

Deanship of Graduate Studies

Al Quds University

**" Ectopic Pregnancy: Incidence, Risk Factors and
Outcomes in Ramallah District between the years
2001-2005"**

Saleh Sabri Ibrahim Hajeer

M.Sc Thesis

Jerusalem - Palestine

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**A thesis Submitted in Partial Fulfillment of
Requirement for the degree of Master of Public Health/
Public Health College -Al Quds University**

1428 / 2007

**Al Quds University
Deanship of Graduate Studies
Public Health Program/ Public Health**

Thesis Approval

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Jerusalem – Palestine

1428 - 2007

Dedication:

I would like to dedicate this work to my mother, my wife and dearest sons, Qussay, Amer, Tarek, Ahamad and Ameer for whom I wish a happy and prosperous life.

Signed

Saleh Sabri Ibrahim Hajeer

Date: 5/ June/ 2007

Declaration

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

Signed:

Saleh Sabri Ibrahim Hajeer.

Date: 5.June.2007

Acknowledgment

I would like to thank all those who participate in this study and made it possible to compile the necessary information.

Special thanks go to the School of Public Health/ Al-Quds University for their cooperation and information supply.

And very special thanks go to Dr. Ayesha Al Rifai and Dr. Saadeh Subhi for their continuous support and supervision.

My appreciation goes also to all the hospitals in Ramallah city for their cooperation and helping in data collection and kindly putting the obstacles down.

Last but not least, the very special support of my wife who was my prime motivator from the beginning should not be forgotten. So was the support I received from my family members and friends. To them all my gratitude and appreciation are due.

Saleh Hajeer

Abbreviations:

EP	Ectopic Pregnancy.
PID	Pelvic Inflammatory Diseases.
IUCD	Intra Uterine Conceptive Device.
PCBS	Palestinian Central Bareu of Statistics.
ART	Assistant Reproductive Technology.
MoH	Ministry of Health.
MCH	Mother and Child Health.
UNRWA	United Nations Relieve and Work Agency.
MIS	Management Information System.
NGO	Non Governmental Organizations.
PHC	Primary Health Care.
RSA	Recurrent Spontaneous Abortion.
IUD	Intra Uterine Device.
D&C:	Dilatation and Curettage.
Beta HCG	Beta Human Chorionic Gonadotropin.
SPSS	Statistical Package for Social Sciences.
UTI	Urinary Tract Infection.
NIS	New Israeli Shekel.
CS	Cesarean Section.
W B	West Bank.
G S	Gaza Strep.
TFR	Total Fertility Rate.
FP	Family Planning.
MMR	Maternal Mortality Ratio.

Abstract

Ectopic pregnancy (EP) is defined as an implantation of a fertilized ovum outside the endometrial cavity or development of fetus out of the uterus (Campbell and Monga, 2000).

This is retrospective descriptive study that poses to identify describe and determine the risk factors of ectopic pregnancy, incidence and outcomes in Ramallah district while studying those women who were admitted to Ramallah hospitals for surgical intervention after diagnosis of ectopic pregnancy between the years 2001-2005.

Retrospective cross-sectional study, 107 women were included in the sample under study. We collected the data by using two forms of questionnaires. The first form was filled by reviewing the hospital's records and the other one by interviewing the selected women.

Our study revealed that the risk factors of ectopic pregnancy in our country are similar to those for other countries. The mean age of the women was 28 years, and ectopic pregnancy was detected to happen mostly after the age of 24 years. EP trend in summer and winter was detected more than in other seasons. Based on the deliveries and stillbirths between the years 2001-2005 in Ramallah district, average incidence of ectopic pregnancy which was 3.53/1000 deliveries (live births and stillbirths). Ninety seven percent of the women were married after the age of 20 years. The most observed risk factors of EP were: age, PID, IUCD, parity, smoking, history of abortions and history of abdominal surgery.

After thorough research; it was shown that smoking PID, IUCD, abortion, multiparity and plvi-abdominal surgery was implicated as risk factors for ectopic pregnancy. Unfortunately ectopic pregnancy unpreventable, thus we must try to implement methods like early diagnosis, careful assessment and management, to minimize the complications of ectopic pregnancy.

المخلص

الحمل الهاجر هو نمو النطفه (Zygote) في غير موقعها الطبيعي (الرحم) مما يؤدي الى مشاكل صحية تؤثر على صحة المرأة الانجابيه والنفسيه والاجتماعيه. ومن هنا تبرز اهميه المشكله لدراسه و تحديد ووصف العوامل التي قد تؤدي الى حدوث الحمل الهاجر في محافظة رام الله و البيرة وكذلك التطرق الى معدل حدوثه ونتائجه وطرق العلاج من خلال دراسة ومقابلة النساء اللواتي ادخلن إلى مستشفيات المحافظه من اجل التدخل الجراحي بعد تشخيصهن بالحمل الهاجر وذلك خلال الفترة ما بين 2001-2005.

تعتبر هذه الدراسة دراسة وصفية استطلاعيه، وقد اجريت اعتمادا على معلومات مستقاة مباشرة من المستشفيات، وقد تم تجميع البيانات النوعيه والكميه باستخدام عدد من الادوات البحثيه، فقد قدمت السجلات التي تمت مراجعتها داخل المستشفيات كما من المعلومات عن موضوع البحث، في حين تم مقابلة النساء بهدف جمع مزيد من المعلومات حول عدة عوامل تخص الحمل الهاجر.

بينت الدر اسه ان العوامل التي قد تؤثر او تساعد على حدوث الحمل الهاجر في المحافظه مشابه لبلدان اخرى حسب هذه الدراسة، حيث وجدنا ان متوسط عمر النساء هو 28 سنه، وان هذا الحمل يميل الى الحدوث غالباً مع تقدم العمر وخصوصا من سن 24 سنه فما فوق.

كما اظهرت الدراسة كذلك بان هذا الحمل قد يحدث في فصلي الشتاء والصيف اكثر من غيريهما من الفصول، وبعد الرجوع و الاطلاع على سجل الولادات التي حصلت ما بين 2001-2005 في المحافظه، توصلنا الى حساب معدل حدوث الحمل الهاجر حيث كانت النتيجة 3.53 لكل 1000 ولادة. (حي أو ميت).

وكمحصله نهائيه لنتائج الدراسة وجدنا ان تقدم العمر، الالتهابات المهبلية والتناسلية، استخدام موانع الحمل وخصوصاً اللولب كمانع للحمل، زيادة عدد مرات الحمل والاجهاض، العمليات الجراحية في منطقه البطن والحوض، كل هذه العوامل تساعد الى حد ما في حدوث الحمل الهاجر، وهذه النتائج بحاجة الى دراسات معمقه على مستوى الوطن بمختلف محافظاتة كي تعمم.

بعد دراسة مستفيضة تبين ان التدخين، الالتهابات التناسلية، اللولب كمانع للحمل، الاجهاضات، كثره الولادة وكذلك جراحه الخوض والبطن كل هذه عوامل قد تساعد على حدوث الحمل الهاجر، وعليه فانه لا بد من وضع آليات ووسائل تهدف الى التقليل من معدل حدوث الحمل الهاجر والحد من مضاعفاته، من خلال وضع آليات للتشخيص المبكر والعلاج المناسب وتحسين الخدمات فيما يخص صحة المراة في القطاعين العام والخاص.

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Chapter One

1.1. Introduction.

Ectopic pregnancy (EP) is defined as an implantation of a fertilized ovum outside the endometrial cavity or development of fetus out of the uterus (Campbell and Monga, 2000).

EP is one of the major obstetrical complications in the prenatal period. Fallopian tube is one of the most common site for implantation of ectopic pregnancy, thus about 98% are tubal pregnancy which means rupture liability is greater than other rare sites (ovary, cervix, and abdominal) resulting in internal bleeding which leads to death or Salpingectomy (removal of fallopian tube or/and ovary); both threaten women's life and reproductive health (Walsh, 2001).

EP sometimes presents as an acute emergency and a life-threatening event. But it also may present in a less acute picture or might even go unnoticed. Accounting for up to 10% of all maternal mortality and the occurrence is one out of 100 to 200 pregnancies According to a confidential inquiry into maternal death (1999-2002) in the United Kingdom it is the fifth most common cause of maternal mortality (Campbell and Monga, 2000).

Reviewed literature have documented two folds to four folds increase of EP rates during the past three decades in many parts of the world, including various European countries, such as North America, Australia, Saudi Arabia and Israel. Incidence figures of 19.7 /1000 pregnancies were reported from the United States in 1992, their highest level in more than two decades. This recent increase is mostly attributed to the increase of incidence of pelvic inflammatory disease (PID) as well as ART (Assisted Reproductive Technology).

The pathogenesis of EP is considered multifactorial, which is usually lower in women less or equal to 24 years old. However, post-inflammatory lesions of the fallopian tubes due to an ascending infection from the lower genital urinary tract are major etiological factor. In fact,

previous PID has been shown to be the strongest predictor (Clark and Baranyaij, 1987; Ankum, et al.1996; Hadgu, et al.1997).

Early pregnancy disorders (Spontaneous miscarriages, Gestational Trophoblastic disease and EP) counts for 75% of gynecological emergency admissions. It is important cause of maternal morbidity and mortality worldwide. There were several reports of increasing incidences of PID during the 1960s and 1970s in the United States and Europe (Alder, 1980, and Curran, 1980).

EP in the Arab countries continues to be a major and significant gynecological health problem and burden, which is similar to the international ratio which ranged from 0.74/100 deliveries in Kingdom of Saudia Arabia (Archibong , Sobande, 2000) and 6/1000 deliveries in Jordan (Hasan ,1983).

In Palestine, a report on PID and EP does not exist. Since the problem exists within the Palestinian women's population. In order to fill this information gap, the author of this study is going explore and describe the EP statistics, associated risk factor, and other issues related to EP. It will be basic general information for the health system and other investigators to capitalize on in the future, keeping into consideration the limitation of the reporting system and communication ways with the women themselves.

1.2. Statement and Significance of the Problem.

The EP rates, mortality, morbidity and risk factors are not available and were not discussed in the Palestinian's medical literature. The effect of this problem on women's and reproductive health in general is not explored completely in the Palestinian context.

The focus of this study which is ectopic pregnancy was not mentioned in this report. Documents, show that the maternal mortality rate is about 70-80 deaths per 100,000 live birth (PCBS 1995).Most of which are due to hemorrhage, ectopic pregnancy is one major contributor.

Thus inconsequently, the Palestinian literature encompasses no studies on such issues making of this study the first that deals with such important issue in obstetrics. This will introduce statistical information in Ramallah hospitals. Hopefully study will play a significant role in improving the women's health. Mobility restrictions imposed by the Israeli Authorities confined this study to Ramallah city where the researcher resides and the study completed in cooperation with Ministry of Health. The investigator collected statistics on the number of the deliveries, and the number of live birth for women between ages 15-44 years old. The data was collected from Ministry of health hospitals, and other private hospitals, with field work lasted for about four months.

