the four governorates and empathy quality domain with (F=6.723, P=0.003). Gaza study women reported a significantly the highest level of empathy with a mean of 85.4%, and Khan Younis governorate women participants reported a significantly the lowest level of empathy with a mean of 79.6%.

Post hoc Scheffe test revealed that Gaza governorate women perceived more empathic with 4.27 than women participant in Khan Younis governorate 3.98. The differences were statistically significant.p=0.003. According to a study to differentiate the difference of empathy in puplic and private hospital the result was statistically significant and it was related to characteristics of patients, health care providers and the health system.

Governorate in comparison with participants perceived reliability

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in different governorate groups in relation to the reliability quality domain. The results revealed a statistically significant across the four governorates and reliability quality domain with (F= 6.972, P= 0.000). Gaza study women reported significantly the highest level of reliability with a mean of 85.2%, and Rafah governorate women participants reported a statistically the lowest level of reliability with a mean of 76.8%.

Post hoc Scheffe test revealed that Gaza governorate women perceived more reliability with 4.26 than women participant in Rafah governorate 3.84(p=0.001), North Gaza governorate 4.00 (p=0.004)and Khan Younis 3.97(p=0.002). The differences were statistically significant.

Governorate in comparison with participants perceived responsiveness

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in different governorates groups in relation to the responsiveness quality domain. The result revealed a statistically significant across the four governorates and responsiveness quality domain with (F=2.607, P= 0.512). Gaza study women reported a significantly the highest level of responsiveness with a mean of 77.6%, and Rafah governorate women participants reported a statistically the lowest level of responsiveness with a mean of 71.6% but Post hoc Scheffe test revealed no statistically significant difference between Rafah governorate women participant responsiveness and other governorates study participants.

Governorate in comparison with participants perceived assurance

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in different governorates groups in relation to the assurance quality domain. The result revealed a statistically significant across the four governorates and assurance quality domain with (F= 5.454, P= 0.001). Gaza study women reported significantly the highest level of assurance with a mean of

84.8%, and Rafah governorate women participants reported a statistically the lowest level of assurance with a mean of 79%.

Post hoc Scheffe test revealed that Gaza governorate women perceived more assurance with 4.24 than women participant in Rafah governorate 3.95(p=0.036) and Khan Younis 3.96(p=0.002). The differences were statistically significant.

Governorate in comparison with participants perceived satisfaction

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in different governorates groups in relation to the satisfaction quality domain. The result revealed a statistically significant across the four governorates and satisfaction quality domain with (F= 5.479, P= 0.001). Gaza study women reported a significantly the highest level of satisfaction with a mean of 84%, and Khanyounis governorate women participants reported a statistically the lowest level of assurance with a mean of 78.4%.

Post hoc Scheffe test revealed that Gaza governorate women perceived more assurance with 4.20 than women 2participants in Khan Younis governorate 3.92(p=0.001). The differences were statistically significant. Results of a study to analyze facilities and waiting times for the satisfaction level of pregnant women in ANC services was the influence between facilities and waiting time on the level of satisfaction of pregnant women in antenatal care services (Wati & Sudana, 2019)

Governorate in comparison with participants all perceived quality domain

As shown in table (4.20), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in different governorates groups in relation to the overall perceived quality domain. The result revealed a statistically significant across the four governorates and overall perceived quality domain with (F=7.448, P= 0.000). Gaza study women reported a significantly the highest level of perceived quality with a mean of 83.6%, and Rafah governorate women participants reported a statistically the lowest level of perceived quality with a mean of 77.6%.

Post hoc Scheffe test revealed that Gaza women perceived more quality with 4.18 than women participants in Rafah governorate 3.91(p=0.003) and Khan Younis 3.94(p=0.000). The differences were statistically significant.

4.21 Health centers and perceived quality domains

Health centers in comparison with women perceived tangibles

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to tangibles perceived quality domain. The result revealed a statistically significant across the eight health centers and tangibles quality domain with (F= 2.178 P= 0.035). Aldarag health center study women reported a significantly the highest mean of tangibles with a mean of 4.23 and Bany Suhaila health center women participants reported a significant statistically lowest level of tangibles with a mean of 3.94. But Post hoc Scheffe has revealed no statistical significance across the eight health centers and tangibles quality domain. This result resembled study among study to assess the impact of service quality on patient satisfaction in private hospitals in Iran were didn't found a significant effect on the quality of the physical environment on patient satisfaction but it was related to costs, delivery of service and interpersonal aspect of care (Zarei, Daneshkohan, Pouragha, Marzban, & Arab, 2015).

Health centers in comparison with women perceived empathy

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to the empathy quality domain. The result revealed a statistically significant across the eight health centers and empathy quality domain with (F= 2.291, P= 0.027). Aldarag health center study women reported a significantly the highest level of empathy with a mean of 86.6%, and Bany Suhaila and Jorat Allout health centers women participants reported a statistically the lowest level of empathy with a mean of 78.8%. But Post hoc Scheffe have revealed no statistical significance across the eight health centers and empathy quality domain.

Table (4.21): Health centers and perceived quality domains

Domain	Health center	No.	mean	SD	F	Sig.
Tangibles	Abushbak	50	4.13	0.68	2.178	0.035
	Aldarag	49	4.23	0.35		
	Alhuria	50	4.16	0.47		
	Abasan Algadeeda	50	4.06	0.49		
	Abasan Alkabeera	53	4.01	0.38		
	Bany Suhaila	51	3.94	0.40		
	Jorat Allout	48	3.95	0.51		
	Tal Alsultan	49	4.05	0.48		
	Total	400	4.07	0.48		
Empathy	Abushbak	50	4.06	0.73	2.291	0.027
	Aldarag	49	4.33	0.47		
	Alhuria	50	4.10	0.55		
	Abasan Algadeeda	50	4.02	0.66		
	Abasan Alkabeera	53	4.01	0.63		
	Bany suhaila	51	3.94	0.49		
	Jorat allout	48	3.94	0.50		
	Tal alsultan	49	4.04	0.46		
	Total	400	4.05	0.587		
Reliability	Abushbak	50	3.93	0.65	3.861	0.000
	Aldarag	49	4.32	0.51		
	Alhuria	50	4.14	0.54		
	Abasan Algadeeda	50	4.05	0.67		
	Abasan Alkabeera	53	3.95	0.52		
	Bany suhaila	51	3.90	0.42		
	Jorat allout	48	3.97	0.42		
	Tal alsultan	49	3.84	0.55		
	Total	400	4.01	0.56		
Responsiveness	Abushbak	50	3.67	0.69	2.614	0.012
	Aldarag	49	3.94	0.46		
	Alhuria	50	3.85	0.40		
	Abasan Algadeeda	50	3.92	0.66		
	Abasan Alkabeera	53	3.93	0.55		
	Bany suhaila	51	3.67	0.85		
	Jorat allout	48	3.76	0.60		
	Tal alsultan	49	3.58	0.51		
	Total	400	3.79	0.61		
Assurance	Abushbak	50	4.03	0.60	3.920	0.000
	Aldarag	49	4.28	0.40		
	Alhuria	50	4.09	0.52		
	Abasan Algadeeda	50	4.12	0.50		
	Abasan Alkabeera	53	4.01	0.478		
	Bany suhaila	51	3.83	0.50		
	Jorat allout	48	3.87	0.59		
	Tal alsultan	49	3.95	0.48		
	Total	400	4.02	0.52		

Table (4.21) Continued

Satisfaction	Abushbak	50	4.03	0.66	4.130	0.000
	Aldarag	49	4.18	0.47		
	Alhuria	50	4.15	0.43		
	Abasan Algadeeda	50	4.12	0.58		
	Abasan Alkabeera	53	3.81	0.41		
	Bany suhaila	51	3.81	0.31		
	Jorat allout	48	3.97	0.58		
	Tal alsultan	49	3.98	0.49		
	Total	400	4.00	0.52		
Overall	Abushbak	50	3.97	0.55	4.402	0.000
	Aldarag	49	4.21	0.29		
	Alhuria	50	4.08	0.36		
	Abasan Algadeeda	50	4.05	0.46		
	Abasan Alkabeera	53	3.95	0.33		
	Bany Suhaila	51	3.85	0.32		
	Jorat allout	48	3.91	0.42		
	Tal alsultan	49	3.91	0.31		
	Total	400	3.99	0.40		

Health centers in comparison with women perceived reliability

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to the reliability quality domain. The result revealed a statistically significant across the eight health centers and reliability quality domain with (F= 3.861, P= 0.000). Aldarag health center study women reported significantly the highest level of reliability with a mean of 86.4%, and Tal Alsultan health center women participants reported a statistically the lowest level of reliability with a mean of 76.8%.

Post hoc Scheffe test revealed that women in ALdarag health center perceived more reliability with 4.32 than women participants in Bany Suhaila 3.90 and Tal Alsultan health center 3.84. The differences were statistically significant p=0.044. During my observation of midwives work in Aldarag health center their staff was very polite, respected mother's appointments and respected mothers with responding to their concerns and questions so the reliability domain was high.

Health centers in comparison with women perceived responsiveness

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to the responsiveness quality domain. The result revealed a statistically significant across the eight health centers and responsiveness quality domain with (F= 2.614, P= 0.012). Aldarag health center study women reported a significantly the highest level of responsiveness with a mean of 79.8%, and Tal Alsultan health center women participants reported a statistically the lowest level of responsiveness with a mean of 71% but Post hoc Scheffe have revealed no statistically significant across the eight health centers and responsiveness quality domain.

Health centers in comparison with women perceived assurance

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to the assurance quality domain. The result revealed a statistically significant across the eight health centers and assurance quality domain with (F= 3.920, P= 0.000). Aldarag health center study women reported significantly the highest level of assurance with a mean of 85.6%, and Bany Suhaila health center women participants reported a statistically the lowest level of assurance with a mean of 76.6%.

