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Effect of Hypertension on Pregnancy Outcomes at UNRWA Health Centers in Gaza Governorates

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Effect of Hypertension on Pregnancy Outcomes at UNRWA Health Centers in Gaza Governorates

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Dedication

To

My Mother

A strong and gentle soul who taught me to trust Allah, believe in hard work and that so much could be done with little

My Father

For earning an honest living for us and for supporting and encouraging me to believe in myself

My Wife

The wonderful person who gave me the support and affection all the way

My Daughters and sons

The real treasure on my life (Ayat, Sara, Fatima, M Jamil and Ahmad)

My Sisters and brothers

Khaled, A/Wahhab, A/Aziz and Mohammad

My Friends…

Palestinian Women …

I dedicate this thesis for 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 this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed:

Khalil J. El Qatrawi

Date: / /2018

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Khalil Jamil El-Qatrawi

Effect of Hypertension on Pregnancy Outcomes at UNRWA Health Centers in Gaza Governorates: Comparative Study

Abstract

Pregnancy and childbirth are physiological and natural processes in women. However, these normal processes might be complicated by factors that affect the outcomes. In Gaza strip, hypertension affects 10 percent of all pregnant women. Hypertension may affect pregnancy and cause adverse outcomes for both mother and baby.

Aim: *This study aimed to identify the possible effect of hypertension on pregnancy outcomes and maternal adverse events among women attended UNRWA's health care services in Gaza Governorates, in order to reduce the incidence of adverse pregnancy outcomes and improve maternal and child health.*

Methods: *analytical comparative study has been performed between August 2016 and May 2017, on 430 mothers who attending United Nations Relief and Works Agency for Palestine Refugees in the Near East health centers, which divided into two groups (with and without hypertension in last pregnancy), consisted of 215 mothers for each. Stratified sampling was used. Data collected through face to face interviewed questionnaire along with medical records revision. Moreover, the World Health Organization life quality scale was used. Statistical analysis was performed using Pearson's Chi-square and t-tests (p-value< 0.05). Helsinki and managerial approval were granted and consent form was obtained from participants.*

Findings: *the hypertensive mothers had statistically significant differences ($p \leq 0.05$) in pregnancy termination ($p=0.001$) , antepartum ($p=0.001$) and postpartum hemorrhage ($p=0.003$) and pre/eclampsia . In addition to 79.1% of mothers with pregnancy-induced-hypertension (PIH) were recovered from HTN. Among newborn adverse outcomes, the significant differences were observed between the two groups in preterm birth ($p=0.13$), low birth weight ($p=0.003$) and neonatal admissions ($p=0.044$) all the differences were for the women with hypertension in the last pregnancy. Also, the hypertensive mothers had there significant differences in quality of life ($p \leq 0.05$).*

Conclusion: *The findings demonstrated that women with hypertension in pregnancy are at higher risk to have adverse fetomaternal outcomes compared to women without hypertension in Gaza Strip. Early diagnosis and quality prenatal follow-up are recommended to improve the maternal and fetal prognosis.*

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List of abbreviation

ACOG	American College of Obstetricians and Gynecologists
ANC	Antenatal Care
CVA	Cardiovascular Accident
DIC	Disseminated Intravascular Coagulation
GG	Gaza Governorates
HELLP	Hemolysis, Elevated Lever enzyme and Low Platelets
HTN	Hypertension
IUGR	Intra Uterine Growth Restriction
JNC	Joint National Committee
LBW	Low Birth Weight
mm Hg	Millimeter of Mercury
MOH	Ministry of Health
NGO	Non-Governmental Organizations
PCBS	Palestinian Central Bureau of Statistics
PE	Pulmonary Embolism
PIH	Pregnancy Induced Hypertension
PNC	Postnatal Care
SCRN	Stillbirth Collaborative Research Network
SGA	Small for Gestational Age
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
VLBW	Very Low Birth Weight
WB	West Bank
WHO	World Health Organization
WHOQOL	World Health Organization Quality of Life

Chapter 1: Introduction

1.1 Background

The hypertensive disorders of pregnancy are a major health problem worldwide and affects individuals with a lot of complications, such as cardiovascular diseases and renal dysfunction (World Health Organization-WHO, 1987). The prevalence of hypertension in the United States for 2011–2014 among adults was 29.0% (Yoon et al., 2015). In Jordan, hypertension is a common and important public health problem with prevalence of 32.2% (Jaddou et al., 2011). Pregnancy and childbirth are physiological and natural processes in women. However, these normal processes might be complicated by factors that affect the outcomes. Among these factors is a hypertension. Hypertension is the most common medical condition associated with pregnancy. Globally, hypertensive disorders affects 10 percent of all pregnant women (Duley, 2009), noting that the same findings (10%) was observed in Gaza Governorates (United Nations Relief and Works Agency for Palestine Refugees in the Near East-UNRWA, 2015).

The hypertension in pregnancy is generally defined as a diastolic blood pressure of 90 mm Hg or more, and/or systolic blood pressure of 140 mm Hg or more and classified into: Preexisting hypertension, gestational hypertension, preexisting hypertension with superimposed preeclampsia and unclassified antenatally (Helewa et al., 1997). The incidence of Chronic Hypertension before pregnancy ranged between 1-5% among all pregnancies and Pregnancy-induced hypertension after 20 weeks of gestation was varies between 2-7% (UNRWA, 2009).

In Qatar, the incidence of eclampsia in is 0.31 per 1000 deliveries and leads to an increase of perinatal morbidity which mainly related to Low birth weight (48.6%) of the cases and prematurity (Sharara, 2012). There may be a synergetic effect of both gestational hypertension and postpartum incident hypertension as women with both were at higher risk of cardiovascular events than were women with gestational or incident hypertension alone (Yeh et al., 2014). The severe hypertension in pregnancy is associated with worse maternal and fetal outcomes and had an important role in defining the outcomes (Cicero et al., 2015).

Hypertension may affect pregnancy and cause adverse outcomes for both mother and baby; maternal outcome could be superimposed preeclampsia on chronic hypertension, preterm

delivery, cesarean delivery, postpartum hemorrhage, Hemolysis, Elevated Lever enzyme and Low Platelets (HELLP) syndrome, disseminated intravascular coagulation, placental abruption, eclampsia, pulmonary edema, renal failure, cerebrovascular hemorrhage and maternal death and perinatal outcome could be abortion, low birth weight, intra uterine growth restriction, small for gestational age, intra uterine fetal death, stillbirth, neonatal admissions to hospitals and respiratory distress (Wongcharoenrut & Yamasmit, 2014).

Hypertensive disorders of pregnancy and gestational diabetes increase the risk of premature vascular disease (Nerenberg et al., 2014). The women of hypertensive pregnancy disorders women may exhibit long–term worse blood pressure control and adverse left ventricular remodeling (Mesquita, 2014).

A study conducted in Ethiopia, among the women with hypertension shows that 6.6% of patients with renal failure, 12.4 with HELLP syndrome, 35.5% with preeclampsia, chronic HTN 4.1%, 12.4% with gestational hypertension and 7.4% with postpartum hemorrhage (Seyom et al., 2015). Whereas, In India, retinal changes were found in 27.27% of women with pregnancy induced hypertension (Bhupally et al., 2015).

Worldwide, the estimated maternal deaths was 287000 occurred in 2010 (WHO, 2012). Hypertension in pregnancy responsible about 18% of all maternal deaths, with an estimated 62000 – 77000 deaths per year (Khan et al., 2006). In Gaza Strip, the total maternal deaths was 10 cases during 2014, two of them were due to hemorrhage, cardiac (2), pulmonary embolism (2), septicemia (2), cancer (1) and acute respiratory distress (1) noting that some of these are related to hypertension in pregnancy (UNRWA, 2015).

The stillbirth incidence was higher among women with eclampsia (15.3%), women with pre-eclampsia (6.4%) and women without pre-eclampsia/eclampsia (1.9%) (Abalos et al., 2014). In Gaza Strip, during 2013 the neonatal mortality was 20.3 per 1000 live birth, among the main causes was preterm birth with 39% (van den Berg et al., 2015).

Regarding the quality of life among hypertensive patients, Ha et al., found it was moderate, except psychological health was relatively low (Ha et al., 2014).

We hope this study will highlight the possible pregnancy outcomes that occurs in relation to hypertension, either maternal or newborns in United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) health centers in GG. Moreover, to provide an evidence that accelerate and enhance the health care providers and decision

makers to improve maternal and child health. Accordingly, we can protect the future of Palestinian people in Gaza Governorates.

1.2 Research Problem

Hypertension in pregnancy, including pregnancy-induced hypertension and chronic hypertension, is one of the leading causes of pregnancy associated morbidity and even mortality. Moreover, HTN in pregnancy affects the psychological well-being and quality of life of women in productive age. According to United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) statistics, the total number of newly registered pregnant women during 2014 was 39546, 10% of them had hypertension in pregnancy, among all pregnant women with HTN 24% were diagnosed as having HTN before pregnancy (UNRWA, 2015). The incidence of Chronic HTN ranged from1 to 5% from all pregnancies and PIH varies between 2-7% and the incidence of PIH is increased with increased placental mass such in twin or molar pregnancy. In Gaza Strip the neonatal mortality was increased from 12.0 (2008) to 20.3 per 1000 live birth (2013), among the main causes was preterm birth which accounted 39% (van den Berg et al., 2015).

Unfortunately, in the Gaza Strip no complete data on the pregnancy adverse outcomes of the mother and newborn, we do not know exactly what are the complications of HTN on mother and newborn and what are the most prevalent adverse outcomes such as eclampsia, HELLP syndrome, ante- and post-partum hemorrhage, prematurity, LBW, neonatal admissions and etc. In other words, we do not know specifically which adverse outcomes may be occurred. So by conducting this study we will be able to predict the consequences of HTN in pregnancy in Gaza Governorates (GG).

1.3 Justification

During the literature search, the researcher found many studies about the adverse maternal and newborn outcomes were conducting in many countries around the world, but most of these studies were fragmented and discussed the outcomes separately. Unfortunately, the researcher couldn’t find such studies in Gaza Governorates concerning adverse outcomes in the mothers with hypertension in pregnancy , so this study considered as the first and baseline study in Gaza governorates that aimed to explore the possible adverse outcomes associated with HTN in pregnancy for the mother and newborn, as during 2015 the total number of pregnant women with HTN was 3860 and 24% of them were diagnosed before

pregnancy. The neonatal mortality was increased from 12.0 (2008) to 23.3 per 1000 live birth (2013), among the main causes was preterm birth which accounted 39% (van den Berg et al., 2015). About 58% of the hypertensive women were multiparous. 68 (98.5 %) were delivered by caesarean section, (43%) of them were carried out as an emergency procedure in Sudan (Kheir et al., 2014). Also The risk of preeclampsia was 2.3 times higher in first pregnancies than that in second or more pregnancies, the neonatal mortality rate (81 vs. 12 per 1000 live births), and prematurity (30.8% vs. 7%), and the rates of low birth wight delivery (32.5% vs. 8.3%) were significantly higher among women with preeclampsia (Khader et al., 2017). The most prevalent maternal outcomes were chronic HTN (12,06%), renal diseases (7.84%), Sepsis (5,28%), hepatic diseases (3.92%), Anemia (3.14%), maternal severe outcome more prevalent with women with eclampsia (18.06%), women with pre-eclampsia (4.31%), maternal deaths were higher with women with eclampsia (3.66%), women with pre-eclampsia 0.43% (Abalos et al., 2014).

Therefore hypertension in pregnancy could be a reason for a different adverse maternal and newborn outcomes, in addition of affecting quality of life. So, by conducting this study we can generate information in order to improve maternal and child health care in Palestine and to give evidence to improve decision making processes at different levels of health care system. Moreover, it will be helpful for different researchers in future.

1.4 Study Objectives

1.4.1. Aim of the study

The aim of the study is to identify the possible effect of pregnancy hypertension on pregnancy outcomes and maternal adverse events among women attended UNRWA's health care services in Gaza Governorates, in order to improve the quality of maternal and child health care services.

1.4.2 Objectives

1- To determine the effects of hypertension in pregnancy on maternal health.

2- To determine the effects of hypertension in pregnancy on newborn's health.

3- To explore the effect of hypertension in pregnancy on the quality of life.

4- To formulate recommendations to promote and protect maternal and child health.

1.5 Research Questions

1- Does the demographic variables affect the presence or the severity of newborn's or maternal adverse outcomes in women with HTN in pregnancy?
2- Does the obstetric profile variables affect the presence or the severity of maternal or newborn's outcomes in women with HTN in pregnancy?
3- What are the possible adverse effects of hypertension in pregnancy on maternal outcome?
4- What are the possible adverse effects of hypertension in pregnancy on newborn's outcome?
5- Does the HTN in pregnancy affect the quality of life?
6- What are the applicable recommendations?

1.6 Context of the study

1.6.1 Socio-demographic context

Historical Palestine have an area of 27.000 sq. km. and bordered by four countries Egypt, Jordan, Lebanon and Syria. In addition to the Mediterranean sea, Aqaba Gulf and the Dead sea. The Gaza Governorates is lying on the Mediterranean Sea as narrow piece of land; it is 45 kilometers long and 6-12 kilometers wide with an area of 378 square kilometers (PASSIA, 2008).

The total population of Gaza Strip and West Bank (WB) was about 4.81 million, 2,36 million females and 2.45 million males (PCBS, 2016). The total number of the Palestinian population residing in the GG is around 1.88 million. The GG is considered the highest density in the world. The Palestinian central Bauru statics (PCBS) declared that the population density in the GG is more than 5154 inhabitants per one square kilometer and the majority of the GG population is refugees (66.8%) who receive basic primary health care services and some secondary care services through UNRWA (PCBS, 2016).

The average life expectancy of the population in GG is 74.6 for females and 71.5 for male (PCBS, 2016). In Gaza Strip the percentage of individuals aged (0-14) constituted 43.0% of the total population at mid-2015. The elderly population aged (65 years and over) constituted 2.4% at the same time (PCBS, 2015). The growth rate in GG during 2015 was 3.4%, fertility rate was 4.5 and family size was 5.7 (UNRWA, 2017).

Gaza Governorates suffered from many recurrent occupations. After the end of the First World War, historical Palestine was placed under the British Mandate. Then the period

from 1948 to 1967 The Gaza strip was under the Egyptian Administration, in June 1967 it was occupied by the Israeli army. In 1994 the Israelis officially handled the Gaza strip to the Palestinian Authority according to Oslo agreement with partial autonomy that lead to improvement of the social and economic status of the people in Gaza till the setting up of Intifada in 2000 where the political and socioeconomic situation started to deteriorate. In June 2007 the life in Gaza reached to the catastrophic situation where a terrible event occurred "the internal division" and Gazan people started to suffer from its sequences; a tight siege has been imposed on the Gaza strip to control borders, movement of goods and travelers. During that Israel launched three large scale aggressions on the Gaza strip which resulted in thousands of deaths and injuries among people and damage of thousands of houses, manufacture compounds, agricultural resources (MOH, 2013).

The economic situation in the Gaza strip has been deteriorated since 2006 as a result of a combination of siege, unemployment, restrictions on workers and industries which cause decline in living conditions and poor infrastructure. Also the basic services quality was affected such as health, education, shelter, and water. 54% of Gaza Strip population are food insecure (OCHA, 2012).

The Palestinian central bureau of statistics (PCBS) stated that the main sources of livelihood in the GG are employment at the services sector mainly at government, UNRWA, nongovernmental organizations (NGOs), agriculture, livestock rearing and fishing (PCBS, 2015). During 2015 the Gross Domestic Product (GDP) was 1.7 (USD Billion), GDP Per Capita 971.1 USD and Unemployment 43.9% (PCBS, 2015).

The deterioration of both economic and social status in the GG negatively affects the status of the Gazian population and the economic recovery became impossible as long as the Siege remains. it is will take years to repair the repeated damages to recover the economy. Furthermore, most of GG population depends on humanitarian aid provided by different relief agencies such as the World Food Program and UNRWA.

1.6.3 Palestinian health care system

In Palestine, the health care system is unique and complex as operating under a difficult circumstances like political instability, Israeli occupation and internal divide. there are five main providers for healthcare services, the Ministry of Health (MOH), United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), Non-Governmental Organizations (NGOs), Palestinian Military Medical Services and the

private sector. MOH is the main health care provider; it has the responsibility for insuring equitable and affordable access to quality health services for all Palestinians and provides primary, secondary, and tertiary services and purchase advanced medical services through referring patients to the neighboring countries and other private and NGO health care facilities, it also play a role in providing and controlling immunization scheme, public health activities, licensing and registration of health facilities. MOH is the main primary health care provider that operates 472 primary health centers; 54 in GG, While NGOs manage 210 primary health centers; 81 in GG (MOH, 2011).

While the UNRWA operates 137 primary health centers; 21 in GG and 42 in WB (UNRWA, 2013).

Number of registered medical manpower in GG during 2014 for doctors, nurses, dentists and pharmacists was 3809, 7155, 1071 and 2562 respectively (PCBS, 2015).

In Palestine, the total number of hospitals was 81 hospitals, 63% (51) of them in West Bank (WB) and 37% (30) of hospitals in GG (MOH, 2017)

The total Number of hospitals in GG was 30, out of them 13 for ministry of health, 14 for NGOS and 3 for military services. Total number of beds was 2999, of them 2243-ministry of health, 595-nongovernmental and 161-military services. Total number of deliveries was 56386 of them 74.7% were at MOH hospitals . Governmental obstetric beds were 235 (13.3%) in GG while the pediatric bed were 391 (22.2%) (MOH, 2017).

The total number of deliveries in GG was 54,719 during 2016 in GG, around 80% 0f them was at governmental facilities. Preterm delivery percentage was 4.3% The percentages of C.S were 21.9% at ministry of health, 14.5% at NGOS and 12% at military hospitals (MOH, 2017).

Bed occupancy rate at obstetric departments has reached to more than 100% in the past years (MOH, 2013). Obstetric beds per 10,000 ratio is only 2.1. In some NGO hospitals; the occupancy rate of the delivery bed is less than 30% (UNFPA, 2011). The maternal mortality ratio in the GG ranges between 20-40 per 100,000 live births which is still within the acceptable range by the WHO (50) (MOH, 2013). The most commonly reported health problems during pregnancy are infections (urinary tract infections and reproductive tract infections), anemia and pregnancy induced hypertension (UNFPA, 2011).

The timing of Ante Natal Care (ANC) visits is not always appropriate; about half of women did not receive ANC services within their first trimester and 7.9% did not benefit from ANC services till the last trimester. The percentage of women receiving Postnatal Care (PNC) has increased from 19.7% in 1996, to 40% currently but the quality of PNC services is an issue. The average stay of woman in the hospital after normal vaginal delivery is usually less than 2hrs and the reported CS rates is more than 20% of all deliveries (ibid).

Hospital based child health services (for under 12 years) are provided by three hospitals specifically for pediatrics in addition to 11 hospitals providing child health services within its services. The total number of pediatric beds is around 560 beds; of them, 23 are pediatric intensive care beds, 106 neonatal care incubators and more than 50 daily care beds (MOH, 2012). The ratio of beds to child population is 8.5 beds per 10,000 (MOH, 2013).

In the GG the continuous Israel siege and the internal political division are strongly affect the provision of health care services is, while the primary and secondary health sector continue to function it faces many challenges as shortage of essential drugs and consumable at MOH facilities, 38% of essential drugs were out of stock at central store level at the beginning of January 2011 (MOH, 2011). At the end of 2011, 148 of 480 essential drugs (31%) and 123 of 700 medical disposables (17.5%) were at zero stock in Gaza that put the patients at substantial risk of medical complications and deterioration in health status especially for cancer patients who are requiring on-going chemotherapy, patients with kidney diseases, transplants, hypertension, blood conditions and chronic illnesses who require a regular regime of medications, some of which are unavailable also exposed to special risk (EMRO, 2012).

Regardless of previous, it is worth to mention that the health sector has exerted significant efforts not only to maintain health services but also to improve and present some new services such as opening of new specialized services at MOH hospitals as cardiac surgery and cardiac catheterization, introducing new schemes for health services as Family Health by UNRWA (MOH, 2011).

1.6.4 UNRWA

UNRWA is the United Nations Relief and Works Agency for Palestine Refugees in the Near East established by the General Assembly in 1949 following the first 1948 Arab-

Israeli War, and became operational in 1950. The UNRWA mandate is to provide assistance and protection to a population of over 5 million registered Palestine refugees. The UNRWA mission is to help Palestine refugees in Jordan, Lebanon, Syria, West Bank and the Gaza Strip to achieve their full potential in human development (UNRWA, 2015). UNRWA provides health, education and relief services that becomes the largest humanitarian operation in the occupied Palestinian territory. Originally it intended to provide jobs on public works projects and direct relief for Palestinian Arabs who fled or were expelled by Israel gangs during the fighting that followed the end of the British mandate over Palestine. Today it provides education, health care, social services and emergency aid to some 5 million Palestinian refugees and it has been the main health care provider over 65 years that provides a comprehensive health care from maternal and child health care, infant care and immunizations, school health, oral health, consultations, diagnostic or laboratory services for management of non-communicable diseases (UNRWA, 2013).

UNRWA is the second primary health care provider in the GG that plays an important role in health services delivery, providing free of charge PHC and purchasing secondary and tertiary services for the registered Palestinian refugees through 137 PHC centers, 21 of them located in GG and 1 hospital in Qalqelia in WB (UNRWA, 2015).

In 2014 UNRWA medical officers provide almost 9.4 million medical consultations totally and almost 4.2 million of them were in GG only, in addition to about 700.000 dental consultations and about 220000 dental screening sessions. Moreover, UNRWA provides maternal and child health care through life cycle approach. Maternal health include, preconception care, antenatal care and family planning services (ibid).

In GG during 2014 the total number of registered pregnant women was 39,546 with ANC coverage 87.3%, the percentage of pregnant women with at least 4 ANC visits was 91.7%, average number of antenatal visits per pregnant women (6.4), women of reproductive age 15-49 years (25%), antenatal care coverage (87%), early pregnancy registration at first trimester (78.3%), the percentage of high and alert pregnancy was 40.1%, Diabetes and hypertension during pregnancy were 2.7% and 10% respectively, prevalence of anemia among pregnant women (35.6%), prevalence of anemia among nursing mothers (45.7%), number of total reported deliveries was 38096, reported abortions 2662, percentage of C-Section among reported deliveries 17.4% and 10 maternal deaths, children < 1 year

registered (38584), mean birth interval (29.3months), percentage of women married by the age < 18 years (33%), mean marital age for women (19), percentage of women with birth intervals < 24 months (48.9), prevalence of exclusive breast feeding up to 4 months (33%), women attending postnatal care within 6 weeks of delivery (99.1%), registered children < 1 year (38584), coverage of child health care (87%), underweight period prevalence for children 0 - 5 years (3.7%), 18 month old children that received 2 doses of Vitamin A 100%, during 2013 the infant and neonatal mortality rates per 1000 live births were 22.4 and 20.3 respectively (UNRWA, 2015).

MOH in Gaza declared that during 2016 in GG, the total number of pregnant women was 59538, around 68% of them was at governmental hospitals, 26.6% was at NGOS and the average number of antenatal care visit was 7. High risk pregnancy reached 26.7%. the caesarian section was increased from 17% in 2010 to 2.8% in 2016.

The post natal care was provided for 49041 women, 70.8% at UNRWA health centers 19.4% at MOH health centers and 9.8% by home visit. Family planning services were provided to 17513 women (MOH, 2017).
According to UNRWA Gaza field health office during 2015, the total number of pregnant women with HTN was 3860, among them 919 (24%) women were diagnosed as having HTN before pregnancy (UNRWA, 2015).
UNRWA has around 11000 employees in GS, in which health department included around 1001 health workers (ibid).

In the recent years UNRWA health program faced many challenges, the main of them was its vertically-oriented health services through maternal and child care, non-communicable disease care and general clinical care such services are not integrated, this challenge faced the epidemiological transition among Palestinian people including refugees with a shift of diseases from communicable ones to non-communicable which appears in the higher rates of diseases including heart diseases, cancer, hypertension and cardiovascular diseases and diabetes mellitus which become the leading causes of death to general population including Palestinian refugees and account for 70 to 80% of causes of deaths (UNRWA, 2013). Addressing the above challenges UNRWA has begun the health reform in June 2011 by adopting the family health team (FHT) approach and e-health as the core strategy of the reform to strengthen primary health care(UNRWA, 2015).

Family Health Team (FHT) introduced as a primary care package focused on providing holistic and comprehensive primary health care for the entire family, depending on long-term provider-patient/family relationships (person-centered approach). In order to improve effectiveness, efficiency and service delivery UNRWA adapted e-health which composed of the electronic medical records developed by UNRWA to improve patients' data management and the improvement of the overall health services. The e.Health software contained four main modules: NCD, maternal health care, child health care, and outpatient, in addition to other support modules such as laboratory, pharmacy, dental and specialists (ibid).

1.7 Operational Definitions

Abruptio placenta: is defined as placental separation from the uterus with bleeding (concealed or vaginal) before delivery of the baby (ACOG, 2014).

Adverse Maternal Outcomes: Any possible adverse outcomes for the mother such as Preeclampsia/eclampsia, mode of delivery (CS), antepartum hemorrhage (APH), postpartum hemorrhage (PPH), placenta abruption and HELLP Syndrome.

Adverse Newborn outcome: Any possible adverse outcomes for the fetus and/or newborn such as stillbirth, neonatal death, neonatal admission, birth weight (especially LBW) and preterm birth.

Antepartum Hemorrhage (APH) : hemorrhage from the genital tract after the twenty eighth week of pregnancy but before delivery the baby.

