An-Najah National University

Faculty of Nursing

The relationship of maternal factors with spontaneous abortion

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List of abbreviations:

1. Diabetes Mellitus: D.M
2. Insulin-Dependent Diabetes Mellitus: IDDM
3. United Nations Relief and Works Agency: UNRWA
4. Spontaneous Abortion: S.A
5. Body Mass Index: BMI
6. Recurrent Spontaneous Abortion: RSA
7. environmental tobacco smoke: ETS
8. cigarette smoking: CS
Abstract:

Objectives:

We sought to determine the predisposing factors that lead to spontaneous abortion among pregnant women in Palestinian UNRWA clinics in North West Bank.

Background:

There are many risk factors for abortion among pregnant women as found by many studies such as diabetes mellitus, maternal age, lifestyle, and others.

Miscarriage or spontaneous abortion is the spontaneous end of a pregnancy at a stage where the embryo or fetus is incapable of surviving independently, generally defined in humans at prior to 20 weeks of gestation (Wikipedia).

A miscarriage is a pregnancy that ends spontaneously before the fetus has reached a viable gestational age (Regan, l; Rai, R 2000).

Methods:

In this study we will select women with history of abortion in UNRWA clinics in North West Bank to find the risk factors that lead to abortion, it includes a retrospective convenient sample, we returned to pregnant women files to find the causes of abortion for each woman and is there a relationship between risk factors and spontaneous abortion, and this mean that we will take two groups of women, the first is a case group contains a women with abortion, and the second is a control group contains women with successful pregnancy outcome.

Result: smoking, maternal age, maternal weight, and history of spontaneous abortion were the leading cause for spontaneous abortion.

Conclusion

Our study shows an important increase in the risk of spontaneous abortion and other types of fetal loss among women aged more than 35 years and that increase is already considerable among those in their 30s. This increase is observed irrespective of a woman's reproductive history. We conclude that there are some important factors that lead to spontaneous abortion as maternal age and weight, smoking history, multipara,
maternal diseases such as diabetes mellitus and hypertension, history of spontaneous abortion, and anemia.

**Key words:** Diabetes mellitus, Abortion, Pregnancy, Miscarriage, Embryo, Fetus, hypertension, Thalasemia, heart diseases, preeclampsia.

**Abbreviations:** D.M, IDDM, UNRWA.
Chapter one:
Introduction
1.1 Introduction:

Pregnancy is the process by which a mammalian female carries a live offspring from conception until it develops to the point where the offspring is capable of living outside the womb. It starts with conception, the process of fertilization to form a zygote, and ends in childbirth, miscarriage, or abortion (Jagnayak SS, 2005).

In humans, pregnancy takes approximately 40 weeks between the time of the last menstrual cycle and delivery (38 weeks from fertilization). It is divided into three trimesters. The first trimester carries the highest risk of miscarriage, the unintentional abortion of a fetus. It is often a result of defects in the fetus, its parent, or damage caused after conception (Jagnayak SS, 2005).

One of the most complications of pregnancy is abortion which means in its most common usage, the voluntary or induced termination of pregnancy (Lena, G2006). Abortion is divided into different types, one of them is spontaneous abortion which is defined as the loss of a pregnancy without outside intervention before 20 weeks’ gestation, affects up to 20 percent of recognized pregnancies. Spontaneous abortion is subdivided into threatened abortion, inevitable abortion, incomplete abortion, missed abortion, complete abortion, and recurrent spontaneous abortion (Griebell, C, 2005).

Spontaneous abortion is the most common serious complication of pregnancy and it is not notifiable; it is difficult to get the accurate incidence. In general, the incidence varies from 10-15 per cent (Jagnayak, Ss 2005).

Eight to 20 percent of clinically recognized pregnancies under 20 weeks of gestation will undergo spontaneous abortion; 80 percent of these occur in the first 12 weeks of gestation (Jovanovich etal, 2003), he overall risk of Sab after 15 weeks is low
(about 0.6 percent) for chromosomally and structurally normal fetuses, but varies according to maternal age and ethnicity (Wyatt PR, Owolabi T, Meier C, Huang T, 2005)

Miscarriages can occur for many reasons, not all of which can be identified. Physical trauma, or exposure to certain chemicals, diseases, they are rarely the cause. A miscarriage usually results from biological defects in the mother or genetic defects in the developing fetus (Royston, E and Armstrong, 1989).
1.2 Background:

Spontaneous abortion (SA), also known as miscarriage, refers to a pregnancy that ends spontaneously before the fetus has reached a viable gestational age and living weight. The World Health Organization defines it as expulsion or extraction of an embryo or fetus weighing 500 g or less from its mother. This typically corresponds to a gestational age of 20 to 22 weeks or less (Tulandi, T., AL-Fozan, M. 2011).

Spontaneous abortion is the most common complication of early pregnancy. The frequency decreases with increasing gestational age. Eight to 20 percent of clinically recognized pregnancies fewer than 20 weeks of gestation will undergo SA; 80 percent of these occur in the first 12 weeks of gestation. The overall risk of SA after 15 weeks is low (about 0.6 percent) for chromosomally and structurally normal fetuses, but varies according to maternal age and ethnicity (Tulandi, T., AL-Fozan, M. 2011). So because of high risk on pregnant women and increase the cases of abortion in Palestine, We in turn, will search for the most risk factors for spontaneous abortion among pregnant women in the North of Palestine.

1.3 Significance of the study:

There are many cases of abortion that have been existed in our population for many reasons, so we find that the existence of abortion need to be investigated for its occurrence, causes and other relevant factors.
1.4 **Aim of the study:**

This study will be implemented in order to find the relationship between maternal factors and spontaneous abortion among pregnant refugees women in the north of west bank.

1.5 **Objectives of the study:**

1. To determine the predisposing factors that lead to spontaneous abortion among pregnant women in North West Bank in Palestine.

2. To assess the extent of abortion in North West Bank of Palestine among refugees.

1.6 **Research question:**

- What is the relation between the risk factors such as maternal age, maternal weight, life style and the occurrence of spontaneous abortion?

1.7 **Hypothesis:**

- There is no significant relationship between age and spontaneous abortion.

- There is no significant relationship between smoking and spontaneous abortion.

- There is no significant relationship between maternal diseases (HTN, DM, and GDM) and spontaneous abortion.

- There is no significant relationship between maternal weight and spontaneous abortion.

- There is no significant relationship between previous spontaneous abortion and spontaneous abortion.
Chapter Two:

Literature Review
2.1 Literature review:

Spontaneous abortion occurs in about one in five pregnancies, and for many women can lead to significant psychological squeals. Many studies conducted to prove that there are many risk factors can lead to spontaneous abortion like maternal age and weight, coffee and alcohol consumption and many other causes listed in these reviews as evidence by these studies according to its cause.

2.2 Maternal and paternal age:

Andersen, A. M, et al (2000) in her study of (Maternal age and fetal loss: population based register linkage study) conclude that “At age 42 years, more than half of pregnancies resulted in fetal loss. The risk of a spontaneous abortion was 8.9% in women aged 20-24 years and 74.7% in those aged 45 years or more. High maternal age was a significant risk factor for spontaneous abortion” (Anderson, A. M, 2000) the objective of her study was to estimate the association between Maternal age and fetal death (spontaneous abortion, ectopic pregnancy, stillbirth), taking into account a woman's reproductive history. The design was A Prospective register linkage study.