Post hoc Scheffe test revealed that women in ALdarag health center perceived more assurance with 4.28 than women participants in Bany Suhaila 3.83 and Jorat Allout health center 3.87. The differences were statistically significant p= 0.008 in Bany Suhaila and p= 0.034 in Jourat Allout. Also, Aldarag health center staff were appreciated for their communication with mothers and qualified for dealing with their conditions in contrast to Bany Suhaila staff that were tough with their clients and didn't have communication skills with mothers. In comparison to a study in public health institutions in Ethiopia, almost half had not been properly involved in the decision-making process during ANC service provision besides mothers giving greater emphasis on delivering information on how to recognize serious problems (danger signs) occurring during pregnancy (Yabo, A.N., Gebremicheal, M.A., & Chaka, E.,2015).

Health centers in comparison with women perceived satisfaction

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to the satisfaction quality domain. The result revealed a statistically significant across the eight health centers and satisfaction quality domain with (F= 4.130, P= 0.000). Aldarag health center study women reported a significantly the highest level of satisfaction with a mean of 83.6%, and Bany Suhaila and Abasan Alkabeera health center women participants reported a statistically the lowest level of assurance with a mean of 76.2% but Post hoc Scheffe have revealed no statistically significant across the eight health centers and satisfaction quality domain. In another study in Northern Ethiopia waiting time greater than one hour OR=3.42 is positively associated with mother perception toward getting high-quality ANC service (Fesseha, 2014).

Health centers in comparison with women all perceived quality domains

As shown in table (4.21), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women in eight health centers in relation to overall perceived quality domains. The result revealed a statistically significant across the eight health centers and overall perceived quality domains with (F= 4.402, P= 0.000). Aldarag health center study women reported a significantly the highest level of perceived quality with a mean of 84.2%, and Bany Suhaila health center women participants reported a statistically the lowest level of perceived quality with a mean of 77%.

Post hoc Scheffe test revealed that women in ALdarag health center perceived more perceived quality with 4.22 than women participant in Tal Alsultan, Jorat Allout health centers 3.91 and Bany Suhaila 3.85. The differences were statistically significant p= 0.036 in Tal alsultan and p= 0.029 in Jorat Allout and p= 0.006 in Bany Suhaila. Evaluation of the quality of ANC service at higher 2 health centers in Jimma, South West Ethiopia majority of the clients was satisfied with accommodation of ANC services. However, the availability of laboratory reagents and drugs remained to be challenged (Abate, T.M., Salgedo, W.B., & Bayou, N.B.,2015).

422 Mother education in comparison with perceived quality domain

Table (4.22): Mother education level in relation to tangible perceived domain

domain	Education level	No.	mean	SD	F	Sig
tangible	**primary**	50	4.18	0.45	2.867	0.058
	secondary	147	4.1	0.48		
	university	203	4.01	0.49		
	total	400	4.07	0.48		
empathy	**primary**	50	4.14	0.61	0.728	0.483
	secondary	147	4.05	0.62		
	university	203	4.03	0.53		
	total	400	4.05	0.58		
reliability	**primary**	50	4.05	0.54	0.116	0.891
	secondary	147	4.01	0.62		
	university	203	4.00	0.52		
	total	400	4.01	0.56		
responsiveness	**primary**	50	3.88	0.66	1.764	0.106
	secondary	147	3.71	0.66		
	university	203	3.83	0.55		
	total	400	3.79	0.61		
assurance	**primary**	50	4.15	0.512	1.563	0.173
	secondary	147	3.98	0.56		
	university	203	4.02	0.50		
	total	400	4.02	0.52		
satisfaction	**primary**	50	4.13	0.51	1.563	0.211
	secondary	147	3.98	0.55		
	university	203	3.99	0.49		
	total	400	4.00	0.52		
overall	**primary**	50	4.09	0.37	1.559	0.203
	secondary	147	3.97	0.45		
	university	203	3.98	0.37		
	total	400	3.99	0.40		

A one-way ANOVA test was conducted to examine whether there were statistically significant differences among women's education levels in relation to all parts of perceived quality domains. There were no statistically significant results in all parts of the perceived quality domain except as shown in table (4.22) a tangible perceive domain perceived among women participants that were high in primary education level with (F=3.246, P= 0.040) but Post hoc Scheffe tests have revealed no statistically significant difference among different education level. Findings in a cross-section study of perceived quality of nursing care and patient education are interconnected by improving patient education, the quality of nursing care can also be improved (Gröndahl, Muurinen, Katajisto, Suhonen, & Leino-Kilpi, 2019). In my opinion with an increase, the level of education mothers anticipates better quality so satisfaction was high among primary education level. In

comparison to a study in Ethiopia, there was a variation in providing quality of care in each visit that was significantly associated with residence, educational status in gravidity, parity, and visit (Tadesse Berehe & Modibia, 2020).

4.23 Family size and mother work in comparison to all perceived quality domains

Table (4.23): Family size and mother work in comparison to all perceived quality domains

domain	variable		No.	mean	SD	F/t	Sig.
All perceived quality domains	Family size	2-4	174	3.99	0.41	F 0.075	0.928
		5-8	153	4.00	0.40		
		More 8	73	3.98	0.44		
		total	400	3.99	0.41		
	Mother work	yes	46	4.03	0.38	t 0.771	0.441
		no	345	3.99	0.41		

As shown in table (4.23), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women's family size in relation to perceives quality domains and satisfaction. The results were no statistically significant in all parts of perceived quality domains with (F=0.075, p= 0.928). This result resembles a meta-analysis was performed to examine the relation of patients' sociodemographic characteristics to their satisfaction with medical care where no relationship was found for family size and income (J. A. Hall & Dornan, 1990). An independent sample t-test was conducted to examine whether there were statistically significant differences among mothers' work in relation to perceived quality domain and satisfaction. The results were no statistically significant in all parts of perceived quality domains with (t=1.0771, p= 0.441). In contrast, to study among unemployment mothers results that re-employment leads to improvement of self-perceived health within a short time window (Schuring, Mackenbach, Voorham, & Burdorf, 2011).

4.24 Cause of visit and perceived quality domain

Table (4.24): cause of visit and perceived quality domain

domain	Type of visit	NO.	mean	SD	t	sig
tangible	ANC	245	4.07	0.53	.003	0.997
	PNC	155	4.07	0.41		
empathy	ANC	245	3.99	0.64	2.77	0.006
	PNC	155	4.15	0.45		
reliability	ANC	245	3.95	0.59	2.76	0.201
	PNC	155	4.10	0.49		
responsiveness	ANC	245	3.69	0.63	4.48	0.000
	PNC	155	3.96	0.56		
assurance	ANC	245	3.98	0.59	2.33	0.006
	PNC	155	4.09	0.40		
satisfaction	ANC	245	4.01	0.57	0.13	0.890
	PNC	155	4.00	0.42		
overall	ANC	245	3.95	0.44	2.95	0.003
	PNC	155	4.06	0.32		

As shown in table (4.24), an independent sample t-test was conducted to examine there was statistically a significant difference between women's perceived quality domains and satisfaction quality domain with regard to the cause of the visit. The test revealed a statistically significant difference among women participant perceived quality domains concerning the cause of visit with (t=-2.95, p= 0.003) in favor of PNC visit except for in tangible perceived quality domain in which the test revealed no statistically significant difference between ANC and PNC visits for women participant in relation to their tangibles perceived quality domain (t=-0.003, p=0.997). Also in the satisfaction perceived quality domain in which the test revealed no statistically significant difference between ANC and PNC visits for women participants in relation to their satisfaction perceived quality domain (t=0.138, p=0.890).

4.25 Health care provider and perceived quality domain

As shown in table (4.25), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among health care providers in relation to women

perceives quality domains and satisfaction. The results were statistically significant in responsiveness, assurance and overall domains. In the responsiveness domain, the result was a statistical significance (F =18.213, p=0.000), the midwife had a statistically significant highest level of responsiveness with 81.4% and the doctor had the lowest level of responsiveness 68.2%, Post hoc Scheffe test revealed that women perceived responsiveness among midwife 4.07 more than both doctor and midwife 3.70 and doctor alone 3.41. The result was a statistical difference.

Table (4.25): Health care provider and perceived quality domain

domain	H.C.P	NO.	mean	SD	F	sig
tangible	midwife	111	4.00	0.49	1.608	0.202
	doctor	12	4.11	0.34		
	both	277	4.09	0.49		
	total	400	4.07	0.48		
empathy	midwife	111	4.12	0.52	2.597	0.076
	doctor	12	3.73	0.61		
	both	277	4.04	0.59		
	total	400	4.05	0.58		
reliability	midwife	111	4.09	0.55	1.873	0.155
	doctor	12	3.87	0.67		
	both	277	3.98	0.55		
	total	400	4.01	0.56		
responsiveness	midwife	111	4.07	0.56	18.213	0.000
	doctor	12	3.41	0.97		
	both	277	3.70	0.58		
	total	400	3.79	0.61		
assurance	midwife	111	4.12	0.46	4.224	0.015
	doctor	12	3.72	0.48		
	both	277	4.00	0.54		
	total	400	4.02	0.52		
satisfaction	midwife	111	3.95	0.50	2.244	0.107
	doctor	12	3.77	0.28		
	both	277	4.03	0.53		
	total	400	4.00	0.52		
overall	midwife	111	4.06	0.40	3.581	0.029
	doctor	12	3.77	0.37		
	both	277	3.97	0.40		
	total	400	3.99	0.40		

In the assurance domain, the result was a statistical significance (F =4.224, p=0.015), the midwife had a statistically significant highest level of assurance with 82.4% and the doctor had the lowest level of assurance 74.4%.Post hoc Scheffe test revealed that women perceived assurance among midwife 4.12 more than doctor alone 3.72. The result was a statistical difference(p=0.045). In the overall quality domain, the result was a statistical

significance (F =3.581, p=0.029), the midwife had a statistically significant highest level of assurance with 81.2% and the doctor had the lowest level of assurance 75.4%, but Post hoc Scheffe test revealed that no a statistical difference among health care providers.