Chronic Hypertension: defined as any HTN predates pregnancy or up to 20 weeks of gestation(ACOG, 2014). .

Early neonatal death: The death of a live born during the first 7 days of life.

Gestational age refers to the duration of gestation. It is measured from the first day of the last menstrual period and is expressed by completed weeks.

HELLP Syndrome: a syndrome of haemolysis (H) elevated liver enzymes (EL) and low platelet count (LP).

Hypertension in pregnancy: an absolute level of blood pressure (140/90mmHg or greater) or by an increase in blood pressure from pre-conception or from first trimester

levels as systolic blood pressure rise by 25mmHg or greater and diastolic blood pressure rise by 15mmHg or more (UNRWA, 2009).

Late neonatal death: The death of a live born infant after 7 completed days, but before 28 completed days after birth.

Neonatal Death: The death of a baby that occur at less than 28 days of age.

Parity - refers to delivery that occurs after viability of the pregnancy, usually after 28 weeks.

Perinatal death: Perinatal deaths comprises the sum of all still births and early neonatal death

Placenta accreta: refers to the clinical condition in which any part of the placenta invades and is inseparable from the uterine wall (ACOG, 2014).

Placenta previa: is a condition where the placenta lies low in the uterus and partially or completely covers the cervix.

Postpartum Hemorrhage (PPH): Either primary from the third stage of labour till 24 hours after delivery or secondary started after 24 hours of delivery till one week postpartum.

Pre-eclampsia : blood pressure greater than or equal to 140 mm Hg systolic or greater than or equal to 90 mm Hg diastolic in 2 occasions at least 4 hours apart after 20 weeks of gestation with proteinuria of >300 mg per 24 hours or dipstick 1+ with or without edema (ACOG, 2013).

Pregnancy induced Hypertension (PIH): which diagnosed after 20 weeks of gestation.

Pregnancy outcomes: either maternal or newborn related outcomes.

Preterm Birth: birth of baby before 37 complete weeks of gestation.

Preterm period: refers to less than 37 completed weeks of gestation.

Quality of life (**QOL**): is the general well-being of individuals and societies which include physical, psychological, environmental and social relationships in addition to overall satisfaction.

Still birth: The birth of a dead fetus at 28weeks or more and birth weight equal or more than 500gms (WHO, 2004).

Term period: the period from 37 completed weeks up to the end of 42nd week (ACOG, 2014) .

Chapter 2: Conceptual Framework and Literature Review

2.1 Conceptual framework

The researcher drew the conceptual framework relying on literature and personal experience, the framework demonstrates what the researcher is going to study, it connects and clarifies the relationship between the dependent and independent variables.

2.1.1. Demographic Profile:

This domain includes some variables such as:

Age, education level, income, livelihood and occupation.

2.1.2 Obstetric profile

Which consist of different variables such as**:**

Gestational age which calculated by completed weeks, parity/gravidity, antenatal care registration and number of visits during last pregnancy, anemia, obesity and systolic and diastolic blood pressure mean.

The variables of previous domains might be determinants for HTN in pregnancy and its adverse outcomes. The variables of demographic and obstetric profile could affect the pregnancy outcome through their effect (direct or indirect) on HTN in pregnancy.

Gestational age refers to the duration of gestation. It is measured from the first day of the last menstrual period and is expressed by completed weeks.

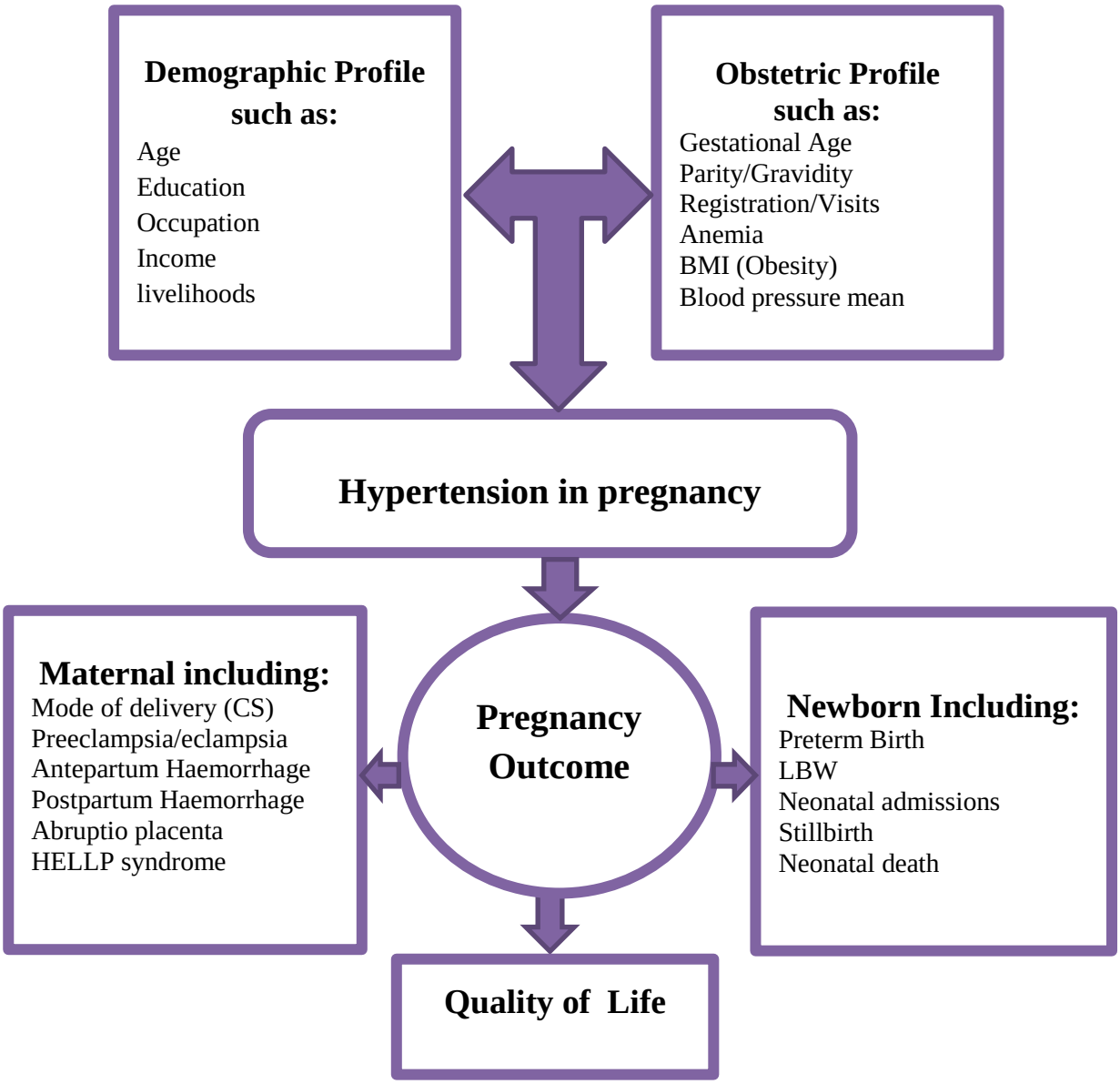
2.1.3 Hypertension in pregnancy

HTN in Pregnancy as independent variable includes chronic hypertension and pregnancy induced hypertension which mean an increase of blood pressure during pregnancy.

Chronic hypertension diagnosed before pregnancy or develops before 20 weeks gestation. Pregnancy induced hypertension diagnosed after 20 weeks of gestation.

The severity of HTN could determine the presence of adverse pregnancy outcomes which may affect both the mother and newborn.

Figure 2.1: Conceptual framework



2.1.4 Pregnancy outcomes

The demographic and obstetric profiles interact with HTN in pregnancy to determine the pregnancy outcomes which consist of two groups:

Adverse Maternal related outcomes: (dependent variable) including the following: Preeclampsia/eclampsia, antepartum hemorrhage, postpartum hemorrhage, HELLP syndrome, abruptio placenta, mode of delivery (CS) and recovery from HTN.

Quality of life dependent variable to measure if the quality of life affected or not by presence of HTN in the last pregnancy.

Adverse Newborn related outcomes: The new newborn related outcome (dependent) is including the following: Preterm birth, LBW, Neonatal admissions, Stillbirth and neonatal death.

2.2. Literature review

2.2.1. Hypertension

HTN is a major and important public health problem worldwide and a risk factor for development of the most common cardiovascular diseases (CVDs). By 2030, the estimated 23 million cardiovascular deaths are expected to have HTN, about 85% of them occurring in low and middle-income countries (WHO, 1987).

In Gaza Strip, the prevalence of HTN was 19.1% in 2014 (UNRWA, 2015). And in Saudi Arabia the prevalence was 26.1% (Al-Nozha et al., 2007). But, in the United States the prevalence of hypertension for 2011–2014 among adults was 29.0% and was among men (30.0%) and women (28.1%), this prevalence was increased with age and men had a higher prevalence of hypertension (Yoon et al., 2015).

The lowest prevalence among the above mentioned studies, is observed in Gaza Strip that's I think it might be due to UNRWA that targeted only accessible refugee population.

In Pakistan, a cross sectional study conducted in medical department, Combined Military Hospital Okara, during the period from August to December 2012, indicates that the mean systolic blood pressure of study group was 118 mm Hg + 10.431 and mean diastolic blood pressure was 81 mmHg + 9.522. About 217 soldiers (9.8%) were found to be hypertensive, 4.4% were normal weight hypertensive whereas frequency of hypertension among over

weight individuals was 8.9% and among obese population was 15.1 % (Kamran et al., 2016). I think the prevalence of HTN was relatively low as the study was conducted among soldiers only and not fully maintain population representativeness.

In Jordan, the review article of Hypertension Prevalence, Awareness, Treatment and Control, and Associated Factors conducted, indicates that the hypertension is a common and important public health problem in Jordan, and shows that among 4117 participant was 32.2% having HTN, the prevalence rate was higher among males and the older age group 50 years and above. The logistic regression indicates that increasing age and BMI, the presence of DM, and the lowest level of education were significantly associated with HTN (Jaddou et al., 2011).

Hypertension refers to Systolic blood pressure equal to or greater than 140 mmHg or diastolic blood pressure equal to or greater than 90 mmHg, or currently taking medication as antihypertensive agents to lower high blood pressure. Whereas, controlled hypertension when Systolic blood pressure less than 140 mmHg and diastolic blood pressure less than 90 mmHg (Chobanian et al., 2003).

The Joint National Committee (JNC 7) classified blood pressure into the following five categories: Normal blood pressure refers to systolic blood pressure less than 120 mm hg and diastolic blood pressure less than 80 mm hg, prehypertension when the systolic pressure ranged between 120 and 129 mm Hg and diastolic blood pressure between 80 and 89 mmHg, hypertension refers to systolic blood pressure equal or more than 140 mm Hg and/or systolic blood pressure equal or more than 90 mm Hg, HTN stage 1 defined as systolic blood pressure ranged from 140 to 159 mm Hg and/or diastolic blood pressure from 90 to 99 mm Hg and HTN stage 2 defined as systolic blood pressure is 160 mm Hg or more and/or diastolic blood pressure is 100 mm Hg or more. There is a continuous relationship between BP and risk of CVD events. The chance of developing of heart attack, heart failure, stroke, and kidney diseases is greater with higher blood pressure (Chobanian et al., 2003).

UNRWA, health Department classifies the HTN in adult over the age of 18 into the following categories: Optimal blood pressure (systolic blood pressure <120 mm Hg) and (diastolic blood pressure <80 mm Hg), prehypertension (systolic blood pressure 120-139 mm Hg) and (diastolic blood pressure 80-90 mm Hg), HTN (systolic blood pressure ≥140 mm Hg) and/or (diastolic blood pressure ≥90 mm Hg), HTN grade-1(systolic blood

pressure 140-159 mm Hg) and/or (diastolic blood pressure 90-99 mm Hg), HTN grade-2(systolic blood pressure 160-179 mm Hg) and/or (diastolic blood pressure 100-109 mm Hg) and HTN grade-2(systolic blood pressure ≥180 mm Hg) and/or (diastolic blood pressure ≥110 mm Hg).

In summary, the HTN refers to systolic equal or more than 140 mmHg and/or diastolic blood pressure 9o mmHg. And could be among the main risk factors for development of CVD, DM, kidney diseases, CVA and other morbidities in addition to the mortality. Moreover, HTN can impaired the life quality.

2.2.2. Hypertension in Pregnancy

The hypertensive disorders of pregnancy are a major health problem worldwide (WHO, 1987). Pregnancy induced hypertension (PIH) is a common health problem with adverse outcomes for both mother and fetus/neonate. It is could be a multifactorial health condition (Kintiraki et al., 2015). In Zambia The prevalence rate of hypertensive disorders of pregnancy was 17.7% among women admitted to tertiary hospital (Shaba & Siziya, 2015). Whereas, in Zimbabwe, the prevalence of pregnancy induced hypertension was higher as 19.2% among women seeking maternity services (Muti et al., 2014). But, in India, it was 7.3% (Manjusha Sajith et al., 2014).

From the previous studies were noted a high prevalence of HTN in pregnancy which affects the pregnancy outcomes.

Definition and Classification

In literature, the hypertension in pregnancy is defined differently. Hypertension in pregnancy should be defined as a diastolic blood pressure of 90 mm Hg or more (Helewa et al., 1997). UNRWA (2009) defined the hypertension in pregnancy by an absolute level of blood pressure (140/90mmHg or greater) or by an increase in blood pressure from pre-conception or from first trimester levels as systolic blood pressure rise by 25mmHg or greater and diastolic blood pressure rise by 15mmHg or more. In summary, some literature used Hypertensive Disorders in Pregnancy, and in others we could see a Hypertension in pregnancy or Pregnancy Hypertension. Moreover, we could also face pregnancy induced Hypertension. All of which to some extent used to describe different types of Hypertension during pregnancy.

In literature we found different classifications, the researcher demonstrated some of them for better understanding. According to WHO, the hypertensive and proteinuric disorders that occur during pregnancy were classified into: Gestational hypertension refers to HTN without proteinuria after 20 weeks of gestation and/or during labor and/or within 48 hours after delivery, unclassified hypertension during pregnancy refers to HTN found when blood pressure is recorded as first time after 20 weeks of gestation and/or during labor and/or within 48 hours of delivery, gestational proteinuria refers to development of proteinuria (equal to or greater than 0.3 g/l) after 20 weeks of gestation and/or during labor and/or within 48 hours after delivery, Pre-eclampsia refers to development of Gestational HTN and proteinuria after 20 weeks of gestation and/or during labor and/or within 48 hours after delivery, eclampsia: Antepartum, intrapartum and postpartum, Underlying hypertension or renal disease, pre-existing HTN or renal HTN and/or proteinuria during pregnancy and superimposed Pre-eclampsia/Eclampsia (WHO, 1987).

However, The Canadian Hypertension Society (1997) classified Hypertensive disorder of pregnancy into: Pre-existing hypertension that diagnosed before pregnancy or within 20 weeks' of gestation, gestational hypertension which develops after 20 weeks' gestation, pre-existing hypertension and superimposed gestational hypertension with proteinuria and unclassifiable antenatally. But, The American College of Obstetricians and Gynecologists (ACOG, 2013) classifies hypertensive disorders of pregnancy into four categories: Preeclampsia-eclampsia (elevation of blood pressure after 20 weeks of gestation with proteinuria or any of the severe forms of preeclampsia), chronic hypertension: refers to HTN before pregnancy (of any cause that predates pregnancy), chronic hypertension with superimposed preeclampsia and gestational hypertension elevation of blood pressure after 20 weeks of gestation without proteinuria or any of the severe forms of preeclampsia.

On the other hand, the UNRWA (2009) classified HTN in pregnancy into: Chronic - pre-existing before pregnancy with incidence ranged between 1-5% of all pregnancies and is more prevalent among older and /or obese women, pre-eclampsia or pregnancy-induced hypertension (refers to an increase in blood pressure which might be with proteinuria, edema or both after 20 weeks of gestation) It occurs mostly among primigravidas with incidence ranged between 2-7% and is increased with increased placental mass and with possible progression to eclampsia and pre-eclampsia superimposed on chronic hypertension (UNRWA, 2009).

My point of view, UNRWA classification is easier and more practical for GG than other classifications due to a limited resources.

In Sudan, a prospective observational hospital based study, conducted in the neonatal intensive care unit at Soba University Hospital in Khartoum, during the period from October 2011 to July 2012. Aimed to determine the neonatal outcome in hypertensive disorders of pregnancy, shows that out of 3168 deliveries sixty nine deliveries were found to be complicated by hypertensive disorders of pregnancy, which gives a prevalence of 2.17%. Of these, (42%) were pregnancy induced hypertension while (21.7%) and (4.3%) had preeclampsia and eclampsia respectively. Chronic hypertension was diagnosed in (20.2 %). Patients who had chronic hypertension with superimposed preeclampsia were (11.5%) of cases. The incidence of hypertension was higher among pregnant women aged 26-30years (36.2 %) and 31-35 years (28.9%). About 58% of the hypertensive women were multiparous. 68 (98.5 %) were delivered by caesarean section, (43%) of them were carried out as an emergency procedure (Kheir et al., 2014).

While, a hospital-based prospective cohort study conducted in Saudi Arabia in tree hospital with sample size 14000 women to explore the impact of maternal age on pregnancy outcomes, found that advanced maternal age is associated with increased risk of preterm delivery, CS and gestational diabetes and adolescents mother are at increased risk of preterm delivery and more likely to have vaginal delivery (Fayed et al., 2017). A population-based retrospective study on 2000 national health survey in Oman to study the advanced maternal age and pregnancy outcomes, the researcher found that the mothers aged ≥35 years were at increased risks of spontaneous abortion, preeclampsia, cesarean section delivery, prolonged labor, and gestational diabetes compared with adult mothers aged 20–34 years (Bakheit, 2015). A cross-sectional study conducted in Accra among mothers in maternity unit, indicated that was a statistical relationship ($p<0.001$) between age and adverse pregnancy outcomes (Adu-Bonsaffo, 2014). Regarding obesity the prevalence of overweight and obesity among school children ranged from 7% to 45%. And among adults from 25% to 81.9% (Musaiger, 2011).

However, El Kishawi et al. (2014) found that obesity and overweight are highly prevalent among women in urban area (57.0%), refugee camp (66.8%), and rural area (67.5%) in Gaza Strip. Also, BMI increased with age, adjusted b = 0.39; 95% CI (0.31, 0.48); $p\leq0.001$, BMI was lower in low-income participants, adjusted b = −1.59, 95% CI (2.74,-

0.44),p = 0.007 and housewives were more susceptible to obesity than employed woman, adjusted b = −2.76, 95% CI (5.33,-0.19), p=0.036.

The previous studies showed that the HTN in pregnancy can cause a several adverse pregnancy outcomes for the mother and new born.

2.2.3. Pregnancy outcomes

2.2.3.1. Adverse maternal outcome

In Bangladesh, a prospective study was done at Ad-din Medical College and Hospital during the period from January to June 2012 at the department of Obstetrics and Gynecology to observe the perinatal outcome of neonates with maternal hypertensive disorders in pregnancy. 73 mothers with their babies were included for the study. Thirty five mothers (47.9%) had regular antenatal checkup (ANC, where 38 (52%) had irregular. Primipara were (26%) and (74%) were multipara, (60%) had positive family history or had own history of hypertensive disorder during their previous pregnancy. (17.8%) had normal vaginal delivery, (82.19%) had lower uterine cesarean section. 30 babies (41%) were admitted. 44 mothers (60%) had gestational hypertension, 21 had (28.6%) pre-eclamtic toxemia, 3 had (4.1%) eclampsia, 5 had (6.8%) essential hypertension 3 of them subsequently developed PET. Mean maternal age 26.86 years, gestational age 34.15 (±1.46)weeks among admitted and 36.30 (±1.6) weeks among non-admitted. Mean birth weight was 1.69 (±0.39) kg. among admitted and 2.71 (±0.31) kg. in non-admitted group. In addition 5 intra uterine death observed in single pregnancy (Hassan, 2013).

Preeclampsia/Eclampsia

Pregnant women with preeclampsia may have any of the following complication: uncontrollable severe hypertension, eclampsia, pulmonary edema, disseminated intravascular coagulation, abruption placentae in addition to other complications (ACOG, 2013).

The ACOG refers severe features preeclampsia to any of the following conditions**:** Hypertension (diastolic >110 or systolic >160 on two occasions at least 4 hours apart on bed rest position), thrombocytopenia (when platelet count <100,000), impaired liver function (elevation of blood levels of liver transaminases is twice of the normal, severe epigastric pain or persistent right upper quadrant pain), new development of renal insufficiency, pulmonary edema and onset of new cerebral or visual disturbances (ibid).

The incidences of pre-eclampsia and eclampsia are deferent between and within regions, the highest values for pre-eclampsia and eclampsia observed in the American and African regions, respectively. Pre-eclampsia is showing the greatest disparities, the incidence ranged from 0.20% in Vietnam to 6.71% in Mongolia. According to income, the highest incidences of pre-eclampsia were observed in upper middle income countries, however the eclampsia appeared to be more frequent in lower middle income countries (Abalos et al., 2014).

A prospective study conducted for one year period in India among 1330 inpatients at Gynecology and Obstetrics Department at Bharati Hospital, Pune. The results indicates that the prevalence of Hypertensive Disorders of Pregnancy was 7.8%, of them 71.2% with preeclampsia, 19.2% with gestational hypertension, 7.7% with eclampsia and 1.9% with chronic hypertension. This incidence was higher among primigravidae (53.8%) and The most commonly prescribed antihypertensive drugs was Methyl dopa (17.3 %) (Sajith et al., 2014). I think the prevalence of preeclampsia in this study was high as all pregnant women were admitted to hospital and represent more the women who at the highest risk. A study included a total of 21,928 women conducted in Jordan showed that the incidence rate of preeclampsia was 1.3%. High blood pressure (OR = 11.9) and obesity (OR = 2.6) were significantly associated with increasing odds of preeclampsia. The risk of preeclampsia was 2.3 times higher in first pregnancies than that in second or more pregnancies. The neonatal mortality rate (81 vs. 12 per 1000 live births), and prematurity (30.8% vs. 7%), and the rates of LBW delivery (32.5% vs. 8.3%)were significantly higher among women with preeclampsia (Khader et al., 2017).

A prospective study of five hundred pregnant women with previous preeclampsia shows the women with preeclampsia with history of delivery at 37 weeks' gestation in a previous pregnancy had a 1 in 4 risk (23%) of recurrent disease. women who treated by antihypertensive agents were at greater risk for recurrent disease. Of the women who experienced recurrent preeclampsia, those with history of previous delivery at 34 weeks' gestation were more likely to deliver an infant with SGA (71% vs 29%; P.0001) and to have gestational hypertension earlier (n 34.4 (IQR, 28.2–37.1) vs 36.1 (IQR, 34.6–38.3); P.028). than were those women who delivered from 34-37 weeks (n 41) to develop preterm deliveries at 37 weeks' gestation (n 54 (71%) vs 16 (39%); P.001) and at 34 weeks (n 31 (41%) vs 5 (12%); P.001) (Bramham et al., 2011)..

A cross-sectional study conducted on behalf of the WHO Multicountry Survey on Maternal and Newborn Health Research Network-(WHOMCS) which implemented at 357 health facilities in 29 countries from Asia, Africa,, Latin America and the Middle East, shows that the incidence of hypertensive disorders of pregnancy was 2,7% (8542 from a total 313030 women in database). The total figures for chronic hypertension, pre-eclampsia and eclampsia are 0.29%, 2.16% and 0.28% of all deliveries respectively. The most prevalent maternal outcomes were chronic HTN (12,06%), renal diseases (7.84%), Sepsis (5,28%), hepatic diseases (3.92%), Anemia (3.14%). Maternal severe outcome more prevalent with women with eclampsia (18.06%), women with pre-eclampsia (4.31%) and women without pre-eclampsia/eclampsia (0.32%). Maternal deaths were higher with women with eclampsia (3.66%), women with pre-eclampsia (0.43%) and women without pre-eclampsia/eclampsia (0.05%). Noting that, all the previous results were statistically significant (Abalos et al., 2014).

I think that all the pre/eclmpsia related studies demonstrated the danger of its occurrence on the mother and new born and might be a life threatening. Regardless the size of previous study, I think some of the previous results were not fully representative as all the women included in the study only who accessed secondary and tertiary health centers and the primary health centers not included which may increase the incidence of different outcomes.

Vascular adverse outcome

A case-control study conducted to examine the relationships between hypertensive disorders of pregnancy and different predictive factors for vascular disease shows that Previous hypertensive disorders of pregnancy are a strong predictor for later vascular morbidity such as cerebrovascular, cardiovascular and renal hypertensive disease (Schokker et al.,2015). The women of hypertensive pregnancy disorders women may exhibit long–term worse blood pressure control and adverse left ventricular remodeling (Mesquita, 2014). Hypertensive disorders of pregnancy and gestational diabetes increase the risk of premature vascular disease (Nerenberg et al., 2014). However, In India, a study indicated that the retinal changes were found in 27.27% of patients with pregnancy induced hypertension (Bhupally et al., 2015).

A review study conducted by Gongora & Wenger (2015) of cardiovascular complication in pregnancy shows that Pre-eclampsia was occurred in 3% to 5% of all pregnancies and

women with a history of pre-eclampsia have a four-fold higher risk of hypertension and a three-fold higher risk of type 2 diabetes mellitus and doubled risk of stroke, cardiac ischemia, or venous thrombosis within 10 to 20 years after pregnancy(Gongora & Wenger, 2015).

There may be a synergetic effect of both gestational hypertension and postpartum incident hypertension as women with both were at higher risk of cardiovascular events than were women with gestational or incident hypertension alone (Yeh et al., 2014).