In addition to maternal age and its effect on spontaneous abortion, Camargo, R.; Santana, D (2011) conducted a study about (Severe maternal morbidity and factors associated with the occurrence of abortion in Brazil) And they found that the rate of spontaneous abortion was higher among women aged 40–49 years and among those with 0 or 1 children or delivery also Spontaneous abortion was significantly associated with parity and maternal age.
Abortion in general carried a higher risk of severe maternal complications, their method was conducting a secondary analysis of the 2006 Brazilian Demographic Health Survey. Interview data on women's experience of spontaneous/induced abortion and associated factors were analyzed overall and by geographic region. The risk of associated severe maternal morbidity was estimated.

Also there is another study talks about maternal age and its effect on late abortion as Cubizolles, M.; Renzo, G.; Papierink (2000) have a study about risk factors for 14-21 week abortions by using a case control design for their research. This survey included two case groups: all consecutive single preterm deliveries (22-36 completed weeks of amenorrhea) and all consecutive single late abortions (14-21 completed weeks of amenorrhea), and one unmatched control group (37 weeks of amenorrhea) the result was: Histories of induced abortion, spontaneous abortion and preterm birth were more closely associated with late abortion of a live fetus than with late abortion of a dead fetus. Women aged 35 years and women living alone had a much higher risk of late abortions than women aged 20-24 years and married women.

Rochebrochard, E.; Thonneau, P (2002) investigate both maternal and paternal age in their study to find out the effect of these factors on fetal loss they use a retrospective study and the last planned pregnancy (n=3174) that ended in a birth or miscarriage were analyzed on women aged 25-44 years in Denmark, Germany, Italy, and Spain, the result was the risk of miscarriage is higher in women aged >=35 and men aged >=40.

Other study which is done by Haavaldsen, C; etal (2010) about the impact of maternal age on fetal death find that The risk of fetal death was 1.4 times higher in
women 40-44 years old than in women aged 20-24 years in midpregnancy but 2.8 times higher at term. In term pregnancies the relative importance of maternal age increased by additional pregnancy weeks. In gestational weeks 42-43, the crude risk was 5.1 times higher in mothers 40 years old or older. The study design including all ongoing pregnancies after 16 weeks of gestation in Norway during the period 1967-2006 (n = 2,182,756).

2.3 Coffee, smoking, alcohol consumption:

As shown before there are some maternal factors that may lead to spontaneous abortion as mother weight and coffee consumption, according to these findings there are many studies that take coffee consumption as a predisposing factor for spontaneous abortion like the study of Bech, B.; et al (2005), the authors conducted a cohort study within the Danish National Birth Cohort to determine whether coffee consumption during pregnancy is associated with late fetal death (spontaneous abortion and stillbirth). Consumption of coffee during pregnancy was associated with a higher risk of fetal death, especially losses occurring after 20 completed weeks of gestation (Bech, B., et al 2005).

Another authors like Fernandes, O.; Sabharwal, M (1998) conclude in their research about (Moderate to heavy caffeine consumption during pregnancy and relationship to spontaneous abortion and abnormal fetal growth) that there is a small but statistically significant increase in the risks for spontaneous abortion and low birth weight babies in pregnant women consuming >150 mg caffeine per day. Their method was a control design study.
This is the same according to Rasch, V. (2003), the author objective was to study the association between cigarette, alcohol, and caffeine consumption and the occurrence of spontaneous abortion, a case-control design was utilized; cases were defined as women with a spontaneous abortion in gestational week 6–16 and controls as women with a live fetus in gestational week 6–16. The variables studied comprise age, parity, occupational situation, cigarette, alcohol, and caffeine consumption. The result was Women who smoked 10–19 cigarettes and 20 or more cigarettes per day did not have significantly increased having spontaneous abortions and Consumption of 5 or more units alcohol per week and 375 mg or more caffeine per day during pregnancy may increase the risk of spontaneous abortion.

The study of Harlap, S; Shiono, P.H (1980) about Alcohol, smoking and incidence of spontaneous abortion in the first and second trimester of pregnancy said that The increased risk of second-trimester miscarriage in drinkers was not explained by age, parity, race, marital status, smoking, or the number of previous spontaneous or induced abortions. Thus alcohol may harm human fetuses not only when it is abused but also when taken in moderation and lead to fetal loss.

As it shown in previous studies about the risk factors of spontaneous abortion there is a relation between smoking habits and abortion as the study of Chatenoud, etal (1998) about Paternal and Maternal Smoking Habits before Conception and During the First Trimester: Relation to Spontaneous Abortion and they found that Women who smoked more than 10 cigarettes/day in the first trimester were at increased risk of miscarriage, No relationship was evident between the number of cigarettes smoked
before conception and the risk of abortion. Likewise, no association emerged between paternal smoking and miscarriage. Their method was conducting a hospital-based case-control study on risk factors for spontaneous abortion in the greater Milan area. Information collected from 782 cases of spontaneous abortions and 1543 controls (women who delivered at term healthy infant).

2.4 Maternal diseases and morbidity:

Another risk factor for spontaneous abortion was diabetes mellitus, there are many studies that confirm this because of its severity and its effect on fetal and maternal wellbeing as the study of Gaufberg, S (2011), in his study about early pregnancy loss in emergency medicine clinical presentation he found that most cases of abortion related to some factors such as maternal insulin dependent diabetes mellitus (IDDM), severe hypertension and renal disease, alcohol or tobacco and some drugs like antidepressant medication were all responsible about the occurrence of abortion among pregnant women.

Jovanovic, L., et al (2005) In their study of Elevated Pregnancy Losses at High and Low Extremes of Maternal Glucose in Early Normal and Diabetic Pregnancy found that Pregnancy losses are increased at the extremes of glycemic in both normal and diabetic pregnancy but at higher levels in diabetic pregnancy. A case control study was used, Mean pregnancy loss rates were 12% in diabetic and 13% in normal pregnancies. Over six intervals of glycated protein in diabetic pregnancy, fetal loss rates at the upper and lower extremes (24 and 33%, respectively) were approximately threefold higher than the four intervening rates (8–14%).
And Verheijen, E tal (2005) in their study of Outcomes of pregnancies in women with pre-existing type 1 or type 2 diabetes, in an ethnically mixed population the Design was Prospective cohort study and the main outcomes were Fetal loss, prenatal and infant mortality and congenital anomaly. The result was: Total pregnancy loss is 123 per 1000.

Other risk factors that lead to spontaneous abortion summed up in these studies as the study of. Chen, K; etal (2005) about Previous maternal infection with Toxoplasma gondii and the risk of fetal death in their study they found no association between previous T gondii infection and risk of fetal death at ≥20 weeks of gestation and 16 week of gestation. However, they noted no association between previous T gondii infection and risk of fetal death at all birth weight categories (≥1000, ≥500 and <1000, and <500 g) their study design was a population-based prospective cohort of 29,912 pregnant women without acute T gondii infection in Norway.