4.26 Citizenship type and perceived quality domains

Table (4.26): Citizenship type and perceived quality domains

Domain	Refugee type	No	Mean	SD	t	Sig.
Tangible	Refugee	73	4.21	0.38	3.112	0.002
	Not refugee	321	4.03	0.46		
Empathy	Refugee	73	4.23	0.47	3.078	0.002
	Not refugee	321	4.01	0.57		
Reliability	Refugee	73	4.25	0.43	4.232	0.000
	Not refugee	321	3.95	0.55		
Responsiveness	Refugee	73	4.15	0.56	5.883	0.000
	Not refugee	321	3.71	0.59		
Assurance	Refugee	73	4.19	0.34	3.201	0.001
	Not refugee	321	3.99	0.52		
Satisfaction	Refugee	73	4.07	0.49	1.080	0.281
	Not refugee	321	4.00	0.50		
Overall	Refugee	73	4.18	0.29	4.906	0.000
	Not refugee	321	3.95	0.38		

As shown in table (4.26), an independent sample t-test was conducted to examine there was a statistically significant difference between women's perceived quality domains and satisfaction quality domain concerning refugee status. The test revealed a statistically significant difference among women participant perceived quality domains concerning their citizenship status (t= 4.906, P= 0.000), in favor of refugee participant, except in the satisfaction quality domain in which the test revealed no statistically significant difference between refugees and not refugees women participant to their satisfaction quality domain (t=1.080, P=0.281).

4.27 Place of residence in comparison to SMS domain

Table (4.27): Place of residence in comparison to SMS domain

Domain	Place of residence	No.	Mean	SD	F	Sig.
Adherence to appointment	North Gaza	38	4.30	0.51	6.708	.000
	Gaza	25	4.37	0.56		
	Khan Younis	87	3.98	0.42		
	Rafah	26	4.15	0.49		
	Total	176	4.13	0.49		
Appropriate time	North Gaza	38	4.37	0.46	7.647	0.000
	Gaza	25	4.41	0.48		
	Khan Younis	87	3.96	0.59		
	Rafah	26	4.08	0.52		
	Total	176	4.13	0.57		
Data security and preference for reminder	North Gaza	38	4.34	0.47	3.475	0.017
	Gaza	25	4.57	0.37		
	Khan Younis	87	4.20	0.52		
	Rafah	26	4.30	0.57		
	Total	176	4.30	0.51		
Medical risk in pregnancy	North Gaza	38	4.38	0.59	3.245	0.023
	Gaza	25	4.42	0.41		
	Khan Younis	87	4.10	0.61		
	Rafah	26	4.21	0.56		
	Total	176	4.22	0.58		

Place of residence in comparison with adherence to appointment

As shown in table (4.27), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in five governorates groups to adherence to appointment. The results revealed a statistically significant across the five governorates and adherence to appointment with (F=6.708, P=0.000). Gaza governorate women participants reported a significantly higher level of adherence to the appointment with a mean of 87.4% than Khan Younis governorate women participants with a mean of 79.6%.

Post hoc Scheffe test revealed that women in Gaza had the highest level of adherence to the appointment with 4.37and KhanYounis had the lowest level of adherence to appointment with 3.98. The differences were statistically significant.(p=0.003)

Place of residence in comparison with sharing appropriate time for next visit

As shown in table (4.27), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in five governorates groups to the appropriate time for the next visit. The results revealed a statistically significant across the four governorates and sharing appropriate time for next visit and its effect on frequency on her visit with (F=7.647, P=0.000). Gaza governorate women participants reported a significant the highest level of adherence to the appointment with a mean of 87.4% and Khan Younis governorate women participants reported the lowest level of mean 79.6%.

Post hoc Scheffe test revealed that women in Gaza governorate had a higher level of sharing appropriate time for next visit with 4.41 than North Gaza governorate with 4.37(0.001) and khan Younis governorate with 3.96(p=0.002). The differences were statistically significant

Place of residence in comparison with data security and preference for a reminder

As shown in table (4.27), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in four governorates groups to data security and preference for a reminder. The results revealed a statistically significant across the four governorates and data security with a preference for the reminder with (F=3.475, P=0.017). Gaza governorate women participants reported a significant the highest level of perceived data security with a mean of 91.4% and Khan Younis governorate women participants reported the lowest level of perceived data security with a mean of 84%.

Post hoc Scheffe test revealed that women in Gaza governorate perceived a higher level of data security with 4.57 than khan Younis governorate with 4.20. The differences were statistically significant (p=0.033). Barriers may affect attendance may resemble a study in Sadia Arabia related to multiple factors as physical barriers (e.g., lack of transport), low maternal education, and inadequate healthcare facilities (including negative staff attitudes and poor communication (Alanazy, Rance, & Brown, 2019b).

Place of residence in comparison with risks in pregnancy

As shown in table (4.27), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in four governorates

groups to manage her medical risks in pregnancy. The results revealed a statistically significant across the five governorates in managing women with medical risks in pregnancy with (F=3.245, P=0.023). Gaza governorate women participant reported a significant the highest level of managing their medical risks with a mean 88.4% and Khan Younis governorate women participants reported the lowest level of managing medical risks in pregnancy with mean 82% but Post hoc Scheffe test have revealed no statistically significant difference among five governorates for managing medical risks in pregnancy

4.28 Health center and SMS domain

Table (4.28): Health center and SMS domain

domain	Health center	No.	mean	SD	F	Sig.
Adherence to appointment	Abushbak	23	4.34	0.56	4.263	.000
	Aldarag	20	4.31	0.56		
	Alhuria	20	4.33	0.47		
	Abasan Algadeed	16	4.12	0.36		
	Abasan Alkabeera	22	3.83	0.39		
	Bany Suhaila	22	3.83	0.35		
	Jorat Allout	27	4.14	0.45		
	Tal Alsultan	26	4.15	0.49		
	Total	176	4.13	0.49		
Appropriate time	Abushbak	23	4.37	0.51	4.126	.000
	Aldarag	20	4.36	0.49		
	Alhuria	20	4.44	0.40		
	Abasan Algadeeda	16	4.05	0.66		
	Abasan Alkabeera	22	3.76	0.66		
	Bany Suhaila	22	3.91	0.48		
	Jorat Allout	27	4.11	0.54		
	Tal Alsultan	26	4.08	0.52		
	Total	176	4.13	0.57		
Data security and preference for reminder	Abushbak	23	4.37	0.53	2.334	.027
	Aldarag	20	4.55	0.37		
	Alhuria	20	4.39	0.40		
	Abasan Algadeed	16	4.43	0.33		
	Abasan Alkabeera	22	4.17	0.43		
	Bany Suhaila	22	4.00	0.53		
	Jorat Allout	27	4.25	0.61		
	Tal Alsultan	26	4.30	0.57		
	Total	176	4.30	0.51		
Medical risk in pregnancy	Abushbak	23	4.44	0.66	4.089	.000
	Aldarag	20	4.36	0.41		
	Alhuria	20	4.37	0.44		
	Abasan Algadeed	16	3.98	0.81		
	Abasan Alkabeera	22	3.81	0.58		
	Bany Suhaila	22	4.02	0.39		
	Jorat Allout	27	4.45	0.49		
	Tal Alsultan	26	4.25	0.56		
	Total	176	4.22	0.58		

Health centers in comparison with adherent to appointment

As shown in table (4.28), a one-way ANOVA test was conducted to examine whether there were statistically significant differences among women participants in eight health centers to adherence to appointment. The results revealed a statistically significant across the five governorates and adherence to appointment with (F=4.263, P=0.000). Abushbac health center women participants reported a significantly higher level of adherence to the appointment with a mean 85.2% than Abasan Alkabeera and Bany Suhaila health centers women participants with a mean 76.6% but Post hoc Scheffe test have revealed no statistical difference among eight health centers in adherence to appointment. Regarding a study to assess factors affects adherence to the appointment in non-communicable disease the results were ack of awareness, clinic overcrowding, appointments that do not match the patient's preference, availability of other service providers, and financial issues (Al Najjar & Al Shaer, 2018).

Health centers in comparison with sharing appropriate time for next visit

As shown in table (4.28), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in eight health centers to appropriate time for the next visit. The results revealed a statistically significant across the eight health centers and sharing appropriate time for next visit and its effect on frequency on her visit with (F=4.126, P=0.000). Alhurria health center women participants reported a significant highest level of adherence to the appointment with a mean of 88.8% and Abasan Alkabeera women participants reported the lowest level of mean 75.2%.

Post hoc Scheffe test revealed that women in Alhurria health center had a higher level of sharing appropriate time for next visit with 4.44 than Abasan Alkabeera with mean 3.76. The differences were statistically significant p=(0.002). This may be related to less catch number for Aalhurria center which leads to decrease pressure among health care providers so they had enough contact time to share next appointment.

Health centers in comparison with data security and preference for the reminder

As shown in table (4.28), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in the eight health centers to data security and preference for the reminder. The results revealed a statistically

significant across the eight health centers and data security with a preference for the reminder with (F=2.334, P=0.027). Aldarag health center women participant reported a significant the highest level of perceived data security with mean 91% and Bany Suhaila health center women participants reported the lowest level of perceived data security with mean 80% but Post hoc Scheffe test have revealed no a statistical difference among eight health centers in perceived data security and preference for the reminder. Regarding a study among HIV patients to assess perceived data security and comfortability for SMS reminders only 6% reporting that they did not feel comfortable and 8% had ethical concerns with the SMS content (Ngowi et al., 2021). Besides a systematic literature review appreoc=ve the text message interventions can effectively promote, including smoking cessation, diabetes control, appointment reminders, medication adherence, weight loss, and vaccine uptake (Poorman, Gazmararian, Parker, Yang, & Elon, 2014).

Place of residence in comparison with risks in pregnancy

As shown in table (4.28), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in the eight health centers to manage her medical risks in pregnancy. The results revealed a statistically significant across the eight health centers in managing women with medical risks in pregnancy with (F=4.089, P=0.000). Jorat Allout health center participant reported a significant the highest level of of the importance of SMS in managing her medical risks with a mean of 88.8% and Abasan Alkabeera women participants reported the lowest level of the importance of SMS in managing medical risks in pregnancy with a mean of 76.2%.