A retrospective study conducted in Saudi Arabia to determine the risk factors for PPH revealed that preeclampsia and history of APP by >6 and >8-fold respectively increased the risk for PPH (Al-Kadri et al., 2009). Another retrospective study showed that the APH prevalence was1.2% and among the common causes were abruptio placenta (68.3%) and placenta previa (30.0%) in Nigeria (Takai et al., 2017). Also, found that was a statistically significant occurrence of placental abruption among hypertensive women (p=0.00, RR=2.60 and OR=14.07) compared with placenta previa (Bako et al., 2008).

In Qatar, a study conducted to determine risk factors for APH revealed that the overall prevalence of APH was 15.3% with 6.7% among Qatari's and 8.6% among non-Qatari Arab women. lower education primary or below (AOR 1.72; 95%CI 1.22-2.43), and intermediate education AOR 1.41; 95%CI 0.88-2.26; P=0.005) compared to university education was significantly associated with APH. As for maternal biological characteristics, family history of G6PD (AOR 1.87; 95% CI 1.18-2.95; P=0.007). Family history of hypertension (OR 1.78; 95%CI 1.30-2.44; P<0.001) was significant (Bener at al., 2012).

Bener et al. (2013) also found that women aged 35 years or older had a significantly higher risk of APH (17.9% vs. 13.7%; P = 0.042) than younger women. Among 8,571,209 deliveries, 25,906 (3.0 per 1000) were complicated by severe PPH (P for yearly trend <.0001), significant risk factors were maternal age ≥35 years (aOR, 1.5; 95% CI, 1.5–1.6), multiple pregnancy (aOR, 2.8; 95% CI, 2.6–3.0), fibroids (aOR, 2.0; 95% CI, 1.8–2.2), preeclampsia (aOR, 3.1; 95% CI, 2.9–3.3), amnionitis (aOR, 2.9; 95% CI, 2.5–3.4), placenta previa or abruption (aOR, 7.0; 95% CI, 6.6–7.3) (Michael et al. 2013).

The etiology of placental abruption is unknown, however it most likely occurs among smokers, in hypertensive pregnancies, in pregnancies with intra uterine growth restriction,

in women with a previous placental abruption and in addition to other conditions (Bako et al., 2008). The placental abruption, defined as the premature separation of the placenta before the delivery of fetus, is among the most dangerous complications of pregnancy for both the fetus and mother.

A retrospective cohort study was conducted in the United States, 1995–2002 (n 30,378,902) using data on women that delivered singleton live births and stillbirths at 20 or more weeks of gestation, shows that at preterm gestation, the rates of acute-inflammation were higher among women with than without abruption (12.0% compared with 10.2%; RR 1.38, 95% confidence interval [CI] 1.34–1.42). At term, acute-inflammation were present in 4.2% and 3.3% of births with and without abruption, respectively (RR 1.39, 95% CI 1.33–1.45) (Ananth et al., 2006). Moreover, Bahar et al., (2009) found that the incidence of Placenta previa (PP) was 0.73%. Major PP 56.5% and minor PP 43.5%. women with major PP showed a significantly higher incidence of antepartum hemorrhage (OR 3.18; 95% CI 1.58–6.4, P = 0.001) and placenta accreta (OR 3.2; 95% CI 1.22–8.33, P = 0.017).

While, Senkoro et al., (2017) found that 73.3% of a women with placenta previa had a delivery by CS (OR 9.68; 95% CI: 6.66–14.1) and women with placenta previa had increased odds of APH (OR 9.21; 95% CI: 5.3–16.0) and PPH (OR 17.6; 95% CI: 8.6–36.2) in Tanzania (Senkoro et al., 2017)

Another comparative study also confirmed the relationship between the hypertension and placental abruption, the study was conducted in Pakistan and included of 50 cases and 50 controls for placental abruption, indicates that the mean systolic blood pressure (SBP) of was 155±7.8 mmHg and was 120±14 mmHg among controls. Mean diastolic blood pressure (DBP) of the cases was 104±6.6 mmHg and 71±11mmHg. Forty-nine 5 (10%) controls and (98%) of the cases were hypertensive while 45 (90%) controls and 1 (2%) case were non-hypertensive (p=0.000) (Khattak et al., 2012).

HELLP syndrome refers to hemolysis (H), elevated liver enzymes (EL), thrombocytopenia (low platelet count-LP), it is syndrome of multisystem disorder with an incidence of 0.17-0.85% of all pregnancies associated with a severe adverse maternal and fetal prognosis. The most accepted hypotheses are; a change in the immune feto-maternal balance, platelet aggregation, endothelial dysfunction, arterial hypertension. HELLP syndrome could be occured due to a generalized microangiopathy, mostly among older multiparous women in the third trimester of pregnancy, which develops with focal liver involvement, hemolysis

and thrombocytopenia which may lead to hepatic rupture, cerebral hemorrhage and DIC complications (Mihu et al., 2007).

I think that in some studies there was a relation with HTN in pregnancy specially for placental abruption than placenta previa.

And the results of the bellow study agreed with the mentioned above study regarding the severity of HELLP syndrome and the adverse maternal and fetal outcomes. In Iran, a retrospective study was conducted to determine the maternal and neonatal outcomes in HELLP syndrome, partial HELLP syndrome (PHS) and pre-eclampsia, and was done on pregnant women admitted in the Yahyanejad Hospital in the Babol University of Medical Science during the period from 1998 to 2009. A total of 327 pregnant women were categorized into three groups, severe pre-eclampsia, HELLP syndrome and PHS. The findings shows that the gestational age (35.72±3.15 WK) at delivery ($P<0.031$) and birth weight ($P<0.00$) were lower significantly in the women of HELLP syndrome. Indication for caesarean section, blood transfusion, acute renal failure, need to ICU care and liver hematoma were significantly greater in the women with HELLP syndrome (Bouzari et al., 2013).

The Induction of labor was more prevalent among HELLP (64.5%), PHS (43.3%) and preeclampsia (40.4%). Need to ICU was higher in women with HELLP (11.8%, $P<0.001$). The same finding was observed of ARF (11.8%, $P<0.001$). Cesarean section: HELLP (23.5%, $P<0.001$), preeclampsia (3.4%) and PHS (3%). Abruption placenta: HELLP (17.6%), preeclampsia (9%) and PHS (6.4%). Blood transfusion: HELLP (23.5%, $P<0.001$) and PHS (3.4%). Pulmonary edema outcome was only present in HELLP (5.9%, $P<0.001$). Eclampcia; HELLP (5.9%) and preeclampsia (2.2%). One case of maternal death was observed among women with HELLP syndrome (ibid).

2.2.3.2. Quality of life (QOL)

It's well-known that the WHO Quality of Life-BREF instrument assess four domains, the first one about physical health (energy and fatigue, pain and discomfort, sleep and rest), the second about psychological health (bodily image and appearance, negative and positive feelings, self-esteem thinking, learning, memory and concentration), the third about social relationships (personal relationships, social support and sexual activity) and the fourth for environmental health (financial resources freedom, physical safety and security health and

social care and home environment) and all these domains are calculated in numerical values (WHO, 1998).

A study conducted in Vietnam to determine the quality of life among people with HTN in rural area, the study has shown moderate quality of life among hypertensive patients all domains, except for psychological health, which was relatively low (Ha et al., 2014). Another study conducted in Poland shows that comorbidities and the number of medications are the primary factors associated with lower health-related quality of life in hypertensive patients women reported lower health-related quality all in dimensions (Zygmuntowicz et al., 2012).

2.2.3.3. Newborn outcomes

A cross-sectional study which based on WHO multi-country survey shows the following newborn outcomes which associated with pre-eclampsia and eclampsia: The LBW (less than 2500 gm) incidence of was 10.6% among women without pre-eclampsia/eclampsia, 34.3% among women with pre-eclampsia and 44.6% among women with eclampsia. Stillbirth incidence was higher among women with eclampsia (15.3%), women with pre-eclampsia (6.4%) and women without pre-eclampsia/eclampsia (1.9%).

The incidence of Apgar score at 5 minutes less than 7 was higher among women with eclampsia (20.3%), women with pre-eclampsia (7.9%) and women without pre-eclampsia/eclampsia (2.6%). The association between baby outcomes and pre-eclampsia and eclampsia indicated as fetal death was among women with eclampsia (15.32%), women with pre-eclampsia (6.36%) and women without pre-eclampsia/eclampsia (1.87%), early neonatal death women with eclampsia (8.61%), women with pre-eclampsia (3.04%) and women without pre-eclampsia/eclampsia (0.82%), perinatal death women with eclampsia (22.66%), women with pre-eclampsia (9.22%) and women without pre-eclampsia/eclampsia (2.68%), preterm death women with eclampsia (39.34%), women with pre-eclampsia (30.89%) and women without pre-eclampsia/eclampsia (7.10%) and neonatal intensive care unit admissions women with eclampsia (32.02%), women with pre-eclampsia (25.84%) and women without pre-eclampsia/eclampsia (6.24%). Neonatal complications (at least one) was more prevalent with women with eclampsia (25.5%), women with pre-eclampsia (20.6%) and women without pre-eclampsia/eclampsia (5.3%) (Abalos et al., 2014).

In Sudan, a prospective observational hospital based study, conducted in the neonatal intensive care unit to determine the neonatal outcome in hypertensive disorders of pregnancy, shows that 36 (52%) babies were classified as preterm, among pregnancy induced hypertension group (33.3%) followed by preeclampsia and chronic hypertension with superimposed preeclampsia groups (27.7%. 19.4% respectively) compared to chronic hypertension and eclampsia. the rate of SGA was higher in pre-eclampsia (53%) and chronic hypertension with superimposed preeclampsia compared to other groups. LGA was only observed in chronic hypertension (CH) (7.14%), six babies (8.6%) had birth asphyxia (Kheir et al., 2014).

Most of the babies with LBW were found in the PIH group, where, babies with VLBW were found in the preeclampsia group and there was significant correlation between the birth weight and type of hypertensive disorder in pregnancy (P= 0.01). 38% of the babies in this group developed sepsis during their admission to the neonatal unit. Most of the septic babies were in the preeclampsia and chronic hypertension with superimposed preeclampsia groups. Thrombocytopenia was diagnosed in 14 babies (20%), which more found in the pre-eclampsia and chronic hypertension with superimposed pre-eclampsia groups. Only 4 (6 %) babies died, all within 7 days of delivery. Perinatal death occurred in two babies of the preeclampsia group; one baby in the one in the PIH group and chronic hypertension with superimposed preeclampsia (ibid).

A hospital based case-control conducted in Gaza strip to assess the risk factors associated with preterm birth which included 200 cases who delivered in the hospitals during (March to mid April 2002) and 200 controls indicates some risk factors, among of these was maternal age 35 years or more which considered as statistically significant by logistic regression analysis (OR 1.8, 95% CI: 1–3, P = 0.04) with positive relationship. This maternal age is well known linked to the occurrence of medical complications of pregnancy such as pregnancy-induced hypertension and renal diseases that increase the risk of preterm birth (Abu Hamad et al., 2007).

However, the Study of increasing neonatal mortality among Palestine Refugees in the Gaza Strip indicates that the infant mortality in 2013 was 22.4 per 1000 live births compared with 20.2 in 2008 (p = 0.61), and this change reflected an increase in neonatal mortality (from 12.0 to 20.3 per 1000 live births, p = 0.01). The main causes of infant deaths were preterm birth (39%), congenital anomalies (29%), and infections (19%). Among the factors related to preterm birth was a women previously classified as alert or high risk in

pregnancy (van den Berg, et al., 2015). Of course, it is well known that HTN in pregnancy is linked to preterm birth, in addition to other factors. However, other center-based cross sectional study was conducted in Egypt to detect the percentage and factors affecting preterm birth in El-Moneera general hospital in south Cairo, during the period from July to December 2014, the Results detected that only (8.2%) were preterm births among all deliveries. In addition to other factors the affection with HTN, was higher among preterm labor mothers as 43.9% comparing with 18.3% of full-term mothers (Abdelhady & Abdelwahid, 2015).

The previous studies from different countries showed the effect of HTN in pregnancy on the newborn health and can cause adverse outcomes.

In Switzerland, a study conducted with aim to identify biomarkers for recognition of women at high risk of developing preeclampsia and to describe the epidemiological characteristics of preeclampsia. The study was based on pregnancy follow up and monitoring of 1571 pregnancies starting at the end of the first trimester during the period from July 2008 and January 2011. The findings indicates that the preeclampsia incidence of 2.31%, About 10% of all observed cases progressed to eclampsia, another 10% progressed to HELLP syndrome. Women with preeclampsia had significantly earlier delivery than women without preeclampsia. 6.67% of the pregnancies affected by preeclampsia showed an early onset of birth before gestational week 34. Thirty percent of preeclamptic women had a preterm birth (before 37 completed weeks of gestation). The incidence of preeclampsia was highest among nulliparous women. There was an observed decrease of preeclampsia incidence with increasing parity. Preeclampsia developed in 25.93% of women with a past history of preeclampsia (Prude et al., 2015).

Also, it was noted that the pregnant women with preeclampsia had significantly higher systolic and diastolic blood pressure than pregnant women without preeclampsia. Moreover, the Neonates born to mothers with preeclampsia had significantly lower birth weight than neonates of mothers without preeclampsia. Apgar scores of babies born to mothers with preeclampsia were lower at 1 minute after birth but not after 5 and 10 minutes. The intrauterine growth restriction was detected in 10% of The fetuses of preeclampsia patients (ibid).

I think this study is very clear and understandable as included a different adverse pregnancy outcomes which may linked to HTN in pregnancy as the women suffered from

different types of hypertensive disorders with a vary adverse maternal and new born outcomes as preeclmpsia, HELLP syndrome, low Apgar score and intrauterine growth restriction.

Intrauterine growth restriction (IUGR):

Intrauterine growth restriction (IUGR) is associated with perinatal morbidity and mortality. IUGR is a condition when the fetus fails to achieve his growth potential. Whereas, antenatal small for gestational age (SGA) refers to fetus with weight <10th percentile. SGA and IUGR are commonly used interchangeably. IUGR identification starts with assessment of risk factors, and the diagnosis is made by ultrasound. The common risk factors of IUGR include maternal causes such as hypertension, diabetes, cardiopulmonary disease, malnutrition, anemia, smoking and drug use (Suhag & Berghella, 2013).

A fetal growth restriction systemic review study indicates that chronic hypertension and preeclampsia are among the maternal conditions contributing for development of fetal growth restriction (Augusthy, 2015). While, the intrauterine growth restriction was detected in 10% of The fetuses of preeclampsia patients (Prude et al., 2015). Also in Iran, a retrospective study shows that the IUGR was greater in a women with HELLP syndrome (17.6%), (5,6%) among women with preeclampsia and (4.9%) among women who suffered from partial HELLP syndrome (Bouzari, Firoozabadi, & Hasannasab, 2013).

In fact, that all the previous three categories considered as complications of hypertension in pregnancy. So, as hypertension is a one among other risk factors of IUGR, this result was shown in the conducted case-control study in Pakistan at the department of Pediatrics Post-graduate medical institute Lady Reading Hospital Peshawar during the period from March 2008 to April 2009 to study a maternal factors associated with IUGR. Small-for-gestational age live born babies were compared with appropriate-for-gestational age babies(the cases were 200 and controls were 200). The findings indicates an interaction between pregnancy induced hypertension and parity of mother on the outcome (IUGR) compared to grand multipara mothers and not had PIH, the odds of developing of an IUGR newborn for the mothers who primary para with PIH was 10.1 higher than control group (Muhammad et al., 2010). .

Prematurity/Preterm Baby and Low Birth Weight (LBW)

In Egypt, a study shows that the preterm births were (8.2%) among all deliveries. And the affection with HTN, was higher among preterm labor mothers as 43.9% comparing with 18.3% of full-term mothers (Abdelhady & Abdelwahid, 2015).

While, a case-control study conducted in Egypt to determine risk factors to preterm birth shows that extreme of reproductive age (<20y and ≥ 40y) were associated with increased risk of preterm birth ($p < 0.001$) (El Beltagy et al., 2016). In Gaza Strip, the preterm birth (39%) was among the main causes of the neonatal mortality (23.3 per 1000 live birth) during 2013 (van den Berg et al., 2015).

A prospective international multicenter cohort study, where follow up was complete for 3184 participants from 3234 healthy nulliparous women with a singleton pregnancy to identify risk factors for spontaneous preterm birth (birth < 37 weeks gestation). The results demonstrate that having a mild hypertension (severe hypertension which requiring medication was excluded) has been identified as risk factor for spontaneous preterm birth after rupture of the membranes with an odds ratio of 9.65 (95% CI 2.5–37.1)in addition to other results (Dekker et al., 2012).

WHO defined Preterm birth as all births before 37 completed weeks of gestation or fewer than 259 days since the first day of a woman's last menstrual period (WHO, 2007). Based on gestational age Preterm birth can be further sub-divided into extremely preterm (<28 weeks), very preterm (28 - <32 weeks) and moderate preterm (32 - <37 completed weeks of gestation). More than 1 in 10 babies are born preterm worldwide. Over 1 million children die each year due to complications related to preterm birth. Prematurity is the leading cause of neonatal deaths and now the second cause of death after pneumonia in children under the age of 5. Preterm birth occurs due to variety of reasons. Some of them resulted from early induction of labor or cesarean birth whether for medical or non-medical reasons. Most preterm births may happen spontaneously. Common causes of preterm birth include multiple pregnancies, infections and chronic conditions, such as diabetes and high blood pressure. Among the evidence based intervention to improve preterm birth is provide effective screening and management of pregnant women at higher risk of preterm birth such as multiple pregnancies, diabetes, high blood pressure, or with a history of previous preterm birth (WHO, 2012).

In summary, we can faced some different terminology in literature such as preterm baby which reflect the delivery of baby before 37 weeks of gestations, regardless of baby weight. On the other hand, others will use the term prematurity which refers to same issue as mentioned above. Moreover, we could find preterm birth in other literature with the same meaning but could be related to the mother more. All of studies conducted about this aspect reflected the importance of prematurity which indicates the deviation from normal pattern and the relation with other acute or chronic conditions such as HTN in pregnancy.

WHO is defined the Low birth weight is as less than 2,500 g. Worldwide, more than 20 million infants are born with low birth weight. Seventy-two percent of low birth weight infants in developing countries occurs in Asia and 22% in Africa. In Sudan, a prospective observational hospital based study shows that the most of the babies with LBW were found in the PIH group, where, babies with VLBW were found in the preeclampsia group and there was significant correlation between the birth weight and type of hypertensive disorder in pregnancy (P= 0.01) (Kheir et al., 2014).
While, according to WHO multi-country survey showed that the LBW (less than 2500 gm) incidence of was 10.6% among women without pre-eclampsia/eclampsia, 34.3% among women with pre-eclampsia and 44.6% among women with eclampsia (Abalos et al., 2014).

From the above studies it was clear the relation betwwen the HTN in pregnancy and the occurrence of low birth weight.

Fetal/Newborn Death (Stillbirth, Neonatal and Perinatal)

In Gaza Strip, during 2013 the neonatal mortality was 22.4 per 1000 live birth, among the main causes was preterm birth with 39% (van den Berg et al., 2015). Stillbirth, refers to fetal death at 20 weeks' gestation or later, is one of the most prevalent adverse pregnancy outcomes in the United States which affect approximately 1 in 160 pregnancies, since 2003 the stillbirth rate in the United States was at 6.2 stillbirths per 1000 births with stagnant character (MacDorman & Kirmeyer, 2009).
Whereas, UNRWA defend the stillbirth (Born dead) as death prior to the complete expulsion or extraction from the mother (UNRWA, 2009). However, The World Health Organization (WHO) defines stillbirth as a baby born dead at 28 weeks of gestation or more, with a body length (35 cm or greater), or a birth weight (1000 gm or greater) (WHO, 2004). As clear from the above mentioned stillbirth definitions, there were differences between them. Moreover, this may explain a high stillbirth rate in the United States.

A cross-sectional study which based on WHO multi-country survey shows stillbirth incidence was higher among women with eclampsia (15.3%), women with pre-eclampsia (6.4%) and women without pre-eclampsia/eclampsia (1.9%) (Abalos et al., 2014).

A population-based study conducted in the United States from March 2006 to September 2008 with surveillance for all stillbirths at 20 weeks or greater, shows that the obstetric conditions and placental abnormalities were the most common causes of stillbirth. Among the obstetric conditions (29.3%; 95% CI), were hypertensive disorders (9.2%; 95% CI) and abruption (7.4%; 95% CI) (SCRN, 2011).

While, another study indicates that 2.2 million stillbirths occur in the antenatal period, and given that around 75% of pregnant women globally attend antenatal clinics at least once, which need more effective intervention that among the possible causes of stillbirth was maternal associated medical conditions such as pregnancy induced hypertension (Lawn et al., 2009).

However, in Iran, a retrospective study shows that the IUFD among women with preeclampsia (3.4%) was more than Partial HELLP Syndrome (PHS) (1.5%). Whereas, the FD was observed more in women with HELLP syndrome (17.6%, $P<0.02$), with preeclampsia (6.7%) and with PHS (5.4%) (Bouzari et al., 2013).

In India, other study conducted to determine the causes of stillbirth during the period from January 2002 to December 2005, there were 96 stillbirths in 2728 deliveries, shows that the stillbirth rate was 35.2/1000. And 58.3% of total stillbirths were antepartum stillbirths, also 17.7% of antepartum and 8.3% of intrapartum stillbirths were at term. About 70.8% of stillbirths were preterm. The most common causes among the mother medical conditions were hypertension and eclampsia, which together accounted for 26.8% of antepartum stillbirths. Moreover, abruptio placenta accounted for 21.9% of total stillbirths (Korde-Nayak Vaishali, et al, 2008).

However, A cross-sectional study to determine the newborn outcomes that related to preeclampsia and eclampsia shows that the fetal death was among women with eclampsia (15.32%), women with pre-eclampsia (6.36%) and women without pre-eclampsia/eclampsia (1.87%), early neonatal death among women with eclampsia (8.61%), women with pre-eclampsia (3.04%) and women without pre-eclampsia/eclampsia (0.82%), perinatal death women with eclampsia (22.66%), women with pre-eclampsia (9.22%) and women without preeclampsia/eclampsia (2.68%), preterm death women with eclampsia

(39.34%), women with pre-eclampsia (30.89%) and women without preeclampsia and eclampsia (7.10%) (Abalos et al., 2014). The researcher thinks it was clear from the previous studies that the hypertension in pregnancy could cause stillbirth directly or indirectly.

A study of defined cohort of 878,126 completed pregnancies conducted to examine the association between maternal chronic hypertension and the risk of congenital malformations shows that both treated and untreated chronic hypertension was associated with a significant increase in the risk of cardiac malformations (OR, 1.6; 95% CI, 1.4–1.9 and OR, 1.5; 95% CI, 1.3–1.7, respectively) compared with normotensive controls (Bateman, et al., 2015).

It was clear from the above mentioned studies the relation between the HTN in pregnancy and the occurrence of stillbirth and other adverse outcomes.

Neonatal Admission

Neonatal complications (at least one) was more prevalent with women with eclampsia (25.5%), women with pre-eclampsia (20.6%) and women without pre-eclampsia and eclampsia (5.3%) (Abalos et al., 2014). Apgar scores of babies born to mothers with preeclampsia were lower at 1 minute after birth but not after 5 and 10 minutes (Purde et al., 2015).

In Pakistan, A cross sectional descriptive study was conducted in the NICU of the military hospital Rawalpindi, during the period from January 2011 to May 2013, shows that the total number of neonates admitted to the NICU was 4201. Of these, (51.49%) were female, (48.30%) were male, and (0.21%) had ambiguous genitalia. Caesarean section (LSCS) in 2514 (59.84%) and spontaneous vaginal delivery (SVD) in 1687 (41.15%). 948 (22.56%) died during their stay in the hospital. Preterm and low birth weight babies accounted for 981 (23.35%), of the cases. Neonatal sepsis, at 713 (16.97%). respiratory distress syndrome (14.31%), neonatal jaundice (10.88%), birth asphyxia (9.54%),meconium aspiration syndrome (8.19%) and Intra Uterine Growth Retardation was 2.88% (Mahmud et al., 2016).

It was clear from the previous studies, the leading cause of NICU admissions was the Preterm and low birth weight babies (23.35%) of the cases. Also, the other results were related directly or indirectly to maternal acute and chronic condition which could include the hypertension in pregnancy in addition to other causes.

Chapter 3: Methodology

In this chapter the researcher presents the methodology used in this study. It explains the study design, study population, study sample, eligibility criteria, period of the study, validity of study instrument, data collection, data entry and statistical analysis, ethical and administrative considerations.

3.1 Study design

The design of this study is analytical comparative design aiming to achieve the objectives of the study in identifying the differences between hypertensive and non-hypertensive groups in the maternal and newborn outcomes. This type of design can usually be conducted faster, practical and inexpensive, large number of participants could be included in the study within short time period.

3.2. Study setting

For more representativeness and accuracy, the study was conducted at 6 UNRWA health centers distributed across the GG, the 6 health centers were selected randomly 2 from each area (north, middle and south). They are; Rimal, Sabra, Nusairat, D Balah, Maen and Khanyounis health centers.

3.3 Study population

The population of the study are the women who attended UNRWA health services in GG and consisted of two groups; the first one is the hypertensive group, from the women with history of hypertension in the last pregnancy and the second one is the non-hypertensive group (women without history of hypertension in recent pregnancy). The total number of women with HTN in pregnancy during 2015 was around 3850.