1.3. Aim of the Study.

This study poses to assess and find out incidence, risk factors and out comes for ectopic pregnancy (EP) in Ramallah district.

1.4. Research Objectives.

To identify incidence of ectopic pregnancy among women age group (15-44 years) in Ramallah district between 2001-2005 years.

To understand the associated risk factors with ectopic pregnancy.

To clarify the potential related morbidities including bio-psychosocial aspect of ectopic pregnancy.

1.5. Research Questions.

What is the relationship between age, parity, abortion, use of intra uterine contraceptive device (IUCD), previous history of lower abdominal surgeries, history of pelvic inflammatory disease (PID) and EP?

What is the incidence of EP among women age group (15-44 years) in Ramallah District between 2001-2005 years?

1.6. Assumptions of the Study.

Age, parity, abortion, use of intra uterine contraceptive device (IUCD), previous history of lower abdominal surgeries, history of pelvic inflammatory disease (PID) are highly associated with the majority of the study sample and convincing predisposing factors for ectopic pregnancy.

The social and economical environment that the woman lives in will influences their predisposition to ectopic pregnancy.

Ectopic pregnancy is supposed to be determined by other factors such as smoking, level of education, place of residence and seasonal factors.

Co-operation of the hospital's staff will be facilitated.

1.7. Limitation of the Study.

The early plan was to conduct the study across the West Bank nationally, however the deterioration in the political circumstances in Palestine associated with mobility barriers including closures and the separation wall compelled, bringing this down and limiting the study to Ramallah district alone.

Data collection from Hospital records may be limited due to, improper and/or incomplete documentation, and absence of proper management information systems (MIS).

Because this study is a retrospective descriptive cross sectional for the past five years, some members of the study where not present at their original address that was documented in the hospital's records. Thus it was not being possible to access them.

Reproductive issues are all sensitive in the Palestinian culture. Talking about any such issues is considered one of the private personal subjects for the women. Some rejection was anticipated to be experienced, and one of the weaknesses of this study was studying the cases

only, and no possibility to select controls.

1.8. Conceptual Definitions of Variables.

1.8.1. Dependent Variable.

Ectopic Pregnancy (EP).

Pregnancy occurring outside the endometrial cavity. (Symonds E and Symonds I 1999, Dunning 1992 and Walsh 2001)

1.8.2. Independent Variables.

Age.

Years grow up.

Abortion.

Pregnancy termination before fetal viability less than 500 mg during second or third month. (Symonds E and Symonds I 1999, Dunning 1992 and Walsh 2001)

Intra Uterine Contraceptive Device (IUCD).

The ability to control fertility by the manufactured device inside uterine cavity. (Symonds E and Symonds I 1999, Dunning 1992 and Walsh 2001)

Gravity.

Whether the woman has ever been pregnant.

Parity.

Number of times that women have delivered potentially viable children. (Symonds E and Symonds I 1999, Dunning 1992 and Walsh 2001)

Lower Abdominal Surgery.

Incision through out the skin to reach the lower pelvis-abdominal cavity.

Pelvic Inflammatory Disease (PID).

Acute infection of the endometrium, myometrium, fallopian tube and ovaries are usually the

result of ascending infections from the lower genital tract. (Symonds E and Symonds I 1999)

1.9. Operational Definitions of Variables.

EP.

Any pregnancy occurring outside the endometrial cavity and surgically treated in the hospital.

Age.

Completed years of age when the EP happened.

Abortion.

Number of abortions before and after EP.

IUCD.

History of using intra uterine device to control and interrupt occurrence of pregnancy before EP.

Gravity.

Whether the women has been getting pregnant.

Parity.

How many times did the woman get pregnant and delivered that pregnancy above 20 weeks.

Lower Abdominal surgery.

Any surgery which was performed in the abdominal cavity.

Pelvic Inflammatory Disease.

Vaginal or urinary tract infection associated with abdominal pain and vaginal secretions.

Smoking.

Whether one of the couples is smoker (woman or her husband).

1.10. Summary.

The aim of the study is to find out risk factor, incidence and out comes for ectopic pregnancy in Ramallah District. This chapter gives an introductory over view of the whole study setup.

Chapter Two

2. Health Status in Palestine.

2.1. Introduction.

As is imitated in the twofold nature of the prevailing health problems in Palestine, the West Bank and Gaza are in progression from a 'traditional' to 'modern' society. In addition the area is also experiencing a move from 28 years of Israeli military occupation to the first local authority since hundreds of years. Many of the health markers in Palestine are improving; on the other hand, it is evident that the pace of improvement in the west bank and Gaza is much slower than in bordering countries like Jordan and Israel. This is due to the long-term consequences of the Israeli policy of blocking development and because of the largely unmet anticipation for rapid economic growth ([www.upmrc.org/ content/ activities/ main.html](http://www.upmrc.org/content/activities/main.html)).

The main health providers of health services in Palestine are Ministry of health, next to medical services for UNRWA, NGOs and Private for profit organization. MOH bears the heaviest burden, as it takes over the responsibility of health in Palestine. All of these health establishments bare a share in offering health services to the population in Palestine either in cooperation with each other or individually (MoH Annual Report, 1999).

2.2. Demographic Data.

The mid year population size of Palestine in 2003 was estimated at 3,737,895. Out of which 50.7% are males and 49.3% are females. 402,900 live in Jerusalem. The rest (63.3%) live in West Bank, and (36.7%) in the Gaza Strip, 42.6% of Palestinians are Refugee, 46% under 15 years, marriages declined 3.8% in 2002 compared with 1997, the median age in is 16.7 years,

crude birth rate 42.7 birth/1000 in 1997 drop to 27.2 in 2003, and population natural increase is 2.4% in Palestine in 2003 (MoH Annual Report, 2004).

The Palestine national authority comprises the West Bank which is divided into ten governorates and Gaza strip which is divided into five governorates. The most populated governorates are Hebron 13.9% and Gaza 13% respectively. The smallest governorate population size is Jericho 1.1%. Taking into consideration that part of the land is still occupied by Israeli settlement, which aggravates the problem of density. (MoH Annual Report, 2004)

2.3. Primary Health Care (PHC).

It is reviewed by MoH that the Palestine society seems for more primary health care involvement at the community level with greater importance on health promotion, education and prevention. Health promotion and environment are the most concern of MoH with respect to public health as a whole and primary health care in particular. (MoH National Strategic Health Plan, 1999-2003)

2.3.1. Primary Health Care Service Providers.

The primary health care is provided by four main organizations: MoH, UNARWA, Non-Governmental and private for profit organization.

2.3.1.1 Government (MoH).

In Gaza strip, MoH operates 44 community health centers. About 32 of these centers provide immunization and well childcare services, as well as treatment services and antenatal care. Only one of these centers include delivery unit operated in Gaza city. Some of the centers provide per- and post-natal care with an obstetrician in attendance. Some centers include out-patient clinics for certain specialties. In addition there are 69 specialties clinics, 16 family

planning, and 22 dental and oral clinics. About 21 centers have laboratories and 10 centers have X-Ray unit. (MoH Annual Report, 2001)

In west bank, MoH operates 329 centers, 189 provide MCH services, 44 are general clinics, and 29 are workings part time as village health room with 2-32 visits per week. There are 77 centers with family planning clinics, 15 centers have dental and oral clinics, 64 centers have specialized clinics and 44 centers have medical laboratories. (MoH Annual Report, 2001)

Services in all MoH health centers are free of charge for children under age 3 and for perinatal care. All other services are covered by government health insurance. (MoH Annual Report, 2001)

2.3.1.2. UNRWA.

UNRWA operates 51 primary health care centers in Palestine. There are 17 centers in Gaza strip and 34 centers in West Bank. UNRWA offers health services free of charge to all refugees and plays a distinguished role in the program of vaccination in cooperation with the primary health care directorate of MoH. Also these centers provide treatment services, antenatal and postnatal services and other specialized services. (MoH Annual Report, 2001)

2.3.1.3. The NGOs Sector.

The NGOs played a significant role in providing and managing health services during the Israeli occupation. This role continued after the Palestinian authority arrival in spite of serious reduction in funds. NGOs operate 40 mini PHC centers distributed all over Gaza strip and 145 in the west bank. Some of which include medical labs equipped to perform simple investigations, and mini pharmacies that medicine is at low cost. (MoH Annual Report, 2001)

2.3.1.4. Private Sector.

There are hundreds of private settings operated by private medical specialists, doctors, dentists, pharmacists, lab technicians and etc. (www.uprhc.org/content/activities)

2.3.2. Secondary Health Care.

The hospital services are operated by the government, non-government, and private for profit organization. The hospital run by the government and the NGOs have been improved in terms of facilities, technical and support services over the years by adding new department and diagnostic equipments, as well as continuous professional training. The total number of the general beds in all 70 hospitals in Palestine is 4,522 beds with a ratio of 13.7 beds per 10,000 populaton. MoH operates 20 hospitals with 2,486 beds (55%) of the total. This indicates that MoH plays the main role in providing secondary health care services. NGOs operate 29 hospitals with 1,536 beds. In addition, private sector operates 20 hospitals with 462 beds while UNRWA operates only one hospital in Qalqilia with 38 beds. (MoH Annual Report, 2001)

Table (2.1): Distribution of Health institutions by area and provider, Palestine, 2003.

	Government		UNRWA		NGO's		Private	
	PHC	Hosp	PHC	Hosp	PHC	Hosp	PHC	Hosp
Gaza Strip	54	11	17	0	32	7		2
West Bank	337	9	34	1	145	22		18
Total	391	20	51	1	177	29		20

2.2. Women Health in Palestine.

2.2.1. Total Fertility Rate (TFR).

Women in Palestine constitute about 50% of the total population. Total fertility rate (TFR) in Palestine is high when it is compared with other countries. It was calculated to be 3.89 according to the data on number of women and live births. The TFR in Palestine by region

was 4.7 in Gaza Strip and 3.4 in West Bank. TFR rate has been decreased with time over the past 5 year from 4.39 in the year 1999 to 4.34 in 2000 and decreased slowly to 3.89 in 2003. This indicates the enormous efforts which are possibly done in the domain of family planning and reproductive health in general. The fertility hit the highest point is among the age group of 25-29 years, then it decreased by increasing the age. This shows that, there is a significant improvement in manage fertility rate in Palestine. However, the TFR and age specific fertility rate in Gaza Strip is elevated than in West Bank (4.7 in GS and 3.4 in WB).(MoH Report, 2004)

2.2.2. Family Planning Services (FP).

The total number of family planning clinics has increased significantly over the past years from 102 FP clinics in 1997 to 197 FP clinics in 2003 (44 in GS and 153 in WB). These clinics are working by different governmental and non governmental organizations. MoH is accountable for about 49.7% of total FP clinics in Palestine. The increase in number of Family planning clinics is accompanied with a major increase in the use of contraceptive methods and the number of women who have been utilizing these services in Palestine over the last years. The present use rate of contraceptive methods is 51.4% of currently married women in Palestine.