Post hoc Sheffe test revealed that women in Jorat Allout health center had the highest level of the importance SMS in managing medical risks in pregnancy with a mean of 4.45 and Abasan Alkabeera had the lowest level of the importance SMS in managing medical risks in pregnancy with a mean of 3.81. The differences were statistically significant (p=0.004). These results may be due to the far distance of health center as it needs high cost of transport. Mobile application improved ANC coverage among Thailand border in mothers and children who were either permanent residents or migrants where there was less delay of antenatal visits and immunizations (Kaewkungwal et al., 2010).

4.29 Health centers in comparison for using mobile health applications

Table (4.29): Health centers in comparison for using mobile health applications

domain	Health center	No.	mean	SD	F	Sig.
Mobile application	Abushbak	42	2.88	1.06	6.867	0.000
	Aldarag	34	3.51	0.76		
	Alhuria	40	3.50	0.64		
	Abasan Algadeed	23	2.48	0.94		
	Abasan Alkabeera	27	3.39	0.82		
	Bany Suhaila	34	3.56	0.72		
	Jorat Allout	38	3.37	0.63		
	Tal Alsultan	42	3.54	0.73		
	Total	280	3.31	0.85		

As shown in table (4.29), a one-way ANOVA test was conducted to examine whether there was a statistically significant difference among women participants in the eight health centers to use mobile health applications for getting information. The results revealed a statistically significant across the eight health centers in using mobile health applications with (F=6.867, P=0.000). Bany Suhaila health center participants reported a significant the highest level of using mobile health applications with a mean of 71.2% and Abasan Algadeeda women participants reported the lowest level of using mobile health applications with a mean of 49.6%.

Post hoc Sheffe test revealed that women in Bany Suhaila health center had a higher level in using mobile health application with a mean of 3.56 than Tal Alsultan health center with a mean of 3.54(p=0.02), Aldarag health center with mean of 3.51(p=0.032), Alhuria health center mean 3.50(p=0.031), Abasan Alkabeera health center with mean 3.39(p=0.041) and Jorat Allout health center mean 3.37(p=0.42). The differences were statistically significant. The cause may be related to fewer communication skills between mother and midwife to get essential and enough communication for her health in order to high workload so mother recurs to get this information from mobile applications.

Chapter Five

Conclusion and recommendation

The findings of this study from mothers with a mean age of 27 years, most of the participants were married and half of them lived in KhanYounis of which more than half of them live in nuclear family structure and an average of 2-4 children. Half of the participants finished university education. The majority of participants don't work and the plurality is under the poverty line with an average monthly income of 915NIS at the time of data collection.

The finding results show low utilization of PCC service among pregnant mothers, a doctor referred this to the cost of this service for folic acid and investigations.

At the time of data collection, more than half of mothers were pregnant with a mean of 18weeks gestational age. Forty-six percent of participants initiated ANC visits after 12 weeks, it was found that they preferred to attend after 12 weeks and from the mother's interview, the cause for late registration was the midwife's instructions to come after 12 weeks.

Regarding the contents of ANC service provided during visits were evaluated, majority of them as history taken and the investigation was done but the contents of health education had the lowest mean as awareness for danger sign, personal hygiene, advised against harmful habits and health promotion for breastfeeding. This was explained by health care providers by the shortness of staff numbers and overcrowded of mothers at a specific time of working hours.

The majority of women who received PNC at clinics, but less than half of them received the service within one week and more than half of them received it more than 9 days later due to the closure of primary healthcare clinics during the COVID-19 pandemic. The incidence of maternal deaths in recent years has increased in the postpartum period in the first and second week, so it is necessary to focus on the early utilization of this service during the first week after delivery The study shows that ANC visits do not resemble the WHO standards with less than recommended guideline.

The study showed low utilization of the content of maternal health in PNC service due to Abasan Algadeeda health center didn't ensure mothers for coming at this period as their neonate was vaccinated in Bany Suhaila health center. But the contents of neonate health were good coverage with full examination for him but it needs to be a focus on the importance of the mother and child handbook and explain its contents.

Regarding perceived tangible in perceived quality domain most participants agree that the health service providers are well dressed and appear neat and most of them don't like the physical appearance of the health center. The study results show empathy perceived quality understanding patients' needs had the highest level. The lowest level was that of the attention of healthcare providers to their beliefs and emotions, with the same result for considering their interests. This result was high in the Gaza governorate at Aldarag health center and low in Khan Younis governorate at Bany Suhaila and Jorat Allout health centers but post hoc no statistically significant results.

Findings show perceived liability domain had the highest mean was that of the response of healthcare providers to mothers' questions and requests. On the other hand, the lowest mean was that of addressing all mothers' concerns. Gaza study women reported significantly the highest level of reliability at Aldarag health center and Rafah governorate women participants reported a statistically the lowest level of reliability with a mean at Bany Suhaila mean and Tal Alsultan health centers.

The results show the lowest findings among the domains in which the mean is responsiveness. The highest one was that of understanding the specific needs of mothers by healthcare providers On the other hand, the lowest one was that of healthcare providers' response to mothers' non-health-related needs. These results explained by work pressure leads to long waiting time, so women cannot tolerate this waiting. Gaza study women reported a significantly the highest level of responsiveness and Rafah governorate women participants reported a statistically the lowest level of responsiveness but Post hoc Scheffe test revealed no statistically significant difference between Rafah governorate women participant responsiveness and other governorates study participants.

Regarding assurance, the majority of women asserted that healthcare providers had good experience and knowledge to manage their condition. On the other hand, women found that healthcare providers were consistently considerate to mothers. Gaza study women

reported a significantly the highest level of assurance in Aldarag health center, and Rafah governorate women participants reported a statistically the lowest level of assurance which statistically significant at Bany Suhaila and Jorat Allout health centers.

The findings show majority had positive general satisfaction for MCH services that have been provided from the health center that was high in Gaza governorate while more than half were not satisfied with waiting time and waiting area in Khanyounis governorate.

87.7% of women confirmed that sending text messages increased adherence to their appointments Gaza governorate women participants reported a significantly higher level of adherence to the appointment than Khan Younis governorate women participants. most of them reported that SMS affected the frequency of their visits to the clinic. As for diseases associated with pregnancy, the majority of cases confirm that SMS improved their adherence to treatment and investigations such as in GDM, PIH and anemia also SMS led to positive health outcomes among women through improving adherence to appointments and medications.

Gaza governorate women participants reported a significant the highest level of perceived data security in Alhurria health center and Khan Younis governorate women participants reported the lowest level of perceived data security in Abasan Alkabeera health center. Jorat Allout health center participant reported a significant the highest level of the importance of SMS in managing her medical risks and Abasan Alkabeera women participants reported the lowest level of the importance of SMS in managing medical risks in pregnancy.

Usage of mobile phone applications affects women's behavior through obtaining information on diet, exercise, and fetal development. The majority of women prefer to receive information from healthcare professionals, but they also consider that information from social media gives them some benefit.

Recommendations

5.1 General recommendation

1-Enhance the utilization of PCC service among women to prevent maternal morbidity and mortality especially providing proper management plans for ladies with chronic disease as provide family planning until control the case.

2-Training of health care providers on PCC protocols with monitoring their work by continuous supervision.

3-Encourage mothers for early registration in pregnancy by incentives and outreach awareness for them. Also by affirmation of its importance in prenatal care.

4-Ensure all components of ANC visits will be done by health care providers to get positive health outcomes for mothers and her neonate. Only 15.5%-15.9% of women were screened for diabetes so confirmation and increase awareness for both women and health care providers for the importance of this investigation.

5-In job continuous learning process for health care providers to increase their awareness about effective counseling for maternal services like communication skills. Training health care providers how to cope the pressure of overcrowded which affects the responsiveness of them to the need of mothers.

6-Reform health center instruction to be suitable for health care providers working and comfortable waiting area for mothers.

7-Apply appointment system in ANC, PNC visits and ensure the importance of early registration with regular follow up also, early visits after delivery for mother and her neonate to get this service that also increases coverage by home visits.

8-Apply technology ways and applications to contact mothers especially during closures of the health center and provide health care providers with special mobile at the health center. Enforce social media with informative videos related to all fields of mother's health and her family besides monitoring these videos to be had corrected information. Learning mothers how they can access sites had the correct information.

9-Regular follow-up and monitoring indicators related to the achievement of health centers for maternal services items.

10-Continuous feedback for SMS reminder service and sharing women in decision-making related to maternal and child services.

5.2 Recommendation for Further Research

1-Deep analysis to assess factors that prevent good utilization of PCC service.

2-Conduct a study for knowing barriers that affect early registration of ANC service and early utilization of PNC service.

3-Methods increase mother adherence to their appointment and identify factors that affect her compliance to an appointment.

4-Conduct a study to assess the impact of COVID 19 on the health of the pregnant mother and her family.