2.5 Maternal weight:

Obesity has been classified as risk factors for abortion among pregnant women as shown in these studies:

King, J.; Casanueva, Etal (2007) in their study (Obesity in Pregnancy: Maternal and neonatal effects) stated that “Obese pregnant women also experience higher rates of spontaneous abortions or early pregnancy losses, The risk of spontaneous abortion is about 20% higher in obese than in normal BMI women”.

King, J., Casanueva, E (2007) And Lashen, H.; Fear, K.; Sturdee, D.W (2004) in their study about obesity and its relation with recurrent abortion in the first trimester of pregnancy, use a case control study; the study population was identified from a maternity
database. The results show that there is a significant increase in the risk of obesity on early and recurrent abortion among pregnant women in first trimester of pregnancy.

### 2.6 History of induced or spontaneous abortion:

Also Parazzini, F.; etal (2010) in their research about the relationship between history of induced abortion and recurrent spontaneous abortion found that Previous induced abortions did not increase the risk of preterm birth, both in small and normal for gestational age preterm infants. No difference emerged in risk factors for infants born at <32 and 32-36 gestational week’s. Their method was a case-control study.

In another words there are a lot of studies that talks about maternal history of abortion and present spontaneous abortion as the study of Winera, N;etal (2009) about induced abortion with misoprostol a risk factor for late abortion or preterm delivery in subsequent pregnancies. In this study authors used Cochran-Mantel-Haenszel chi-square test, Case–control study design in a teaching hospital from January 2005 to June 2006. The cases had singleton pregnancies delivered at 16–36 weeks of gestation after spontaneous late abortions, preterm labor or preterm premature rupture of membrane, or induction of labor for preterm premature rupture of membrane before 37 weeks. The control group was composed of the two consecutive spontaneous singleton deliveries at ≥37 weeks of gestation after each new case the result was induced abortion with misoprostol during the first or second trimester of pregnancy is safe for subsequent pregnancies and doesn’t affect fetus health.

Raatikainen, k,etal (2006) conducted a study about the relationship between history of induced abortion and present abortion, their method was a case control study.
by selecting women with normal deliveries and others with one or two history of induced abortion and the result was that Induced abortion is not an independent risk factor for adverse obstetric outcome.

2.7 Most risk factors for spontaneous abortion are summed up in these studies:

Tulandi, T.; Al-Fozan, H (2011) in their study of (Spontaneous abortion: Risk factors, etiology, clinical manifestations, and diagnostic evaluation) found that there are many factors that contribute abortion like age, previous spontaneous abortion, smoking, alcohol and cocaine intake, and maternal weight influence the occurrence of abortion. They use a case-control study as they found that of 1 million pregnancies the overall rate of spontaneous abortion was 11 percent and the approximate frequencies of clinically recognized miscarriage according to maternal age, there was an increased risk of spontaneous abortion in women who drank more than three drinks per week during the first trimester. The increased risk associated with moderate alcohol consumption was higher in the first than the second trimester, and was highest in the first 10 weeks of pregnancy.

Yun Zhang, B.; Sheng Wei, Y (2010) in their study about (Risk factors for unexplained recurrent spontaneous abortion in a population from southern China) conclude that environmental tobacco smoke also known as (passive smoking), a higher BMI more than 24.0, and a family history of recurrent spontaneous abortion (RSA) considered to be an independent risk factors for RSA in population, they use a control design in the study by selecting one group with history of recurrent abortion and other
control group. Another result was smoking, alcohol consumption, and coffee consumption were not associated with increased risk of RSA, both short (< 1 hour/day) and long (≥ 1 hour/day) periods of environmental tobacco smoke (ETS) were associated.

While several studies have examined the role of employment during pregnancy on reproductive risk, few have taken into account the risk of abortion among pregnant women as the study of Bryant, H (1991) about Effect of employment and its correlates on spontaneous abortion risk, this study was designed to test the hypothesis that employment, or certain types or preconditions of employment, places a woman at increased risk for spontaneous abortion. A case-control study design, utilizing two control groups matched to the 334 cases for age and parity. Control groups consisted of pregnant women (less than 25 wk gestation) and postnatal women, the result was while employment itself would seem not to be a risk factor for spontaneous abortion, preconditions which lead to such employment may in fact affect this relationship.

2.8 Other risk factors:

Other factors associated with risk of early spontaneous abortion are high paternal age (de la Rochebrochard 2002, Nybo Andersen 2004, psychological stress (Coste 1991, Neugebauer 1996), irradiation (Kline 1984), maternal lead exposure (Kline 1984, Hertz-Picciotto 2000), and paternal exposure to lead or mercury (Anttila 1995).

Occupational exposure, such as work in daycare nursery has been proposed as a risk factor (Gothe 1992). Nurses working in anesthesiology has been suspected to be at risk, but this has not been confirmed in other studies (Ericson 1985, Eger 1991).
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Spontaneous abortion was significantly associated with parity and maternal age. Abortion in general carried a higher risk of severe maternal complications.
Pregnancy complicated by type 2 diabetes mellitus is a high-risk state, with miscarriage and congenital malformations almost twice that seen in type 1 disease.

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Title</th>
<th>Page</th>
<th>Design</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brydon. P, etal</td>
<td>2000</td>
<td>Pregnancy outcome in women with type 2 diabetes mellitus needs to be addressed</td>
<td>54</td>
<td>Case-control design</td>
<td>pregnancy complicated by type 2 diabetes mellitus is a high-risk state, with miscarriage and congenital malformations almost twice that seen in type 1 disease</td>
</tr>
<tr>
<td>, Lois Jovanovic etal</td>
<td>2005</td>
<td>Pregnancy Losses at High and Low Extremes of Maternal Glucose in Early Normal and Diabetic Pregnancy Evidence for a protective adaptation in diabetes</td>
<td>28</td>
<td>Case-control design, data logarithm tested by z score test</td>
<td>Pregnancy losses are increased at the extremes of glycemia in both normal and diabetic pregnancy but at higher levels in diabetic pregnancy</td>
</tr>
<tr>
<td>Evelyn C.J. Verheijen, etal</td>
<td>2005</td>
<td>Outcomes of pregnancies in women with pre-existing type 1 or type 2 diabetes, in an ethnically mixed population</td>
<td>112</td>
<td>Prospective cohort study, Univariate and multivariate logistic regression analysis</td>
<td>Ethnicity has a significant impact on the outcome of diabetic pregnancies, with worse outcomes for babies born to Asian mothers compared with Caucasian mothers. The use of insulin pre-pregnancy rather than type of diabetes appears to predict adverse outcome.</td>
</tr>
<tr>
<td>Name</td>
<td>Year</td>
<td>Title</td>
<td>Participants</td>
<td>Study Design</td>
<td>Summary</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------</td>
<td>----------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Anne-Marie Nybo Andersen, et al</td>
<td>2000</td>
<td>Maternal age and fetal loss: population based register linkage study</td>
<td>320</td>
<td>Prospective register linkage study</td>
<td>Fetal loss is high in women in their late 30s or older</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anne-Marie Nybo Andersen, et al</td>
<td>2004</td>
<td>Advanced Paternal Age and Risk of Fetal Death: A Cohort Study</td>
<td>160</td>
<td>Prospective cohort study</td>
<td>The paternal age-related risk of late fetal death was higher than the risk of early fetal death and started to increase from the age of 45 years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bodil Hammer Bech, et al</td>
<td>2005</td>
<td>Coffee and Fetal Death: A Cohort Study with Prospective Data</td>
<td>162</td>
<td>Prospective cohort study</td>
<td>Consumption of coffee during pregnancy was associated with a higher risk of fetal death, especially losses occurring after 20 completed weeks of gestation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roberta B. Ness, et al</td>
<td>1999</td>
<td>Cocaine and Tobacco Use and the Risk of Spontaneous Abortion</td>
<td>340</td>
<td>Case-control study</td>
<td>Cigarette smoking and cocaine use are independently associated with an increased risk of spontaneous abortion</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Study Design</td>
<td>Study Details</td>
<td>Results</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>------</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Olavo Fernandes, et al</td>
<td>1998</td>
<td>Case – control and cohort design</td>
<td>Moderate to heavy caffeine consumption during pregnancy and relationship to spontaneous abortion and abnormal fetal growth</td>
<td>Increase in the risks for spontaneous abortion and low birth weight babies in pregnant women consuming &gt;150 mg caffeine per day.</td>
<td></td>
</tr>
<tr>
<td>Harold W. de Valk, et al</td>
<td>2006</td>
<td>Case-control retrospective design</td>
<td>Pregnancy Outcome in Type 2 Diabetes Mellitus: A Retrospective Analysis from the Netherlands</td>
<td>Pre-gestational type 2 diabetes is associated with an increased incidence of adverse pregnancy outcome</td>
<td></td>
</tr>
</tbody>
</table>
Chapter Three:

Research design and methodology
Research design and methodology

3.1 Study design:

A retrospective case control study was designed to collect data from the patient’s files from January 2011 to June 2011 in North West bank of Palestine.

In this study, we aimed to find the relationship between maternal factors and spontaneous abortion among pregnant refugees women in the north of west bank.

A retrospective case control descriptive design will be adopted for the current study. The case-control design is suitable for the efficient study of several risk factors and the association with the outcome as evidence by shortening of time; this is also manifested in most of studies.

3.2 Study Subjects:

Subjects of this study are from the UNRWA clinics, and the subjects are all pregnant women files from January 2011 to June 2011 from each district of (Nablus, Jenin, and Toukarem city) in the North of West Bank.

From January to June 2011, cases with spontaneous abortion will be identified at the Department of Obstetrics and Gynecology of agency clinic-North West bank of Palestine during the time period.

3.3 Sampling process and sample size:

Two types of samples were selected via. Successful delivery women population and women who have spontaneous abortion ,all files will be taken from UNRWA clinics according to the distribution of the people in each district of (Nablus, Jenin, and
Tulkarem city) in the North of West Bank among refugees, and we will included all cases available between January to June 2011, the sample taken is a convenient sample from Jenin, Tulkarem and Nablus(Askar) clinics, the number of files included is 181, file, according to all files exist in each clinic, the number of files is 506 in these clinics.

3.4 Study setting:

This study implemented in the UNRWA clinics in North West bank in Palestine, Geographically separate clinics are taken, the study conducted in three UNRWA clinics: Nablus (Asker clinic), Jenin, and Tulkarem.

A population-based, matched case-control study of spontaneous abortion will be conducted in North West bank, Palestine 2011.

Ethical permission obtained from the Institutional Review Board of the medical faculty at Al-Najah University to approve the study before beginning of data collection, also permission from the UNRWA was taken to conduct our study.

3.5 Study period:

A period of one semester which is, from September 2011 to December 2011.

3.6 Inclusion criteria:

-Registered pregnant women in UNRWA clinics in North West Bank.

- The sample selected only successful pregnancy and spontaneous abortion.

- The sample selected only from January to June 2011.
- A gestational age of 6 to 34 completed weeks.

- The diagnosis of spontaneous abortion was based on clinical history, examination.

### 3.7 Exclusion criteria:

- Delivery and post delivery ward and governmental clinics.

- Induced abortion.

### 3.8 Study Tool:

Questionnaire for collecting information has been developed after surveying some previous studies dealing with the same subject, and also the center file questions regarding abortion included to fill as a part of our questionnaire.

Questionnaire includes possible risk factors for spontaneous abortion, including sociodemographic, anthropometric, and lifestyle factors, obstetric and medical history.

### 3.9 Methods:

This study designed as a case control study; the investigation carries out in the UNRWA clinics in the north of West Bank.

Data, sample and information collected using e questionnaire, the first part of this questionnaire deals with demographic characteristic, educational level, occupation and working condition, and obstetric history of the women, the second part deals with complication during pregnancy.
3.10 Procedure:

The way in which the information collected is as follow, the questionnaires used to collect the information from the files after pilot study was taken, we fill the questioners from the files, first four students went to Askar clinic to work on questionnaires, then in the next week one student went to Jenin clinic and the other students went to Toulkarem clinic because of constricted time.

3.11 Ethical consideration:

The data collected to assess the risk factors of spontaneous abortion. This study is approved by the research ethical committee of the Ministry of Health and the Faculty of Nursing – An-Najah National University, Institutional Review Board approval also obtained. The results protected in a way to ensure that it is not possible to identify any of the individuals.

3.12 Budget:

<table>
<thead>
<tr>
<th>Item</th>
<th>number</th>
<th>price</th>
</tr>
</thead>
<tbody>
<tr>
<td>questionnaires</td>
<td>600</td>
<td>120NIC</td>
</tr>
<tr>
<td>Travel/moving</td>
<td>3cities</td>
<td>300NIC</td>
</tr>
<tr>
<td>Additional money for spare use</td>
<td></td>
<td>100NIC</td>
</tr>
<tr>
<td>Result analysis</td>
<td></td>
<td>600NIC</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>1120NIC</td>
</tr>
</tbody>
</table>
Chapter Four: Results
4.1 Introduction:

A case control study conducted at three UNRWA clinics in three Palestinian cities at North West bank, Nablus, Jenin, and Toulkarem.

This study will be implemented in order to find the relationship between maternal factors and spontaneous abortion among pregnant refugees women in the north of west bank.

4.2 Data analysis:

Statistical analysis were performed using SPSS version 14, chi-square test were used to evaluate overall associations as appropriate. Multiple regressions were performed to assess the unadjusted associations (sig) and 95% CI between exposure and the outcome. Prediction with a P-value for the parameter estimate in unvaried analysis of less than 0.05 was included as risk factors.
Results pertinent to hypothesis one:

Hypothesis one says: there is no significant relation at the level ($\alpha = 0.05$) between (case & control) and Maternal age.

For testing hypothesis one, the researcher conducted Chi Square test and the results of this analysis are shown in table (1-4).

1. Maternal age:

   Table (1-4): Results of Chi Square for relation between (case & control) and maternal age

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Maternal age</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td>Chi-Square Value</td>
</tr>
<tr>
<td>0.00001*</td>
<td>28.474</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. The percentage of women age <24 years old was 11.3% case and 88.8% control, women age between 24-34 years old was 34/301 case and 267/301 control, women age =>35 years old was 38/119 case and 81/119 control.

* Statically significant at ($\alpha = 0.05$).

Figure (1-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Maternal age.
Results pertinent to hypothesis two:

Hypothesis two says: there is no significant relation at the level ($\alpha = 0.05$) between (case & control) and Smoking history.