3.4. Eligibility criteria

Inclusion criteria

Hypertensive group are; women who were diagnosed with hypertension before (chronic HTN) and after 20 weeks (PIH) of gestation or in the recent pregnancy.

Non-Hypertensive group are; women without hypertension in the recent pregnancy.

Exclusion criteria:

1. Any woman who don't meet the inclusion criteria.
2. Any women with Diabetes Mellitus or Heart disease.
3. Who refuse to participate.

3.5. Period of the study

The data were collected from the health centers from the period of August 2016 to May 2017. Data cleaning and analysis was done from June to September 2017.
From October till December thesis writing.

3.6. Sample size and sampling process

In this study, the Raosoft, power and sample size calculations (soft program) was used in order to calculate the required sample and the result indicates that the representative sample should be at least 175 participants for each group with total of 350 participants and based on 1:1 ratio (Annex 2). The researcher used the following parameters for sample calculation; maximum acceptable percentage points of error (confidence interval 5%) with confidence level 95% and Power 80%.
Also, for more representativeness, and to increase statistical power, the researcher increased the sample size to 430 participants, 215 participants for hypertensive group and 215 for non-hypertensive group. Generally, Gaza Strip's population is relatively considered homogeneous community with low disparities so the researcher decided to use stratified proportional sampling by randomly selecting six health centers after exclusion of some health centers where the e.Health is newly or not implemented (Jabalia, Rafah, Talsultan, Maghazi and etc.) at the time of proposal writing.

The selected health centers were as following:

- North area (Rimal and Sabra health centers),
- Middle area (Nuesirat and Dier balah health centers) and
- South area (Maan and Khan-Younis health centers).

The required numbers of participant for each health centers were determined according to proportionate percentage of hypertension in pregnancy (Annex 3). All eligible participants were enrolled in the study by quota sampling during the postnatal care after obtaining consent form and the hypertensive and non-hypertensive groups matched by location.

3.7. Study instruments

The researcher used structured questionnaire which contains personal data, socio-demographic characteristics (mother age at last age, marital age, income, education and other variables), medical history (presence of HTN or any other medical condition), obstetric profile which included antenatal care registration, visits, anemia, obesity and blood pressure mean) and birth history, and outcomes of the last pregnancy which include adverse maternal outcome (type of delivery, preeclampsia, antepartum and postpartum hemorrhage), quality of life and newborn outcome (birth weight, prematurity and other variables).

In addition, WHOQOL-BREF scale with SF-26 was used which consisted of 4 domains (physical activity, psychological, social relationship and environmental) with overall satisfaction mean was used to assess the quality of life for respondents.

The second step was record based abstraction sheet by reviewing mother's and newborn's e-medical files to obtain the relevant data about the mother (BMI, blood pressure, ANC registration and visits and other data) and new born health (weight, prematurity and other variables) the last pregnancy.

3.8. Pilot study

It was carried out on a sample of 20 mothers with HTN and 20 mothers without HTN in the last pregnancy to clarify the validity and reliability of the questionnaire. The pilot study did not make changes in the study instrument.

3.9. Data collection

Data were collected by three trained data collectors by using structured face-to-face questionnaire and quality of life S-26 which contains 4 domains in the selected UNRWA health centers at the time of postnatal care.

The researcher trained the assistant data collectors about the aim, objectives of the study, the tools that used, and for questionnaire application. The time allocated for each interview took about 25-30 minutes.

At the same period record based review took place by the researcher himself.

3.10. Validity and reliability

3.10.1. Validity

The researcher submitted the questionnaire to thirteen experts in field to evaluate the context and the components of the instrument, in order to ensure validity and relevance and their feedback were taken in consideration.

Also, a pilot study conducted before the actual data collection to examine participants' response to the questionnaire and how they understand it.

The face validity was insured by proper construction of questionnaire into parts with logical consequences and arrangements.

3.10.2. Reliability

The following measures were done to assure instruments reliability:

1. Training of data collectors on questionnaire's techniques to ensure standardization of questionnaire filling.
2. The data entry filled in the same day of data collection, and this allowed for possible interventions to check the data quality or to re-fill the questionnaire when required.
3. Re-entry of 5% of the data after finishing data entry were ensured correct entry procedure and decreased entry errors.

3.11. Data entry and analysis

The obtained data of appropriate questionnaire was entered and analyzed by the researcher himself with support of the supervisor using Statistical Package of Social Science (SPSS) program version 22 and according to the following steps:

1- Reviewing of the questionnaires domains, structure and abstracted relevant data from the e-records.
2- Coding of questions.
3- Data model entry design by SPSS.
4- Data cleaning.
5- Descriptive, analyzed and tabulated statistics as frequency, mean and percentages will be calculated to compare the results between non-hypertensive and hypertensive groups.

6- Chi square used for categorical group and t-test (systolic and diastolic blood pressure, BMI, quality of life and other variables) were used and P values equal or less than 0.05 is considered as statistically significant to compare the results between the hypertensive and non-hypertensive groups.

3.12. Ethical and administrative consideration

The researcher was committed to all ethical and administrative consideration.

An ethical approval obtained for from Helsinki Committee which is adopted by the world medical assembly and an official letter of approval to conduct the research was obtained from the Helsinki committee-Gaza.

Academic approval was achieved from School of Public Health at Al-Quds University,

Administrative organizational approval was asked for from Chief of Health programme in UNRWA-Gaza field office.

In addition, the aim and objectives of the study were explained to all participants and consent form was obtained verbally before voluntary participation.

3.13. Study Limitations

The study faced some limitations such as:

1- Accessibility of the data that may be not documented.
2- The drop out of the participants at the time of the study.
3- The frequent cutoffs of electricity.
4- Financial constrain.

Chapter 4: Results and Discussion

This chapter demonstrates the results of statistical tests and analysis of data, including descriptive analysis that presents the demographic characteristics, obstetric profile and pregnancy outcomes of the study sample. The researcher used simple and advanced statistics including frequency, means, percentage, Chi square and t-test. Finally the researcher demonstrated the outcomes arising from this study and compared them with other studies.

4.1. Descriptive analysis

4.1.1. Socio-demographic characteristics of the study participants

The study sample consisted of 430 women, 215 (50%) were suffered from hypertension during the last pregnancy (hypertensive) and 215 (50%) were not suffered from hypertension during the last pregnancy (non-hypertensive). The hypertensive group consisted of 153 (71.2%) of mothers with PIH and 62 (27.8%) of mothers with Chronic HTN (before 20 weeks of gestation). Also pregnancy outcome were 210 singletons and 5 multiple among hypertensive mothers, while, were 209 and 6 among non-hypertensive respectively. Moreover, the mothers distribution by the sex of newborns were for hypertensive 116 males, 99 females and non-hypertensive mothers 103males and 112 females.

Table 4.1: Distribution of participants by age, residency and education.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	No.	%
Age group (at last delivery)	Mean, 28.82, Std = 6.850		Mean, 26.50 Std = 5.256		Mean, 28.02, Std = 6.151	
20 years old and less	21	9.8	19	8.8	40	9.3
21– 35 years	148	68.8	173	80.5	321	74.7
More than 35 years	46	21.4	23	10.7	69	16.0
Total	215	100.0	215	100.0	430	100.0
Marital age	Mean, 20.8, Std = 3.718		Mean, 20.38, Std = 3.446		Mean, 20.82, Std = 3.581	
18 years and less	58	27.0	61	28.4	119	27.7
19 – 20 years	60	27.9	51	23.7	111	25.8
21 – 24 years	70	32.6	75	34.9	145	33.7
25 years and above	27	12.6	28	13.0	55	12.8
Total	215	100.0	215	100.0	430	100.0
Residence area						
City	79	36.7	76	35.3	155	36.0
Village	48	22.3	71	33.0	119	27.7
Camp	88	40.9	68	31.6	156	36.3
Total	215	100.0	215	100.0	430	100.0
Mother education						
Below secondary	56	26.0	45	20.9	101	23.5
Secondary	79	36.7	76	35.3	155	36.0
Diploma	14	6.5	24	11.2	38	8.8
University and higher	66	30.7	70	32.6	136	31.6
Total	215	100.0	215	100.0	430	100.0

Table (4.1) presents the demographic characteristics of the study population, it shows that the majority of study population age at last delivery belonged to the age group of 21-35 years (74%), (68.8%) were hypertensive and (80.5%) were non-hypertensive. (9.3%) of all participant belonged to age group 20 years and less, (9.8%) were hypertensive and (8.8%) were non-hypertensive. Three mothers had minimum age 17 years old among hypertensive group and (8.8) of hypertensive group had 40 and above, among them was the maximum age 44 years for one mother. The researcher described the extreme ages below 18 and 40 and above to explain that they at higher risk to develop adverse pregnancy outcomes. The mean age at delivery for all mothers is 28.2 ± 6.1years, 28.8 ± 6.8 for hypertensive and

26.2±5 for non-hypertensive. Other study indicated that the advanced maternal age was associated with increased risk of preterm delivery, CS and adolescents mother are at increased risk of preterm delivery and more likely to have vaginal delivery (Fayed et al., 2017).

Also The researcher thinks that the adverse maternal and newborn outcomes will increased with age, older woman liable more to have complications. Moreover, it's well-known that in general the incidence of HTN especially PIH increase with age.

Regarding marital age, it was noticed that (33.7%) of all mothers, (32.6%) of hypertensive women and (34.9%) of non-hypertensive women get married at age group of 21-24 years and (27.7%) of all participants, (27%) of hypertensive women and (28.4%) of non-hypertensive women get married at age 18 years and less.

The mean (± SD) marital age was 20.8 ± 3.5 years, hypertensive- 20.8 ± 3.7 and non-hypertensive 20.3 ± 3, as described before, no big differences between the two groups in marital age. However, the mean marital age in Gaza strip was 19.9 and for Palestinian refugee in Jordan Lebanon were 20.3, 21.4 respectively (UNRWA, 2017). PCBS noted that during 2014 the mean marital for males in Palestine was 20.3, GS-20.2 and WB-20.4 (PCBS, 2017). While, it was in Jordan 29.4 for males and 25.8 for females (DOS, 2014). The researcher can explain these differences by the variation in culture and economic status; some families thought it is better for girls to get married at younger age.

Table (4.1) shows that (36.3%) of all participants, (40.9%) of hypertensive group and (31.6%) of non-hypertensive group live in refugees camp. UNRWA-health program outlined that Palestinian population living in refugees camps in GG was 40.3%, (UNRWA, 2017).

Mothers live in cities were (36.0%) of all participants, (36.7%) of hypertensive group and (35.3%) of non-hypertensive group (27.7%) of all participants, (22.3%) of hypertensive women and (33.0%) of non-hypertensive women live in village. El Kishawi et al. (2014) found that obesity and overweight are highly prevalent among women in refugee camp (66.8%). The researcher thinks that the refugees camp environment (over- crowdedness, poor infrastructure, etc.) and displacement are considered as an important social determinants of Palestinian health (El Kishawi et al., 2014).

Table (4.1) also shows that regarding the mother education level, (23.5%) of mothers had attained below secondary schools, (36%) had attained secondary education, (8.8%) had attained college education while most of the mothers (31.6%) had university and higher education. for better understanding the education level for the mothers of first category below secondary (include illiterate, can read and write, elementary and preparatory education) it were one mother was illiterate and 20 mothers had only elementary from hypertensive, while 8 mothers from non-hypertensive group had elementary non-hypertensive group education. However, PCBS outlined that the females who had university and higher education was 14.5% in G.G and 12.6% in WB (PCBS, 2106). The researcher attributes this differences between the study sample to the calculation method of PCBS depends on all females regardless married or not, while in this study all females were married.

Table 4.2: Distribution of participants by working, income, house ownership and family type.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	No.	%
Working						
Yes	19	8.8	20	9.3	39	9.1
No	196	91.2	195	90.7	391	90.9
Total	215	100.0	215	100.0	430	100.0
Total monthly Income By NIS						
Less than 1000 NIS	100	46.5	100	46.5	200	46.5
From 1000 to 2000 NIS	82	38.1	85	39.5	167	38.8
Above 2000 NIS	33	15.3	30	14.0	63	14.7
Total	215	100.0	215	100.0	430	100.0
House Ownership						
Completely owned	84	39.1	97	45.1	181	42.1
Family owned	125	58.1	107	49.8	232	54.0
Rental	2	0.9	8	3.7	10	2.3
Destroyed during the war	4	1.9	3	1.4	7	1.6
Total	215	100.0	215	100.0	430	100.0
Family Type						
Extended	64	29.8	63	29.3	127	29.5
Nuclear	151	70.2	152	70.7	303	70.5
Total	215	100.0	215	100.0	215	100.0

Table (4.2) shows that (9.1%) of respondents, (8.8%) of hypertensive and (9.3%) of non-hypertensive are working, while, the majority of mothers (90.9%) are not working. PCBS reported that the unemployment rate among females in Palestine was 42.8% (PCBS, 2016). Unemployment in GG is very high and affects many aspects of women life especially in health.

Findings Table (4.2) also shows that (46.5%) of all mothers had monthly income less than 1000 NIs, (38.8%) had 1000-2000, and only (14.7%) had more than 2000 NIS. PCBS declared that the poverty among G.G population was 38.8% in 2011 (PCBS, 2016). This situation lead to w poor economic status in G.G, which increase the burden of diseases including adverse pregnancy outcomes and poor life quality.

The findings of Table (4.2) indicates that (54.0%) of all mothers, (58.1%) of hypertensive mothers and (49.8%) of non-hypertensive mothers live in houses owned by the husband family, however, (1.6%) of all mothers houses had been destroyed during Gaza war-2014. 2.3% of all mothers live in rented houses, this result is lower than PCBS results as 5.7% of families live in rented houses and 79% in owned houses either by husband or any one of his family in GG (PCBS, 2016).

Table (4.2) also shows that (29.8%) of the mothers live within extended families are hypertensive and (29.3%) are non-hypertensive. Moreover, the table shows that (70.2%) of the mothers living within nuclear families are hypertensive and (70.7%) are non-hypertensive. As shown from table there was no big differences between the two groups in the family type and may this variable had the same effect on the health of both groups, on the other hand, according to PCBS (85.7%) of families were nuclear (84.7% GG, 86.3% WB) and 10.2% were extended in Palestine (ibid).

Table 4.3: Distribution by family size, husband education and working.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	No.	%
Family Size	Mean, 5.3209, SD= 2.510		Mean, 5.097, SD = 1.878		Mean, 5.209, SD =2.517	
3 members and less	77	35.8	49	22.8	126	29.3
From 4 to 6	75	34.9	121	56.3	196	45.6
7 members and more	63	29.3	45	20.9	108	25.1
Total	215	100.0	215	100.0	430	100.0
Husband education						
Below secondary	65	30.2	57	26.5	122	28.4
Secondary	63	29.3	72	33.5	135	31.4
Diploma	21	9.8	18	8.4	39	9.1
University and higher	66	30.7	68	31.6	134	31.2
Total	215	100.0	215	100.0	430	100.0
Husband Working						
Yes	144	67.0	143	66.5	287	66.7
No	71	33.0	72	33.5	143	33.3
Total	215	100.0	215	100.0	430	100.0

The results of table (4.3) shows that (25.1%) of participants, (29.3%) of hypertensive and (20.9%) of non-hypertensive live with families of 7 members and more. The mean (±SD) family size is 5.2±2.5, hypertensive 5.3±2.5 and non-hypertensive-5.09±1.8, this result is closed to UNRWA-Health department result as the average family size (5.6) in GG (UNRWA, 2016), while, PCBS declared that the average family size in GG was 5.7 (PCBS, 2016).

Table (4.3) also shows that (28.4 %) of all mothers husbands, (3.2%) of hypertensive (3 can read and write, of elementary and 39 of preparatory education), (26.5%) of non-hypertensive (two illiterate, one husband can read and write, 13 elementary and 41 preparatory education) had below secondary education, while, (31.3) of all mothers husband. (30.7%) of hypertensive and (31.6%) of non-hypertensive are holder of university and higher education. While, (28.4%) of all husbands, (30.2%) of hypertensive group and 57(26.5%) of non-hypertensive group had below secondary education. The results of PCBS was 15.7% of males are holder of university and higher education in GG (PCBS, 2016), this differences may be explained by using a different methodology in calculating

the variables as PCBS calculation depends on all males and only who married as in our research.

The table (4.3) also show that (33%) of all husbands, (33%) of hypertensive group husband and (33.5%) of non-hypertensive group were not employed, which closed to PCBS results, 34% of males were not employed in G.G (PCBS, 2016).

4.1.2. Obstetric profile

The obstetric profile contains some variables related to the last pregnancy such as reproductive history, antenatal care and other related factors.

Table 4.4: Distribution of study participants by gravidity, party and history of abortion.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	No.	%
Gravidity	Mean, 4.3, SD = 3.2		Mean, 3.57, SD = 2.4		Mean, 3.9, SD = 2.87	
Primi gravida	63	29.3	42	19.5	105	24.4
From 2 to 3	44	20.4	83	38.6	127	29.6
From 4 to 6	57	26.6	64	29.8	121	28.1
7 and more	51	23.7	26	12.1	77	17.9
Total	215	100.0	215	100.0	430	100.0
Parity	Mean, 3.4, SD = 2.6		Mean, 2.7, SD = 1.9		Mean, 3.2, SD = 2.3	
Para one	75	34.9	50	23.3	125	29.1
From 2 to 3	47	21.9	94	43.7	141	32.7
From 4 to 6	61	28.3	58	26.9	119	27.7
7 and more	32	14.9	13	6.0	45	10.5
Total	215	100.0	215	100.0	430	100.0
Past history of abortion	Mean 0.87, Std = 1.36		Mean, 0.51, Std = 0.99		Mean, 0.69, Std = 19.8	
Never	119	55.3	152	70.7	271	63.0
Once	49	22.8	36	16.7	85	19.8
Twice and More	47	21.9	27	12.6	74	17.2
Total	215	100.0	215	100.0	430	100.0

Table (4.4) shows that (24.4%) of the respondents, (29.3%) of hypertensive respondent and (19.5%) of Non-hypertensive were primi gravida., while (23.7%) of hypertensive and (12.1%) for Non- hypertensive had seven and more gravida. Gravidity mean for all respondents, hypertensive group and non-hypertensive group were 3.9±2.8, 4.3±3.2 and

3.5± 2.4 gravida respectively. Which means that hypertensive mothers had higher mean and more gravida than the non-hypertensive.

Table (4.4) also shows that the most of mothers (32.7%), (21.9%) of hypertensive, (43.7%) of Non-hypertensive had from two to three parity with mean 3.4 ±2.6 and 2.79±1.9 for the hypertensive and non-hypertensive groups respectively. On the other hand, mothers who had one parity were (34.9%) of hypertensive mothers and (23.3%) of non-hypertensive. Also, (14.9%) of hypertensive group and (6.0%) of non-hypertensive had seven and more parity. It was clearly to observe that hypertensive mothers were more at the extreme categories, who had one and seven and more.

Table (4.4) shows that the hypertensive mothers had at least a past history of one abortion more than non-hypertensive (22.8%, 16.7%) respectively. The same trend was observed for the mothers with history of 2 abortions or more (21.9%) of hypertensive (12.6%) of non-hypertensive. 6.8% of expected deliveries resulted in abortion during 2016 in GG, 7.9% in Jordan and 4.8% in WB among Palestine refugees (UNRWA, 2016). Occurrence of abortion increased with advanced maternal age (≥ 35) (Bakheit, 2015).

The incidence of abortion was estimated to be 265 per 1000 live birth. recurrent abortion is associated with gravidity, consanguinity and marital age (Yassin, 2000). Also a study conducted in Pakistan, the researcher found that the abortion is associated with maternal age (p-.048) among other demographic factors (Catak et al., 2016)

Table 4.5: Distribution of birth interval, PCC, ANC and BMI.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	No.	%
Birth Interval by months	Mean = 35.77, SD = 20.7		Mean = 31.6, SD = 18.8		Mean = 33.5, SD = 19.78	
Less than 24 months	47	33.6	62	37.6	109	35.7
From 24 to 48 months	41	29.3	55	33.3	96	31.5
More than 48 months	52	37.1	48	29.1	100	32.9
Total	140	100.0	165	100.0	305	100.0
Preconception care (PCC)						
Yes	43	20.0	49	22.8	92	21.4
No	172	80.0	166	77.2	338	78.6
Total	215	100.0	215	100.0	430	100.0
ANC Early registration < 14 weeks						
Yes	161	74.9	151	77.3	312	72.6
No	54	25.1	64	22.7	118	27.4
Total	215	100.0	215	100.0	430	100.0
ANC visits	Mean = 8.06, SD = 2.577		Mean = 6.655 SD = 2.232		Mean = 7.358 SD = 2.509	
3 and less	7	3.2	18	8.4	25	5.8
4 and more	208	96.7	197	91.6	381	94.2
Total	215	100.0	215	100.0	430	100.0
Body mass index (BMI)	Mean = 30.7, SD = 5.59		Mean = 25.8, SD = 4.38		Mean = 28.28, SD = 5.59	
Normal	24	14.9	84	55.6	108	34.6
Overweight	49	30.5	46	30.5	95	30.5
Obese	88	54.6	21	13.9	109	34.9
Total	161	100.0	151	100.0	312*	100.0
*** 118 mothers were excluded as they registered for last pregnancy after 13 weeks of gestation.**						

Table (4.5) shows that the mothers with birth interval less than 24 months were (37.1%) of all participants, 33.6% of hypertensive and (35.7%) of non-hypertensive. the Minimum birth interval was 10 months and observed once in each group, while, the maximum among hypertensive120 and non-hypertensive131months. Taking in consideration that 125 of mothers were excluded as they had the first para. The overall mean was 33.5, 35.7 for hypertensive and 31.6 for non-hypertensive, however, the UNRWA-Health department annual report showed that the birth mean interval and the percentage of women with birth

interval less than 24 months were 33.7 and 38.5% respectively in GG, 39 and 30.4 in WB, 40.4 and 27.7% in Jordan and 42.4 and 30.4% for Palestinian refugees (UNRWA, 2016).

A cross-sectional study conducted in Bangladesh to determine the determinants and consequences of short birth interval showed that mothers with birth intervals of less than 21 months were at two-fold increased risk of adverse pregnancy outcome (AOR 2.23 95% CI 1.51-3.29), including neonatal mortality (AOR 2.28 95% CI 1.28-4.05), perinatal mortality (AOR 2.33, 95% CI 1.55-3.50) and stillbirth (AOR 2.13, 95% CI 1.28-3.53) in comparison with mothers who had birth intervals of 45 months or longer (de Jonge et al., 2014). It was clear from the table (4.5) that hypertensive mothers had lower birth interval less than 24 months, higher 24 months and more and higher mean in comparison with non-hypertensive, also more than one third of mothers had an interval of less than 24 months which needs more efforts to minimize this percentage in order to reduce pregnancy adverse events. Therefore, the researcher thinks it's a time to strengthening the provided family planning and preconception cars service to achieve better quality.

Table (4.5) also shows that the mothers who received preconception care (PCC) were (21.4%), (20.0%) of hypertension group and (22.8%) of non-hypertensive group. However, as shown in the table (4.5) that the mothers who get pregnant after PCC of non-hypertensive group was slightly higher than hypertensive despite that hypertensive mothers were in need for attention as they at higher risk to develop adverse pregnancy outcomes especially for these women with history of chronic HTN, PIH, preeclampsia/eclampsia and/or bad obstetric history.

Table (4.5) shows that the mothers who registered for AC early for the last pregnancy up to 13 weeks of gestation were (72.6%) of all participant, (74.9%) of hypertensive group and (77.3%) of non-hypertensive were registered, the minimum and maximum gestational age at registration were 4 and 34 for hypertensive and 4 and 31 week for non-hypertensive group respectively. However, the early registration for antenatal care was lower than UNRWA-health department result, it was 89.1% in G.G, 74.8% in WB and 82.3% in Jordan among Palestinian refugees (UNRWA, 2016). Moreover, the early registration among hypertensive mothers was slightly higher than non-hypertensive. The researcher can attribute these differences to low PCC coverage at that time, some mothers with high risk pregnancy desired to be followed up by private specialists or clinics and poor health care provider counseling.

Table (4.5) shows that (94.2%) of all participants with ANC visits mean 7.3, 208 (96.7%) of hypertensive group and (91.6%) of non-hypertensive group had 4 and more antenatal care visits during the last pregnancy. Moreover, the antenatal visits mean of hypertensive group (8.06) was higher than the mean of non-hypertensive (6.6) and this results are closed to UNRWA findings as the average number of antenatal visits was 6.7 and 95.2% of pregnant women had 4 visits and more in G.G (UNRWA, 2016), which reflects the quality of health services provided by UNRWA especially for the risky mothers. But there were a variations in ANC mean and the percentage of pregnant women who had four visits and more between WB (5.1, 91.5%), Lebanon (6.2, 94.2%) and Jordan (5.1, 81.5%) for Palestinian refugees (UNRWA, 2016).

The average of ANC visits in WB was 4.6 during 2016 (MOH, 2017). The minimum number of visits was observed among hypertensive and non-hypertensive 2 and 1 respectively, while the maximum was 15 and 13 respectively. A study conducted in Egypt showed that women with inadequate number of ANC visits had a 12-fold risk of a poor maternal outcome (post-partum hemorrhage, eclampsia, and intensive care unit admission), a 53-fold risk of a poor fetal outcome compared to women with an adequate number of antenatal visits.(El-Sayed Azzaz et. al, 2016). The researcher thinks that the ANC is very essential health preventive program aimed to reduce maternal and fetal mortality and morbidity. Therefore, the frequency of ANC visits plays a clear effect in pregnancy outcome, the of ANC visits mean and four visits and more of hypertensive was higher than non-hypertensive, and these differences are accepted as the hypertensive mothers are at higher risk to have adverse pregnancy outcomes.