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Annexes

Annex (1): Helsinki Committee Approval Letter

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: 2019/06/17 **Number:** PHRC/HC/554/19

Name: Hala Hamed Bahloul 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:

Women's perceptions of the quality of care and health related information provided by the mother and child health eRegistry

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/554/19 in its meeting on 2019/06/17

و قد قررت الموافقة على البحث المذكور عاليه بالرقم و التاريخ المذكوران عاليه

Signature

Member **Member**

Chairman

Dr. Assad 16/6/2019

Genral Conditions:-

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

Specific Conditions:-

Annex (2): Approval of MoH

State of Palestine
Ministry of health

دولة فلسطين
وزارة الصحة

السيد : رامي عيد العبادله المحترم

التاريخ:05/10/2020
رقم المراسلة 562330

مدير عام بالوزارة /الإدارة العامة لتنمية القوى البشرية/وزارة الصحة

السلام عليكم ,,,

الموضوع/ تسهيل مهمة الباحثة// هالة حمودة

التفاصيل //
بخصوص الموضوع أعلاه، والحاقا لكتابنا بتاريخ 9/12/2019 والخاص بتسهيل مهمة الباحثة/ هالة حامد حمودة الملتحقة ببرنامج ماجستير الصحة العامة – مسار الإدارة الصحية ـ جامعة القدس أبوديس في إجراء بحث بعنوان:ـ
"Women's perceptions of the quality of care and health related information provided by the mother and child health e-Registry"
حيث الباحثة بحاجة لتمديد فترة الدراسة لستة اشهر اضافية (لتعذر استكمال الدراسة بسبب اجراءات كورونا) اضافة لتوسيع مجال الدراسة لتشمل جميع عيادات النساء في مراكز الرعاية الاولية حيث انها بحاجة لتعبئة استبانة من عدد من النساء (الحوامل – بعد الولادة) وعقد مجموعات بؤرية مع عدد منهن.
نأمل توجيهاتكم لذوي الاختصاص بضرورة الحصول على الموافقة المستنيرة من النساء اللاتي هن على استعداد للمشاركة في الدراسة ومن ثم تمكين الباحثة من التواصل معهن، بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، ودون تحمل الوزارة أي أعباء أو مسئولية.
وتفضلوا بقبول التحية والتقدير،،،
ملاحظة / تسهيل المهمة الخاص بالدراسة أعلاه صالح لمدة 6 أشهر من تاريخه.
الدراسة حاصلة على موافقة لجنة اخلاقيات البحث الصحي (لجنة هلسنكي)

محمد ابراهيم السرساوي
مدير دائرة/الإدارة العامة لتنمية القوى البشرية

التحويلات

■ محمد ابراهيم محمد السرساوي(مدير دائرة)	← رامي عيد سليمان العبادله(مدير عام بالوزارة)	إجراءاتكم بالخصوص(05/10/2020)
■ رامي عيد سليمان العبادله(مدير عام بالوزارة)	← مدحت محمد يوسف محيسن(وكيل وزارة مساعد)	إجراءاتكم بالخصوص(05/10/2020)
■ رامي عيد سليمان العبادله(مدير عام بالوزارة)	← مدحت محمد يوسف محيسن(وكيل وزارة مساعد)	إجراءاتكم بالخصوص(05/10/2020)

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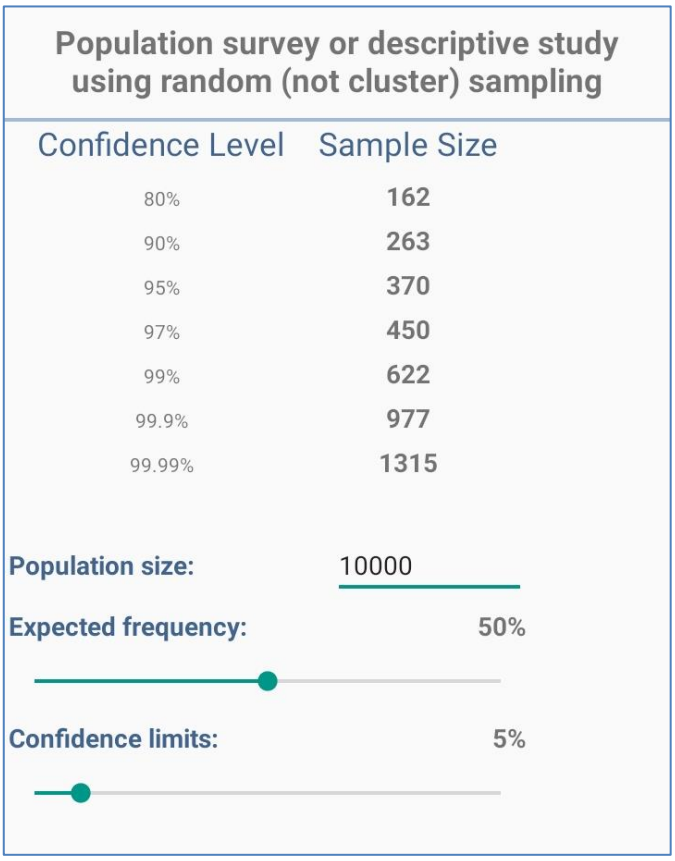
Annex (3) Sample size calculator



Annex (4) The questionnaire and consent in Arabic and English version

Women's perceptions of the quality of care and health related information provided by the mother and child health e-Registry

Serial Number:			
Health center name:			
Part one: Socio-demographic characteristics of the mother			
Mother's age …….. Years			
Place of residence	North Gaza	Gaza	
	Middle area	Khan Younis	Rafah
Current marital status	Married	Widow	Divorce
Level of education attained	Illiterate	Primary	Secondary
	University	Postgraduate	
Family type	Nuclear family	Extended family	
Family size			
Citizenship status	refugee	Not refugee	
Occupational status	Employed	Not employed	
Level of monthly income	…….. NIS		
Part two: Maternal History			
Gravida	Primigravida	Multigravida, number	
Parity	nulliparous	Multipara, number	
Current Gestational age(weeks)	…….		
Number of living children	…….		
Abortions	No	Yes, number	
Stillbirth	No	Yes, numbers	
Place of last delivery (not of this pregnancy)	governmental	Private hospital	
	NGO center/hospital	others	

Any risks during this pregnancy	No	Yes
	If Yes, the health problem was	
	1. G.D.M	2. PIH
	3. Anemia	4. IUGR
	5. DVT	6. Genitourinary infection
	7. Multiple pregnancies	
Risk in PNC period	1. Uterine rupture	2. Bleeding after delivery
	3. Premature labor	4. perinatal asphyxia
	5. Placenta previa	6. Placenta accreta

The cause for visiting this health center:
ANC PNC

Part Three: the content of antenatal care (ANC) provided

Antenatal care provider	Physician	Midwife	both

Before the current pregnancy, which of these services provided for you		
1-health education for lifestyle.		4-Breast examination
2- Counseling on pregnancy.		Folic acid supplementation
3- laboratory test	Blood group	
	blood level	
	Plasma glucose	

Numbers of visits during this pregnancy……

First antenatal care visits:

12 weeks of gestational age or less	13-28 weeks	More than 28 weeks

If the first ANC visit was conducted after the 12 weeks of gestation, why you did not go earlier?

1. Doesn't know about pregnancy	2. Doesn't know that she must go earlier
3. Did not think it necessary to go that early	4. I preferred to attend at that time
5. Lack of money for transport	6. Too busy
7. Social factor	8. Follow up at other places in early pregnancy
9. Long waiting time	10. No service quality in a health center
11. Health care provider not qualified	12. Others:
13. Discouraged by providers	

ANC services provided during ANC visits *"We are going to ask about received ANC services, please answer Yes if you received these services"*			
	No	Yes	Yes in every visit
History taking			
Asked history of previous delivery?			
Asked history of complications?			
Asked history of any health conditions?			
Asked history of any health condition aggravated by the pregnancy			
Asked history of current pregnancy?			
investigations			
Was your blood pressure measured?			
Was your blood glucose measured?			
Did you give a urine sample for examination?			
Did you give a blood sample for investigation?			
Health education			
Were you given or told about the importance of iron/folic acid?			
Were you advised on a diet?			
Were you advised on rest?			
Were you told about danger signs in pregnancy? (alarming)			
Were you advised on the practice of personal hygiene?			
Were you advised on dental hygiene?			
Were you advised on the practice of harmful habits? (smoking, diet, physical activity)			
Were you counsel for the use of medications during pregnancy?			
Have you received health promotion for breastfeeding?			
Have you received an explanation on the maternal and child handbook?			
Did you know the content of the maternal and child handbook?			

In this pregnancy, have you attended ANC in other clinics than this PHC? If the answer yes: Give reasons:			
It was important for you to attend all the scheduled antenatal care visits			
You are always confident of when your next antenatal care visit			
You are well informed about the purpose of the tests by health staff			
Part four: PNC services provided during PNC visits(only PNC) **Place of PNC**: 1. Health Center 2. Hospital 3. Home			
The number of visits during the last pregnancy ……			
We are going to ask about the number of PNC services, please answer Yes if you received these services			

	yes	**no**
Did you receive care soon after delivery? If yes 1-1st week 2- next 5 weeks		
Did you receive the care for your newborn soon after delivery up to 6 weeks? If yes, how many days after delivery? …….. If no, was the health center contact and visit you at home? What were the services provided by health staff?		
mother health		
Was your temperature measured?		
Was your fundus height examined?		
Do you have an episiotomy? If yes was your episiotomy examined?		
Do you have a C.S scar? If yes was your C.S scar examined?		

Where did you ask about breast engorgement or other problems?		
Was your breast was examined?		
Have you received counseling about family planning services?		
Newborn health		
Was newborn temperature measured?		
Was newborn weight measured?		
Was newborn length measured?		
Was newborn head circumference measured?		
Was newborn umbilicus examined?		
Was your baby examined by a doctor?		
Have you received counseling for newborn care?		
Were you told about proper techniques for breastfeeding?		
Were you practice the proper technique on breastfeeding with help of a midwife?		
Have you received an explanation on the maternal and child handbook?		
Did you know the content of the maternal and child handbook?		
Provided service		
Do you believe that postnatal services are important to the health of the mother?		
Do you believe that postnatal services are important to the health of newborns?		
Would you recommend postnatal care to others?		
Did you face barriers to attend PNC services? If the answer yes, the barriers were		*Answer more than one if indicates*
1. Family controlling	2. Not aware of the service	
3. Long waiting time	4. Lack of money for transport	
5. I was feeling well so, no need for the service		

Part five: Women perceive quality and satisfaction

For each of the below statement, please select one of the five options statement:

1=strongly disagree 2=disagree 3=neutral 4=agree 5=strongly agree

	1	2	3	4	5

Tangibles

The physical appearance of the health center is visually appealing and attractable					
The health center is clean on every visit					
Seat protection from sun, rain, space					
The health center is equipped with modern and up to date equipment					
The service providers are well dressed and appear neat					
The center operating hours are convenient to clients					
Booking an appointment is easy					

Empathy

Health care providers are polite and deal with clients in a friendly manner					
Health care providers pay attention to clients					
Health care providers pay attention to the client's beliefs and emotions					
Health care providers take into consideration their clients' interest					
Health care provider understand the needs of their clients					