The most accepted method which has used by new clients in Palestine was IUDs, followed by Pills. (MoH Report, 2005)

2.2.3. High Risk Pregnancy Services.

Pregnant woman at high risk are those with one or more health disorders linked with pregnancy such as pre-eclamptic toxemia, Diabetes mellitus, heart disease, hypertension, renal diseases, habitual abortion, ladies who had late pregnancy (age 39 years and more) and primi-gravida as well. The percentage of newly pregnant women visits with high-risk pregnancy was 14.8% of total newly pregnant women in MoH.

The number of visits paid per high-risk pregnant women is 3.8 visits. Number of visits paid per high-risk pregnant women was less than number visits paid per normal pregnant woman. (MoH Report, 2005)

2.2.4. Delivery Care.

According to MoH report, about 95.2% of births took place in health institutions and 4.8% in homes in Palestine, the vast majority of deliveries took place in hospitals with a percentage of 84.0% while deliveries outside hospitals took place with a percentage of 16.0%.

The governmental hospitals take the major share of total deliveries with a percentage of 53.5% (64.5% in GS and 45.7% in WB), which may be endorsed to better facilities, cheapest for the large group of community and availability of health insurance. It is followed by NGOs hospitals with a percentage of 30.0% (11.8% in GS and 42.9% in WB). The delivery in UNRWA maternity took place with a percentage of 3.3% (7.9% in GS where no maternity units in WB). (MoH Report, 2005)

2.2.5. Home Delivery:

Home delivery was decreased from 7.5% in 2002 to 4.8% in 2003 of total deliveries in Palestine; this was mainly reported in WB governorates while, home delivers decreased from 14% in 2002 to 7.9% in 2003. Home delivers in WB were reported at 20.7% in Jenin, 19.4% in Salfit and 13.9% in Qalqiliah. Home delivery in GS constituted only 0.5% of total deliveries. (PCBS, 2003)

2.2.6. Postnatal Care Services.

Women contributed in postnatal awareness agenda after birth in hospitals or during home visits. Nurses and health educators gathered groups of women who visit the MCH centers for children vaccination and post-natal care and provide them lectures to increase their awareness

on breast feeding, child care, spacing between births, personal hygiene, nutrition and so on. The total number of beneficiaries of home visit program in Gaza Strip was 1,768 women. (4.2% of total live births)

The mean age of women at first delivery was 20.5 years; out of them 20.9% gave the first child at age under 18 years. The mean age of last delivery was 26.8 years. The mean number of pregnancy was 4.3 and abortion 0.5. About 96.4% of visited women have had antenatal care (75.8% in MoH, 20.8% in UNRWA and 3.4% in NGOs). (MoH Report, 2005)

2.2.7. Maternal Mortality Ratio (MMR).

MMR is one of the most essential indicators to determine the health status for women. Globally, most maternal deaths are the consequence of hemorrhage, complications of unsafe abortion, pregnancy-induced hypertension, sepsis and obstructed delivery. A number of factors have increased the risk of maternal mortality in refugee settings.

During the exodus and emergency phase, pregnant women may become malnourished and anemic and they are at higher risk of infectious disease. They are exposed to physical and psychological violence. They are often alone and may have to give birth under hazardous conditions.

In Palestine, although institutionalized deliveries are improved but many risk factors including unrest of the political situation and repeated curfews, frequent closures and separation of Palestinian areas are determinant factors that increase the risk of maternal mortality.

Many pregnant women were imposed to deliver at Israeli Army check points which exposed their life for danger due to unsafe delivery. Under diagnosis and reporting is a continuous problem in both Gaza Strip and West Bank. Physicians need to pay more attention to determine the underlying causes of death among women in reproductive age between 15-49 years old. Therefore, the reported MMR in Palestine is about 12.7 per 100,000 live births among women aged 15-49 years. (21.3 in GS and 6.7 in WB)

The causes of maternal mortality were reported to be Amniotic fluid embolism, Myocardial infarction, Pre-eclamptic toxemia, Post partum hemorrhage and Septicemia shock. Here, EP was not reported to be a cause of maternal mortality in Palestine. (MoH Report, 2004)

2.3. Summary.

The chapter reviews the health status in Palestine in general and the women's health in particular. The health services in Palestine is provided by a complex cooperation between governmental, NGOS, UNRWA and the private sector. Unfortunately, the MoH started to work and took over the responsibility of the health care system in Palestine after Oslo agreement 1993. Here, some improvements were occurred in the healthcare services and systems, but the continuation of the Israeli occupation still standing for some deterioration in the delivered services for the Palestinian people. The indicators for the women's health in Palestine improved to some extent, were the TFR is 3.89, the family planning services was improved, more than 92% of the deliveries were took place in the hospital and the MMR is 12.7/100,000.

Chapter Three

3. Literature Review.

3.1. Introduction.

This chapter reviews the literature for ectopic pregnancy, discusses the different risk factors, and demonstrates the effect morbidity of ectopic pregnancy on women's health.

3.2. Ectopic Pregnancy Definition and Incidence.

Ectopic pregnancy (EP) is a condition where a fertilized egg settles and grows in any location other than the inner lining of the uterus. The vast majority of ectopic pregnancies occur in the fallopian tube (95%). However, they can occur in other locations, such as the ovary, cervix, and abdominal cavity. An ectopic pregnancy occurs in about 16.7/1000 pregnancies.

The major health risk of this condition is internal bleeding. Before the 19th century, mortality from ectopic pregnancies exceeded 50%. By the end of the 19th century, the mortality rate dropped to 5% because of surgical intervention. With current advances in early detection, the mortality rate has improved to less than 5 in 10,000.

The survival rate from ectopic pregnancies is improving even though the incidence of ectopic pregnancies is also increasing. The major reason for a poor outcome is failure to seek early medical attention. (Symonds E and symonds I, 1999 .Dunnihoo, 1992)

Significant peri-operative complication in United State is estimated about 2 in 100 even with improved diagnostic and treatment techniques. (Walsh, 2001)

Hassan (1983) conducted a survey in Jordan University hospital among 75 patients between the years 1976-1982 and found the ratio of EP 1/162 deliveries.

Jabbar and Al- Wakeel (1980) conducted a study on 45 cases of EP in Saudi Arabia. They found that the incidence of EP was 1.4/1000 pregnancies.

Thonnea et al (2002) published a study on incidence of EP in Donka Maternity Hospital between "1995-1999" on 227 cases of EP and found out that ratio increased from .41%-1.5% of annual delivery.

Hidlebaugh et al (1997), in a retrospective analysis of outpatient and inpatient records of all patients with a diagnosis of EP covered by Fallon Community Health from 1990 to 1995. Clinical and financial analyses of ectopic pregnancy management at a large health plan. 107 women treated for EP. The incidence of EP was 8.6/1000 reported pregnancies.

3.3. Risk Factors Ectopic Pregnancy.

The risk factors for ectopic pregnancy in general are; a prior history of an ectopic pregnancy, a history of pelvic infections or surgery, prior surgeries to the fallopian tubes, endometriosis, a fibroid tumor of the uterus, pelvic scar tissue (adhesions), and the use of intrauterine devices. It is important to note that women without any of these risk factors can still develop an ectopic pregnancy. The recurrence rate is 15% after the first ectopic pregnancy, and 30% after the second. (Symond E and symond I, 1999 .Dunnihoo, 1992)

3.3.1. Age.

A study of reproductive potential after EP on 120 cases who were managed surgically carried out by Al-Nuaim, et al (1995) at the gynecology and obstetric department at King Khaled University Hospital in Saudi Arabia over five years period (1987-1991).It revealed 56.7% conception rate, 75% of them resulted in life birth, 22.1% ended in abortion and 2.9% were

repeated EP. They concluded that the younger the patient the shorter the duration to get pregnant after EP.

Job-Spira et al (1999) did a study on 849 patients who experienced EP between January 1992- December 1996 and found that 32.8% were in the age group ≥ 35 years, 30.1% 30-40years, 26% 25-29 years and 10.9% < 25 years. 874 cases experienced EP prior the use of contraception, 185 of the sample experienced rupture tubes which affects seriously the immediate women's health but did not harm fertility.

Handler et al (1989) and Tharaux C. et al (1998) concluded that EP risk increase with the age, where the risk is 2.4 above the age of 24 years.

Some studies concluded that there is a temporal relationship between age and EP where age specific fertility rates reveals a greater relative decline in fertility in older women who have the highest risk of an extra uterine pregnancies. (James and Jordon, 1984)

An early age of sexual relations may increase the susceptibility to have EP, where as the late age of sexual debut decrease the risk of EP. (Anorlu et al, 2005)

Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in obstetric and gynecology department and they found that 56% of the studied population was between 21-30 years of old.

3.3.2. Parity.

Smith et al , (2007) conducted a case control retrospective study at the department of obstetric, North Central Bronx Hospital, Bronx, in USA about adverse obstetric history and ectopic pregnancy at New York Methodist hospital between January 2000 and April 2004, there were found that women with multipara was higher in the ectopic pregnancy group.

Jabbar and Al- Wakeel (1980) found that 39 of 45 patients with EP were paragravida 1-5, and one to five patients were reported to be nullipara and grand multipara.

Archibong, (2000) studies 82 women in Saudi Arabia and he found that 56% parous women, 21% non parous.

Javey (1976), studied EP in Iran on 96 cases over seven years period, they found previous fertility was high and prime gravida constituted.

3.3.3. Abortion.

Smith et al, (2007) they were mention in there study that women with history of induced abortion were more likely to have ectopic pregnancy.

Coulam, et al (1989) in an epidemiological study among 630 patients with a diagnosis of Recurrent Spontaneous Abortion (RSA) in a Methodist hospital in Indiana, found out that there was an increase of EP 2.2 folds among women with a history of RSA.

Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in obstetric and gynecology department and they found no previous history of abortion is found in 60% of the patients.

Parazzini, et al (1995) investigated the relation ship between induced abortions and the subsequent risk of ectopic pregnancy from a case control study, which was induced abortion and risk of ectopic pregnancy conducted at Milano in Italy found that the risk of ectopic pregnancy was higher in women reporting induced abortions.

Ikema and Ezegui (2005) carried out a survey by fertility department of Gynecology and obstetrics in the university of Nigeria Teaching Hospital between the years 1997-2003 and founded that the ratio of EP to delivery was 1/44(136/6003) deliveries, and they found out that EP was prevalent in young single women with a previous history of induced abortion and result in pelvic infection.