For testing hypothesis two, the researcher conducted Chi Square test and the results of this analysis are shown in table (2-4).

**Table (2-4):** Results of Chi Square for relation between (case & control) and Smoking history

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Smoking history</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td>Chi-Square Value</td>
</tr>
<tr>
<td>*0.004</td>
<td>8.521</td>
</tr>
<tr>
<td></td>
<td>%14.9, 71</td>
</tr>
<tr>
<td></td>
<td>%85.1, 406</td>
</tr>
<tr>
<td></td>
<td>%100.0, 477</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).

2. **Smoking history:** percentage of smoking women is 35.7% case and 64.3% control, percentage of non smoking women is 14.9% case and 85.1% control.

Figure (2-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Smoking history.
Results pertinent to hypothesis three:

Hypothesis three says: there is no significant relation at the level ($\alpha = 0.05$) between (case & control) and maternal diseases.

Table (3-4): Results of Chi Square for relation between (case & control) and maternal diseases

| Correlation P-Value | Diseases |  |  |  |  |  |  |  |
|---------------------|----------|---|---|---|---|---|---|
|                     | DM       |   | HTN |   | GDM |   |   |
| Percent             | Percent  |   | Percent |   |   |   |   |
| GDM                 | Case     | 14 | 11 | 9 | 14 |   |   |
|                     | Control  | 88 | 21 | 6 | 88 |   |   |
|                     | Total    | 102| 32 | 15| 102|   |   |

3. Maternal diseases:

For testing hypothesis three, the researcher conducted Chi Square test and the results of this analysis are shown in table (3-4).

* Statically significant at ($\alpha = 0.05$).

Figure (3-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and diseases.
Results pertinent to hypothesis four:

Hypothesis five says: there is no significant relation at the level ($\alpha = 0.05$) between (case & control) and Body Mass Index.

For testing hypothesis five, the researcher conducted Chi Square test and the results of this analysis are shown in table (4-4)

Table (4-4): Results of Chi Square for relation between (case & control) and Body Mass Index

<table>
<thead>
<tr>
<th>Correlation P-Value</th>
<th>Chi-Square Value</th>
<th>Body Mass Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percent</td>
</tr>
<tr>
<td>0.038*</td>
<td>8.411</td>
<td>%26.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%73.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%100.0</td>
</tr>
</tbody>
</table>

Statically significant at ($\alpha = 0.05$).

2. **Body Mass Index**: the percentage of women underweight (<18.5) is 20.0% case and 80.0% control, the percentage of women Normal weight (18.5–24.9) is 14.8% case and 85.2% control, the percentage of women Overweight (25–29.9) is 12.5% case and 87.5% control, the percentage of women Obesity (>= 30) is 26.2% case and 73.8% control.

Figure (4-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Body Mass Index.
Results pertinent to hypothesis five:

Hypothesis five says: there is no significant relation at the level (α = 0.05) between (case & control) and Previous spontaneous abortions.

For testing hypothesis six, the researcher conducted Chi Square test and the results of this analysis are shown in table (5-4).

Table (5-4): Results of Chi Square for relation between (case & control) and previous spontaneous abortions

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Previous spontaneous abortions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td>Chi-Square Value</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>43.423</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Previous spontaneous abortions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>25</td>
<td>7.9%</td>
</tr>
<tr>
<td>Control</td>
<td>292</td>
<td>92.1%</td>
</tr>
</tbody>
</table>

* Statically significant at (α = 0.05).

3. Previous spontaneous abortions: the percentage of spontaneous abortions (0) is 7.9% case and 92.1% control, the percentage of spontaneous abortions (1) is 31.0% case and 69.0% control, the percentage of spontaneous abortions (=>2) is 28.8% case and 71.2% control.
Figure (5-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Previous spontaneous abortions.

**Results pertinent to Gravida:**

For testing the relationship between gravida and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (6-4).

Table (6-4): Results of Chi Square for relation between (case & control) and Gravida

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Chi-Square Value</th>
<th>P-Value</th>
<th>Case</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
</tr>
<tr>
<td>&lt;=4</td>
<td>=&gt;4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>54.4</td>
<td>26</td>
<td>9.1</td>
<td>1</td>
<td>20.8</td>
<td>12.1</td>
</tr>
<tr>
<td>100.0</td>
<td>57</td>
<td>100.0</td>
<td>11</td>
<td>100.0</td>
<td>24</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).

6. **Gravida:** the percentage of women with gravida 1 is 12.1% case and 87.9% control, gravida 2 is 20.8% case and 79.2% control, gravida 3 is 9.1% case and 90.9% control, gravida =>4 is 45.6% case and 54.4% control.
Figure (6-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Gravida.

**Results pertinent to anemia:**

For testing the relationship between anemia and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (7).

Table (7-4)
Results of Chi Square for relation between (case & control) and Anemia

<table>
<thead>
<tr>
<th></th>
<th>Anemia</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Percent</td>
</tr>
<tr>
<td>Case</td>
<td>76</td>
<td>15.5%</td>
</tr>
<tr>
<td>Control</td>
<td>414</td>
<td>84.5%</td>
</tr>
<tr>
<td>Total</td>
<td>490</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).

Figure (7-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Anemia.
Results pertinent to vaccinations:

For testing the relationship between vaccinations and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (8-4).

Table (8-4) Results of Chi Square for relation between (case & control) and Vaccinations

<table>
<thead>
<tr>
<th>P-Value</th>
<th>Chi-Square Value</th>
<th>Percent</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.166</td>
<td>1.916</td>
<td>%19.2</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%14.5</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%80.8</td>
<td>147</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%85.5</td>
<td>277</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%100.00</td>
<td>182</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%100.0</td>
<td>324</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).

Figure (8-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Vaccinations.
Results pertinent to Previous caesarian:

For testing relationship between previous caesarian and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (9-4)

Table (9-4): Results of Chi Square for relation between (case & control) and Previous caesarian

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Chi-Square Value</th>
<th>Percent</th>
<th>0</th>
<th>Percent</th>
<th>1</th>
<th>Percent</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00001*</td>
<td>38.354</td>
<td>6</td>
<td>32</td>
<td>34.8%</td>
<td>44</td>
<td>11.0%</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>60</td>
<td>65.2%</td>
<td>354</td>
<td>88.7%</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>92</td>
<td>100.0%</td>
<td>399</td>
<td>100.0%</td>
<td>92</td>
</tr>
</tbody>
</table>

* Statically significant at (α = 0.05).

9. Previous caesarian: the percentage of women with previous caesarian (0) is 34.8% case and 65.2% control, Previous caesarian (1) is 11.0% case and 88.7% control, Previous caesarian (=>2) is 42.9% case and 57.1% control.

![Figure](image)

Figure (9-4) indicates that there is a significant relation at the level (α = 0.05) between (case & control) and Previous caesarian.
Results pertinent to Level of education:

For testing relationship between Level of education and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (10-4).