Reliability

Health care providers respect clients appointment					
Health care providers provide clients with appropriate timely services					
Health care providers address all your concern					
Health care providers respond to clients questions and request					

Responsiveness

Health care providers promptly respond to clients health needs					
Health care providers promptly respond to clients non-health needs					
Health care providers understand the specific needs of clients					
Health care providers are too busy to respond to the client's request					
Health care providers treat all clients equally					
Health care provider always welcoming you					

Assurance

Health care providers promote yourself confidence					
Health care providers make you feel safe					
Health care providers are consistently considerate with you					
Health care providers sharing you in decision making					
Health care providers provide you with services that improve the activity of your daily living					
Health care providers provide you with services that alleviate your symptoms					
Health care providers had knowledge and skills to manage your condition					

Satisfaction

For each the below statements, please select one of the five options: 1-strongly satisfied 2-dissatified 3- natural 4- satisfied 5- strongly satisfied

Making an appointment for follow up visit					
Waiting time					
The convenience of the waiting area					
The area in the examination room appropriate					
Welcoming and greeting of service providers					
The time that health providers spent with you					
The services providers explanations about maternal services					
The services provider respect your privacy					
The performance of health providers all					
The needed medication always available in the center pharmacy					
Folic acid and iron always available for you					
Your general satisfaction with MCH services that have been provided by the health center					

Most of us worry about something. This list is not meant to give you more things to worry about, but we would just like to know if any of these things are worrying you at all. I will present the statements and would like to hear how much of a worry it is to you at the moment, from 0 if not a worry to 5 if it is something that you are extremely worried about.

Worries and concerns	**No worry**					**Major worry**
Your own health	0	1	2	3	4	5
The possibility of something being wrong with the baby	0	1	2	3	4	5
Your relationship with your husband/partner	0	1	2	3	4	5
Your relationship with your family and friends	0	1	2	3	4	5
Your housing	0	1	2	3	4	5
The health of someone close to you	0	1	2	3	4	5
Employment problems	0	1	2	3	4	5
Money problems	0	1	2	3	4	5
The possibility of stillbirth	0	1	2	3	4	5
Going to hospital	0	1	2	3	4	5
Internal examinations	0	1	2	3	4	5
Giving birth	0	1	2	3	4	5
Coping with the new baby	0	1	2	3	4	5

Part six: e-registry

Part 6-A: questions related to a health center			
		yes	**no**
Are you have a mobile or free access to mobile			
Did you receive messages from your health center about your pregnancy?			
If the answer was yes			
Did you read carefully the content of messages?			
Concept: Oral	Written	No	
If the answer was no:			

Do you like to receive SMS message reminders?	Yes	No
Do you think it will increase your adherence	Yes	No
What are the barriers to receive SMS messages?		
1. husband rejection 3. social rejection		***Answer more than one if indicates***
2. Not have a mobile 4. can't read messages		
5. I think it is not secure		

Part 6-B: Women who receive SMS from a health center

For each of the below statement, please select one of the five options statements:

1=strongly disagree 2=disagree 3=neutral 4=agree 5=strongly agree

items	**1**	**2**	**3**	**4**	**5**
Adherence to appointment					
Sending SMS messages to improve your adherence to appointment					
sending SMS useful in remind you about an appointment					
SMS was sent had full detailed for appointment					
Appropriate time					
Sharing in detect the appropriate time for you					
sending SMS 3 days before your appointment is enough for you					
Sending SMS affected the frequency of your visits to health providers					
You prefer sending time on the day before the appointment					
Your appointment is accurate for your visit every time					
Data security					
your data is secure					
Your data is private					
Prefer way for reminder					

Prefer telephonic reminder than SMS					
Prefer voice messaging					
You will more satisfy if there are incentives for coming					
Risks in pregnancy					
In case of G.D.M, SMS reminder improves your control of blood glucose					
In the case of PIH, SMS reminder improve blood pressure control					
In case of anemia, SMS reminder improves hemoglobin level control					
Your feedback regularly monitored by a health care provider					
Sending SMS had an impact on your health outcome					
Part B: messages from social media					
Is the application providing you enough and useful information for a healthy lifestyle?					
Is the application affecting your health behavior?					
You have family support and encourage to receive this service					
You receive awareness information on your health					

How you prefer the content watching Video pictures article other		
Do you face barriers to get the health information you want?	yes	no
If yes, what are the barriers you face? 1. Not knowing where to go 2. Financial accessibility 3. Social restriction 4. others……		

How the frequency of your visits to health providers has changed after using media?	decrease	same	increase
How do you regard the health information obtained from social media?	Not useful	Somewhat useful	useful
About usefulness, which is better in terms of seeking information?	Health provider	Social media	No difference

In your opinion: Do you think that the health center affects in improving your health?

If the answer yes (go to the next questions)

What are the changes that health centers provided in health care improvement?

If the health center was closed, what are the results on your health?

عزيزتي المشاركة

يسعدني مشاركتك الفاعلة في بحث بعنوان

تصورات المرأة لجودة الرعاية والمعلومات المتعلقة بالصحة المقدمة من السجل الإلكتروني لصحة الأم والطفل

أنا الباحثة هالة بهلول طالبة في ماجستير الصحة العامة –مسار إدارة صحية جامعة القدس (أبو ديس)

بهدف تقييمك ورضاكي عن خدمة الأمومة المقدمة للحوامل والسيدات في مرحلة ما بعد الولادة في عيادات الرعاية الأولية

تتضمن المشاركة قي الدراسة ملء استبيان و يستغرق ملئه حول 15 دقيقة من وقتك الثمين

المشاركة طوعية و بالامكان المشاركة او عدم المشاركة مع العلم ان عدم المشاركة لن تؤثر عليك إلا ان مشاركتك تحظى بتقدير كبير

المعلومات سرية ولن يتم الاشارة على البيانت الماخودة وسيتم استخدام المعلومات التي ستقدمها لاغراض البحث فقط

شكرا لحسن تعاونكم

الباحثة / هالة حامد بهلول

\تصورات المرأة لجودة الرعاية والمعلومات المتعلقة بالصحة المقدمة من السجل الالكتروني لصحة الأم والطفل

الرقم التسلسلي.....					
اسم المركز الصحي					
الجزء الأول : البيانات الخاصة بالأم					
عمر الأم: ..... سنة					
مكان الإقامة	غزة	شمال غزة			
	الوسطى	خانيونس	رفح		
الحالة الاجتماعية	متزوجة	مطلقة	أرملة		
المؤهل العلمي	لست متعلمة	ابتدائي/إعدادي	دراسات عليا		
	ثانوي	بكالوريوس			
نوع الأسرة	ممتدة	نواة			
المواطنة	لاجئ	غير لاجئ			
عدد افرد الاسرة	.....				
المهنة	أعمل	لا أعمل			
معدل الدخل	..... شيكل شهريا				
الجزء الثاني: تاريخ الامومة					
الحمل	أول مرة	متعددة /عددهم			
الولادة	أول مرة	متعددة/عددهم			
مدة الحمل الحالي(بالأسابيع)	.....أسبوع				
عدد المواليد الأحياء	..... مولود				
عدد مرات الإجهاض	أبدا	نعم / عدد المرات			
عدد مرات موت الجنين داخل الرحم	أبدا	نعم/ عدد المرات			
مكان ولادة اخر طفل	مستشفى حكومي	مستشفى خاص			
	الجمعيات الخيرية	غير ذلك			
هل تعرضت لمشاكل خلال هذا الحمل	لا	نعم			
	اذا كانت الاجابة نعم				
	سكر حمل	ضغط حمل			
	فقر دم	تأخر في نمو الجنين			
	جلطة في الوريد	التهابات في مجرى البول			
هل تعرضت لمشاكل بعد الولادة	المشيمة في غير مكانها	حمل متعدد			
	تمزق بالرحم	نزيف ما قبل الولادة(للسيدات ما بعد الولادة)			
	نزيف ما بعد الولادة(للسيدات ما بعد الولادة)	ولادة مبكرة(للسيدات ما بعد الولادة)			
	اختناق ما حول الولادة(للسيدات ما بعد الولادة)	ضغط ما بعد الولادة			
	مشيمة ملتصقة				

السبب في زيارة المركز اليوم	رعاية حوامل	رعاية ما بعد الولادة	
الجزء الثالث : محتوى رعاية زيارة الحامل			
مقدم الرعاية الصحية	قابلة	طبيب	كلاهما
في فترة ما قبل الحمل أي من هذه الخدمات قدمت لك؟			
تثقيف عن النظام الصحي	فحص الثدي		
مشورة بخصوص الحمل	التزويد حمض الفوليك		
فحوصات مخبرية نسبة الدم	فصيلة الدم		
نسبة السكر			
عدد زيارات المتابعة خلال هذا الحمل			
أول زيارة خلال هذا الحمل			
12 أسبوع منذ بداية الحمل	12-28 اسبوع	أكثر من 28 اسبوع	
اذا بدأت في متابعة الحمل بعد12 اسبوع من الحمل فما هو سبب التأخر وراء ذلك			
1-لا كنت أدري أني حامل	2- لا كنت اعرف أنه يجب التسجيل المبكر		
3- لم أكن أعتقد أنه من الضروري أن أذهب مبكرا	4- أفضل الحضور في ذلك الوقت		
5- عدم توفر المال لركوب المواصلات	6- مشغولة جدا		
7- عامل اجتماعي	8- أتابع في مكان اخر للحمل		
9- وقت الانتظار طويل	10- لا توجد جودة رعاية في المركز		
11- مقدم الرعاية الصحية غير مؤهل	12- لا يوجد تشجيع من مقدم الخدمة للتسجيل مبكرا		
13- غير ذلك			

الخدمات المقدمة للحوامل خلال متابعة الحمل

سوف يتم سؤالك عن بعض الخدمات المقدمة خلال الحمل من فضلك اجيبي بنعم اذا تلقيت هذه الخدمة