Table (4.5) shows that (35.1) of participants, (52.1%) of hypertensive and (18.1%) of non-hypertensive were obese and (31.9%) of mothers, (34.0%) of hypertensive and (29.8%) were overweight. The researcher categorized BMI according to WHO criteria, BMI less than 18.5 kg/m2 means underweight, normal weight from 18.5 to 24.9 kg/m2, overweight from 25 to 29.9 kg/m2 and obesity from 30 kg/m2 and above. 118 mothers from both group were excluded as they registered for last pregnancy after 13 week of gestation. The previous findings indicate that the incidence of overweigh and obesity was higher among hypertensive group and the same picture was observed in the differences between the BMI mean of Hypertensive (30) and non-hypertensive (25). The minimum and maximum BMI were 19.1and 47.7 respectively among hypertensive and 18.7 and 41.3 among non-hypertensive group. The table shows clearly that the percentage of hypertensive mothers

who had obesity and overweight were 54.6% and 30.5% respectively, while 13.9% and 30.5% of non-hypertensive mothers and 34.9% and 30.5% of all mothers. The estimated prevalence of obesity and overweight among females was 30.8% and 60.7% Palestinian territory, 16% and 37% in Lebanon, 49.8% and 79.5% in Kuwait, 36.4% and 66% in Jordan and 41.6% and 66% in Egypt (EMRO, 2012). However, according to UNRWA annual report the percentage of obesity among patients with non-communicable diseases was 37.1% in Gaza strip, 42.1% in WB and 46.9% in Jordan for Palestinian refugees (UNRWA, 2016).

The researcher thinks that the obesity and overweight are common among the Palestinian people and associated with other risk factors as sedentary lifestyle, age, gender and eating habits, thereafter, the obesity and overweight are risk factor to many lifestyle related illnesses including HTN which can cause maternal and newborn adverse outcomes. The researcher can attribute high percentage of obesity among hypertensive mothers to their effect on BP and to cause HTN which is very risky during pregnancy.

Table 4.6: Deference's between study groups by mean of hemoglobin, systolic and diastolic blood pressure and postnatal care.

Variable		No.	Mean	Std
Haemoglobin	Hypertensive	215	10.8	0.8
	Non-Hypertensive	215	10.9	0.9
Systolic blood pressure (SBP)	Hypertensive	215	122.1	8.2
	Non-Hypertensive	215	106.7	4.9
Diastolic blood pressure DBP	Hypertensive	215	81.3	5.9
	Non-Hypertensive	215	68.8	4.7
Postnatal care Attendance in days	Hypertensive	215	9.20	4.912
	Non-Hypertensive	215	7.86	3.855

The table (4.6) shows that hemoglobin mean among hypertensive mothers (10.8) was slightly lower than non-hypertensive (10.9), the minimum hemoglobin mean was observed among hypertensive 8.1 and 6.7, the maximum was 13.7 among hypertensive and 13.0 non-hypertensive. UNRWA-health department defined anemia when hemoglobin lower than 11gm/dl and classified into mild 10 to 10.9, moderate 7 to 9.9 and severe < 7. Anemia incidence in WB was 28.2%, of which mid anemia is 26.6%, moderate 1.5% and severe 0.1% during 2016 (MOH, 2017), while, UNRWA health report showed that the prevalence

of anemia among pregnant women in GG was 35.6% and in WB 29.2% (UNRWA, 2017). Anemia is a serious complication for a women during pregnancy, its might be due to hemoconcetration, placentation, increased demand, inadequate intake and bleeding condition like APH and PPH, in addition to used medication which affect absorption of iron and vitamins. The researcher explained the mild difference between the two groups in hemoglobin mean by high prevalence of anemia among pregnant women regardless that the most of cases were mild which considered as public health problem.

Table (4.6) also shows that the systolic BP mean was 122.1 among hypertensive and 106.7 among hypertensive. While, the diastolic was 81.3, 68.8 respectively. As shown from the table that both systolic and diastolic BP mean were higher among hypertensive compared to the non-hypertensive mothers. The minimum and maximum mean were 95.2 and 146.6 among hypertensive mothers and 88.2, 120 among non-hypertensive respectively. The researcher thinks that this differences in BP is related to HTN in pregnancy in association with diet and lifestyle which caused raised and uncontrolled BP ($\geq$ 140 and/or $\geq$ 90) which put the mothers at higher risk of having adverse maternal and newborns outcomes. However, the estimated prevalence of raised BP among adult females in Palestine was 35.6%, in Jordan 25.9%, in Lebanon 12.9% and in Egypt 40.8% (EMRO, 2012).

Table (4.6) also shows that the postnatal care attendance in days mean was higher among hypertensive group (9.2) compared to non-hypertensive (7.8), which reflect a delay in receiving postnatal care for the hypertensive group.

Recovery rate from pregnancy-induced-hypertension.

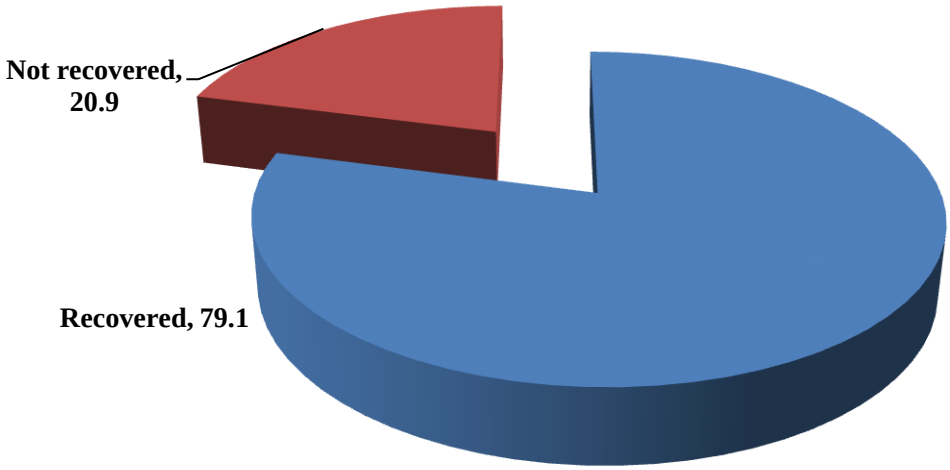


Figure 4.1: Recovery from hypertension during pregnancy

Figure (4.1) shows that (79.1%) of the diagnosed mothers with PIH were recovered at the end of postnatal period (42 days after delivery) while (20.9%) were not recovered. Knowing that, there are 62 cases with chronic hypertension and 215 without hypertension.

4.1.3 Newborn outcome

Table 4.7: Distribution of Newborns by stillbirth, birth weight, preterm birth, neonatal admission to hospital and death.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	Nu.	%
Stillbirth						
Alive	213	99.1	215	100.0	428	99.5
Stillbirth	2	0.9	0	0.0	2	0.5
Total	215	100.0	215	100.0	430	100.0
Birth Weight	Mean = 3041.6 Sd = 587.6		Mean = 3404.4 Sd = 456.9		Mean = 3223.02 Sd = 556.2	
Normal Birth Wight (NBW)	180	85.7	185	88.5	365	87.2
Low Birth Wight (LBW)	21	10.0	6	2.9	27	6.4
High Birth Wight (HBW)	9	4.3	18	8.6	27	6.4
Total	210	100.0	209	100.0	419*	100.0
Preterm Birth						
Yes	32	15.4	16	7.6	48	11.5
No	176	84.6	193	92.4	369	88.5
Total	208	100.0	209	100.0	417**	100.0
Neonatal Admission to Hospital						
Yes	26	12.5	14	6.7	40	9.6
No	182	87.5	195	93.3	377	90.4
Total	208	100.0	209	100.0	417	100.0
Neonatal death						
Yes	6	2.8	1	0.5	7	1.6
No	207	97.2	214	99.5	423	98.4
Total	213***	100.0	215	100.0	428	100.0

* 5 and 6 Twins were excluded from hypertensive and non-hypertensive respectively
**2 Stillbirths and 5 twins were excluded from hypertensive and 5 twins from non-hypertensive
*** 2 SB were excluded

Table (4.7) shows that the total live birth was (99.5%) and stillbirths (0.9%) of hypertensive, where no stillbirth among non-hypertensive group. The two cases of stillbirth were preterm (<37 week of gestation).

Other study showed that the incidence of stillbirth was 13 in Jordan, 9 in Iraq, 8 in Saudi Arabia and 13 per 1000 in Egypt in 2013 (WHO, 2013). However, stillbirth is one of the

most prevalent adverse pregnancy outcomes in the United States which affect approximately 1 in 160 pregnancies, since 2003 the stillbirth rate was at 6.2 stillbirths per 1000 births with stagnant character (MacDorman & Kirmeyer, 2009). Many study conducted regarding stillbirth as a cross-sectional study showed that the fetal death was among women with eclampsia (15.32%), women with pre-eclampsia (6.36%) and women without pre-eclampsia/eclampsia (1.87%) (Abalos et al., 2014).

Regarding the birth weight, globally, low birth weight is considered as a significant problem and associated with a long and short consequences. WHO defined low Birth weight as less than 2500 g (WHO, 2014). Table (4.7) shows that 27 (6.4%) of all newborns, 21 (10.0%) of hypertensive and 6 (2.9%) of non-hypertensive group had a low Birth weight (< 2500 g). 365 (87.2%) of newborns were with normal birth weight (NBW) 2500-3999 g and 9 (6.4%) with high birth weight (HBW) 4000 g and more. The minimum birth weight was 850 g among hypertensive, on the other hand the maximum was 4500 g among non-hypertensive. Birth weight mean was 3223 g, hypertensive 3041.6 and non-hypertensive 3404.4. Muti et al. (2015) found that women with PIH were more likely three times to deliver a low birth weight baby (OR 3.0, p = 0.0115) in Zimbabwe.

Table (4.7) shows that (88.5 %) of mothers had term birth and (11.5%) of mothers preterm birth. (11.5%) of hypertensive and (7.6%) of non-hypertensive had preterm birth. The twins and stillbirth (13) were excluded from calculation. It is clearly that the percentage of preterm birth among hypertensive mother was higher than non-hypertensive..

WHO defined Preterm birth as all births before 37 completed weeks of gestation or fewer than 259 days since the first day of a woman's last menstrual period (WHO, 2007). More than 1 in 10 babies are born preterm worldwide. Over 1 million children die each year due to complications related to preterm birth. Preterm birth occurs due to variety of reasons. Common causes of preterm birth include multiple pregnancies, infections and chronic conditions, such as diabetes and high blood pressure (WHO, 2012). The main causes of infant deaths were preterm birth (39%), congenital anomalies (29%), and infections (19%). Among the factors related to preterm birth was a women previously classified as alert or high risk in pregnancy in the Gaza Strip (van den Berg et al., 2015).

Table (4.7) shows that neonatal admission to hospitals is found in 9.6% in study sample with 12.5% in hypertensive group and 6.7% in non-hypertensive group. Two newborns were excluded as they stillbirth.

Also the table (4.7) shows that (1.6%) of newborns, (2.8%) of hypertensive and (0.5%) of non-hypertensive group, where died within the first 28 days of life (2 stillbirths were excluded). All 7 deaths occurred at hospital between the first and fourteenth day of life, the main causes of death were prematurity and respiratory distress.

4.1.4 Maternal outcomes

Table 4.8: Mode of delivery among hypertensive and non-hypertensive groups.

Variable	Hypertensive		Non-hypertensive		Total	
	No.	%	No.	%	No.	%
Mode of delivery						
Spontaneous normal vaginal delivery (SNVD)	77	35.9	162	75.3	239	55.6
Cesarean section (CS)	80	37.2	35	16.3	115	26.7
Induction	58	26.9	18	8.4	76	17.7
Total	215	100.0	215	100.0	430	100.0

Table (4.8) shows that SNVD was more common among study sample (55.6%) and non-Hypertensive (75.3%) was higher than hypertensive (35.9%). While, CS delivery was more common among hypertensive mothers (37.2%) compared with non-hypertensive (16.3%) and 26.7% of all mothers. Also the assisted delivery was 17.7% among all mothers and higher in the hypertensive (26.9%) in comparison with non-hypertensive (8.4%). In other words pregnancy termination consisted of both CS and assisted delivery (induction) was higher among hypertensive (64.1%) compared with non-hypertensive (24.7%). The main first four causes for pregnancy termination among hypertensive mothers were preeclampsia/eclampsia (28.3%), APH (17.4%), deterioration of fetal status (17.1%) and previous of scar (16%) respectively. While, previous scar (39%), poor labor progress (22.2%), APH (11.3%) and deterioration of fetal status (9.4%) among non-hypertensive.

4.1.5 Quality of life

Table 4.9: Differences in quality of life between mothers with HTN and without HTN.

		No.	Mean	Std
Physical Activity (Domain 1)	Hypertensive	215	66.6	17.4
	Non-Hypertensive	215	74.4	15.1
Psychological (Domain 2)	Hypertensive	215	64.3	12.6
	Non-Hypertensive	215	73.9	17.5
Social Relationships (Domain 3)	Hypertensive	212	70.5	12.9
	Non-Hypertensive	213	76.7	12.9
Environment (Domain 4)	Hypertensive	215	55.1	11.6
	Non-Hypertensive	215	60.1	12.2
Overall Satisfaction	Hypertensive	212	64.2	10.3
	Non-Hypertensive	213	71.3	10.8

Table (4.9) show that the mean of physical health (66.6), psychological health (64.3), social relationship (70.5) and environmental health (55.1) are lower among hypertensive mothers compared to non-hypertensive mothers which had (74.4, 73.9, 76.7 and 60.1 respectively). Therefore, the overall satisfaction mean across all domains (64.2) is lower among the mothers with HTN in last pregnancy compared to mothers without HTN (71.3). However, The social relationships mean (76.7) was the highest and observed among non-hypertensive group. While, the environmental health (55.1) was the lowest among the hypertensive mothers. The findings of table (4.9) regarding the quality of life results supported the negative impact of HTN associated adverse maternal outcomes among women with HTN.

4.2. Inferential analysis

Inferential analysis was used in this study to explore differences in maternal and new born outcomes between the mothers with and without hypertension in the last pregnancy.

4.2.1 Comparison between hypertensive and non-hypertensive by socio-demographic characteristics.

Table 4.10: Comparison between hypertensive and non-hypertensive by maternal and marital age.

Variable	Hypertensive		Non-hypertensive		Total		χ^2	Sig.
	Mean	SD	Mean	SD	Mean	SD		
Age (at last delivery)	28.82	6.850	26.50	5.256	28.02	6.151	9.174	0.008
Marital age	20.8	3.718	20.38	3.446	20.82	3.581	0.996	0.802
Family size	**5.3209**	**2.510**	**5.097**	**1.878**	**5.209**	**2.517**	20.018	0.001

Table (4.10) shows that there are a significant statistical difference in maternal age between hypertensive and non-hypertensive groups with (χ^2 = 9.174, Sig. = 0.008). A study conducted in Kenya according to Jebet (2012**),** the maternal age is not associated with poor pregnancy outcomes (χ^2= 7.744 p- value = <0.101). The researcher thinks that the previous study was conducted among mothers to determine the risk factors for poor pregnancy outcomes only and age was classified in a narrow range groups. While, Adu-Bonsaffoh et al. (2014), found that was a statistical relationship between age and adverse pregnancy outcomes (p<0.001).

Also, Bakheit (2015) mothers aged ≥35 years were at increased risks of spontaneous abortion, preeclampsia, cesarean section delivery, prolonged labor, and gestational diabetes compared with adult mothers aged 20–34 years. Other study indicated that the advanced maternal age was associated with increased risk of preterm delivery, CS and adolescents mother are at increased risk of preterm delivery and more likely to have vaginal delivery (Fayed et al., 2017). Also the study result was consistent with another study, Laxmaiah et al. (2015) found that the risk of hypertension was significantly (P< 0.001) increased with an increase of age 5.5-7.9 times higher in 35-59 year in women. However, there is no statistical difference between the study groups in marital age, noting that 33.7% of mothers get married at 21-24 years and 27.7% of them get married at age 18 years and less. The researcher thinks that the age is co-factor to HTN in pregnancy in occurrence of poor pregnancy outcome.

Table (4.10) shows that there is a statistical difference between hypertensive and non-hypertensive groups in the family size (χ^2 = 20.018, Sig.=0.001). Regarding groups mean, the hypertensive mothers had higher family size mean (5.3±2.5) compared to non-hypertensive (5.09±1.8) which indicate that the HTN in addition to family size may produce poor maternal and newborn outcomes. UNRWA-Health department result as the average family size (5.6) in GG (UNRWA, 2016).

This study not congruent with other study as Laxmaiah et al. (2015) who found that the odds ratios for hypertension were lower (0.90) among women with higher family size. The differences between studies related to used retrospective design and were conducted among all women at different ages. The researcher thinks that the increased family size increase the burden on mother responsibilities towards the family members and considered as a contributor factor in addition to presence of HTN, which affect the pregnancy outcomes and life quality.

Table 4.11: Comparison by residency area, mother education, working, total monthly income, house ownership and family type between the study groups.

Variable	Hypertensive		Non-hypertensive		Total		X^2	Sig.
	Nu.	%	Nu.	%	Nu.	%		
Residency area								
City	79	36.7	76	35.3	155	36.0	7.068	0.028
Village	48	22.3	71	33.0	119	27.7		
Camp	88	40.9	68	31.6	156	36.3		
Total	**215**	**100.0**	**215**	**100.0**	**430**	**100.0**		
Mother education								
Below secondary	56	26.0	45	20.9	101	23.5	4.005	0.261
Secondary	79	36.7	76	35.3	155	36.0		
Diploma	14	6.5	24	11.2	38	8.8		
University and higher	66	30.7	70	32.6	136	31.6		
Total	**215**	**100.0**	**215**	**100.0**	**430**	**100.0**		
Working								
Yes	19	8.8	20	9.3	39	9.1	0.028	0.500
No	196	91.2	195	90.7	391	90.9		
Total	**215**	**100.0**	**215**	**100.0**	**430**	**100.0**		
Total monthly income								
Less than 1000 NIS	100	46.5	100	46.5	200	46.5	0.197	0.906
From 1001 to 2000 NIS	82	38.1	85	39.5	167	38.8		
Above 2000 NIS	33	15.3	30	14.0	63	14.7		
Total	**215**	**100.0**	**215**	**100.0**	**430**	**100.0**		
House Ownership								
Completely owned	84	39.1	97	45.1	181	42.1	6.037	0.108
Family owned	125	58.1	107	49.8	232	54.0		
Rented	2	0.9	8	3.7	10	2.3		
Destroyed during the war	4	1.9	3	1.4	7	1.6		
Total	**215**	**100.0**	**215**	**100.0**	**430**	**100.0**		
Family Type								
Extended	64	29.8	63	29.3	127	29.5	0.011	0.500
Nuclear	151	70.2	152	70.7	303	70.5		
Total	**215**	**100.0**	**215**	**100.0**	**215**	**100.0**		

Regarding the residency area, table (4.11) shows that was a statistical differences between hypertensive and non-hypertensive groups (χ^2 = 7.068, Sig. = 0.028). These differences were seen among women with HTN who live in refugees camps. UNRWA-health program outlined that population living in camps was 40.3% in Gaza Strip (UNRWA, 2017). The researcher thinks that camp population is exposed to adverse pregnancy outcomes in presence of HTN.

Table (4.11) shows that there are no statistical differences between the hypertensive and non-hypertensive groups in variables of education (χ^2 = 4.005, Sig=0.261), working (χ 0.028, Sig=0.500) and total monthly income (χ^2 = 0.197, Sig=0.906). Suleiman (2014) conducted a prospective case-control study in Jordan on pregnant women with HTN in Pregnancy and found that women with low educational level at risk to have HTN in pregnancy. The researcher attributed the differences in results to the highest education level among women in GG. Moreover, PCBS (2016) outlined that the percentage females who had university and higher education was 14.5% in G.G and 12.6% in WB.

Laxmaiah et al. (2015) found that the risk of hypertension was 1.2 (1.07-1.33) times higher among people completed education 9th standard and above as compared to illiterate. The researcher attributed the differences regarding last study to larger population, different culture as conducted in India and it was a retrospective study. Our result regarding the study that monthly income was consistent with other study as Jebet (2012) fond that the total monthly income was not associated with adverse pregnancy outcome. However there are no significant statistical differences between study groups in their house ownership and family type. Laxmaiah et al. (2015) found that odds ratios for hypertension were lower among women residing in joint families (0.88).

4.2.2Obstetric profile and HTN in Pregnancy

Table 4.12: Differences between hypertensive and hypertensive mothers in gestational age at registration, BMI, Hemoglobin, weight increase, systolic BP, diastolic BP, routine, non-routine antenatal care visit, gravidity and parity.

Variable		N	Mean	Std	t	Sig.
Gestational age at registration (weeks)	Hypertensive	215	10.9	5.3	-0.921	0.358
	Non-Hypertensive	215	11.4	5.6		
Body Mass Index	Hypertensive	215	30.7	5.6	10.116	0.001
	Non-Hypertensive	215	25.8	4.4		
Mean haemoglobin	Hypertensive	215	10.8	0.8	-0.806	0.421
	Non-Hypertensive	215	10.9	0.9		
Routine antenatal care visit (number)	Hypertensive	215	8.1	2.6	6.040	0.001
	Non-Hypertensive	215	6.7	2.2		
Systolic blood pressure (SBP mean)	Hypertensive	215	122.1	8.2	23.684	0.001
	Non-Hypertensive	215	106.7	4.9		
Diastolic blood pressure (SBP mean)	Hypertensive	215	81.3	5.9	24.356	0.001
	Non-Hypertensive	215	68.8	4.7		
Postnatal care Attendance in days	Hypertensive	215	9.20	4.912	3.146	0.002
	Non-Hypertensive	215	7.86	3.855		
					χ^2	**Sig.**
Gravidity	Hypertensive	215	4.3	3.2	26.398	0.001
	Non-Hypertensive	215	3.57	2.4		
Parity	Hypertensive	215	3.4	2.6	28.765	0.001
	Non-Hypertensive	215	2.79	1.9		

Table (4.12) shows that there are no statistical significant differences between the hypertensive mothers and non-hypertensive mothers in gestational age at registration (weeks) and Mean haemoglobin, while there are statistical significant differences between the two groups in routine antenatal care visit, mean systolic and diastolic BP, body mass index and postnatal care, all the differences were for Hypertensive respondents.

Regarding routine ANC visits, table (4.12) shows that there is a significant differences (Sig=0.001) and hypertensive mean was higher (8.1) than non-hypertensive (6.7).

However, more ANC visits with presence of HTN in pregnancy may associated with adverse pregnancy outcomes. The researcher explains this result that a hypertensive mothers were a high risk pregnancy and accordingly the UNRWA healthcare providers asked the mothers for frequent visits for more follow up and to prevent complications.

Table (4.12) also shows that there is a statistical significant differences between Hypertensive and Non- hypertensive mothers in variable body mass index (Sig. = 0.001). The differences were for hypertensive mothers as they had BMI mean (30.7) higher than non-hypertensive (25.8). The prevalence of overweight and obesity among school children ranged from 7% to 45%. And among adults from 25% to 81.9% (Musaiger, 2011). However, a study conducted in Gaza Strip, El Kishawi et al. (2014) found that obesity and overweight are highly prevalent among women in urban area (57.0%), refugee camp (66.8%), and rural area (67.5%).This results indicates that higher BMI (obesity) in addition to HTN in pregnancy can produce adverse maternal and newborn outcomes. Moreover, it's well-known that obesity and overweight are common risk factor for development of non-communicable diseases.

Regarding the systolic and diastolic blood pressure, the table (4.12) shows that a significant differences between (Sig=0.001) the groups as SBP and DBP mean (122.1 and 81.3) were higher than among non-hypertensive (106.7 and 68.8). The researcher thinks that this result is logical as mothers with HTN had a higher blood pressure. On other hand, blood pressure mean reflect the control status of BP during pregnancy. All these factors contribute to development of unwanted maternal and newborn outcomes. However, this result not congruent with the study of Manjusha et al. (2014) which indicted that systolic and diastolic BP mean were 156.6 and 101.4 respectively. This differences explained by that the last study was conducted among women with different type of HTN in pregnancy (preeclampsia/eclampsia-71%) with a prospective design. On the other hand, the estimated prevalence of raised BP among adult females in Palestine was 35.6%.

Table (4.12) indicates that the postnatal care attendance in days mean higher among hypertensive mothers (9.2) in comparison with non-hypertensive (7.87) and this differences reach statistically significance (Sig=0.002). The postnatal care is very essential and important to be performed for all the mothers and newborn as early as possible after delivery, especially for the mothers with HTN in pregnancy. The researcher thinks that the results means that the mothers with HTN in pregnancy were attended health centers or

home visited for postnatal care with more days than mothers who do not had HTN, which put the mother and newborn at risk for development of unwanted pregnancy outcomes.

Table (4.12) shows that there is a statistical significant differences between hypertensive and non- hypertensive in variable of gravidity (χ^2 = 10.457, Sig. = 0.005). Gravidity mean among hypertensive mothers was higher than the non-hypertensive especially in the extreme categories primi and seven and more which might be a risk for developing adverse pregnancy outcomes in addition to HTN in pregnancy. This result congruent with retrospective cohort study conducted in Tanzania with findings that mothers with five gravidity and more 6 times at higher risk to have fetomaternal morbidity and mortality in developing countries (Elizabeth et al, 2107).

The researcher opinion was that the gravidity first one and five and more are at higher risk to have adverse pregnancy outcomes especially when associated with extreme ages. In this line, Manjusha et al. (2014) found that the incidence of hypertension in pregnancy was highest among primigravidae.