Table (10-4): Results of Chi Square for relation between (case & control) and Level of education

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Level of education</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P-Value</td>
<td>Chi-Square Value</td>
<td>Case</td>
<td>Control</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
<td>=&gt;16</td>
<td>12-16</td>
<td>=&gt;16</td>
<td>12-16</td>
</tr>
<tr>
<td>0.00001*</td>
<td>%6.7</td>
<td>7</td>
<td>8</td>
<td>%6.7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>%93.3</td>
<td>97</td>
<td>94</td>
<td>%92.2</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>%100.0</td>
<td>104</td>
<td>102</td>
<td>%100.0</td>
<td>102</td>
</tr>
</tbody>
</table>

* Statically significant at (α = 0.05).
10. **Level of education**: the percentage of women education level <12 years is 22.3% case and 77.7% control, the percentage of women education level between 12-16 years is 6.7% case and 92.2% control, the percentage of women education level => 16 years is 6.7% and 93.3% control.

![Bar chart showing Level of education percentages](image)

Figure (10-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Level of education.

**Results pertinent to Personal medical history:**

For testing relationship between Personal medical history (HTN, DM, GDM) and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (11-4).

Table (11-4) Results of Chi Square for relation between (case & control) and Treatment

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chi-Square Value</strong></td>
<td><strong>Percent</strong></td>
</tr>
<tr>
<td><strong>P-Value</strong></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>0.00001*</td>
<td>31.072</td>
</tr>
<tr>
<td></td>
<td>31.072</td>
</tr>
<tr>
<td></td>
<td>44</td>
</tr>
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<td></td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Statically significant at ($\alpha = 0.05$).

11. **Personal medical history**: the percentage of women with personal medical history is 33.0% case and 67.0% control, the percentage of women with no personal medical history is 11.3% case and 88.7% control.

![Graph showing personal medical history](image)

Figure (11-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and treatment.

**Results pertinent to Parity.**

For testing relationship between Para and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (12-4).

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Chi-Square Value</th>
<th>Percent</th>
<th>Percent</th>
<th>Percent</th>
<th>Percent</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0000</td>
<td>24.532</td>
<td>%25.5</td>
<td>%21.2</td>
<td>%11.3</td>
<td>%6.9</td>
<td>12</td>
</tr>
<tr>
<td>1*</td>
<td></td>
<td>120</td>
<td>%78.8</td>
<td>%88.7</td>
<td>%93.1</td>
<td>163</td>
</tr>
<tr>
<td>%100.0</td>
<td>161</td>
<td>%100.0</td>
<td>%100.0</td>
<td>%100.0</td>
<td>%100.0</td>
<td>175</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).
12. **Para:** the percentage of women with Para (1) is 6.9% case and 93.1% control, Para (2) is 11.3% case and 88.7% control, Para (3) is 21.2% case and 78.8% control, Para (>=4) is 25.5% case and 74.5% control.

![Bar chart showing the percentage of women with different Paras for cases and controls.]

Figure (12-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Para.

**Results pertinent to Peri-natal deaths:**

For testing relationship between Peri-natal deaths and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (13-4)

**Table (13-4): Results of Chi Square for relation between (case & control) and Peri-natal deaths**

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Chi-Square Value</th>
<th>Peri-natal deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td></td>
<td>Case</td>
</tr>
<tr>
<td>0.27</td>
<td>3.924</td>
<td>0.0%</td>
</tr>
<tr>
<td>0.0%</td>
<td>3.924</td>
<td>5%</td>
</tr>
<tr>
<td>5%</td>
<td>100.0</td>
<td>95%</td>
</tr>
<tr>
<td>100%</td>
<td>100.0</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).
13. **Peri-natal deaths**: the percentage of women with peri-natal death (0) is 3.1% case and 83.7% control, peri-natal death (1) is 14.4% case and 85.6% control, peri-natal death (2) is 37.5% case and 62.5% control, peri-natal death (>2) is 0.0% case and 100.0% control.

Figure (13-4) indicates that there is no significant relation at the level ($\alpha = 0.05$) between (case & control) and Peri-natal deaths.

**Results pertinent to previous ante-partum hemorrhage:**

For testing relationship between previous ante-partum hemorrhage and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (14-4).
Table (14-4): Results of Chi Square for relation between (case & control) and previous ante-partum hemorrhage

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Previous ante-partum hemorrhage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
</tr>
<tr>
<td>P-Value</td>
<td>Chi-Square Value</td>
</tr>
<tr>
<td></td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Statically significant at (α = 0.05).

14. **Previous ante-partum hemorrhage**: the percentage of women with previous ante-partum hemorrhage is 23.7% case and 76.3% control, the percentage of women with no previous ante-partum hemorrhage is 14.9% case and 85.1% control.

Figure (14-4) indicates that there is no significant relation at the level (α = 0.05) between (case & control) and Previous ante-partum hemorrhage.

**Results pertinent previous post-partum hemorrhage:**

For testing relationship between previous post-partum hemorrhage and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (15-4).
Table (15-4): Results of Chi Square for relation between (case & control) and Previous post-partum hemorrhage

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Previous post-partum hemorrhage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
</tr>
<tr>
<td>P-Value</td>
<td>Chi-Square Value</td>
</tr>
<tr>
<td>0.00001*</td>
<td>33.879</td>
</tr>
<tr>
<td></td>
<td>%100.0</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).

15. **Previous post-partum hemorrhage**: the percentage of women with previous post-partum hemorrhage is 30.3% case and 69.7% control, the percentage of women with no previous post-partum hemorrhage is 9.7% case and 90.3% control.

Table (15-4) indicates that there is a significant relation at the level ($\alpha = 0.05$) between (case & control) and Previous post-partum hemorrhage.
Results pertinent to vaginal bleeding:

For testing relationship between vaginal bleeding and spontaneous abortion, the researcher conducted Chi Square test and the results of this analysis are shown in table (16-4).

**Table (16-4):** Results of Chi Square for relation between (case & control) and vaginal bleeding.

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Vaginal bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square Value</td>
<td>Percent</td>
</tr>
<tr>
<td>P-Value</td>
<td>Case</td>
</tr>
<tr>
<td>0.846</td>
<td>0.038</td>
</tr>
<tr>
<td></td>
<td>%84.0</td>
</tr>
<tr>
<td></td>
<td>%100.0</td>
</tr>
</tbody>
</table>

* Statically significant at ($\alpha = 0.05$).

16. **Vaginal bleeding:** the percentage of women with vaginal bleeding is 16.9% case and 83.1% control, the percentage of women with no vaginal bleeding 16.0% case and 84.0% control.

Figure (16-4) indicates that there is no significant relation at the level ($\alpha = 0.05$) between (case & control) and Vaginal bleeding.
Chapter Five:

Discussion
5. Discussion:

The study conducted from three UNRWA centers and analyzed by using SPSS package.

Here below we are discussing the results of risk factors that affect the occurrence of spontaneous abortion among pregnant women with a history of abortion women in comparison with women who had a normal pregnancy experiences.

The risk factors that may affect the occurrence of abortion:

1. Maternal age: there is no relation between the age and spontaneous abortion. The result of the study shows that there is a significant relationship between abortion and age (P: 0.00001).