	لا	**نعم**	**نعم في كل زيارة**
التاريخ المرضي			
هل سألك مقدم الرعاية الصحية عن الولادة السابقة؟			
هل سألك مقدم الرعاية الصحية عن المضاعفات خلال الولادة؟			
هل سألك مقدم الرعاية الصحية عن الحالة الصحية؟			
هل سألك مقدم الرعاية الصحية عن أي حالة صحية تضاعفت أثناء الحمل؟			
هل سألك مقدم الرعاية الصحية عن وضع الحمل الحالي؟			
الفحوصات والتحاليل			
هل تم قياس الضغط لك؟			
هل تم فحص السكر لك؟			
هل تم أخذ عينة بول للتحليل؟			
هل تم سحب فحص نسبة الدم؟			
التثقيف الصحي			
هل تم ابلاغك او اعطاؤك عن حمض الفوليك؟			
هل تم ابلاغك او اعطاؤك عن الحديد؟			

هل قدمن لك النصيحة بشأن التغذية السليمة؟			
هل قدمت لك النصيحة بشأن الراحة؟			
هل تم ابلاغك عن علامات الحمل الخطر؟			
هل قدمت لك النصيحة بشأن النظافة الشخصية؟			
هل قدمت لك النصيحة للاعتناء بالاسنان؟			
هل قدمت لك النصيحة بشأن العادات الضارة؟(التدخين، الأكل المفرط، عدم ممارسة الرياضة)			
هل قدمت لك المشورة بشأن تناول الأدوية أثناء الحمل؟			
هل قدم لك التقيف الصحي لدعم الرضاعة الطبيعية؟			
هل تم شرح محتوى كتيب الامومة لك؟			
هل تعرفي محتويات كتيب الامومة؟			
في هذا الحمل هل تم متابعة حملك في مكان اخر غير هذا المركز؟ إذا كانت الإجابة نعم ما هي الاسباب			
هل من الضروري حضور جميع الزيارات المقررة لك اثناء الحمل؟			
دائما ما تكوني متأكدة من موعد الزيارة القادمة؟			
يقدم مقدم الرعاية الصحية المعلومات الكافية للهدف من الفحص؟			
الجزء الرابع : رعاية ما بعد الولادة (فقط للسيدات ما بعد الولادة)			
مكان تلقي الرعاية ما بعد الولادة 1- المركز الصحي 2- المستشفى 3- البيت			
عدد الزيارات لك في اخر حمل لك؟ ..... زيارة			
سوف يتم سؤالك عن الخدمات المقدمة لك خلال الرعاية ما بعد الولادة من فضلك اجيبي نعم اذا تلقيت الخدمة			
	نعم	لا	
هل تلقيت الرعاية في وقت قريب بعد الولادة؟ اذا كانت الاجابة نعم هل تم تقديم الرعاية للمولود في خلال ستة اسابيع من الولادة؟			
اذا كانت الاجابة نعم ، في خلال كم يوم بعد الولادة ..... اذا كانت الاجابة لا ؟ هل تم تواصل المركز الصحي معك وزيارته في البيت؟ وما هي الخدمات التي قدمها الفريق الصحي؟			
صحة المرأة			
هل تم قياس درجة الحرارة؟			
هل تم فحص ارتفاع الرحم؟			
هل تم شق العان؟ هل تم فحص شق العانة؟			
هل تمت ولادتك قيصرية؟			
وهل تم فحص جرح العملية؟			

هل تم سؤالك عن احتقان الثدي او اي مشاكل اخرى تتعلق به؟		
هل تم فحص الثدي؟		
هل تلقيت مشورة بشأن وسائل منع الحمل؟		
صحة المولود		
هل تم قياس درجة الحرارة؟		
هل تم قياس الوزن؟		
هل تم قياس الطول؟		
هل تم قياس محيط الرأس؟		
هل تم فحص السرة؟		
هل تم فحصه من قبل الطبيب؟		
هل تلقيت المشورة للعناية بالمولود؟		
هل تم ابلاغك عن الطريقة الصحيحة للرضاعة الطبيبعية؟		
هل تم شرح محتوى كتيب الامومة لك؟		
هل تعرفي محتويات كتيب الامومة؟		
الخدمة المقدمة		
هل تعتقدين ان هذه الخدمة مهمة لصحة الام؟		
هل تعتقدين ان هذه الخدمة مهمة للمولود؟		
هل ستنصحين الامهات بهذه الخدمة؟		

ضعي اشارة اذا كانت هناك اكثر من اجابة	**هل واجهتي معوقات لتلقي هذه الخدمة**	
	1-تحكم من العائلة	2-ليس عندي وعي بهذه الخدمة
	3-وقت الانتظار طويل	4-نقص المال للمواصلات
	5- اشعر باني جيدة لهذا لا داعي لهذه الخدمة	

الجزء الخامس: تصورات المرأة لمستوى الكفاءة والرضا عن الخدمة

كل بيان أدناه ، الرجاء اختيار الرقم الذي يعبر موافقتك مع الجمل التالية

1=لا أوافق بشدة 2=لا اوافق 3=محايد 4=أوافق 5=اوافق بشدة

الملموسات

الجملة	1	2	3	4	5
المنظر الخارجي للمركز جذاب					
لمركز نظيف					
المقاعد محمية من الشمس و المطر					
المعدات المستعملة جيدة					
مقدموا الخدمة انيقين يرتدون ملايس مناسبة					
ساعات العمل مناسبة					
اخذ المواعيد سهل					

التعاطف

مقدمو الخدمة مؤدبين و يتعاملون بأريحية مع الام					
مقدمو الخدمة يعيرون اهتمامهم للام					
مقدمو الخدمة يهتمون لمعتقدات و مشاعر المرضى					
مقدمو الرعاية يأخذون في حسابهم اهتمامات المريض					
مقدمو الخدمة يتفهمون احتياجات المرضى					

الموثوقية

يحترم مقدمو الخدمة المواعيد					
يقدمون الخدمة في الوقت المناسب					
يتعاملون مع كل اهتماماتك الصحية					
مقدمو الخدمة مستعدون للاجابة عن اي تساؤلات او استفسارات					

الاستجابة

يستجيبون بكفاءة لاحتياجات الام الصحية					
يستجيبون بكفاءة لاحتياجات الام غير الصحية					
مقدمو الرعاية يتفهمون احتياجات الخاصة لكل ام					
غير مشغولين للاستفسار عن سؤال لك					
يعاملون جميع الامهات بالتساوي					
دائما يرحبون بخدمتك					

الثقة

يشجعون الام على الثقة بنفسها					
يجعلونك تشعرين بأمان					
يراعونك باستمرار					
يشاركونك في انخاذ القرار					
يقدمون الخدمة التي تحسن حياتك اليومية					
يقدمون الخدمة التي تقلل من أعراض آلامك					
مقدم الرعاية الصحية لديه الخبرة والمهارات للتعامل مع حالتك الصحية					

الرضى

ضعي اشارة عند الرقم الذي يعبر عن مدى رضاك

1- غير راضي بشدة 2- غير راضي 3- محايد 4- راضي 5- راضي بشدة

ما مدى رضاكي عن	1	2	3	4	5
أخذك لمواعيد المتابعة					
وقت انتظار الخدمة					
صالة انتظار الخدمة					
مكان الفحص مناسب					
الترحيب من قبل مقدم الخدمة					
الوقت الذي قضاه مقدم الخدمة معك					
شرح مقدم الخدمة عن الخدمات الصحية المقدمة للامهات					
يحترم مقدم الخدمة الخصوصية					
اداء مقدمو الرعية الصحية					
لادوية اللازمة دائما متوفرة بالمركز					
الحديد و حمض الفوليك دائما متوفر					
مستوى رضاك العام عن مقدم الخدمة					

معظمنا قلق بشأن شيء ما. لا تهدف هذه القائمة إلى إعطائك المزيد من الأشياء التي تقلق بشأنها، لكننا نرغب فقط في معرفة ما إذا كان أي من هذه الأشياء يقلقك على الإطلاق. سأقدم البيانات وأود أن أسمع مدى القلق الذي يساورك في الوقت الحالي ، من 0 إن لم يكن مصدر قلق إلى 5 إذا كان هذا شيئًا أنت قلق للغاية بشأنه.

القلق و الهموم	غير قلق 0	1	2	3	4	قلق جدا5
صحتك						
احتمالية حدوث شي ما للطفل						
علاقتك بزوجك						
علاقتك مع أصدقائك وعائلتك						
بيتك						
صحة شخص قريب منك						
مشاكل الوظيفة						
مشاكل المصاريف						
احتمالية ولادة طفل ميت						
الذهاب للمستشفى						
الفحص الداخلي						
التعامل مع طفل جديد						
الولادة						

الجزء السادس: التسجيل الالكتروني

أسئلة لها علاقة بالمركز الصحي		
	نعم	لا
هل لديك هاتف محمول او وصول مجاني إلى الهاتف المحمول؟		
هل استقبلتي رسائل من المركز الصحي بخصوص متابعة حملك؟		
إذا كانت الإجابة نعم		
هل قرأتي محتويات الرسالة بدقة؟		
الموافقة شفويا كتابيا لا		
إذا كانت الإجابة لا		
	نعم	لا
هل تحبين الحصول على رسائل لتذكيرك بمواعيد المتابعة؟		
هل تعتقدي بأنها ستزيد من التزامك بالمواعيد؟		
ما هي المعوقات لاستقبال الرسائل؟ 1-رفض الزوج 2-رفض العائلة 3- لا يوجد لدي هاتف 4- لا أستطيع القراءة 5- اعتقد انه لا توجد خصوصية		

أجيبي عن رأيك بهذه الجمل بمدى موافقتك لها

1- لا اوافق بشدة 2- لا أوافق 3- محايد 4- اوافق 5- اوافق بشدة

	1	2	3	4	5
الالتزام بالموعد					
إرسال الرسالة زودت من التزامك بالمواعيد					
ارسال الرسائل مفيدة لتذكيرك بالمواعيد					
الرسائل المرسلة مفصلة بالميعاد					
الموعد المناسب					
يشاركوكي بالموعد المناسب لك					
ارسال الرسالة لك قبل 3 ايام من موعدك كاف لك					
كان لارسال الرسائل تأثير على تكرار زيارتك لمقدمي الخدمة الصحية					
تفضل إرسال الوقت في اليوم السابق للموعد					
موعدك دقيق لزيارتك في كل مرة					
البيانات المتعلقة بك					
بياناتك امنة					
بياناتك خصوصية					
الطريقة المفضلة للتذكير					