3.3.4. Intrauterine Contraceptive Device (IUCD).

Tuomivaara, Kanppila, and Puoakka (1996) conducted a retrospective study about EP on 552 cases treated for EP, during 1973-1982; found that there was a significant positive correlation between increase of EP and the use of IUCD.

Coulam, et al (1989) stated also that the prevalence of known risk factors for EP was PID 3%, tubal surgery 20%, and IUCD 3%.

In his study, Hassan (1983) found that 14.6% of his study sample group had a history of IUCD use.

Bouyer, et al. (2002) conducted a survey at Auvergne region in France on 243 women having IUD and found out that 25% of them reported EP. They suggested that IUD itself may have an etiological role of EP.

Raziel, et al (2004) conducted a retrospective study in department of obstetric and gynecology in Israel between "1990-2001" on 694 cases of EP, 19 of them were ovarian, and found that there was a strong relationship between IUD users and EP.

Among 82 cases studied in Abha in Saudi Arabia by Archibong, (2000), 17% of cases were IUCD users.

3.3.5. Pelvic Inflammatory Diseases (PID).

Infection in the pelvis is another leading cause of ectopic pregnancy. Pelvic infections are usually caused by sexually transmitted organisms such as Chlamydia or Gonorrhea. However, non-sexually transmitted bacteria can also cause pelvic infection and increase the risk of an ectopic pregnancy. Infection causes an ectopic pregnancy by damaging or obstructing the fallopian tubes. Normally, the inner lining of the fallopian tubes are coated with small hair-like projections called cilia. These cilia are important to transport the egg smoothly from the

ovary through the fallopian tube and into the uterus. If these cilia are damaged by infection, egg transport becomes disrupted. The egg can settle in the fallopian tube without reaching the uterus, thus becoming an ectopic pregnancy. Likewise, infection-related scarring and partial blockage of the fallopian tubes can also prevent the egg from reaching the uterus. (Symonds E and symonds I, 1999 .Dunnihoo, 1992)

Similar to pelvic infections, conditions such as endometriosis, fibroid tumors, or pelvic scar tissue (pelvic adhesions), can narrow the fallopian tubes and disrupt egg transportation, thereby increasing the chances of an ectopic pregnancy. Prior surgeries involving the fallopian tubes or other pelvic organs are other risk factors for an ectopic pregnancy. In hopes of conceiving, some women undergo surgery to repair damaged fallopian tubes or to reverse prior tubal ligations. Any such procedure involving the fallopian tubes increases the risk for an ectopic pregnancy. (Tommaso et al, 1998)

In a retrospective study about pelvic inflammatory disease (PID), conducted by Kamwendo, et al. (2000) among women admitted to Orebro Medical Centre Hospital in Sweden in the period between the years 1970 and 1997 in age group 15- 54. The research team found the presence of a relationship between EP and PID .An increase of PID lead to increase of EP, and a reduction in PID is associated with decline of EP. The greater decline was found among the age group ≤ 25 years old two to three times than those ≥ 25 years old.

Pisarska, Carson and Busler, (1998) in a study about EP reported an increase in ectopic pregnancy 7 folds after an attack of pelvic inflammatory disease.

Hadgu, Koch and Westrom (1997) established an analysis of EP data using marginal & conditional models and found that pelvic inflammatory disease occurs almost exclusively in sexually active women of fertile age ≤ 24 years old.

Coulam, et al (1989) in an epidemiological study among 630 patients, mentioned that the prevalence of known risk factors for ectopic pregnancy was pelvic inflammatory disease.

Jabbar and Al- Wakeel (1980) conducted a study on 45 cases of EP in Saudi Arabia. They found that the incidence of EP was 1.4/1000 pregnancies and 39 of 45 patients with EP of the target group 20-30 years of age was found to have history of pelvic inflammatory disease.

Helvacioğlu, et al (1979) conducted a survey from 1968 to 1975 on 313 patients with EP treated at Chicago Lying-In Hospital, 31% of who reported pelvic inflammatory disease.

Tozzi et al, Istituto di Recherche Farmacologiche Mario Negri, Clinica Obstetrico Ginecologica, Università di Milano, Italy (1992) analyzed the risk factors for EP in a case control study between 1989 and 1991. Results revealed that PID was one of the main risk factors through out the 120 cases of EP.

Centre of Disease Control(CDC), Atlanta (1998). Reproductive Health, Conducted a retrospective study (Risk factors for EP) between 1935-1982 included 274 case, revealed that nine variables was the significantly risk of EP, four variables remains the strongest risk factor of EP : Pelvic inflammatory disease was one of them.

Coste et al (1996) wrote an article and reported that in France, EP constitutes 2% of live birth and 1.6% at all reported pregnancies, more than 50% of EP cases are attributable to infectious and the rest PID.

Faculty of medicine, Chulalongkorn University, Bangkok, Thailand, Bungavejchevien, et al (2003) Department of Obstetric and Gynecology, assessed the risk factors of EP in a case control study between 1999- 2000 on 208 cases of EP and concluded that PID was one of the main risk factors for EP.

Javey (1976), studied EP in Iran on 96 cases over seven years period, they found 40% had pelvic inflammatory disease.

3.3.6. Lower Abdominal Surgery.

Centre of Disease Control(CDC), Atlanta (1998).Reproductive Health, Conducted a retrospective study(Risk factors for EP) between 1935-1982 included 274 case, revealed that nine variables was the significantly risk of EP, four variables remains the strongest risk factor of EP : Prior tubal surgery was considered one of strongest risk factors.

Klinika, et al (2005) conducted a survey over 214 patients aged 18-44 years in department of Reproductive Medicine and Gynecology of Pomeeranian University in Poland between the years 1993-2002, and found that 48.5% of the target group had a history of lower abdominal surgical procedures as a main risk factor.

Javey (1976), studied EP in Iran on 96 cases over seven years period, they found 10.4% of the total and the abdominal surgery.

3.3.7. Smoking.

Coste et al (1996) wrote an article and reported that in France, EP constitutes 2% of live birth and 1.6% at all reported pregnancies; cigarette smoking was one of the risk factor.

Department of obstetric and gynecology, Faculty of medicine, Chulalongkorn University, Bangkok, Thailand (2003) assessed the risk factors of EP in a case control study between 1999-2000 on 208 cases of EP and concluded that smoking was one of the main risk factors for EP.

Klinika, et al (2005) conducted a survey over 214 patients aged 18-44 years in department of Reproductive Medicine and Gynecology of Pomeeranian University in Poland between the years 1993-2002, they were found an association between ectopic pregnancy and smoking.

Department of Obstetric and Gynecology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, Bungavejchevien, et al (2003) conducted a survey on risk factors of EP and found that smoking was one of the main risk factors in Thailand women.

Cigarette smoking around the time of conception increases the risk of EP; the risk increase with the number of cigarette smoked. This risk may be result of impaired immunity in smokers which predisposes them to pelvic infection and impaired functioning of the fallopian tubes. Women who have risk 2.4 times more than non-smokers. (Handler et al, 1989)

Other study revealed that smoking during the preconception period increase the risk of EP by 1.9 more compared with those who not smokes during the same period. This risk was found to be elevated by the increase in the number of cigarettes smoked daily. (Saratya, 1998)

3.3.8. Fertility Drugs.

Bungavejchevien, et al (2003) assessed the risk factors of EP in a case control study between 1999- 2000 on 208 cases of EP and concluded that infertility was one of the main risk factors for EP.

An additional predisposing factor which may play a greater role in developing EP which is history of previous infertility which may increase the risk to 2.5 more. (Fernandez and Gervaise, 2004)

Reproductive Health, Centre of Disease Control, Atlanta (1998).Conducted a retrospective study(Risk factors for EP) between 1935-1982 included 274 case, revealed that nine variables was the significantly risk of EP, one of the four variables remains the strongest risk factor of EP : history of infertility.

3.3.9. Seasonal Variation.

Cangalli et al (1999) studies 15639 pregnancies in 5.5 years (January 1992- June 1997), and the results showed that rhythm of EP increased in June and December, 37.4% in comparison to other months of the year.

3.4. Outcome of Ectopic Pregnancy.

Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in Obstetric and Gynecology department and they found that 70 of 82 case ended with salpingectomy which was the most surgical procedure performed and no maternal deaths reported .

Bernoux et al (1999) investigated fertility outcome after EP among 328 women in France, 23 of them used IUCD, and 305 nonuser. They found that there was no significant different between IUCD user and non user, however IUCD non user had more miscarriages so their delivery rate was lower. EP considered as failure of contraception, and demonstrating high fertility in IUCD users.

Takeda et al (2006) accomplish a study on 112 women with EP were treated by laparoscopic surgery between the years "2000-2005". Seventeen patients who demonstrated more than 501 gram of intra abdominal bleeding were classified as having massive hem peritoneum. Except for two women with tubal abortion of ampullary pregnancy, all other patients had rupture at the pregnancy site. The mean amount of estimated intra abdominal bleeding was 1362.1 ± 491.4 gram, and they mentioned that laparoscopic surgery can be safely carry out by experienced laparoscopes and hemodynamic permanence must be managed peri operative.

Throughout reviewing (Transfusion medicine in obstetrics and gynecology) a study conducted by Santoso et al in (1995) assumed that one of the most circumstances would-be requiring blood transfusions ruptured EP. This review aims to update obstetricians and gynecologists and other health care providers about the basic in addition to the latest technologies of blood transfusion, and complications of blood transfusion, including infections, noninfectious, and immunological etiologies. HIV and hepatitis are explored, these being the most serious infectious risks of transfusion.

Hidlebaugh et al, (1997) in a retrospective analysis of outpatient and inpatient records of all patients with a diagnosis of EP covered by Fallon Community Health from 1990 to 1995. Clinical and financial analyses of ectopic pregnancy management at a large health plan. 107 women treated for EP. The incidence of EP was 8.6/1000 reported pregnancies. At first, 38% of surgical patients had laparoscopic treatment; mean length of stay was extensively longer for laparotomy (3.1days) in opposition to (1.3 days) for laparoscopy, as was the mean

recovery time (4.6 weeks) in opposition to (2.4weeks).Total charges were similar for laparoscopy and laparoscopy (\$6720 in opposition to \$6840). Outpatient methotrexate therapy cost significantly less than the two surgical procedures (average \$8180). Laparotomy resulted in similar intrauterine pregnancy rates as laparoscopy (66% against 77%), and similar repeat tubal pregnancy rates (17% against7%) The results of this study support laparoscopy and methotrexate as efficacious, safe, and cost effective for the treatment of EP compared with laparotomy. Reproductive results were similar among the three groups.