Regarding the parity, table (4.12) shows that there is a statistical significant differences between Hypertensive and Non- hypertensive mothers in variable of parity (χ^2 = 6.859, Sig. = 0.023). hypertensive parity mean (3.4) was higher than non-hypertensive (2.7). Elizabeth et.al (2107) found that mothers with 5 para and more 9 times at higher risk to have adverse pregnancy outcomes. On the other hand, Al-Shaikh et al. (2017) found that grand multiparous ≥ 5 are at the same risks of complications in comparison with other parity categories and the grand multiparous were exposed to the most two pregnancy associated complications were spontaneous preterm delivery and gestational diabetes (9.1%and12.6%, respectively). The researcher attributed the variety of result to the used study design.

4.3. Newborn outcomes

To explore differences in maternal and newborn adverse pregnancy outcomes between hypertensive and non-hypertensive mothers, the researcher conducted inferential analysis in this study as illustrated below.

Table 4.13: Comparison between hypertensive and non-hypertensive groups in stillbirth, birth weight, preterm birth, neonatal admission and neonatal death.

Variable	Hypertensive		Non-hypertensive		Total		χ^2	Sig.
	Nu.	%	Nu.	%	Nu.	%		
Stillbirth								
Yes	213	99.1	215	100.0	428	99.5	**2.009**	**0.249**
No	2	0.9	0	0.0	2	0.5		
Total	215	100.0	215	100.0	430	100.0		
Birth weight (LBW)								
Yes	21	10.0	6	2.9	27	1.6	**3.67**	**0.055**
No	189	90	203	97.1	392	98.4		
Total	210	100.0	209	100	419	100.0		
Preterm birth								
Yes	32	15.4	16	7.6	48	6.4	**11.4**	**0.003**
No	176	84.6	193	92.4	369	**93.5**		
Total	208	100.0	209	100.0	417	**100.0**		
Neonatal Admission to Hospital								
Yes	26	12.5	14	6.7	40	11.5	**6.114**	**0.013**
No	182	87.5	195	93.3	377	88.5		
Total	208	100.0	209	100.0	417	100.0		
Neonatal death								
Yes	6	2.8	1	0.5	7	9.6	**4.06**	**0.044**
No	207	97.2	214	99.5	423	90.4		
Total	213	100.0	215	100.0	428	100.0		

Table (4.13) shows that there was no statistical difference between the two group (χ^2= 2.009, Sig.= 0.249), also fishers exact test was not significant (P= 0.499). The percentage of stillbirth among study sample was 0.5%. Worldwide, for every 1000 total births in 2015, 18.4 babies were stillborn, mostly in low-and middle-income countries (WHO, 2016). Our result not consistent with other study as the incidence of stillbirth was 13 in Jordan, 9 in Iraq, 8 in Saudi Arabia and 13 per 1000 in Egypt in 2013 (WHO, 2013). The researcher attributed the differences to the used sample as our result based on a small and WHO study

on population based which give more representativeness. Muti et al. (2015) found that women with PIH 4.3 times more likely to have stillbirth (OR 4.34, p = 0.0517) in Zimbabwe. While, A cross-sectional study which based on WHO multi-country survey shows stillbirth incidence was higher among women with eclampsia (15.3%), women with pre-eclampsia (6.4%) (Abalos et al., 2014). On the other hand, according a study conducted in the United States showed that the hypertensive disorders responsible for 9.2% (95% CI) of all stillbirths (The Stillbirth Collaborative Research Network Writing Group, 2011). Also this result not consistent with Korde-Nayak Vaishali et al. (2008) who found that the stillbirth rate was 35.2/1000. And 58.3% of total stillbirths were antepartum stillbirths in India. The researcher thinks in general that the stillbirth is related to HTN in pregnancy as adverse outcome, women with preeclampsia/eclampsia, HELLP syndrome, placenta previa at higher risk to have stillbirth in addition to other obstetric conditions and medical diseases.

Also stillbirth more frequently occur before delivery and might be preterm or term. In this study, findings indicated that our result was vary from others, due to study sample size as most of stillbirth relevant studies depend on a large samples (population-based). Moreover, the differences exist between countries as United States had own definition for stillbirth (after 20 weeks of gestation), while, WHO calculated stillbirths after 28 weeks of gestation and other countries after 24 weeks. However, stillbirth considered as a neglected public health problem which need more attention and analysis.

Birth Weight

Table (4.13) shows that There is a statistical significant differences between the two group in birth weight (χ^2=11.4, Sig.= 0.003). The differences for hypertensive group As 21 (10.0%) of hypertensive and 6 (2.9%) of non-hypertensive group had a low birth weight. Also the hypertensive birth mean (3041.6)was lower than non-hypertensive (3404.4). this result is consistent with different studies as in Jordan, Khader et al. (2017) found that the LBW rate among hypertensive mothers with preeclampsia/eclampsia was 32.5% and non-hypertensive 8.3%, and Muti et al. (2015) found that women with PIH were more likely three times to deliver a low birth weight baby (OR 3.0, p = 0.0115). However other studies no consistent with our result as Bener et al. (2012) found that the incidence of low birth weight (<2500 g) was 6.7% with statistically significant differences in APH (Adj. OR 1.6; 95% CI 1.1–2.5, p-0.046) and was not significant in HTN in Pregnancy. The researcher

attributed the last result to used methodology it was hospital-based prospective and the mothers were selected not by the presence of LBW, while this study is comparative with equal numbers of hypertensive and non-hypertensive mothers. Moreover, the last study was related to HTN in pregnancy as APH mostly associated with HTN in Pregnancy. The researcher opinion was that LBW adverse pregnancy outcome is a result of a different and interrelated factor and conditions like chronic maternal diseases (HTN, Anemia, etc.), parity, gravidity and age, but very important one was HTN in pregnancy as the mother at higher risk to have a wide range of complications such as APH, PPH, HELLP syndrome and preeclampsia/eclampsia which indicate an immediate medical intervention by pregnancy termination either by induction or CS delivery regardless of gestational age in order to save the mother or the baby as early as possible, all of which can cause LBW. Finally the LBW can increase infant morbidity and mortality.

Preterm birth

Table (4.13) shows that a statistical significant difference (χ^2 = 6.114, sig.= 0.013) in preterm birth for the hypertensive group as 32 (11.5%) of hypertensive and 16 (7.6%) of non-hypertensive had preterm birth. It is clearly that the percentage of preterm birth among hypertensive mother was higher than non-hypertensive. The study results is congruent with Abdelhady & Abdelwahid (2015) study result they found that the preterm births were (8.2%) among all deliveries, and the affection with HTN, was higher among preterm labor mothers as 43.9% comparing with 18.3% of full-term mothers in Egypt.

Also the study result was consistent with Dekker et al. (2012) who found that mild HTN was a risk factor for preterm birth (OR-9.65, 95%, CI 2.5-37.1), and Kheir et al. (2014) who found that the most of the babies with LBW were found in the PIH group, where, babies with VLBW were found in the preeclampsia group and there was significant correlation between the birth weight and type of hypertensive disorder in pregnancy (P= 0.01). The researcher attributes this result to the effect of HTN and its management on the newborn. Newborns of hypertensive mothers are at higher risk to be delivered before 37 weeks of gestation due to related hypertensive conditions during pregnancy which required pregnancy termination in addition to obstetric conditions.

Neonatal Admission to Hospital

Table (4.13) shows that neonatal admission is found in 9.6% in study sample, 12.5% of hypertensive group and 6.7% in non-hypertensive group. The differences between the hypertensive and non-hypertensive groups reach statistically significant level (χ^2 = 4.06, P = 0.044). All differences were for the hypertensive group. This significant differences were consistent with Abalos et al. (2014) who found that the neonatal intensive care unit admissions women with eclampsia (32.02%), women with pre-eclampsia (25.84%) and women without pre-eclampsia/eclampsia (6.24%). The researcher thinks that it was expected that the admission percentage was more among hypertensive mothers as the mothers with HTN considered as high risk pregnancy due to presence of the effect of HTN on the mother, placenta and fetus, in addition to increased risk of pregnancy termination along with used medication which put both the mother and newborns at higher risk to have more complications such as prematurity, LBW, respiratory distress syndrome, jaundice, stillbirth and other conditions, which increase the infant morbidity and mortality. Regardless the study results, it was some limitation as the Apgar score was not calculated due to the study design.

Neonatal Death

Table (4.13) shows that there was no statistical differences between hypertensive and non-hypertensive group in neonatal death (χ^2 = 3.67, sig.= 0.055). In GG, during 2013 the neonatal mortality was 22.4 per 1000 live birth (van den Berg et al., 2015). The study result was not consistent with Abalos et al. (2014) who found that the early neonatal death among women with eclampsia (8.61%), women with preeclampsia (3.04%) and women without pre-eclampsia/eclampsia (0.82%).

The researcher attributed the differences between the studies to the selected target population of studies and also to calculate neonatal mortality rate needs a large sample or population based study which not applicable in this study where used comparative design to describe neonatal death as adverse newborn outcome among hypertensive mothers. In general the researcher thinks that neonatal death to some extent is related to the HTN. the mother with a high risk pregnancy may be required termination of pregnancy by induction or CS which associated with a range of newborn complication as preterm delivery, respiratory distress and jaundice. Moreover, hypertensive mothers also had another risk as

they used a some medication such as antihypertensive agents with their side effect on the mother and newborn.

4.4. Maternal outcomes

Table 4.14: Comparison between study groups by mode of delivery.

Variable	Hypertensive		Non-hypertensive		Total		χ^2	Sig.
	No.	%	No.	%	No.	%		
Mode of delivery								
Spontaneous normal vaginal delivery (SNVD)	77	35.9	162	75.3	239	55.6	67.289	0.001
Cesarean section (CS)	80	37.2	35	16.3	115	26.7		
Induction	58	26.9	18	8.4	76	17.7		
Total	215	100.0	215	100.0	430	100.0		

HTN in pregnancy can cause a range of adverse pregnancy outcomes; pregnancy termination may prevent and/or minimize the occurrence of such outcomes and save the mother and newborn.

Table (4.14) shows that there was a statistical significant differences between the hypertensive and non-hypertensive mothers in mode of delivery (χ^2 = 67.289, sig.= 0.001). The differences for hypertensive group as CS and assisted delivery were higher respectively in hypertensive group (37.2%, 6.9%) compared to non-hypertensive group (16.3%, 8.4%). However, UNRWA (2017) reported that the C-Section among reported deliveries was 18.9% in GG. The researcher thinks that the study result (26.7%) is relatively congruent with the of UNRWA result (around 19%), noting that the UNRWA result based on a normal population, but this study 50% of sample belonged to a high risk pregnancy with HTN which gives about 37% -CS deliveries.

On the other hand, this study not congruent with other study, Muti et al. (2015) found that 12.46 % of mothers delivered by caesarean section and 1.04 % had an assisted delivery among hypertensive women. This differences may be attributed to the sample small size (n=289) with around 19% with only mild PIH among hospitalized women. Senkoro et al. (2017) found that 73.3% of a women with placenta previa had a delivery by CS (OR 9.68; 95% CI: 6.66–14.1). Moreover, Kheir et al. (2014) found that about 58% of the

hypertensive women were multiparous, 98.5 % of them were delivered by caesarean section and 43% of them were carried out as an emergency procedure. The last study was conducted among in the neonatal intensive care unit for a hypertensive mothers, so that's explain higher number of CS as among very risky group. Also, Hassan (2013) found that 17.8% of hypertensive mothers had normal vaginal delivery, while 82.19% had cesarean section, this result regarding CS was higher than this study, this variations explained by the used design it was prospective hospital based among mothers with HTN. In addition to the previous studies, this study is consistent with Bouzari et al. (2013) study which resulted that the induction of labor was more prevalent among HELLP (64.5%), Partial HELLP Syndrome (43.3%) and preeclampsia (40.4%) and Cesarean section: HELLP (23.5%, P<0.001), preeclampsia(3.4%) and PHS(3%).

The researcher thinks that all of the above conditions are considered as adverse maternal outcome and may related directly or indirectly to HTN in pregnancy as in preeclampsia 40%-Induction (assisted delivery) and 3.4%-CS.

Table 4.15: Preeclampsia/eclampsia among hypertensive group.

Preeclampsia	**Hypertensive**	
	No.	**%**
No	**152**	**70.7**
Yes	**63**	**29.3**
Total	**215**	**100.0**

Table (4.15) shows that 14.7% of all mothers, 29.3% of mothers with HTN had preeclampsia/eclampsia, where is no cases of preeclampsia/eclampsia among non-hypertensive mothers. the differences were for hypertensive group. The findings indicated the possible impact of HTN in occurrence of such outcome.

Preeclampsia/eclampsia is one of the most serious complication among pregnant which associated directly and strongly to the HTN. In this line, findings of the table (4.15) shows that only hypertensive mothers had preeclampsia/eclampsia 14.7% of all mothers (29.3% of hypertensive), as every woman with preeclampsia/eclampsia must had increased blood pressure in addition to other symptoms. Pregnant women with preeclampsia/eclampsia may have uncontrollable severe hypertension, pulmonary edema, disseminated

intravascular coagulation, abruption placenta in addition to other complications (ACOG, 2013).

The study result is relatively consistent with other study, Kheir et al. (2014) found that among 3168 deliveries gives a prevalence of 2.17% HTN during prgnancy. Of these, (42%) were pregnancy induced hypertension while (21.7%) and (4.3%) had preeclampsia and eclampsia respectively. Also congruent with Hassan, (2013) study with findings indicates that 60% of mothers had gestational hypertension, 28.6% pre-eclamtic toxemia and 4.1% eclampsia.

This result attributed to the matching to our study as both conducted among hypertensive women. On the other hand this result not congruent with Khader et al., (2017) study where found that the incidence rate of preeclampsia was 1.3% among women in Jordan. The researcher attributes the differences to the type of Khader et al. study which was a comprehensive national study and all the data was obtained from specific hospitals in Jordan.

However, Manjusha et al. (2014) found that prevalence of hypertensive disorders of pregnancy was 7.8%, of them 71.2% with preeclampsia. The previous result (71.2%) was higher than this study result (14.7%) and the researcher attributed it to a used study sample and methodology, this study was comparative while the other was hospital based which contained very risky hypertensive women who were admitted to hospital, in addition, the researcher cannot calculate the prevalence of preeclampsia/eclampsia. On the other hand, this study not consistent with Muti et al. (2015) study which indicated that the prevalence of PIH, preeclampsia and eclampsia were 19.4 %, 1.7 % and 0.3 % respectively. The researcher attributed this differences to sample size, it was smaller than this study only 289 participants, the study was conducted at hospital and the prevalence of eclampsia and preeclampsia were 10.4% and 2.1% among (19.4%) but this study comparative and the hypertensive group consisted of PIH in addition to chronic HTN.

While, a study conducted by WHO showed that the incidence of hypertensive disorders of pregnancy was 2,7% (8542 from a total 313030 women in database), the total figures for chronic hypertension, pre-eclampsia and eclampsia are 0.29%, 2.16% and 0.28% of all deliveries respectively (Abalos et al., 2014). The WHO result is lower than the findings of this study (29.3%), as WHO study more representative as it a cross-sectional multicountry survey and conducted at secondary and tertiary health level in addition to the very large sample. While, this study is comparative on the level of primary health care with limited sample size.

Also, Gongora & Wenger (2015) found that Preeclampsia/eclampsia was occurred in 3% to 5% of all pregnancies, this result was lower as it a review study. Also, Prude et al. found that the preeclampsia incidence of 2.31% and About 10% of all observed cases progressed to eclampsia. The percentage of women with preeclampsia/eclampsia is 14.7% among all mothers, this result is higher than the above mentioned results, the researcher thinks its related to, in some studies the preeclampsia/eclampsia incidence or prevalence calculated among all mothers (hypertensive and non-hypertensive) but in this study the researcher cannot do so, differences in sample size and type of studies as some of them were a hospital based or multicountry surveys, in this study under preeclampsia/eclampsia considered a wide scope of cases such as preeclampsia, eclampsia and chronic HTN with superimposed preeclampsia/eclampsia and some hospital doctors may over diagnose this condition without proper documentation, and may treat some cases with PIH as having preeclampsia/eclampsia to prevent the expected serious fetomaternal adverse outcomes. In addition, some studies either higher or lower in the results compared with study, that's depends how we looking and understand the numbers, if it among high risk pregnancy as having HTN or among all mothers.

Table 4.16: Comparison between hypertensive and non-hypertensive groups in occurrence of antepartum and postpartum Hemorrhage.

Variable	Hypertensive		Non-hypertensive		Total		χ^2	Sig.
	No.	%	No.	%	No.	%		
Antepartum Hemorrhage (APH)								
No	185	86.0	209	97.2	394	91.6	17.462	0.001
Yes	30	14.0	6	2.8	36	8.4		
Total	215	100.0	215	100.0	430	100.0		
Postpartum Hemorrhage (PPH)								
No	200	93.0	212	98.6	412	95.8	8.350	0.003
Yes	15	7.0	3	1.4	18	4.2		
Total	215	100.0	215	100	430	100.0		

Antepartum and Postpartum hemorrhage (APH, PPH) were a common and serious bleeding complications during pregnancy and delivery which considered as common complications among adverse maternal outcomes.

Table (4.16) shows that the occurrence of APH 8.4% of all mothers and among hypertensive (14%) was higher compared to non-hypertensive (2.8%). This result regarding APH is relatively consistent with Bener et al. (2012) study with prevalence of APH 15.3% and family history of hypertension (OR 1.78; 95%CI 1.30-2.44; P<0.001) was significant. Bener et al. (2013) also conducted other study and found that women aged 35 years or older had a significantly higher risk of APH (17.9% vs. 13.7%; P = 0.042) than younger women. while, the study result not congruent with Takai et al. (2017) study, where the prevalence of APH 1.2%, the common causes were abruptio placenta (68.3%) and placenta previa (30.0%). Also, women with placenta previa had increased odds of APH (OR 9.21; 95% CI: 5.3–16.0). The researcher thinks that APH in this study is higher than other, as APH may include all the bleeding conditions resulted from placenta previa, abruption placenta and any vaginal bleeding during the pregnancy, which may occur in second and third trimester. Also, sometimes the diagnosis of APH did not based on specific bleeding causes. In general, APH might be more related to placental related conditions rather than to HTN.

Findings of Table (4.16) shows that the percentage of PPH occurrence was higher among hypertensive (7%) compared to non-hypertensive mothers (1.4%) and 4.2% of all mothers (p=0.001).This result is higher than study conducted by Michael et al. (2013) which resulted that among 8,571,209 deliveries, 25,906 (3.0 per 1000) were complicated by severe PPH (P for yearly trend <.0001), Significant risk factors were maternal age ≥35 years (aOR, 1.5; 95% CI, 1.5–1.6), multiple pregnancy (aOR, 2.8; 95% CI, 2.6–3.0), fibroids (aOR, 2.0; 95% CI, 1.8–2.2), preeclampsia (aOR, 3.1; 95% CI, 2.9–3.3), amnionitis (aOR, 2.9; 95% CI, 2.5–3.4), placenta previa or abruption (aOR, 7.0; 95% CI, 6.6–7.3).

On the other hand, Al-Kadri et al. (2009) found that preeclampsia and history of APP by >6 and >8-fold increased the risk for PPH respectively. Moreover, Senkoro et al. (2017) found that women with placenta previa had increased odds of PPH (OR 17.6; 95% CI: 8.6–36.2).The researcher attributed this differences to used methodology and sample size. In addition to the PPH is related more to, preeclampsia/eclampsia which considered as severe

complication of HTN in pregnancy, frequently associated with placental conditions and may be increased due to over diagnosis as clinical diagnosis in hospitals.

Table 4.17: Comparison between hypertensive and non-hypertensive groups in occurrence of abruptio placenta, placenta previa and HELLP Syndrome

Variable	Hypertensive		Non-hypertensive		Total		χ^2	Sig.
	No.	%	No.	%	No.	%		
Abruptio placenta								
No	210	97.7	213	99.1	423	98.4	1.307	0.225
Yes	5	2.3	2	0.9	7	1.6		
Total	215	100.0	215	100.0	430	100.0		
Placenta previa								
No	214	99.5	214	99.5	428	99.5	0.000	0.751
Yes	1	0.5	1	0.5	2	0.5		
Total	215	100.0	215	100.0	430	100.0		
HELLP Syndrome								
No	213	99.1	215	100.0	428	99.5	2.009	0.249
Yes	2	0.9	0	0.0	2	0.5		
Total	215	100.0	215	100.0	430	100.0		

Table (4.17) shows that only 1.6% of all mothers, 2.3% of hypertensive and 0.9% of non-hypertensive had abrupio placenta (χ^2 =1.307, sig.=0.255). While, 0.5% of mothers, 0.5% of hypertensive and 0.5% of non-hypertensive had placenta previa (sig.=0.751). However, only 2 (0.9%) of hypertensive mothers which account 0.5% of all mothers had HELLP syndrome (χ^2 = 2.009, sig.=0.249). There are no statistical differences between the hypertensive and non-hypertensive mothers in variables of placental abruption, placenta previa and HELLP syndrome.

Abruptio placenta, placenta previa and HELLP syndrome are considered as a severe conditions which may lead to severe bleeding and adverse fetomaternal outcomes. Placental abruption is most likely occur among smokers, in hypertensive pregnancies, and in addition to other conditions (Oyelese & Ananth, 2006).

The study result as 2.3% of hypertensive group had abruption placenta not congruent with other studies as Tikkanen (2010) found that the prevalence of placental abruption is lower

in the Nordic countries (0.38–0.51%) compared with the USA (0.6–1.0%) and around 0.4–1% of pregnancies are complicated by placental abruption. While, Bako et al. (2008) found that was statistically significant occurrence of placental abruption among hypertensive women (p=0.00, RR=2.60 and OR=14.07) compared with placanta previa. In this study were only 2 cases (0.9%) had HELLP syndrome among hypertensive mothers (p=0.249), this result is vary from other studies as Mihu et al. (2007) found that the HELLP syndrome incidence was 0.17-0.85% of all pregnancies.

While, Bouzari et al. (2013) found the gestational age (35.72±3.15 WK) at delivery (P<0.031) and birth weight (P<0.00) were lower significantly in the women of HELLP syndrome, the Induction of labor was more prevalent among HELLP (64.5%), Need to ICU was higher in women with HELLP (11.8%, P<0.001), Cesarean section: HELLP(23.5%, P<0.001), Abruption placenta: HELLP (17.6%) and Eclampcia: HELLP (5.9%) and preeclampsia(2.2%).

The researcher attributed this differences between this study and other studies regarding the occurrence of placenta previa, abrubtio placenta and HELLP syndrome to the under diagnosis and poor documentation of such cases at the level of secondary health care, poor tertiary level. In addition to the study design and sample. Also the researcher thinks that placenta previa might be not related to HTN in pregnancy as its etiology is still unknown.

4.5 Quality of life

Table 4.18: Comparison between hypertensive and non-hypertensive by quality of life.

		No.	Mean	Std	T	Sig.
Physical Activity	Hypertensive	215	66.6	17.4	-4.936	0.001
	Non-Hypertensive	215	74.4	15.1		
Psychological	Hypertensive	215	64.3	12.6	-6.509	0.001
	Non-Hypertensive	215	73.9	17.5		
Social Relationship	Hypertensive	212	70.5	12.9	-4.886	0.001
	Non-Hypertensive	213	76.7	12.9		
Environment	Hypertensive	215	55.1	11.6	-4.371	0.001
	Non-Hypertensive	215	60.1	12.2		
Overall Satisfaction	Hypertensive	212	64.2	10.3	-6.924	0.001
	Non-Hypertensive	213	71.3	10.8		

Table (4.18) shows that there are statistical significant differences of mean overall satisfaction (p=0.001) among hypertensive mothers (64.2) in comparison with non-hypertensive mean(71.3). It is clear that the mothers with HTN which associated with adverse pregnancy outcomes had lower quality of life in comparison to mothers without HTN during the last pregnancy.

The differences were for hypertensive group as overall satisfaction mean foe hypertensive group (64.2) lower than non-hypertensive (71.3). The quality of life among hypertensive mothers was found lower in all domains. This result means that the mother with HTN are exposed not only to the burden of HTN during pregnancy, but also to the related conditions, which affect their different perceptions regarding the quality of life domains. A similar result was also found in another study conducted among hypertensive patients in Poland showed that comorbidities and the number of medications are the primary factors associated with lower health-related quality of life in hypertensive patients and women reported lower health-related quality all in dimensions (Zygmuntowicz et al., 2012). However, to some extent this result is partially consistent with other result, as Ha et al. (2014) conducted a study with findings that the people with HTN has moderate quality of life except psychological health was relatively low (mean=49.4 ±12.7).

The researcher attributed this differences to study population as in our study was mothers with or without HTN in last pregnancy, while the other study was among people with HTN (males and females) in the rural area. Melchiors et al., (2010) found that the highest mean satisfaction for social relationship among hypertensive people in Brazil. However, the researcher thinks the differences in results between different study related the sample size and the used instrument, in our study WHOQOL-BREF while, other used WHOQOL-100 or SF-36.

Chapter 5: Conclusion and Recommendation

5.1. Conclusion

Hypertension in pregnancy is an important and challenging public health problem in developing and developed countries. Hypertension could be interfered with Pregnancy and may cause different pregnancy outcomes with unexpected adverse events. In this line, this study aimed to identify the possible effect of pregnancy hypertension on pregnancy outcomes and maternal adverse events among women attended UNRWA's health care services in Gaza governorates, in order to reduce the incidence of adverse pregnancy outcomes and improve maternal and child health care. An analytical comparative study was carried out among mothers who had hypertension and mothers who had not hypertension in last pregnancy. The sampling was stratified proportional applied for UNRWA health centers in Gaza governorates with sample size of 430 respondents, 215 mothers in hypertensive group and 215 mothers in non-hypertensive group. A validated constructed questionnaire with face to face interview, in addition to used WHOQOL-BREF for Quality of life assessment were carried to all respondents along with medical records review in form of abstraction sheet. P values less than 0.05 is considered statistically significant, Chi square and t-test were used.