سوف ترضى اكثر إذا كان حوافز للمجئ					
تفضلي التنبيه باختيار الموعد على اجندة الهاتف					
تفضلي الرسائل الصوتية					
المخاطر المصاحبة للحمل					
في حالة سكر الحمل يعمل التذكير عبر الرسائل القصيرة على تحسين التحكم في سكر الدم					
في حالة ضغط الدم في الحمل يعمل التذكير عبر الرسائل القصيرة على تحسن ضغط الدم					
في حالة فقر الدم يعمل التذكير عبر الرسائل القصيرة على تحسن نسبة الدم					
تتم مراقبة ملاحظاتك بانتظام من قبل مقدم الرعاية الصحية					
كان لإرسال الرسائل القصيرة تأثير على نتائج صحتك					

الجزء الثاني: الرسائل من مواقع التواصل الاجتماعي					
هل يوفر لك التطبيق معلومات كافية ومفيدة لنمط حياة صحي؟					
هل يؤثر التطبيق على سلوكك الصحي؟					
لديك دعم أسري وتشجع على تلقي هذه الرسائل؟					
تتلقى معلومات توعية عن صحتك					
كيف تفضل مشاهدة المحتوى فيديو صور مقالات غير ذلك					
هل تواجه عوائق في الحصول على المعلومات الصحية التي تريدها؟	نعم	لا			
إذا كانت الإجابة بنعم ، فما هي العوائق التي تواجهها 1. لا تعرف إلى أين تذهب 2.الامكانية المالية 3. القيود الاجتماعية 4- غير ذلك					
كيف تغيرت وتيرة زياراتك لمقدمي الخدمات الصحية بعد استخدام وسائل الإعلام؟	قلت	نفس الشئ	ازدادت		
ما مدى جودة المعلومات التي تحصل عليها من خلال وسائل التواصل الاجتماعي؟	مقيدة	مفيدة بعض الشيء	ضارة		
فيما يتعلق بالفائدة من هو الافضل من حيث البحث عن المعلومات	مقدمي الخدمة الصحية	مواقع التواصل الاجتماعي	لا يوجد فرق		

برأيك هل تعتقد أن المركز الصحي يؤثر في تحسين صحتك؟

إذا كانت الإجابة بنعم (انتقل إلى الأسئلة التالية)

ما هي التغييرات التي يقدمها المركز الصحي في تحسين الرعاية الصحية؟

اذا تم إغلاق المركز الصحي فما هي النتائج على صحتك؟

Annex (5) Key Informant interview and focus group interview

Health Provider Key Informant Interviews

1-Please can you inform us about the provision of PCC services in your clinic?

Probing questions: Duration for provision - written protocols related to PCC- Previous training and workshops - updating for this protocol – Personal satisfaction and convinced of the importance of this service - Would you like to add any notes on this protocol.

2- From your perspective, why responsiveness of Health care providers to the need of mothers was low?

Probing questions : Barrier to communicate with women - Ways to improve this responsiveness.

3- What is your opinion about SMS service?

Probing questions: Advantages - Disadvantage – Barriers - Ways to face these challenges.

4- During the closure of clinics due to COVID-19, what do you think closure affects women's health?

Probing questions : High-risk pregnancy – communication.

5-What are the effects of PCC services on the health of women?

Probing questions : Women's health - Baby's health – Adv and disadvantages -A success story.

6- Studies showed: Lack of access to information. Is it true? If yes: Why?

Probing questions: Say your results if needed - Contact time – Awareness.

7- Tell me about ANC services provided at the center?

Probing questions: Quality – Type – BP measurement – Satisfaction.

8- What do you think about the quality of P.N.C?

Probing questions : Access, coverage, resources - Gaps for good delivery services.

9- what do you think about the family planning service?

Probing questions : low utilization, barriers for utilization.

Mother's focus group

1- **Do you believe: governmental health centers are different from other health centers?**

Probing questions : Type of service - Cost - Quality of service (care, staff)

2-Women prefer registration to pregnancy after 12 weeks, what do you think the cause?

Probing questions : Barriers face for early registration - Ways to improve

3-What's your opinion about PCC service?

Probing questions: investigation, health education, the importance of this service

4. **Tell me about ANC services providing for pregnant mother**

Probing questions: Quality of this services-Important of these services-Health educational part

5-What's your opinion about P.N.C service?

Probing questions : Mothers and child services-Barriers face to access this service-Quality of this service.

6-Can you explain to me the process of SMS reminders in the clinic and how it affects your health behavior?

Probing questions : Adherence for the appointment-Improve outcome of pregnancy-Quality of information-Accurate of appointment-Frequent of attendance-Utilize social media to get positive health outcome.

7-Is interrupting closure COVID 19 an effect on your health?

Probing questions: Worries on your and infant health-Waiting and contact time.

Annex (6) Experts and professional consulted

No.	name	affiliation
1	Prof.Dr. Yehia Abed	Al Quds University
2	Dr. bassam Abu Hamad	Al Quds University
3	Dr. Fuad Al Esawi	MoH
4	Dr. Maha AMAMI	MoH
5	Dr. Randa Radi	UNRWA, Health program
6	Itmad Abu Ward	UNDP
7	Dr. Jadallah Okasha	UNRWA,c Health program
8	Dr. Neiveen al Telbani	UNRWA, Health program

عنوان الدراسة: تصورات المرأة لجودة الرعاية والمعلومات المتعلقة بالصحة المقدمة من السجل الالكتروني لصحة الأم والطفل

اعداد الباحثة: هالة حامد يوسف بهلول

اشراف: البروفسور الدكتور يحيى عابد

ملخص الدراسة

يعد كل من رعاية الحوامل ورعاية ما بعد الولادة من الخدمات الهامة المقدمة للأمهات في فترة الإنجاب للحد من اعتلال ووفيات الأمهات، كلاهما يكمل بعضهما البعض للحصول على نتائج إيجابية لكل من الأم وطفلها. تهدف هذه الدراسة إلى تقييم تصور النساء عن جودة الرعاية في مراكز الرعاية الصحية الأولية الحكومية في قطاع غزة ورضاهن عن الحصول على معلومات من السجل الصحي الإلكتروني وتقييم إرسال الرسائل النصية القصيرة في تحسين نتائجهن والحضور في الوقت المحدد. أجريت الدراسة على ثمانية مراكز رعاية صحية في أربع محافظات. تم تصميم هذه الدراسة بطريقة مختلطة: تضمنت بيانات كمية ونوعية. تم جمع البيانات الكمية من الأمهات اللواتي يستخدمن رعاية الحمل و ما بعد الولادة في مراكز الرعاية الصحية الأولية الحكومية. في المجموع ، شاركت 400 امرأة في الدراسة الكمية. تم جمع البيانات النوعية من خلال 3 نقاشات جماعية مع الأمهات اللواتي تلقين خدمة رعاية الحوامل و رعاية ما بعد الولادة المقدمة لهم. تم إجراء مقابلات مع عشرة من مقدمي الرعاية الصحية (الأطباء ، القابلات).تم اجراء تحليل البيانات النوعية من خلال برنامج SPSS واشتمل التحليل على أنواع مختلفة من الاختبارات الإحصائية. بالنسبة للبيانات النوعية تم استخدام طريقة الترميز المفتوح الموضعي التحليلي.

أظهرت نتائج الدراسة أن 41.6% من السيدات المشاركات في الدراسة تلقين خدمة ما قبل الحمل حيث تم تزويد الفوليك أسيد للسيدات بنسبة 41.6% وقد كانت نسبة التسجيل المبكر للحمل 53.9 %وهي مرتبطة بتفضيل الام للتسجيل المتأخر و تعليمات مقدم الخدمة الصحية للتسجيل بعد 12 اسبوعا. تأخر حوالي 63% من السيدات في تلقي خدمة رعاية ما بعد الولادة لأكثر من اسبوع وذلك بسبب اغلاق العيادات اثناء جائحة كورونا.

كان أعلى متوسط في مقياس الجودة والرضا الملموسين هو الجودة الملموسة 81.4٪ حيث أفادت المشاركات من محافظة غزة عن مستوى ملموس أعلى بكثير بمتوسط 84.4٪ بينما كان أدنى متوسط هو الاستجابة المدركة للجودة 75.8٪ حيث أفادت المشاركات من محافظة رفح إحصائيًا أدنى مستوى استجابة بمتوسط 71.6٪ كما وأوضح مقدمو الرعاية الصحية السبب إلى زيادة عدد الامهات المسجلين وضغط العمل ونقص الموظفين.

أفادت المشاركات من محافظة غزة عن مستوى أعلى بكثير من الالتزام بالموعد بمتوسط 87.4٪ من المشاركات في محافظة خان يونس بمتوسط 79.6٪. كانت مشاركة المواعيد للزيارات التالية عالية في مركز الحرية الصحي ، حيث أبلغت النساء المشاركات عن أعلى مستوى للالتزام بالموعد بمتوسط 88.8٪ ، وسجلت النساء المشاركات في عبسان الكبيرة اعلى مستوى بمتوسط 75.2٪. أفاد المشاركون في مركز بني سهيلة الصحي عن أعلى مستوى لاستخدام التطبيقات الصحية عبر الهاتف المحمول بمتوسط 71.2٪ كما وسجلت النساء المشاركات في عبسان الجديدة أدنى مستوى لإدارة المخاطر الطبية أثناء الحمل بمتوسط 49.6٪. تؤكد الأمهات أن إرسال رسائل التنبيه عبر الرسائل النصية القصيرة قد تحسن في زيادة الالتزام بالمواعيد بنسبة 81.8٪ ومفيد في التذكير بالمواعيد 83.3٪ خاصة عند النساء المعرضات لخطر الحمل.