One hundred and seventeen successive women's with diagnosis of EP admitted to Temple University Hospital between 1989 and 1992 were separated into two groups. Group 1 consisted of 56 women's with operative laparoscopy and Group 2 consisted of 61 women's treated by laparotomy. The two groups were similar for age, race, parity, gestation, presentation, and location of the ectopic gestations. Fifty seven percent of patients in the laparoscopy group were treated by salpingectomy and 43% by salpingostomy, compared to 84% and 16% correspondingly in the laparotomy group. Mean operative time for laparoscopy was 58 min and 42 min for laparotomy. Complication rates were similar in the two sub-groups. Only two patients in the Laparoscopy group required subsequent laparotomy, one to assure hemostasis and 5 weeks following surgery, mean length of hospital stay "1.25 days" for Laparoscopy and "4.39" days for laparotomy. This reflected in a lower cost of hospital stay (\$10,105 in opposition to \$13,608). The present records show that operative laparoscopy is not only safe and effective, but also more economical than open laparotomy in the treatment of ectopic pregnancies. (Chatwani, 1992)

Maymon et al in (1995) reviewing of 1197 clients, gathered from the English literature, a variety of traditional or salpingectomy operative laparoscopic procedures have been done, with 93% and 98% respectively, being able to avoid further surgery. Among the group treated by the conservative approach, a 6% post-operative complication rate was reported, of which 4% were persistent ectopic, 48% intra-uterine, and 18% repeated ectopic pregnancies. Among the drastically treated patients, two intra and one post-operative complication required laparotomies. The fertility develops and performance ending are less observable among this group. The benefits, safety and efficacy of each of the laparoscopic options, with appropriate

recommendations for their use, are discussed. However, even with the abovementioned dramatic progress, women with previous ectopic pregnancies still have decreased fertility would-be. Preventive measures aspired at reducing its overall occurrence therefore seems to be the major factor towards preserving a client's future fertility potential.

Sziller et al (1998) reports on the altering incidence of and maternal mortality from EPs in Hungary between the years 1931 - 1995. Statistics of reported pregnancies were achieved from the National Institute of Statistics and the Hungarian College of Obstetricians and Gynecologists. Incidence of EP was calculated as rates per 1000 live births and per 1000 reported pregnancies including live births, the rate of EPs /1000 reported pregnancies raised by 190% from 3.7 to 6.4. In the last period studied, EP-related maternal deaths declined sharply from 1931 through the late 1980's. In the last decade, the average value was 16 / 10.000 accounted ectopic pregnancies. On the other hand, case fatality rate of EP is the highest evaluated to any of the other obstetric occurrences including induced and spontaneous abortions, and deliveries. Over the last decade, maternal deaths resulting from ectopic gestation represented 8.7% of the total maternal mortality rate. Given the increasing incidence of EP together with a large proportion in pregnancy related maternal mortality.

A study conducted in the Department of Obstetrics and Gynecology, University of Southern California School of Medicine, Los Angeles, by Vermesh et al (1989) aimed to compare prospectively the parameters of morbidity, cost, length of hospital stay, and fertility outcome after linear salpingostomy by Laparoscopy versus Laparotomy. All women's underwent diagnostic laparoscopy. Sixty patients with unruptured ectopic gestations of 5 cm or smaller were randomized to 30 cases laparoscopy or 30 cases laparotomy. The laparoscopy and laparotomy groups were similar in age, height, weight, gravidity, gestational age, hematocrit, ectopic pregnancy size. The estimated blood loss was significantly lower in women's experiencing laparoscopy. Two patients in the laparoscopy group required laparotomy for hemostasis, and two patients undergoing laparotomy had wound infection. The length of hospital stay was shorter after laparoscopic salpingostomy (1.4 +/- 0.1 days) than after laparotomy (3.3 +/- 0.2 days). Postoperative hystero salpingography showed patency of the involved tube in 16 of 20 (80%) and 17 of 19 (89%) of patients in the laparoscopy and laparotomy groups, correspondingly. Pregnancy rates were ten of 18 (56%) and 11 of 19

(58%) in these groups, respectively, and all pregnancies were considered within 6 months of surgery.

3.5. Clinical Presentation:

3.5.1 Acute Presentation:

Amenorrhea, lower abdominal pain and vaginal bleeding .The abdominal pain usually precedes the onset of vaginal bleeding, and may start on one side of the lower abdomen. However it rapidly becomes generalized as blood loss extends into the peritoneal cavity .Sub diaphragmatic irritation by blood produces referred shoulder tip pain.

The period of amenorrhea is usually 6-8 weeks .Clinical examination reveals a shocked woman with hypotension , tachycardia and sings of peritonism including abdominal distension , guarding and rebound tenderness .Pelvic examination is usually unimportant because of the acute pain and discomfort , and should be undertaken with caution .The type of acute presentation occurs in no more than 25% of cases . (Mishell, 1997)

3.5.2. Sub Acute Presentation.

After a short period of amenorrhea, vaginal bleeding and abdominal pain .Any woman who develops lower abdominal pain following an interval of amenorrhea should be considered as a possible ectopic pregnancy. Knowing that some cases may go unnoticed as EP appears like abortion with out significant presentation. (Mishell, 1997)

3.6. Differential Diagnosis.

The first step in the diagnosis is an interview and examination by the doctor. Occasionally, the doctor may feel a tender mass during the pelvic examination. If an ectopic pregnancy is suspected, blood hormone tests, pelvic ultrasound, dilatation and curettage (D&C), and laparoscopy can be used to help confirm the diagnosis. These tests may take several days to

complete, and the results may be inconclusive. The timing of performing these tests and interpretation of test results can be complicated, and should be directed by your obstetrician. When checking blood hormone levels, such as beta human chorionic gonadotropin (beta HCG) and progesterone, a series of blood samples are obtained. Beta HCG levels normally rise during pregnancy. An abnormal pattern in the rise of this hormone can be a clue to the presence of an ectopic pregnancy. In those with abnormal hormone patterns, an ultrasound can be performed. In patients with an ectopic pregnancy, an ultrasound can demonstrate the absence of pregnancy within the uterus. In the past, a dilatation and curettage (D&C) procedure is then performed. During D&C, samples are obtained from the inner lining of the uterus to demonstrate the absence of pregnancy tissue within the uterus. However nowadays this practice had largely been replaced by Beta HCG titer and ultrasounds. Laparoscopy is the most direct method of visualizing an ectopic pregnancy. During laparoscopy, viewing instruments are inserted through small incisions in the abdominal wall to visualize the structures in the abdomen and pelvis, thereby revealing the site of the ectopic pregnancy. In rare instances, even laparoscopy may not detect certain ectopic pregnancies due to their small size or unusual location. In these cases, the doctor may elect observation or treatment with a drug called methotrexate. Treatment with methotrexate is described below. (Tay et al, 2000)

3.7. Management of Ectopic Pregnancy.

Treatment options for ectopic pregnancy include observation, laparoscopy, laparotomy, and medication. Selection of these options is individualized. Some ectopic pregnancies will resolve on their own without the need for any intervention, while others will need urgent surgery due to life-threatening bleeding. (Tay et al, 2000)

For those who require intervention, the most common treatment is surgery. Two surgical options are available; laparotomy and laparoscopy. Laparotomy is an open procedure whereby a transverse (bikini) incision is made across the lower abdomen. Laparoscopy involves inserting viewing instruments into the pelvis through tiny incisions in the skin. For many surgeons and patients, laparoscopy is preferred over laparotomy because of the tiny incisions used and the speedy recovery afterwards. Under optimal conditions, a small incision can be made in the fallopian tube and the ectopic pregnancy removed, leaving the fallopian tube

intact. However, certain conditions make laparoscopy less effective or unavailable as an alternative. These include massive pelvic scar tissue and excessive blood in the abdomen or pelvis. In some instances, the location or extent of damage may require removal of a portion of the fallopian tube, the entire tube, the ovary, and even the uterus. (Van et al, 2005)

Recently, considerable effort has focused on treating ectopic pregnancies without surgery. Some patients can be monitored by their symptoms and blood levels of beta HCG hormone without surgical intervention. Changes in the hormone levels can signal a spontaneous resolution of the pregnancy. This approach requires very close communication with the health care provider so if that should problems occur intervention can be prompt. Another treatment method involves the use of an anti-cancer drug called Methotrexate. This drug acts by killing the growing cells of the placenta, thereby inducing miscarriage of the ectopic pregnancy. Some patients may not respond to Methotrexate, and will require surgical treatment. Methotrexate is gaining popularity because of its high success rate and low rate of side effects. Although there have been reported cases of women giving birth by cesarean section to live infants that were located outside the uterus, which is extremely rare. The chance of carrying an ectopic pregnancy to full term is so remote, and the risk to the woman is so great, that it cannot be recommended. It would be ideal if an ectopic pregnancy in the fallopian tube could be saved by surgery to relocate it into the uterus. This concept has yet to become a successful procedure.

Overall, there have been great advances in the early diagnosis and treatment of ectopic pregnancy. Surgery is being replaced more and more by medical management, and the mortality from this condition has decreased dramatically. (Nelson et al, 2003)

3.8. Health Effect.

Chow et al (1987) and Tran and Leroy (1992) indicated that EP should be considered as a reproductive failure that may reflect low fertility level possibly due to persistence organic lesion in fallopian tube.

Maternal morbidity and mortality due to Tubal pregnancy has risen in the past decades, in addition to the direct health effect on the woman like bleeding, pain, and the psychological

effect on the woman and her family, there are many effects on health in general such as fertility effect, and the extra cost on the health providers due to the process of hospitalization. From this perspective, prevention efforts should aim at health education and liberal contraceptive utilization.

3.9. Summary.

Reviewing literature revealed that most studies were done retrospectively since 1935 until now and most of them were descriptive or case recode in nature. All of them agreed that the main risk factors for EP are PID, IUCD, age, parity, history of abortions and history of lower abdominal surgery. In Palestine there has not been one single study done even hospital based, which makes this study very unique.

Chapter Four

4. Proposed Conceptual Framework.

4.1. Introduction.

An EP is a condition where a fertilized egg settles and develops in any locality other than the internal lining of the uterus. The vast majority of ectopic pregnancies take place in the fallopian tube (95%). However, they can occur in other locations, such as the ovary, cervix, and abdominal cavity. (Symonds E and symonds I, 1999 and Dunnihoo, 1992)

It is important to remember that in most cases of EP, the cause is unknown.