Mothers with hypertension in pregnancy still at increased risk for developing of adverse pregnancy outcomes regarding to maternal and newborn complication in comparison to mothers without hypertension. Among socio-demographic characteristics, the significant differences in pregnancy outcomes were observed in maternal age at last delivery and residency area. Regarding the obstetric profile, the gravity, parity, BMI, routine antenatal care visits, systolic and diastolic blood pressure and postnatal care were had significant differences ($p \leq 0.05$) between hypertensive and non-hypertensive mothers. In the context of maternal outcomes, the researcher found that the mothers with hypertension in last pregnancy had statistically significant differences ($p \leq 0.05$) in pregnancy termination, pre/eclampsia, antepartum and postpartum hemorrhage, while no significant differences ($p > 0.05$) in placental abruption, placenta previa and HELLP syndrome compared to non-hypertensive mothers.

Newborn outcomes also affected, the statistical significant differences were observed between the two groups in preterm birth (χ^2 =6.114, p=0.13)., low birth (χ^2 =11.4, p=0.003) weight and neonatal admissions (χ^2 =4.06, p=0.044).

Regarding the quality of life, the overall satisfaction was lower among mothers with hypertension with moderate quality of life and these differences were statistically different, in addition to 79.1% of mothers with pregnancy-induced-hypertension (PIH) were recovered.

5.2. Recommendations

1. Expansion of preconception care coverage in order to prepare women to enter pregnancy in optimal health and controlled blood pressure before pregnancy.
2. Enhancing early ANC registration in order to timely detection and correction of any deviation from normal pregnancy pattern and enhancing close follow up for the women with HTN and high risk pregnancy.
3. Improve the referral system and feedback mechanism between primary and secondary health care.
4. Ensuring effective and timely postnatal care and family planning.
5. Improving health education program especially among females at teen ages through effective school heath program and effective counseling among healthcare providers regarding HTN and adverse pregnancy outcomes.
6. Enhancing community participation and mobilization, the community should be educated about pregnancy and delivery preparedness and the importance of having a birth plan and how can HTN affect pregnancy and vice versa.
7. Psychosocial support should be provided to mothers with hypertension and adverse pregnancy outcome as early as possible.
8. Conducting more researches in different aspects of pregnancy associated with HTN or other chronic conditions. Case control studies to determine risk factors for each adverse pregnancy outcome in addition to hospital based studies.

References

El-Sayed Azzaz, A. M., Martínez-Maestre, M. A., & Torrejón-Cardoso, R. (2016, September). Antenatal care visits during pregnancy and their effect on maternal and fetal outcomes in pre-eclamptic patients. *J. Obstet. Gynaecol. Res.*, pp. 1102-1110.

Abalos, E., Cuesta, C., Carroli, G., Qureshi, Z., Widmer, M., & Vogel, J. (2014). Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: a secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG, 121*, pp. 14-24.

Abdelhady, A. S., & Abdelwahid, A. (2015). Rate and Risk Factors of Preterm Births in a Secondary Health Care Facility in Cairo. *World Journal of Medical Sciences, 12*(1), pp. 09-16.

Abu Hamad, K., Abed, Y., & Abu Hamad, B. (2007). Risk Factors associated with Preterm Birth in the Gaza Strip : Hospital Based Case-Control Study. *Estren Mediterranean Health Journal, 13*(5), pp. 1132-1142.

ACOG. (2013, November 11). American College of Obstetricians and Gynecologists, Task Force on Hypertension in Pregnancy. *Obstetrics & Gynecology, 122*(5).

ACOG. (2014). *Obstetric data definitions (Version 1.0).* ACOG.

Adu-Bonsaffo, K., Obed, S. A., & Seffah, J. D. (2014). maternal outcomes of hypertensive disorders in pregnancy at Korle Bu Teaching Hospital, Ghana. *International Journal of Gynecology and Obstetrics*, pp. 238-242.

Al-Nozha, M. M., Abdullah , M., Arafah , M. R., Khalil, M. Z., Khan, N. B., Al-Mazrou , Y. Y., et al. (2007, Jan). Hypertension in Saudi Arabia. *Saudi Med J., 28.*(1), pp. 77-84.

Al-Shaikh, G. K., Ibrahim, G. H., Fayed, A. A., & Al-Mandeel, H. (2017). Grand multiparity and the possible risk of adverse maternal and neonatal outcomes: a dilemma to be deciphered. *BMC Pregnancy Childbirth*, pp. 10.1186/s12884-017-1508-0.

Ananth, C. V., Getahun, D., Peltier, M. R., & Smulian, J. C. (2006, APRIL). Placental Abruption in Term and Preterm Gestations. *The American College of Obstetricians and Gynecologists, 107*(4), pp. 785-792.

Augusthy, V. C. (2015, Dec). Fetal growth restriction: aetiology, screening, diagnosis and management. *Int J Reprod Contracept Obstet Gynecol. , 4*(6), pp. 1672-77.

Bakheit, M. M. (2015). Advanced Maternal Age and Risks for Adverse Pregnancy Outcomes: A Population-Based Study in Oman. *Health Care for Women International*, pp. 1081-1103.

Bako, B., Audu, B., Chama, C., Kyari, O., & Idrissa, A. (2008). An 8 year clinical review of antepartum haemorrhage at the university of maiduguri teaching hospital, maiduguri . *bomj*.

Bateman, B. T., Huybrechts, K. F., Fische, M. A., Seely, E. W., Ecker, J. L., Oberg, A. S., et al. (2015, March). Chronic hypertension in pregnancy and the rissk of congenital malformation: a cohort study. *Am J Obstet Gynecol, 212*(3), pp. 337.e1-14.

Bener, A., Al-Nufal, M., Vachhani, P., Ali, A., Samson, N., & Saleh, N. (2013). Maternal complications and neonatal outcome in Arab women of a fast developing country. *J Family Community Med, 20(1)*, pp. 27-34.

Bergstrøm , S. (1994). Perinatal Health. In K. Lankinen , S. Bergstrøm , P. Måkelå , & M. Peltomaa , *Health and disease in developing countries* (pp. 287-296). London: The Macmillan Press Limited.

Bhupally, A. k., Sulekha, S., Devi E, R., Swathi M, Rohini M, & Shruthi T. (2015). Prevalence of Hypertensive Retinopathy Changes in Pregnancy. *International Journal of Integrative Medical Sciences, 2*(10), pp. 182-85.

Bouzari, Z., Firoozabadi, S., & Hasannasab, B. (2013). Maternal and Neonatal Outcomes in HELLP Syndrome, Partial HELLP Syndrome and Severe Pre-Eclampsia: Eleven Years Experience of an Obstetric Center in the North of Iran. *World Applied Sciences Journal , 26 (11)*, pp. 1459-1463.

Bramham, K., Briley, A. L., Seed, P., Poston, L., Shennan, A. H., & Chappell, L. C. (2011). Adverse maternal and perinatal outcomes in women with previous preeclampsia: a prospective study. *Am J Obstet Gynecol, 204*(512), pp. e1-9.

Catak, B., Oner, C., Sutlu, S., & Kilinc, S. (2016). Effect of socio-cultural factors on spontaneous abortion in Burdur, Turkey: A population based case-control study. *Pak J Med Sci*, pp. 1257–1262.

Chobanian, A. V., Bakris, G. L., Black, H. R., Cushman, W. C., Green, L. A., Izzo, J. L., et al. (2003). The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: The JNC 7 report. *JAMA, 289*(19), pp. 2560–72.

Cicero, A. F., Esposti, D. D., Immordino, V., Morbini, M., Baronio, C., Rosticci, M., et al. (2015, October). Independent Determinants of Maternal and Fetal Outcomes in a Sample of Pregnant Outpatients With Normal Blood Pressure, Chronic Hypertension, Gestational Hypertension, and Preeclampsia. *The Journal of Clinical Hypertension, 17*(10).

de Jonge, H. C., Azad, K., Seward, N., Kuddus, A., Shaha, S., Beard, J., et al. (2014). Determinants and consequences of short birth interval in rural Bangladesh: a cross-sectional study. *BMC Pregnancy and Childbirth*, pp. 1-7.

Dekker, G. A., Lee, S. Y., North, R. A., McCowan, L. M., Simpson, N. A., & Roberts, C. T. (2012, July 16). Risk Factors for Preterm Birth in an International Prospective Cohort of Nulliparous Women. *PLoS ONE , 7(7)*, p. e39154.

Department of Statistics. (2014). *Jordan statistical yearbook 2013.* Amman: Department of Statistics.

Duley, L. (2009, june). The global impact of pre-eclampsia. *Seminars in Perinatology, 33*(3), pp. 130-137.

El Beltagy, N. S., Rocca, M. M., EL-Weshahi, H. T., & Ali, M. S. (2016, October 5). Risk Factors for Preterm Labor among Women Attending El Shatby Maternity University Hospital, Alexandria, Egypt. *Arch Nurs Pract Care 2(1):*, pp. 045-049.

El Kishawi, R. R., Soo, K. L., Abed, Y. A., & Wan Muda, W. (2014). Obesity and overweight: prevalence and associated socio demographic factors among mothers in three different areas in the Gaza Strip-Palestine: a cross-sectional study. *BMC Obesity*.

EMRO. (2012). *Noncommunicable diseases in the Eastern Mediterranean Region.* WHO.

EMRO. (2012). *The work of WHO in the Eastern Mediterranean Region: annual report of the Regional Director 2012 / WHO.* WHO EMRO.

Fayed, A. A., Wahabi, H., Mamdouh, H., Kotb, R., & Esmaeil, S. (2017). Demographic profile and pregnancy outcomes of adolescents and older mothers in Saudi Arabia: analysis from Riyadh Mother (RAHMA) and Baby cohort study. *BMJ Open*.

Gongora, M. C., & Wenger, N. K. (2015). Review Cardiovascular Complications of Pregnancy. *International Journal of Molecular Sciences, 16*(10), pp. 62-71.

Ha, N. T., Duy, H. T., Le, N. H., Khanal, V., & Moorin, R. (2014). Quality of life among people living with hypertension in a rural Vietnam community. *BMC Public Health*.

Hassan , M., Choudhury , F., Begum , M., Rahman , H., & Akhter , S. (2013). Immediate Perinatal Outcome of Neonates with Maternal. *J Nepal Paediatr Soc, 33(3)*, pp. 190-195.

Helewa, M. E., Burrows, R. F., Smith, J., Williams, K., Brain, P., & Rabkin, S. W. (1997). Report of the Canadian Hypertension Society Consensus Conference:1. Definitions, evaluation and classification of hypertensive disorders in pregnancy. *CAN MED ASSOC J*, pp. 715-725.

Jaddou, H. Y., Batieha, A. M., Khader, Y. S., Kanaan, A. H., El-Khateeb, M. S., & Ajlouni, K. M. (2011). Hypertension Prevalence, Awareness, Treatment and Control, and Associated Factors: Results from a National Survey, Jordan. *International Journal of Hypertension*, pp. 102-109.

Jebet, C. J. (2012). *Factors Contributing to Adverse Pregnancy Outcomes in Public Health Facilities in Keiyo District, Kenya. Unpublished thesis, Kenyatta University.*

Kamran, M., Iftikhar, R., & Roshan, R. (2016). Obesity and Hypertension: Time to Face Reality. *Pak Armed Forces Med J, 66 (Suppl-1)*, pp. 36-40.

Khan, K. S., Wojdyla, D., Say, L., Gülmezoglu, A., & Van Look, P. (2006, March 28). WHO analysis of causes of maternal death: a systematic review. *Lancet, 367*, pp. 1066–74.

Khattak, S. N., Deeba, F., A. A., & Khattak, M. I. (2012). Association of Maternal Hypertension with Placental Abruption. *J Ayub Med Coll Abbottabad, 24(3-4)*, pp. 103-105.

Kheir, A. E., Ali, R. B., & Kononna, A. A. (2014, August). Neonatal Outcome in Hypertensive Disorders of Pregnancy in a Tertiary Neonatal Unit in Sudan. *Journal of Medicine and Medical Research, 2(5)*, pp. 59-65.

Kintiraki, E., Papakatsika, S., Kotronis, G., Goulis, D. G., & Kotsis, V. (2015). Pregnancy-Induced hypertension. *Hormones , 14*(2), pp. 211-223.

Kord- Nayak Vaishali N, & Gaikwad Pradeep R. (2008). Causes of stillbirth. *J Obstet Gynecol India, 58(4)*, pp. 314-18.

Lawn, J. E., Yakoob, M. Y., Haws, R. A., Soomro, T., Darmstadt, G. L., & Bhutta, Z. A. (2009). 3.2 million stillbirths: epidemiology and overview of the evidence review. *BMC Pregnancy and Childbirth, 9(Suppl 1):S2*.

MacDorman, M. F., & Kirmeyer , S. (2009, January 28). Fetal and perinatal mortality, United States, 2005. *Natl Vital Stat Rep, 57(8)*, pp. 1-19.

Mahmud, S., Shah, S. A., Ali, S., Ghafoor, T., Ahmed, S., & Lodhi, M. A. (2016). Pattern of neonatal admissions in a tertiary care hospital. *Pak Armed Forces Med J, 66 (Suppl-1)*, pp. S95-99.

Mesquita, R. F. (2014). Onset of hypertension during pregnancy is associated with long-term worse blood pressure control and adverse cardiac remodeling. *Journal of the American Society of Hypertension, 8(11)*, pp. 827-831.

Mihu, D., Costin, N., Mihu, C. M., Seicean, A., & Ciortea, R. (2007, December). HELLP Syndrome – a Multisystemic Disorder. *J Gastrointestin Liver Dis, 16*(4), pp. 419-424.

Ministry of Health-MOH. (2011). *Annual Report.* Palestine: Palestinian Health Information Center.

Ministry of Health-MOH. (2014). *Annual Report.* Palestine: Palestinian Health Information Center.

MOH. (2017). *annual report 2016.* Gaza: MOH.

MOH. (2017). *Health Annual report Palestine 2016.* Ministry of Health.

Muhammad, T., Khattak, A. A., Rehman, S., Khan, M. A., Khan, A., & Khan, M. A. (2010). Maternal Factors Associated with Intrauterine Growth Restriction. *J Ayub Med Coll Abbottabad, 22*(4), pp. 64-69.

Musaiger , A. (2011). Overweight and obesity in eastern mediterranean region: prevalence and possible causes. *J Obes*.

Muti, M., Tshimanga, M., Notion, G. T., Bangure, D., & Chonzi, P. (2015). Prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. *BMC Cardiovascular Disorders, 15*.

Nerenberg, K., Daskalopoulou, S. S., & Dasgupta, K. (2014, July). Gestational Diabetes and Hypertensive Disorders of Pregnancy as Vascular Risk Signals: An Overview and Grading of the Evidence. *Canadian Journal of Cardiology, 30*(7), pp. 765–773.

OCHA. (2012). *United Nation Office for the Coordination of Humanitarian Affairs, OCHA in 2012 & 2013, plan and budget.*

Offiah, I., O'Donoghue, K., & Kenny, L. (2012). Clinical Risk Factors for Preterm Birth. In J. Morrison, *Preterm Birth - Mother and Child* (pp. 73-94). InTech.

Organ, W. (1988). *Organizational citizenship behavior: The good soldier syndrome.* Lexington, Massachusetts, USA: Lexington Books.

PASSIA . (2008). *Palestinian Academic Society for the study of international Affairs.* Retrieved from http://www.passia.org.

PCBS. (2015). *Palestinian Central Bureau of Statistics* (Vol. 16). Ramallah, Palestine.

PCBS. (2016). *People in Palestine, 2016.*

Purde, M.-T., Baumann, M., Wiedemann, U., Nydegger, U. E., Risch, L., Surbek, D., et al. (2015, July 28). Incidence of preeclampsia in pregnant Swiss women. *Swiss Medical Weekly, 145:w14175*.

Sajith, M., Nimbargi, V., Modi, A., Sumariya, R., & Pawar, A. (2014, April). Incidence of pregnancy induced hypertension and prescription pattern of antihypertensive drugs in pregnancy. *International Journal of Pharma Sciences and Research (IJPSR), 5*(4).

SCRN. (2011, December 14). Causes of Death Among Stillbirths. *JAMA, 306(22)*, pp. 2459–2468.

Senkoro, E. E., Mwanamsangu, A. H., Chuwa, F. S., Msuya, S. E., Mnali, O. P., Brown, B. G., et al. (2017). Frequency, Risk Factors, and Adverse Fetomaternal Outcomes of Placenta Previa in Northern Tanzania. *Journal of Pregnancy*, pp. 1-7.

Setia, M. S. (2016). Methodology series module 2: Case-control studies. *Indian J Dermatol, 61*, pp. 146-51.

Seyom, E., Abera, M., Tesfaye, M., & Fentahun, N. (2015). Maternal and fetal outcome of pregnancy related hypertension in Mettu Karl Referral Hospital, Ethiopia. *Journal of Ovarian Research, 8*(10).

Shaba, S., & Siziya, S. (2015). Prevalence rate for hypertensive disorders of pregnancy and correlates for women admitted to the maternity ward of a tertiary hospital in Zambia. *Asian pacific journal of health sciences, 3*(2), pp. 31-35.

Sharara, H. A. (2012). A twenty-year study (from January 1991-December 2009). *Qatar Medical Journal, 2012*(2).

Suhag, A., & Berghella, V. (2013). Intrauterine Growth Restriction (IUGR): Etiology and Diagnosis. *Curr Obstet Gynecol Rep, 2*, pp. 102–111.

Suleiman, A. K. (2014). Risk Factors on Hypertensive Disorders among Jordanian Pregnant Women. *Global Journal of Health Science*, pp. 138-144.

Takai , I., Sayyadi , B., & Galadanci , H. (2017). Antepartum Hemorrhage: A Retrospective Analysis from a Northern Nigerian Teaching Hospital. *Int J Appl Basic Med Res*, pp. 112-116.

UNRWA. (2009). *Prevention and Control of Noncomunicable Disease.*

UNRWA. (2009). *Provision of Maternal Health and Family Planning Services,Technical Instruction Series NO. HD/FH/1/95.*

UNRWA. (2013). *" Health Department Annual Report".* United Nations Relief and Works Agency for Palestine refugees in the Near East UNRWA.

UNRWA. (2015). *annual report 2014.* department of health UNRWA.

UNRWA. (2017). *Annual Report 2016.*

UNRWA, U. N. (2013). *" Health Department Annual Report".* UNRWA.

van den Berg, M. M., Madi, H. H., Khader, A., Hababeh, M., Zeidan, W., Wesley, H., et al. (2015, August 4). Increasing Neonatal Mortality among Palestine Refugees in the Gaza Strip. *PLoS ONE, 10*(8).

WHO. (2004). *ICD-10: International statistical classifi cation of diseases and related health problems—instruction manual* (Vol. 2). Geneva, Switzerland: World Health Organization.

WHO. (2007). *Pocket bookof hospital care for children: guidelines of the management of common illnesses with limited resources.* Geneva: World Health Organization.

WHO. (2012). *Born too soon: the global action report on preterm birth.* Geneva: World Health Organization.

WHO, UNICEF, UNFPA and the World Bank. (2012). *Trends in Maternal Mortality: 1990 to 2010.* Retrieved March 7, 2016, from World Health Organization website: whqlibdoc.who.int/publications/2012/9789241503631_eng.pdf

Wongcharoenrut, K., & Yamasmit, W. (2014, January). Outcomes of Pregnancy with Chronic Hypertension. *Thai Journal of Obstetrics and Gynaecology, 22*, pp. 8-14.

World Health Organization. (1987). *The Hypertensive Disorders of Pregnancy.* Geneva: World Health Organization.

Yassin, K. (2000). Incidence and socioeconomic determinants of abortion in rural Upper Egypt. *Public Health*, pp. 269-272.

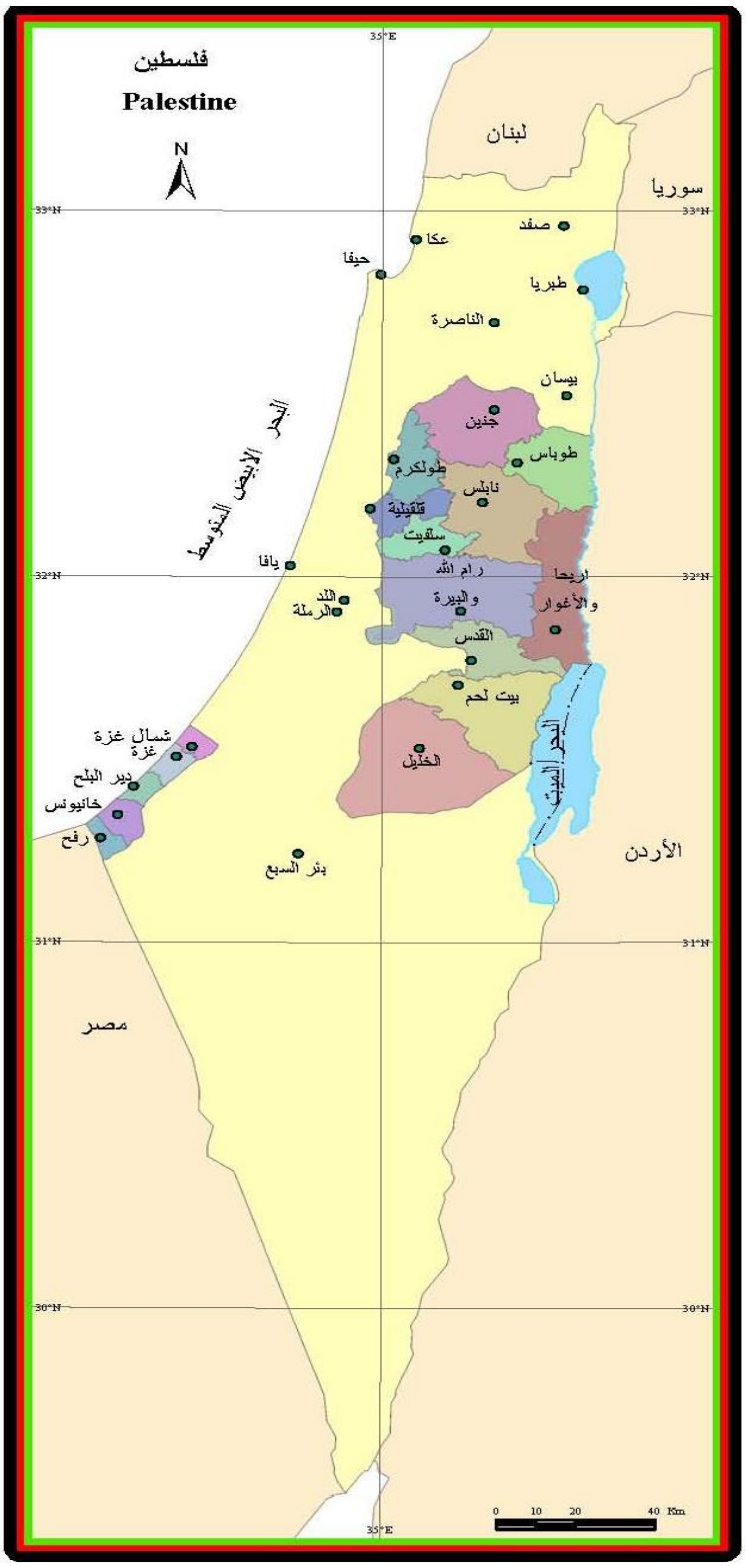
Yeh, J. S., Cheng, H.-M., Hsu, P.-F., Sung, S.-H., Liu, W.-L., Fang, H.-L., et al. (2014, November 11). Synergistic Effect of Gestational Hypertension and Postpartum Incident Hypertension on Cardiovascular Health: A Nationwide Population Study. *The Journal of the American Heart Association*.

Yoon, S. S., Fryar, C. D., & Carrol, M. D. (2015, November). Hypertension Prevalence and Control Among Adults: United States, 2011–2014. *NCHS Data Briefs, National Center for Health Statistics., 220*.

Zygmuntowicz M, Owczarek A, Elibol A, Chudek J: Comorbidities and the quality of life in hypertensive patients. *Pol Arch Med Wewn*. 2012, 122 (7–8): 333-340.

Annexes

Annex (1): Palestine map



Source:(PCBS, 2016)

Annex (2) Sample size calculation

Sample size calculator

What margin of error can you accept? 5% is a common choice	5 %	The margin of error is the amount of error that you can tolerate. If 90% of respondents answer *yes*, while 10% answer *no*, you may be able to tolerate a larger amount of error than if the respondents are split 50-50 or 45-55. Lower margin of error requires a larger sample size.
What confidence level do you need? Typical choices are 90%, 95%, or 99%	95 %	The confidence level is the amount of uncertainty you can tolerate. Suppose that you have 20 yes-no questions in your survey. With a confidence level of 95%, you would expect that for one of the questions (1 in 20), the percentage of people who answer *yes* would be more than the margin of error away from the true answer. The true answer is the percentage you would get if you exhaustively interviewed everyone. Higher confidence level requires a larger sample size.
What is the population size? If you don't know, use 20000	3850	How many people are there to choose your random sample from? The sample size doesn't change much for populations larger than 20,000.
What is the response distribution? Leave this as 50%	50 %	For each question, what do you expect the results will be? If the sample is skewed highly one way or the other,the population probably is, too. If you don't know, use 50%, which gives the largest sample size. See below under **More information** if this is confusing.
Your recommended sample size is	**350**	This is the minimum recommended size of your survey. If you create a sample of this many people and get responses from everyone, you're more likely to get a correct answer than you would from a large sample where only a small percentage of the sample responds to your survey.