   Our study shows an increasing risk of fetal loss with increasing maternal age in women aged more than 30 years. Although maternal age is highly correlated with Parity and reproductive history, our data clearly show a strong and independent effect of maternal age on the risk of spontaneous abortion. The percentage of abortion cases to control is 31.9%: 68.1% respectively and this disapprove the hypothesis that says that there is no relationship between maternal age and risk of spontaneous abortion. Our study consistent with the study of Anderson, A.M (2000) as she found that there is a strong relationship between maternal age and risk of spontaneous abortion and other forms of fetal losses such as ectopic pregnancy, and stillbirth. The increase in risk of ectopic pregnancies in teenage women is most likely caused by pelvic inflammatory disease (Anderson, A.M 2000).
2. **Maternal smoking**: there is no relation between smoking and spontaneous abortion. The result of the study shows that there is a significant relationship between abortion and smoking (P: 0.004).

According to the results of our study we found that active smoking is associated with increased risk of spontaneous abortion more than non smoker women and there is a strong relationship between smoking and spontaneous abortion, also this result disapprove the hypothesis that says there is no relationship between smoking and spontaneous abortion, this results is confirmed by the study of Ann Nielsen, et al (2006) about Maternal smoking predicts the risk of spontaneous abortion, and they conclude that The amount of daily smoking prior to pregnancy seems to be associated with an increased risk of spontaneous abortion, whereas the duration of smoking does not seem to be related to an increased risk of spontaneous abortion.

Also (Chatenoud 1998) in his study about Paternal and Maternal Smoking Habits before Conception and During the First Trimester: Relation to Spontaneous Abortion, They found that Women who smoke more than 10 cigarettes/day in the first trimester were at increased risk of miscarriage, No relationship was found between the number of cigarettes smoked before conception and the risk of abortion. Likewise, no association emerged between paternal smoking and miscarriage. In our study we found that there is a relationship between maternal smoking and spontaneous abortion but we don’t know the relationship between paternal smoking and the effects on the fetus because this is not included in the current study.
3. Maternal diseases (HTN, DM, and GDM): there is no relation between maternal diseases and spontaneous abortion. The result of the study shows that there is a significant relationship between abortion and maternal diseases (P: 0.00001).

About 60% of cases have had DM and 40% of control. Jovanovic, L et al (2005) in their study of Elevated Pregnancy Losses at High and Low Extremes of Maternal Glucose in Early Normal and Diabetic Pregnancy found that Pregnancy losses are increased at the extremes of glycemic in both normal and diabetic pregnancy but at higher levels in diabetic pregnancy. A case control study was used. Mean pregnancy loss rates were 12% in diabetic and 13% in normal pregnancies.

13.7% of cases have had GDM and 86.3% of control. Yang H et al (2009) in their study about risk factors for gestational diabetes mellitus in Chinese women said that spontaneous abortion was significantly associated with an increased GDM risk.

34.4% of cases have had HTN and 65.6% of control was shown in our study and that mean there is a relationship between spontaneous abortion and HTN. A study in (2005) by Sheiner E, Levy A, Katz M, Mazor M, in their study about Pregnancy outcome following recurrent spontaneous abortions talked that there is a significant association exists between spontaneous abortions and pregnancy complications such as placental abruption, hypertensive disorders and CS, and this approve our result.

4. Maternal weight: there is no relationship between maternal weight and spontaneous abortion. The result of the study shows that there is a significant relationship between spontaneous abortion and maternal weight (P: 0.038).
26.2% of cases have had obesity (BMI=>30) and 73.8% of control, and this means there is a higher significant risk factor for spontaneous abortion in North West bank in Palestine. King, J Casanueva, et al (2007) in their study (Obesity in Pregnancy: Maternal and neonatal effects) stated that “Obese pregnant women also experience higher rates of spontaneous abortions or early pregnancy losses, The risk of spontaneous abortion is about 20% higher in obese than in normal BMI women”, and this disapprove our hypothesis about the relationship between maternal weight and spontaneous abortion.

Also this result is confirmed by the study of Jim X. Wang, et al (2002) as they conclude that high BMI is associated with increased risk of spontaneous abortion also, underweight women had a similar risk of spontaneous abortion, there is another study that confirm our result and disprove this hypothesis, it is the study of Areefa S. Al Bahri & Yousef I. Aljeesh (2009) about Risk Factors among Women with Gestational Diabetes at UNRWA Clinics in Gaza Strip and they conclude that there is a significant relationship between body mass index (BMI) before and during pregnancy and development of gestational diabetes also they found that there is a significant relationship between BMI and frequency of abortion in the presence of gestational diabetes.

4. **History of spontaneous abortion**: there is no significant relationship between spontaneous abortion and previous spontaneous abortion. The result of the study shows that there is a significant relationship between spontaneous abortion and previous spontaneous abortion (P: 0.00001).

Our study shows that 31% of women with spontaneous abortion have one previous spontaneous abortion, on other hand 7.9% of the women of spontaneous
abortion have no previous spontaneous abortion. This result disapproved the hypothesis that said there is no relationship between previous spontaneous abortion and recurrent spontaneous abortion, this result is confirmed by many studies such as the study of (Zainab, A 1994) about risk factors for spontaneous abortion on Saudi women.

This result is also confirmed by the study of Mayo Clinic staff (2010) as they conduct a study about spontaneous abortion, etiology and risk factors, they found that the risk of miscarriage is higher in women with a history of more than one previous miscarriage. After one miscarriage, the risk of miscarriage in a future pregnancy is about the same as women who have never had a miscarriage — 20 percent. After two miscarriages, the risk increases to about 28 percent, this result disprove hypothesis and confirmed our result.

Other potential risk factors that may affect the occurrence of abortion:

1. Gravidity:

The result of the study shows that there is a significant relationship between spontaneous abortion and gravidity (P: 0.00001). Also study show that the woman with Gravida (1) 12.1%, Gravida (2) 20.8%, Gravida (3) 9.1%, and Gravida (=>4) 45.6%, and this mean that there is a strong relationship between the number of gravidia and spontaneous abortion. And there are many studies prove our results such as Osborn JF, Cattaruzza MS, Spinelli A(2000) in her study about Risk of spontaneous abortion in Italy, 1978-1995, and the effect of maternal age, gravidity, marital status, and education, they found that the risk of spontaneous abortion is excessively high for women with high gravidity.
2. Anemia:

The result of the study shows that there is a significant relationship between spontaneous abortion and anemia (P: 0.019). Also our study shows that 15.5% of women with spontaneous abortion have anemia.

Uche-Nwachi EO et al (2010) in their study about Anemia in pregnancy: associations with parity, abortions and child spacing in primary healthcare clinic attendees in Trinidad and Tobago approve our result and they talk that previous spontaneous abortions were directly related to the prevalence of anemia.

2. Vaccination:

The result of the study shows that there is a significant relationship between spontaneous abortion and vaccination (P: 0.166). Also our study show that 14.5% of women with spontaneous abortion received vaccination.

Manoj B; Seema T; Suraksha A (2003) in their study about spontaneous abortion approve our result about vaccination they talk that vaccination decrease the incidence of spontaneous abortion.

3. History of caesarian:

The result of the study shows that there is a significant relationship between spontaneous abortion and previous cesarean (P: 0.00001). Also our study show that the women with one previous c/s has a prevalence of 11% of the women with spontaneous abortion.
abortion have one previous cesarean, 42.9% (=>2) previous c/s, this result mean that increasing number of c/s can lead to spontaneous abortion.