However, several factors can raise the risk for an EP:

4.2. Etiology.

Several issues contribute to the relative risk of EP. In theory, anything that obstructs the migration of the embryo to the endometrial cavity could influence women to ectopic gestation. The most reasonable explanation for the increasing frequency of EP is previous pelvic infection; however, most patients presenting with an EP have no exclusive risk factor. The following risk factors have been linked with EP. (Ankum et al, 1996)

4.2.1. Pelvic Inflammatory Disease.

The most universal cause is Chlamydia trachomatis infection. Patients with chlamydial infections have a variety of clinical presentations, from asymptomatic cervicitis to salpingitis and florid pelvic inflammatory disease (PID). More than 50% of women who have

been infected are oblivious of the exposure. Other organisms causing PID, such as *Neisseria gonorrhoea*, increase the risk of EP. A history of salpingitis increases the risk of EP 4-fold. The incidence of tubal damage increases after successive episodes of PID (13% after 1 episode, 35% after 2 episodes, and 75% after 3 episodes). (Barnhart, 1994)

4.2.2. History of Prior EP.

After one EP, a patient sustains a 7- to 13-fold increase in the likelihood of another EP. In general a patient with previous EP has a 50-80% chance of having a consequent intrauterine gestation, and a 10-25% chance of a future tubal pregnancy. (Barnhart, 1994)

4.2.3. History of Tubal Surgery and Conception after Tubal Ligations.

Prior tubal surgery has been verified to increase the risk of developing EP. The increase depends on the degree of damage and the area of anatomic alteration. Surgeries carrying higher risk of subsequent EP include salpingostomy, neosalpingostomy, fimbrioplasty, tubal reanastomosis, and lyses of peri tubal or per ovarian adhesions.

Conception after previous tubal ligations increases a women's risk of developing ectopic pregnancies. Nearly 35 to 50% of patients who demonstrate after tubal ligations are reported to experience an EP. Failure after bipolar tubal cautery is more liable to result in EP than occlusion using suture, rings, or clips. Failure is attributed to fistula formation that allows sperm passage. Ectopic pregnancies following tubal sterilizations usually occur 2 or more years after sterilization, rather than instantly after. In the first year, only about 6% of sterilization failures result in EP. (Barnhart, 1994)

4.2.4. Use of Fertility Drugs or ART.

Ovulation induction with clomiphene citrate or injectable gonadotropin therapy has been linked with a 4-fold increase in the risk of ectopic pregnancy in a case-control study. This finding suggests that multiple eggs and high hormone levels may be significant factors. One study has demonstrated that infertility patients with luteal phase defects have a statistically higher EP rate than patients whose infertility is caused by an ovulation. The risk of EP and

heterotopic pregnancy considerably increases when a patient has used Assisted Reproductive Techniques to conceive. For example, In Vitro Fertilization (IVF) or Gamete intra Fallopian Transfer.

In a study of 3000 clinical pregnancies achieved through in vitro fertilization, the EP rate was 4.5%, which is more than double the background incidence. In addition, studies have verified that up to 1% of pregnancies achieved through in vitro fertilization or gamete intrafallopian transfer can result in a heterotopic gestation, compared to an incidence of 1 in 30,000 pregnancies for spontaneous conceptions. (Breen, 1970)

4.2.5. Intra Uterine Contraceptive Device.

The presence of an inert copper-containing or progesterone intrauterine device (IUD) habitually has been thought of as a risk factor for EP. However, only the progesterone IUD has a rate of EP higher than that for women not using any form of contraception. The modern copper IUD does not increase the risk of EP. Yet, if a woman eventually conceives with an IUD in place, it is more likely to be an EP. The actual incidence of ectopic pregnancies with IUD use is 3-4%. (CDC, 1995)

4.2.6. Age.

The peak rate of EP happens in women aged 35-44 years. A 3- to 4-fold increase in the risk for rising an EP exists compared to women aged 15-24 years. One proposed rationalization involves the myoelectrical activity in the fallopian tube, which is responsible for tubal motility. Aging may result in a progressive failure of myoelectrical activity along the fallopian tube. (Marchbanks et al, 1988)

4.2.7. Parity.

Jabbar and Al- Wakeel (1980) found that 39 of 45 patients with EP were paragravida 1-5, and one to five patients were reported to be nullipara and grand multipara.

Archibong, (2000) studies 82 women in Saudi Arabia and he found that 56% parous women, 21% non parous.

Javey (1976), studied EP in Iran on 96 cases over seven years period, they found previous fertility was high and prime gravida constituted.

4.2.8. Abortion.

Coulam, et al (1989) in an epidemiological study among 630 patients with a diagnosis of Recurrent Spontaneous Abortion (RSA) in a Methodist Hospital in Indiana, found out that there is an increase of EP 2.2 folds among women with a history of RSA. Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in obstetric and gynecology department and they found no previous history of abortion is found in 60% of the patients.

Ikema and Ezegui (2005) carried out a survey by fertility department of Gynecology and Obstetrics in the University of Nigeria Teaching Hospital between the years 1997-2003 and founded that the ratio of EP to delivery was 1/44(136/6003) deliveries, and they found out that EP was prevalent in young single women with a previous history of induced abortion and result in pelvic infection.

4.2.9. Smoking.

Cigarette smoking has been shown to be a risk factor for developing an EP. Studies have confirmed elevated risk ranging from 1.6-3.5 times that of nonsmokers. A dose-response outcome also has been recommended. Based on laboratory studies in humans and animals, researchers have nominated several mechanisms by which cigarette smoking might play a role in ectopic pregnancies. These methods include one or more of the following: delayed ovulation, altered tubal and uterine motility, or altered immunity. Till today no study has supported a detailed mechanism by which cigarette smoking affects the occurrence of EP. (Saratya et al, 1998)

4.2.10. Salpingitis Isthmica Nodosum.

The etiology of salpingitis isthmica nodosum is unclear, but proposed mechanisms include post-inflammatory and congenital (small diverticula's) as well as acquired tubal changes such as observed with endometriosis. (Diquelou et al, 1988)

4.3. Outcome (Mortality and Morbidity).

Chow et al (1987) and Tran and Leroy (1992) indicated that EP should be considered as a reproductive failure that may reflect low fertility level probably due to persistence organic lesion in fallopian tube. In 1986, 36 maternal deaths (13.2% of all such deaths) were related to ectopic pregnancy. Between 1970 and 1986, a total of 752 women died as a result of an ectopic pregnancy. Overall, the case-fatality rate has decreased greater than 86% since the first reporting period in 1970.

Maternal morbidity and mortality due to Tubal pregnancy is rising in the past decades, in addition to the direct health effect on the woman like bleeding, pain, and the psychological effect on the woman and her family, there are many effects on health in general such as fertility effect, and the extra cost on the health providers due to the process of hospitalization. From this perspective, prevention efforts should aim at health education and liberal contraceptive utilization.

4.4. Proposed Conceptual Framework.

The conceptual framework of this study sketched around the major risk factors for EP, shown in the figure below:

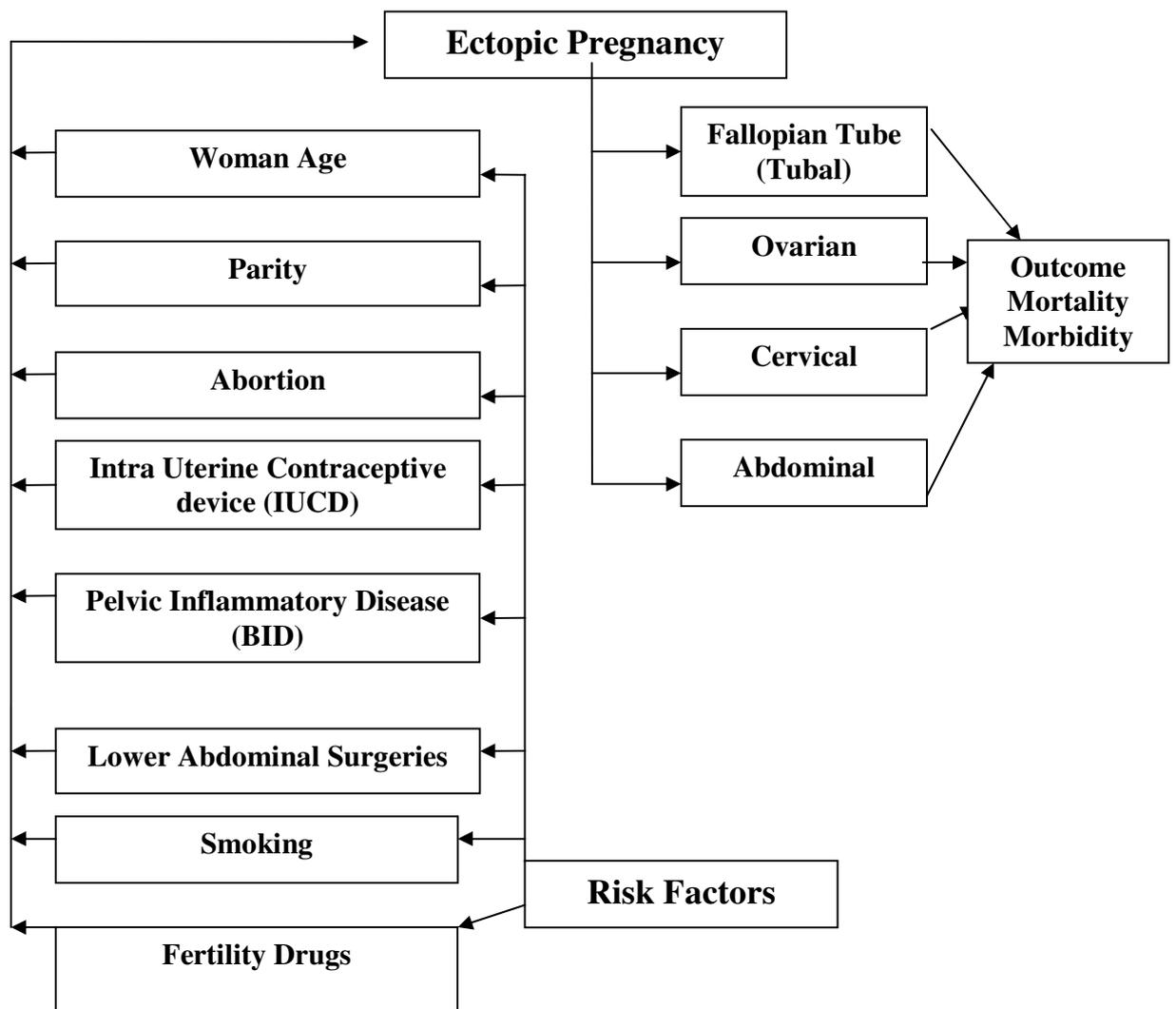


Figure (4.1): The proposed conceptual framework.

4.5. Summary.

The previous chapter was summarized the proposed and assumed conceptual framework for the study, which included the etiology for EP and the risk factors as general.

Chapter Five

5. Methodology.

5.1. Introduction.

The chapter covers the researcher design, the population targeted and the sampling method used in the study. It also presents the ethical considerations related to the study, instrumentation and method of data analysis.