Annex (3) Proposed No. participants.

Health Center	No. Women With HTN-2015	Proportionate percentage	No. proposed Hypertensive group	No. proposed Non-Hypertensive group	Total
Sabra	144	10.6	23	23	46
Rimal	213	15.6	34	34	68
Nuesirat	246	18	38	38	76
D Balah	153	11.2	25	25	50
Maan	267	19.6	42	42	84
Khan-Younis	339	25	53	53	106
Total	1362	100%	215	215	430

Annex (4): Committee panel control

No.	Name	Position
1.	Dr. Bassam Abu-Hamad	Al-Quds University
2.	Dr. Yahia Abed	Al-Quds University
3.	Dr. Yousef AlJeesh	Islamic University
4.	Dr. Khitam Abu-Hamad	Al-Quds University
5.	Dr. Saleh Isa	Field Disease Control Officer-UNRWA
6.	Dr. Mariam A/Qader	Field Family Heath Officer-UNRWA
7.	Dr. Taysie El-Ammasi	Senior Medical Officer-UNRWA
8.	Dr. Zohier El-Khatib	Field Family Heath Officer –UNRWA
9.	Dr. Imad El-Aour	Area Health Officer-UNRWA
10.	Dr. A/Qader Al-Habil	Senior Medical Control Officer-UNRWA
11.	Dr. Kefah Al-Najjar	Senior Medical Officer-UNRWA
12.	Dr. Ahmad Al-Shaer	Islamic University
13.	Huda Samour	Senior Staff Nurse-UNRWA

Annex (5): Expert arbitration form

بسم الله الرحمن الرحيم

السيد / ..... المحترم

تحية طيبة وبعد:

تحكيم إستبانة

أنا الطالب خليل جميل القطراوى , ملتحق ببرنامج ماجستير صحة عامة – علم الأوبئة بجامعة القدس أبو ديس وأقوم بإعداد رسالة الماجستير كمتطلب تكميلي لنيل الدرجة والتي هي بعنوان :

Effect of Hypertension on Pregnancy Outcomes at UNRWA Health Centers in Gaza Governorates: comparative study

أرجو من سيادتكم التكرم والإطلاع على الإستبانة وإفادتنا برأيكم وإقتراحاتكم وإبداء الملاحظات الهادفة للتعديل.

مع خالص الشكر والتقدير

الباحث: خليل جميل القطراوى

Annex (6): Consent form

Questionnaire

استبانة المقابلة

جامعة القدس – فلسطين

كليــة الدراســات العليــا

كليــة الصحــة العامـــة

الأخت الفاضلة:

تحية تقدير واحترام وبعد،،،

أنا الطالب خليل جميل القطراوي طالب ماجستير بجامعة القدس كلية الدراسات العليا- برنامج الصحة العامة تخصص وبائيات أقوم بإجراء هذا البحث كمتطلب رئيسي من متطلبات الحصول على شهادة الماجستير، حيث أن الدراسة تهدف إلى **التعرف على تأثير ارتفاع ضغط الدم على نتائج الحمل لدى السيدات اللواتي يتابعن في عيادات وكالة الغوث في محافظات قطاع غزة.**

يرجى التكرم بالإجابة على جميع أسئلة الاستبانة بكل أمانة وصدق، مع العلم أن مشاركتك في هذه الدراسة طوعية، كما أن البيانات التي سيتم جمعها سيتم استخدامها للبحث العلمي فقط.

هذه الاستبانة سوف تستغرق حوالي 20 دقيقة لاستكمالها مهما تكن المعلومات التي تعطيها سوف تبقى سرية وطي الكتمان.

كل الشكر والتقدير لكم

الطالب

خليل جميل القطراوي

Annex (7): Questionnaire

Effect of Hypertension on Pregnancy Outcomes at UNRWA Health Centers in Gaza Governorates – Questionnaire

Serial No: □□□□

Date of interview : ……/……/……

RCN…….

Research category:

1. Hypertensive 2. □Non-hypertensive

No. of maternal health record……..

No. of child health record……..

Governorate:

1. □North 2. □Middle 3. □South

Name of Primary Health care center: …….

1.Demographic Profile		
1.1. Mother's age at last delivery: …….		
1.2. Marital age: ……		
1.3. Place of residency:		
1- □ City	2- □ Village	3- □ Camp
1.4. Education of the mother :		
1. □ Illiterate	2. □Can read and write	3. □ Elementary
4. □ Preparatory	5. □ Secondary	6. □ Associate diploma
7. □ Bachelor and above		
1.5. Education of the husband :		
1. □ Illiterate	2. □ Can read and write	3. □ Elementary
4. □ Preparatory	5. □ Secondary	6. □ Associate diploma
7. □ Bachelor and above		
1.6 Current working status:		
1. □ Working	2. □ Nonworking.	***If nonworking skip to Q1.7***
1.7. Current working status for husband :		
1. □ Working	2. □ Nonworking	
1.8.1. How much in your family income (NIS) ?		
1. □ Less than 1000 NIS	2. □ 1000-2000	3. □ 2000-3000
4. □ More than 3000	5. □ Don't know	6. □ Refuse to answer
1.8.2. Does the current income meet expenses?		
1- □ Yes & Save	2- □ Yes	
3- □ Sometimes	4- □ No	
1.9. The number of family members (size) …….		
1.10.1. Type of the family:		
1- □ Nuclear family	2- □ Extended family	
1.10.2. Please, specify the total number of persons……..		
1.11. House ownership:		
1- □ Completely owned	2- □ Family owned	3- □ Rented
4- □ Destroyed during war	5- □ Other**, s**pecify……..	

2.Obstetric profile
2.1.1 Number of Pregnancies:……
2.1.2.Deliveries:……..
2.1.3.Abortions……
2.2. Interval (by Months) between the last delivery and the previous one?.....
2.3. Did you receive preconception care service?
1- □ Yes 2- □ No
2.4. Did you have a family history of the following conditions? 1- □ Yes 2- □ No
1- □ HTN 2- □ DM 3- □ Cardiac conditions
2.5. Did you have a past history of the following conditions? 1- □ Yes 2- □ No
1- □Chronic HTN 2- □PIH 3- □ Pre/eclampsia
4- □Cardiac conditions 5- □Renal conditions 6- □GDM
7- □DM 8- □Hypothyroidism 9- □BA
10- □Thalassemia 11- □ Others(specify)……..
2.6. Did you suffer from hypertensive conditions during the last pregnancy?
1- □ Yes 2- □ No ***If No, skip to Q 2.11***
2.7. If yes, which type of the following :
1- □ Chronic HTN 2- □ Pregnancy-induced-HTN
2.8. If chronic HTN, when was it firstly diagnosed? Specify (year)…….
2.9. If PIH was diagnosed during pregnancy, did you take treatment on time in the last pregnancy?
1. □ Yes 2. □ No
2.10. During the puerperium period (42 Days), did you take treatment on time in the last pregnancy?
1. □ Yes 2. □ No
2.11. When did you receive PNC service after delivery? Specify in days……
2.12. If you suffered from PIH, did you receive the final PNC assessment visit (40-42 days after delivery)?
1- □ Yes, by MW 2- □Yes by Dr only 3- □Yes by both 4- □No
2.13. If yes, did you recover from the PIH?
1- □ Yes 2- □ No

The following questions are about the previous pregnancies (excluding the last pregnancy)

2.14. Regarding the newborn outcome, did you experienced any of the following:

Outcome	Yes	No	Numbers
a- Stillbirth			
b- Neonatal death , if yes, specify the age by days…..			
c- Low Birth Weight (< 2500 gm.) baby			
d- Prematurity (< 37 weeks)			

2.15.1. Did you experience any newborn complications related to the previous pregnancies?

1- □ Yes 2- □ No if no skip to Q2.25

2.15.2 If Yes, specify…….

2.16.1. Did you suffer any maternal complications related to the HTN during previous pregnancies?

1- □ Yes 2- □ No

2.16.2 If Yes, specify……..

3.Maternal out me

3.1.Have you suffered from any complications in last pregnancy or in the peurperium?

Complications	Yes	No
a- Bleeding in early pregnancy (up to 28 weeks)		
b- Bleeding in late pregnancy (28 to expulsion of fetus)		
c- Bleeding after delivery, specify the day (if yes)…….		
d- Abruptio placenta		
e- Placenta previa		
f- Pre/eclampsia		
g- HELLP syndrome		
h- Disseminated intra vascular coagulopathy		
i- Others, (specify) ……		

3.2.Did you hospitalized during the last pregnancy?

1- □ Yes 2- □ NO

3.3.1.Was blood transfusion required?

1- □ Yes 2- □ No

3.3.2.What was the indication:

1- □ APH 2- □ PPH 3- □ Pre/Eclampsia

4- □ APH + Preeclampsia 5- □ PPH + Preeclampsia 6- □ Others……

Delivery/ Termination of Pregnancy:

3.4.1. Mode of delivery

1- □ SNVD 2- □ CS. 3- □ induction

3.4.2.What was the CS indication:

1- □ Previous CS 2- □ P.R.O.M 3- □ pelvis Abnormalities

4- □ Others……. 5- □ Hemorrhage

3.5.1. Place of delivery

1- □ Hospital. 2- □ Private clinic 3- □ Home

3.5.2. If hospital, select:

1- □ Governmental hospital 2- □ Private hospital

3.6. Pregnancy outcomes :

1- □ Singleton 2- □ Multiple

3.7. Pregnancy termination,

if No. skip to Q 4.1

1- □ Yes 2- □ No

3.8. Type of termination:

1- □ In term pregnancy 2- □ Before term pregnancy

3.9. Method of termination

1- □ CS 2- □ induction

3.10. What was the indication for termination?

Indications	Yes	No
1. Antepartum hemorrhage		
2. Pre/eclampsia		
3. Augmentation		
4. Deterioration of fetal status		
5. Failure of induction (for CS.)		
6. Oligohydramins		
7. Previous scars		
8. P.R.O.M		
9. Other (specify)_____		

4.Newborn outcome	
4.1. Neonatal death	
1- □ Yes, specify the age by days…….	2- □ No
4.2. Delivery room resuscitation	
1- □ Yes	2- □ No
4.3.1 Did the new born suffer from any medical condition?	
1- □ Yes	2- □ No
4.3.2.If Yes, specify……	
4.4.1. Did the new born suffer from any congenital condition?	
1- □ Yes	2- □ No
4.4.2.If Yes, specify …….	
4.5.1. Neonatal admission to intensive care unit:	
1- □ Yes	2- □ No
4.5.2. If Yes, what was the cause:	
1- □ Prematurity	2- □ RD
3- □ Jaundice	4- □ Others…….
4.5.3.If Yes, specify how long.…….,	

Abstraction sheet

Obstetric profile

1. Gestational age at last delivery …….. week

2. Number of pregnancies:……

3.Deliveries:……..

4.Abortions…….

5. Number of PCC visits ……

6. Gestational age at registration for ANC in last pregnancy……..

7. Number of routine ANC checkups.....

8. Number of non-routine ANC checkups.....

9. Risk scoring of last pregnancy at first ANC visit:

1- □ Normal 2- □ Alert 3- □ High

10. Risk scoring of last pregnancy at last ANC visit:

1- □ Normal 2- □ Alert 3- □ High

11. BMI at registration……

12. Mean Hb ……

HB.	NO	1	2	3	4	5	6
	RESULT						

13. BP measurement:

BP.		REG	24	LAST	PN1	PN2	1	2	MEAN
	SYS								Q.14…..
	DIA								Q.15…..

14. Gestation at which BP. Increased.....

15. Gestation at which PIH was diagnosed…….

16. Gestation at which chronic HTN was diagnosed…….

17. Final PNC assessment (40-42 days after delivery) for the case of PIH:

1- □ Yes 2- □ No

18. Recovered from PIH:

1- □ Yes 2- □ No

Maternal outcome

19.Old NCD file 1- □ Yes 2- □ No
20.NEW chronic HTN referred to NCDs 1- □ Yes 2- □ No
21.PIH referred to NCDs 1- □ Yes 2- □ No

Newborn outcome

22- Live	1- □ Yes	2- □ No
23- Still birth	1- □ Yes	2- □ No
24- Sex	1- □ Male	2- □ Female
25- Weight of baby at birth in grams……		
26- Head circumference …….		
27- Prematurity (< 37 weeks)	1- □ Yes	2- □ No

IF TWINS

22.2. Live	1- □ Yes	2- □ No
23.2. Still birth	1- □ Yes	2- □ No
24.2. Sex	1- □ Male	2- □ Female
25.2. Weight of baby at birth in grams……		
26.2. Head circumference …….		
27.2. Prematurity (< 37 weeks)	1- □ Yes	2- □ No

Annex (8): WHOQOL – BREF in English language

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4.	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5

22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

		Never	**Seldom**	**Quite often**	**Very often**	**Always**
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Do you have any comments about the assessment?

Annex (9): WHOQOL – BREF in Arabic language

التعليمات

هذا الإستبيان يستفسر عما تشعر به فيما يتعلق بنوعية حياتك و صحتك و نواحي أخرى من حياتك, نرجو الإجابة على جميع الأسئلة. إذا لم تكن متأكد من الإجابة على سؤال معين , نرجو اختيار الجواب الأنسب. و هذا قد يكون ردك الأول في أحيان كثيرة . نرجو أن تضع في اعتبارك قيمك و آمالك و ما يمنعك و يشغلك. نطلب أن تفكر في نمط حياتك خلال الشهرين الماضيين مثلا. قد يكون السؤال:

	لا يوجد	قليلا	نوعا ما	كثيرا	دائما
هل تحصل على أي دعم أو مساعدة من الأخرين ؟	1	2	3	4	5

عليك وضع دائرة حول الرقم الذي يصف مقدار الدعم أو المساعدة من الآخرين خلال الشهرين الماضيين. وهكذا فإنك ستضع الدائرة حول الرقم (4) إذا كنت قد حصلت على دعم كبير من الآخرين كالآتي

	لا يوجد	قليلا	نوعا ما	كثيرا	دائما
هل تحصل على أي دعم أو مساعدة من الأخرين ؟	1	2	3	(4)	5

قد تضع الدائرة حول الرقم (1) إذا لم تحصل على أي دعم أو مساعدة تتمناها من الآخرين خلال الشهرين الماضيين .

*** يرجى قراءة كل سؤال و تقيم مشاعرك ووضع الدائرة حول الرقم الذي يعطي أفضل إجابة بالنسبة لك.**

	كيف تقيم جودة حياتك؟	سيئة للغاية	سيئة	لا بأس	جيدة	جيدة جداً
(G1)1		1	2	3	4	5

		غير راض مطلقا	غير راض	لا راض و لا غير راض	راض	راض تماما
(G4)2	كيف أنت راض عن صحتك ؟	1	2	3	4	5

*** الأسئلة التالية تستفسر عن مدى تعرضك لأشياء معينة خلال الشهرين الماضيين**

		لا يوجد	قليلا	بدرجة متوسطة	كثير جدا	بدرجة بالغة
(F1.4) 3	إلى أي حد تشعر بأن الوجع يمنعك من القيام بالأعمال التي تريدها ؟	1	2	3	4	5
(F11.3)4	كم تحتاج من العلاج الطبي لتتمكن من القيام بأعمالك اليومية ؟	1	2	3	4	5
(F4.1)5	إلي أي مدى تستمتع بالحياة ؟	1	2	3	4	5
(F24.2)6	إلي أي مدى تشعر بأن حياتك ذات معنى ؟	1	2	3	4	5
(F5.3)7	كم أنت قادر على التركيز ؟	1	2	3	4	5
(F16.1)8	كم تشعر بالأمان في حياتك اليومية ؟	1	2	3	4	5
(F22.1)9	إلى أي حد تعتبر البيئة المحيطة بك صحية ؟	1	2	3	4	5

*** الأسئلة التالية تستفسر عن مدى قدرتك على إتمام أمور معينة خلال الأسبوعين الماضيين**

		لا يوجد	قليلا	بدرجة متوسطة	كثير جدا	بدرجة بالغة
(F2.1)10	هل لديك طاقة كافيه لمزاولة الحياة اليومية ؟	1	2	3	4	5
(F7.1)11	هل أنت قادر على قبول مظهرك الخارجي ؟	1	2	3	4	5
(F18.1)12	هل لديك من المال ما يكفي لتلبية إحتياجاتك ؟	1	2	3	4	5
(F20.1)13	كم تتوفر لك المعلومات التي تحتاجها في حياتك اليومية ؟	1	2	3	4	5
(F21.1)14	إلي أي مدى لديك الفرصة للأنشطة الترفيهية ؟	1	2	3	4	5

		سيئة للغاية	سيئة	لا بأس	جيدة	جيده جدا
(F9.1)15	كم أنت قادر على التجول بسهولة	1	2	3	4	5

*** الأسئلة التالية تطلب منك أن تعبر عن مدى رضاك نحو جوانب مختلفة من حياتك خلال الشهرين الماضيين**

		غير راض مطلقا	غير راض	لا راض و لا غير راض	راض	راض تماما
(F3.3)16	كم أنت راض عن نومك ؟	1	2	3	4	5
(F10.3)17	إلي أي مدى أنت راض عن قدرتك على القيام بنشاطاتك اليومية ؟	1	2	3	4	5
(F12.4)18	كم أنت راض عن قدراتك على العمل ؟	1	2	3	4	5
(F6.3)19	كم أنت راض عن نفسك ؟	1	2	3	4	5
(F13.3)20	كم أنت راض عن علاقاتك الشخصية ؟	1	2	3	4	5
(F15.3)21	كم أنت راض عن حياتك الجنسية ؟	1	2	3	4	5
(F14.4)22	كم أنت راض عن الدعم أو المساعدة من الأصدقاء ؟	1	2	3	4	5
(F14.4)23	كم أنت راض عن أحوالك السكنية ؟	1	2	3	4	5
(F19.3)24	كم أنت راض عن الخدمات الصحية المتوفرة لك ؟	1	2	3	4	5
(F23.3)25	كم أنت راض عن وسائل مواصلاتك.؟	1	2	3	4	5

*** الأسئلة التالية تشير إلى كم من المرات شعرت أو تعرضت فيها لأشياء معينة خلال الشهرين الماضيين**

		أبدا	نادرا	غالبا	غالبا جدا	دائما
(F8.1)26	كم من المرات كانت عندك مشاعر سلبية مثل الحزن أو اليأس أو القلق أو الاكتئاب ؟	1	2	3	4	5

هل ساعدك أحد في ملء هذا الإستبيان ؟

كم من الوقت إستغرقت لملء هذا الإستبيان ؟

هل لديك أي تعليقات حول هذا الإستبيان ؟

شكراً لمساعدتك

Annex (10): Academic and managerial approval

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ:2016/8/29

حضرة الدكتورة/غادة أبو نحلة المحترمة
مدير برامج الصحة– وكالة الغوث

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب خليل القطراوي

تهديكم أطيب التمنيات ونتمنى لكم دوام التقدم والإزدهار. ونرجو تكرم سيادتكم بالعلم بأن الطالب المذكور أعلاه يقوم بإجراء بحث بعنوان:

"Effect of Hypertension on Pregnancy Outcomes at UNRWA Health centers in Gaza Governorates"

كمتطلب للحصول على درجة الماجستير في الصحة العامة–مسار علم الأوبئة، وعليه نرجو التكرم بالموافقة والايعاز لمن يلزم للسماح للطالب بجمع البيانات الخاصة ببحثه، حيث تشمل عينة البحث السيدات اللاتي وضعن حديثاً ومسجلات في مراكز الرعاية الأولية التابعة لإدارتكم الموقرة.
علماً بأن المعلومات ستكون متوفرة لدى الباحث والجامعة فقط وسنطلعكم على النتائج في حينها .

و اقبلوا فائق التحية و الاحترام،،،

Bas Hamad
د. بسام أبو حمد
منسق عام برامج الصحة العامة
فرع غزة

نسخة:
- الملف

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Annex (11): Helsinki Committee Approval

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: 01/08/2016 **Number:** PHRC/HC/136/16

Name: KHALIL J. EL-QATRAWI **الاسم:** خليل القطراوي

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:

Effect of Hypertension on Pregnancy Outcomes at UNRWA Health Centers in Gaza Governorates

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/136/16 in its meeting on 01/08/2016

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

Signature

Member 1/8/2016 Member

Chairman

Genral Conditions:-

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

Specific Conditions:-

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العيون

تأثير ارتفاع ضغط الدم على نتائج الحمل في عيادات وكالة الغوث في محافظات غزة

إعداد: خليل جميل القطراوي

إشراف: د. أشرف الجدي

ملخص الدراسة:

الحمل والولادة هي عملية فسيولوجية طبيعية لدى النساء. ومع ذلك، قد تكون هذه العملية العادية معقدة في وجود عوامل تؤثر على نتائج الحمل. في قطاع غزة، 10% من النساء يصبن بارتفاع ضغط الدم أثناء الحمل. ومن الجدير بالذكر أن ارتفاع ضغط الدم قد يؤثر على الحمل ويسبب نتائج سلبية لكل من الأم والطفل. من النتائج السلبية التي تصاب بها الأم قد تكون تسمم الحمل على ارتفاع ضغط الدم المزمن، الولادة المبكرة، الولادة القيصرية، نزف ما قبل وما بعد الولادة، متلازمة هيلب، تخثر منتشر داخل الأوعية الدموية، انفصال المشيمة، تسمم الحمل، وذمة رئوية، الفشل الكلوي، نزيف دماغي، الوفاة. ومن ناحية أخرى، ومن نتائج الفترة المحيطة بالولادة؛ الإجهاض، وانخفاض الوزن عند الولادة، تأخر نمو داخل الرحم، ولادة مبكرة، ووفيات الجنين داخل الرحم، ودخول الأطفال حديثي الولادة إلى المستشفيات.

تهدف هذه الدراسة إلى التعرف على التأثير المحتمل لارتفاع ضغط الدم أثناء الحمل على نتائج الحمل المضاعفات السلبية للأمهات المسجلات في خدمات الرعاية الصحية للأونروا في محافظات غزة، من أجل الحد من حدوث نتائج الحمل السلبية وتحسين الرعاية الصحية للأم والطفل.

أجريت دراسة مقارنة تحليلية في الفترة ما بين أغسطس 2016 و إبريل 2017، على 430 أم يتابعون لدى المراكز الصحية التابعة للأونروا، والتي قسمت إلى مجموعتين (غير مصابين ومصابين بارتفاع ضغط الدم في الحمل الأخير)، مكونة من 215 أم لكل مجموعة. وقد استخدمت المعاينة الطبقية النسبية. وقد تم استخدام الاستبانة كأداة لجمع البيانات من خلال المقابلة الشخصية بجانب السجلات الطبية للتأكد من صحة البيانات. كما وقد تم استخدام مقياس جودة الحياة لمنظمة الصحة العالمية. وقد تم إجراء التحليل الإحصائي لمقارنة النتائج المدروسة بين المجموعات باستخدام "معامل الارتباط بيرسون" واختبار "مربع كاي" واختبار "ت".

وقد اظهرت الدراسة وجود فروق ذات دلالة إحصائية لدى الأمهات اللواتي يعانون و اللواتي لا يعانون من ارتفاع ضغط الدم تعزو لمتغير إنهاء الحمل (χ^2 =67.289, p=0.001)، و نزيف ما قبل الولادة (χ^2 = 17.462, p=0.001) ونزيف ما بعد الولادة (χ^2 =8.350, p=0.003) والنزف قبل الولادة =(χ^2 73.815, p=0.001)، في حين لا توجد فروق ذات دلالة إحصائية بين المجموعتين تعزو إلى انفصال المشيمة ومتلازمة هيلب. ومع ذلك، فيما يتعلق بالنتائج السلبية للولادة، لوحظت فروق ذات دلالة إحصائية بين المجموعتين في الولادة المبكرة (χ^2 =6.114, p=0.13)، وانخفاض الوزن عند الولادة (χ^2 =11.4, p=0.003) ودخول حديثي الولادة للمستشفيات (χ^2 =4.06, p=0.044). كما أوضحت الدراسة أن هناك فروق ذات دلالة إحصائية في جودة الحياة. بالإضافة إلى أن 79.1٪ من الأمهات اللواتي يعانين من (PIH) تم شفاؤهن بعد الولادة.

وأظهرت النتائج أن الخطورة تكون أكبر لدى النساء اللواتي يعانين من ارتفاع ضغط الدم أثناء الحمل من أن يكون لهن نتائج ضارة (الولادة المبكرة، وانخفاض الوزن عند الولادة، دخول حديثي الولادة للمستشفيات، وتسمم ما قبل الحمل، والنزف قبل الولادة وبعدها) مقارنة بالنساء اللواتي لا يعانين من ارتفاع ضغط الدم في قطاع غزة. وأن التشخيص المبكر وجودة المتابعة قبل الولادة تعمل على تحسين صحة الأم والجنين.

وقد أوصت الدراسة بما يلي

وضع خطة وطنية لتحسين الرعاية الصحية للأم والطفل في فلسطين على المستوى الأول، الثاني والثالث.

وضع خطط تثقيفية لتشجع وزيادة وصول السيدات الحوامل لمراكز الرعاية الأولية.

تحسين رعاية ما قبل وأثناء وما بعد الحمل والولادة خصوصاً للسيدات المصابات بارتفاع ضغط الدم.

تطبيق أبحاث لدراسة محددات نتائج الحمل السلبية في فلسطين.