A study in(2005)by Sheiner E, Levy A, Katz M, Mazor M, in their study about Pregnancy outcome following recurrent spontaneous abortions talked that there is a significant association exists between consecutive recurrent abortions and pregnancy complications such as placental abruption, hypertensive disorders and CS, and this approve our result.

5. **Vaginal bleeding:**
our result shows that there is no significant relation between vaginal bleeding and abortion and this result is not consistent with other studies as the study of Hassan, R; et al (2009) about Association between first-trimester vaginal bleeding and miscarriage and they conclude that Heavy bleeding in the first trimester, particularly when accompanied by pain, is associated with higher risk of miscarriage. Spotting and light episodes are not, especially if lasting only 1-2 days.
Recommendations and concluding remarks:

1. It is of great importance that the Palestinian Ministry of Health includes miscarriage cases (number, causes, categories, etc.) in their registry forms as pregnancy outcome is considered as a powerful indicator of health status of women in the community because this was a limitation for our study.

2. As findings of the current study we believe that more attention should be paid to health educational programs. This can be achieved through specially designed health promotional programs.

3. Special concern should be paid for couples with recurrent miscarriage should be tested for genetic abnormalities, immunologic and other physical abnormalities in women reproductive system.

4. according to our results we advise doing further studies to confirm this results and to find other risk factors that lead to spontaneous abortion among Palestinian women in general not in the north of west bank only.
Chapter Six:

References
References:


Questionnaire

Abortion case record extraction form

All items in the form are very essential and should be filled accordingly:

1. **District:**
   - □ Askar refugee camp clinic – Nablus
   - □ Tulkarm refugee camp clinic
   - □ Jenin refugee camp clinic

2. **Maternal age in years:**
   - □ <24
   - □ 24-34
   - □ =>35

3. **Level of education?**
   - □ uneducated
   - □ school
   - □ high school
   - □ diploma
   - □ university
   - □ others

4. **Smoking History:**
   - □ Yes
   - □ No

5. **Body mass index:**
   - □ Underweight (<18.5)
   - □ Normal weight (18.5–24.9)
   - □ Overweight (25–29.9)
   - □ Obese (=> 30)
6. Previous spontaneous abortions:

- □ 0
- □ 1
- □ =>2

7. Personal medical history:

Does the patient suffer from or are you receiving treatment for any of the following conditions?

- □ Yes
- □ No

If yes, please choose:

- □ Heart Disease □ GDM
- □ PET □ Stroke
- □ Asthma □ Hypertension
- □ Kidney Disease □ Diabetes
- □ Thalassemia □ Epilepsy
- □ Thyroid Disease □ Emphysema/chronic bronchitis

8. Para:

- □ 1
- □ 2
- □ 3
- □ =>4

9. Gravida:

- □ 1
- □ 2
- □ 3
- □ =>4

10. Blood group + RH:

    Mother: ……
    Husband: ……

11. Peri-natal deaths:
12. Previous caesarian(s):
   □ 0
   □ 1
   □ 2
   □ >2

13. Previous ante-partum hemorrhage:
   □ Yes
   □ No

14. Previous post-partum hemorrhage:
   □ Yes
   □ No

15. Vaginal bleeding:
   □ Yes
   □ No

16. Anemia (Hb: 9gms or less):
   □ Yes
   □ No

17. Is the woman received prenatal care:
   □ Yes
   □ No

18. Vaccinations:
   Does the patient have been immunized against tetanus?
   □ Yes
   □ No
استبيان

نموذج لسجل حالات الاجهاض

كل الأسئلة في النموذج مهمة ويجب تعبيرها وفقاً للإجابة الصحيحة:

1. المنطقة:
   □ مخيم عسكر – نابلس
   □ مخيم طولكرم
   □ مخيم جنين

2. عمر الأم بالسنوات:
   □ < 24
   □ 24-29
   □ 30-34
   □ >= 35

3. المستوى التعليمي:
   □ شهادة جامعية (1-4 سنوات)
   □ شهادة جامعية (12 سنة)
   □ شهادة جامعية (12 – 18 سنة)
   □ (12> سنة)

4. مدخنة:
   □ نعم
   □ لا
5. مؤشر كتلة الجسم:
- نقصان في الوزن (<18.5)
- وزن طبيعي (18.5–24.9)
- زيادة في الوزن (25–29.9
- بدائية (30+) 

6. حالات الإجهاض الذاتية السابقة:
- 0 □
- 1 □
- =>2 □

7. التاريخ الطبي للمريض:
هل يعاني أو يأخذ المريض علاج لأي من الحالات التالية:

- نعم □
- لا □

إذا نعم، من فضلك اختر:
- أمراض القلب □
- فشل في القلب □
- سكتة دماغية □
- استئصال الطحال □
- الربو □
- داء السكري □
- أمراض الكلى □
- السرطان □
- الصرع □
- أمراض الغدة الدرقية □
- التهاب الشعب الهوائية المزمن □

8. عدد الولادات:
- 1 □
- 2 □
9. عدد الأحمال:

1 □
2 □
3 □
=>4 □

10. مجموعة الدم والعامل الرايزيسي:
الأم ....
الزوج ....

11. وفيات ما قبل الولادة:

0 □
1 □
2 □
>2 □

12. عمليات قيصرية سابقة:

0 □
1 □
2 □
>2 □

13. نزف ما قبل الولادة:

نعم □
لا □

14. نزف ما بعد الولادة:

نعم □
لا □
15. النزف المهبل: □ نعم □ لا
16. فقر دم: □ نعم □ لا
17. التطعيم: □ نعم □ لا
V. INFORMED CONSENT

بسم الله الرحمن الرحيم

نحن طلاب سنة رابعة (تمريض - جامعة النجاح الوطنية) نقوم بدراسة بحثية حول موضوع "العوامل التي تؤثر على الإجهاض".

وسنقوم بجمع معلوماتنا العلمية من ملفات المرضى في عيادات الوكالة التالية: عيادة مخيم عسكر (نابلس)، وعريضة مخيم جنين، وعيادة مخيم طولكرم.

هذه الدراسة تهدف إلى معرفة مدى تأثير بعض العوامل مثل التدخين والسكري والعمر والوزن ... الخ على الإجهاض، كما ونهدف من خلال هذه الدراسة إلى الخروج بوصفات ووضع حلول تقليل حالات الإجهاض في فلسطين.

كما ونحثكم على أن هذه المعلومات ستستخدم فقط لهدف البحث العلمي، ونتعامل مع هذه المعلومات بسرية وافية ومسؤولية.

توقيع الطلاب:

تيسير مخازرة
ريم توفيق
تأتي الشرفا

إياد رياض

إياد رياض

ننصحكم على حسن تعاونكم معنا من أجل صحة أفضل

اعتمادًا على: د. عدنان سرحان

التاريخ: \.....\....
VI. PRIVACY/CONFIDENTIALITY

Please describe whether the research would involve observation or intrusion in situations where subjects have a reasonable expectation of privacy. If existing records are to be examined, has appropriate permission been sought; i.e. from institutions, subjects, physicians? What specific provisions have been made to protect the confidentiality of sensitive information about individuals?

A letter was sent to the services director of UNRWA in the West Bank Dr. Omayah khamash to accept collecting UNRWA clinics.