5.2. Study Design.

This study is a descriptive study where quantitative data were collected by using a combination of tools; hospital records and a household based questionnaire that was filled in via interviewing the women under study.

The hospital records review produced quantitative information about the sample and the interview with the questionnaire brought to being complementary quantitative data. Design of this study was retrospective cross sectional study.

5.3. Target population.

All women who were admitted, diagnosed and surgically treated for EP at Ramallah (Government, non government and Private) hospitals between the years" 2001-2005" represented both the target and study population in this study.

5.4. Sampling.

Our sample consists of 107 women who were diagnosed and surgically treated for EP in the hospital. Inclusion criteria were adopted to participate in this study which includes any woman in the reproductive age, who was admitted to the hospital for surgical intervention. After being diagnosed with EP the hospital record had address, however we eventually were able to contact her for interview.

5.5. Data Collection.

The author approached all the hospitals administration and permissions were obtained (consent form) prior to the data collection phase as per the University policy. All maternal cases that were treated surgically were reviewed and screened to pick out the EP files. Collection of some demographic data and review of the medical history was followed. Subsequently, the same women were followed in the community by a trained female nurse to fill out the questionnaire. This procedure was facilitated by home addresses documented in the hospitals records.

5.6. Data Analyses.

SPSS version 12.0 was used to analyze the results by using diagrams and tables. Sample size, mean age, mode, and incidence were calculated. All screened records were documented. Since the study is a descriptive one, we will try to describe the trends and frequencies in the variables under study were described.

5.7. Ethical Consideration.

Approval and permission for conducting the study at the hospital settings were obtained from the hospitals administrations after formal written request for that from the university (see appendixes). Full disclosure about the study proposes was given and provided to the women with explaining the confidentiality of the data for the purposes of this study exclusively.

5.8. Instrumentation.

Three complementary approaches were utilized in data collection. The first was operating room record, second was patient record review whereas the third was questionnaire form. The research instrument was a quantitative method which includes assessment of demographic variables, socio-economic status of the family and complete medical history. The measurement tool was piloted and initially pre-tested by filling it out from the medical records and interviewing the participants. In addition, two obstetricians (Dr. Shukri Odeh and Dr. Sa'adeh Subhi) were consulted for validity matters. At this pilot, the observation of the researcher and the trained field workers were taken into consideration and the questionnaire was modified consequently to ensure the clarity of the questions. As for reliability, split half approach was adopted to measure the different variables under study.

Face to face validity of our measurement was brought to light after consulting expert's obstetricians. Our operationalization of EP was any woman in the reproductive age which diagnosed as EP and surgically treated in the hospital which mostly reflects the conceptual definition of our dependent variable. Socio-economic status of the family was constructed by creating a SES index which includes the educational level of the women and her husband, employment status, average of the family income and the shelter conditions.

Abortion history was deliberated by only asking if there is an accident of abortion or not despite of the nature, type or frequency of the abortion.

The smoking history of the women was measured by asking if there is any smoker in the family whether the participant or her husband smokes despite the number of cigarettes per day.

For the history of PID the women were asked about history of vaginal discharge with fever and treatment for UTI.

Negative effect of the EP on the family specially the husband was constructed by requesting from the women to respond and answer about the magnitude of the negative effect of EP on the husband and most of the women indicated that they enjoy this question a lot and this question triggered their pain.

Reviewing the hospital records was performed by the researcher himself and it was a very complicated and impressive process where inadequate information was listed in the patient's files and unprofessional medical history taking.

The data was then entered into the computer, coded, recoded and analyzed using the statistical package for the social sciences (SPSS).

5.9. Summary.

This chapter presented and reviewed the methodology which was used in this research. It provided justification for the study design and description of the study setting and sampling, the pilot testing for the questionnaire and how data were collected and analyzed.

Chapter Six

6. Results and Analysis.

6.1. Introduction.

This chapter presents the result and analysis of the data. These results reflect the incidence, risk factors and outcomes of ectopic pregnancy in Ramallah district between the years 2001-2005.

6.2. General description of the sample.

The sample consisted of 107 women in the reproductive age (19-42) year from Ramallah District during the years (2001-2005) performed surgical procedure as recorded in operating rooms records in all hospitals private, government and non government hospitals in Ramallah. 94 file records found, 84 of which were interviewed, 7 refused the interview, 3 were out of the area and 78 of the women fulfilled the 3 complementary approaches.

6.3. Demographic data.

The ages of the women ranged between 19 and 42 years with a mean of 28 years.

6.3.1. Educational level of the husband.

Our results revealed that husband's educational level is better than those of the women. This may partly be related to the social preference to educate males more than females. These educational levels of the husbands play an important role in their employment, where 92.7% of the employed husbands have Tawjihi and more. As an end sketch, it may be concluded that husbands' work is determined by his educational level ($P=.002$). From our study we concluded a very significant result for the educational level of the women, where 72.7% of the educated husband's wife's has Tawjihi and more ($P=.000$).

Tables (6.1.): Educational level of the woman's husband.

Educational level	Frequency	Percent
Tawjihi and more	55	70.5
Less than Twajihi	23	29.5
Total	78	100.0

6.3.2. Income of the family.

Our study indicated that for 75.6% of the family, the income is less than 3000 NIS per month. Furthermore, there is a strong association between employment status of the couples and the monthly income, where 80% of those who have 3000 NIS and more are employed in a paid job ($p=.000$).

Table (6.2.): Average of monthly income.

Monthly Income (NIS)	Frequency	Percent
Less than 1800 nis	27	34.6
1800-3000 nis	32	41.0
More than 3000 nis	19	24.4
Total	78	100.0

6.3.3. Type of Household.

75.6% of the sample under study lives in private homes and nuclear families away from the extended traditional households. From that 94.7% has an income of 3000 NIS and more. This concludes that there is a well built relation between the type of household and the income of the family (P=.004).

Table (6.3): The nature of the households

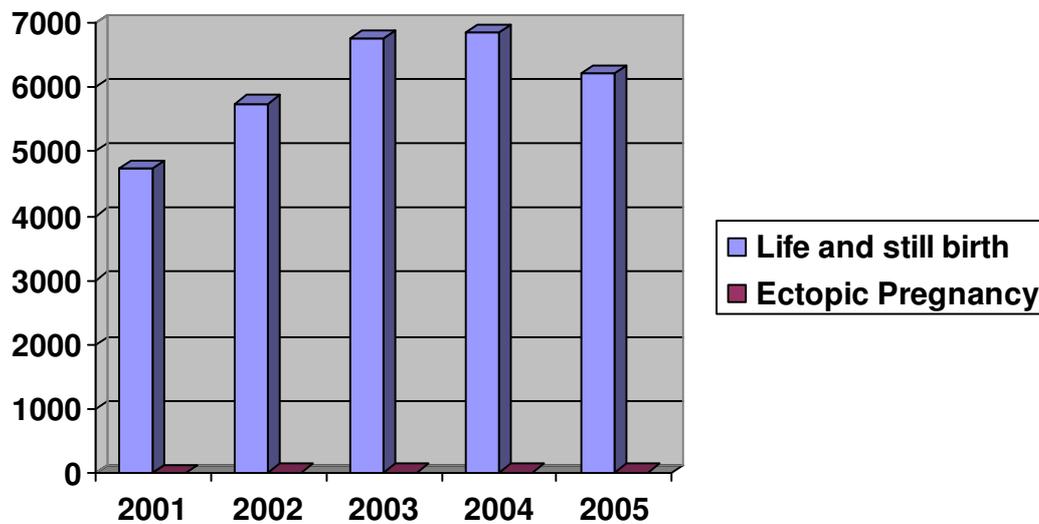
Type of the household	Frequency	Percent
Nuclear family	59	75.6
Extended family	19	24.4
Total	78	100.0

6.4. Incidence of EP.

Based on the Ministry of Health reports regarding the number of life births and still births in Ramallah district from 2001-2005 year, we calculated the proposed incidence of ectopic pregnancies in Ramallah governorate which is 3.53/1000. Here we consider the reported number of surgically treated ectopic pregnancies in Ramallah hospitals as the nominator, and the yearly life births and still births as the denominator.

After that we found that the yearly incidences of ectopic pregnancies in Ramallah governorate between "2001-2005" as follow:

Table (6.4): Yearly incidence of EP.



Year	Live and still births	Number of Surgically treated EP	Incidence /1000 (Estimated)
2001	4734	17	3.60
2002	5746	22	3.83
2003	6742	21	3.12
2004	6841	25	3.65
2005	6211	22	3.54
Total	30274	107	(Average) 3.53

Figure (6.1): Live and still births and incidence rate of ectopic pregnancy between the 2001 - 2005 years.

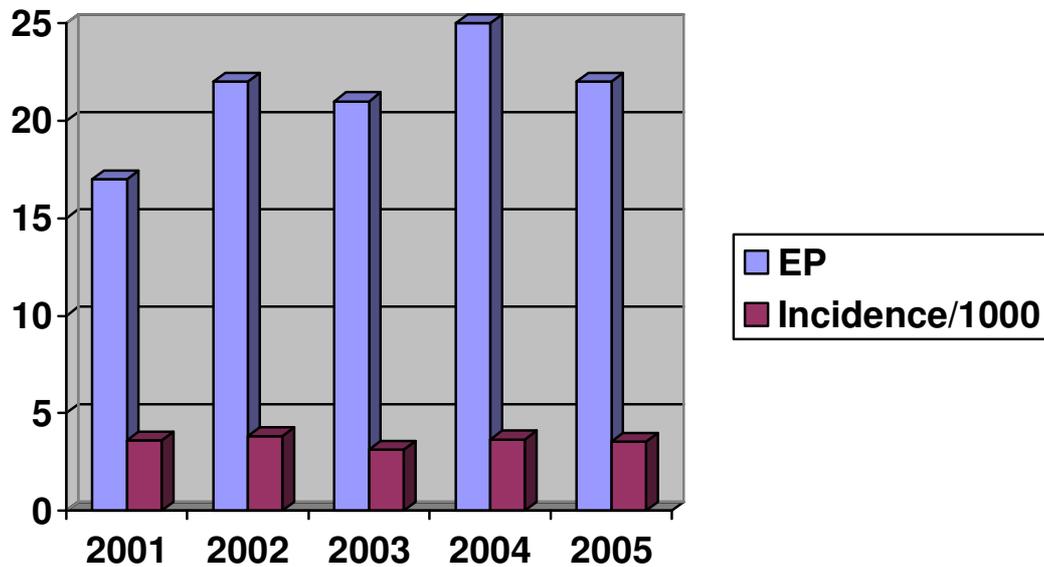


Figure (6.2): Ectopic pregnancy incidence rate/1000 Live and still births between the 2001 - 2005 years.

6.5. Risk Factors.

6.5.1.1. Age.

Our results showed that the ectopic pregnancy risk increased after the age of 24 years, where 68% of the women were above the age of 24 year on the time of ectopic pregnancy.

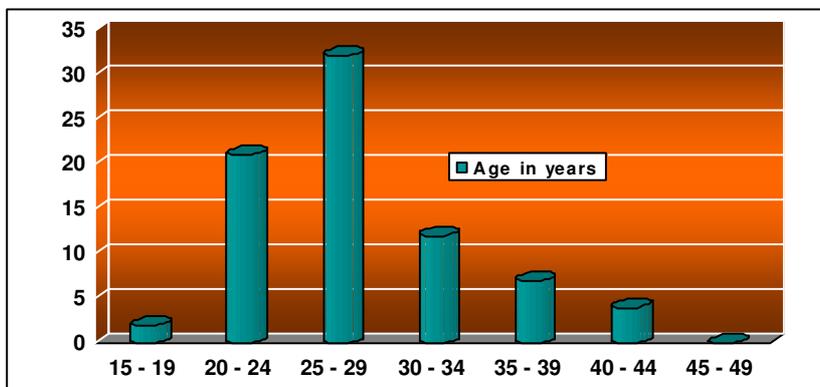


Figure (6.3): Age distribution of women's.

6.5.1.2 Marital Age.

42.3 % of the women under this study experienced their first intercourse (marriage) before the age of 20 years. This reflects to some extent the preference of the Palestinian population to marry their girls off as early as possible. In our study early sexual intercourse and activity play an important role in developing ectopic pregnancy.

Table (6.5): Marital age of the women's.

Age	Frequency	Percent
Less than 15 years	2	2.6
15-19	29	37.2
20-24	32	41.0
25-29	13	16.7
30 and more	2	2.6
Total	78	100.0

6.5.1.3. Period between Marriage and First Pregnancy.

From our study we found that the majority of the women have been getting pregnant within the first year of marriage. We can claim that there is no association between the period of

marriage and the first pregnancy and the risk of ectopic pregnancy where the 84.6% of the sample under study got pregnant in the first year after marriage.

Table (6.6): Period between marriage and first pregnancy.

Period between marriage and first pregnancy	Frequency	Percent
Immediately	22	28.2
1-12 months	44	56.4
13-24 months	4	5.1
25-36	3	3.8
37 months and more	5	6.4
Total	78	100.0

6.5.2. Women Reproductive Profile.

6.5.2.1 History of Abortion before EP.

The results concerning previous history of abortion showed that 53.4% of our sample has a positive history of abortion, here we can conclude to some extent that having history of abortion increase the risk of developing ectopic pregnancy.

Table (6.7): History of abortion before EP.

History of abortion	Frequency	Percent
No abortion	36	46.2
abortion	42	53.8
Total	78	100.0

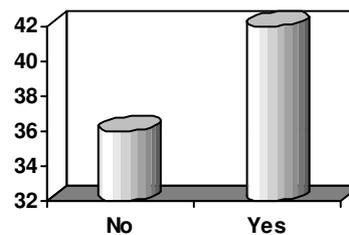


Figure (6.4): History of abortion before EP.

6.5.2.2. Live Birth before EP.

83.3% of the sample under study has one or more live birth. Thus concluding to some extent that multiparity plays a significant role in increasing the risk of ectopic pregnancy. We may refer this to the changes that occur on the uterus and fallopian tubes after the process of pregnancy.

Table (6.8): Parity status before EP.

Parity status	Frequency	Percent
No life birth before EP	13	16.7
One or more life birth before EP	65	83.3
Total	78	100.0

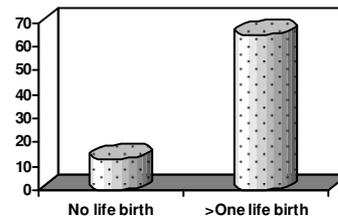


Table (6.5): Parity status before EP.

6.5.2.3 Contraceptive History before EP.

50% of the women under study has a history of using contraceptives, IUCD constitute the highest percentages of the used contraceptives. This may be related to the women preferences to use IUCD instead of others due to the safety, cost and routine compared to other alternatives. IUCD play's an important role in increasing the risk of developing ectopic pregnancy more than other contraceptive alternatives.

Table (6.9): Types of used contraceptives.

Types contraceptives.	Frequency	Percent
IUCD	32	41.0
Pills	5	6.4
Others	2	2.6

Did not use any contraceptives	39	50.0
Total	78	100.0

6.5.2.4. Hormones Therapy before EP.

Hormones therapy before pregnancy plays an important role in increasing the risk of getting EP. About 20% of the women have history of treating with hormones therapy before getting pregnant outside the uterus. This allowing us to conclude to some extent that there is an association between the history of using hormones and the risk of ectopic pregnancy.

Table (6.10): Hormones therapy before ectopic pregnancy.

Hormones therapy before EP	Frequency	Percent
Yes	15	19.2
No	63	80.8
Total	78	100.0

6.5.2.5. History of Vaginal Infections before EP.

On the top of the pyramid, UTI and PID are the main and most important risk factors for EP. In our study three fourth of the women experienced vaginal infections and received treatment for that infection. Therefore, we consider UTI a strong trigger to cause EP.

Table (6.11): History of vaginal infection before ectopic pregnancy.

Vaginal infection before EP	Frequency	Percent
Yes	59	75.6
No	19	24.4
Total	78	100.0

6.5.3. Smoking Habits.

Two thirds of the women's husbands in our sample are smokers. Thus inconsequently causing passive environment smoking in the households, this will lead to increasing the risk of ectopic pregnancy. In addition to that, 20% of the women under study are smokers. Consequently, the smoking habit of the woman depends to some extent on the smoking status of their husbands, where 24.5% of the smoker women are smokers compared to 11% of the non-smoker women.

Table (6.12): Smoking habits of the husbands.

Smoking habits of the husbands	Frequency	Percent
Yes	51	65.4
No	27	34.6
Total	78	100.0

6.5.4. History of Abdominal Surgery.

The results is consistent with the previous studies in the fact that the positive history of abdominal surgeries play an important role in increasing the risk of getting EP, where 51.3% of our sample was founded to has history of abdominal surgeries. The following table shows us that history of CS is the major item in the history of abdominal surgeries where 37.2% of the sample has a history of CS.

Table (6.13): Types of abdominal surgeries before ectopic pregnancy.

CS	17	21.8
Others	10	12.8
No operations	39	50.0
Total	78	100.0

6.5.5. Season Trend of EP.

Of the sample surveyed, 32.1% of women were admitted to the hospital for surgical intervention in winter and 38.5% in summer. This appears to be corresponding with EP international rhythm which increased in June and December.

Table (6.14): Distribution of the cases among the seasons of the year.

Season	Frequency	Percent
Winter	25	32.1
Spring	8	10.3
Summer	30	38.5
Autum	15	19.2
Total	78	100.0

6.6. Outcomes.

6.6.1. Morbidity.

In this study morbidity was define by the, cost, length of hospital stay, and fertility outcome, salpingectomy by laparoscopy or laparotomy, blood loss and blood transfuse, bio psychosocial effect of the surgical procedure on women's health .

6.6.1.1. Pregnancy Orientation before EP.

More than half of the women under study had no idea that they are pregnant on the time of admission to the hospital. This could be related to the short time between fertilizing and getting EP.

Table (6.15): Women's knowledge about pregnancy when EP has been diagnosed.

Women's knowledge	Frequency	Percent
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Yes (Aware)	36	46.2
No (Un Aware)	42	53.8
Total	78	100.0

6.6.1.2. Period between the EP and Next Pregnancy:

Our results showed that getting ectopic pregnancy has a significant effect on the future health of the woman and her fertility where 41% of our sample did not get pregnant after the experience of ectopic pregnancy, and this unfortunately will affect the life of the women in general not only her fertility leading to many psychosocial problems in the household.

Table (6.16): Period between ectopic pregnancy and the next pregnancy.

Period	Frequency	Percent
Immediately	2	2.6
1-6 months	15	19.2
7-12 months	15	19.2
13-24 months	12	15.4
25 and above	2	2.6
Did not get pregnant	32	41.0
Total	78	100.0

6.6.1.3. Informed About Complications of the EP Surgery.

Our analysis shows that the majority of doctors did not explain the nature of the ectopic pregnancy, the surgical intervention and the possible future effect on the woman's health.

This reflects to some extent the biomedical nature and technicality of our doctors in dealing with their patients and ignoring the social and human aspects of the human body.

Table (6.17): Informed about complications of the ectopic pregnancy.

	Frequency	Percent
Yes (Aware)	17	21.8
No (Un Aware)	61	78.2
Total	78	100.0

6.6.1.4. Perception of the EP Experience.

Our results showed that the woman understand and perceived the indications and the nature of the operation where 79.5% of sample said that they were informed about the indication of the surgery and 20.5% were not. This may be related to the denial phase of the post EP. On the other hand, more than half of the women in our sample claimed that the effect of the EP on their husbands was very much negative regarding the fertility of the woman and future pregnancy hope.

Table (6.18): Did you perceive the indication of the surgery?

	Frequency	Percent
Yes	62	79.5
No	16	20.5
Total	78	100.0

Table (6.19): The effect of the surgery on the women' husbands.

	Frequency	Percent
Very much	43	55.1
Much	4	5.1
Little	5	6.4
Very little	2	2.6

No effect	24	30.8
Total	78	100.0

6.6.1.5. Desired Pregnancy Afterwards.

To assess if the EP affected the desire to get pregnant after the accident of ectopic pregnancy or not we asked about the number of life births and abortions after the EP, and found that 44.6% of our sample had been got pregnant after the EP, and about half of them delivered one live birth at least after the ectopic occurred.

Table (6.20): Desired pregnancy after EP.

Pregnancies after EP	Frequency	Percent
00	44	56.4
01	20	25.6
02	11	14.1
03	1	1.3
04	2	2.6
Total	78	100.0

6.6.1.6. Using of Contraception after the EP.

Our analysis showed that only about 15.3% of the women under study were used contraceptives to prevent further pregnancies, among those 75% preferred to use IUCD as the safest method as they believe, but the safest method mentioned in literature is pills.

Table (6.21): Types of used contraceptives after EP.

Types contraceptives.	Frequency	Percent
IUCD	9	11.5
Pills	1	01.2
Others	2	02.6
Did not use any contraceptives	66	84.7
Total	78	100.0

6.6.1.7. Blood Transfusion.

The study shows that 34.6% of the studied women's received blood. Ectopic pregnancies are condition that could predispose patients to significant blood loss.

Table (6.22): Did you receive blood?

	Frequency	Percent
Yes	27	34.6
No	51	65.4
Total	78	100.0

6.6.1.8. Surgical Intervention.

On analysis of the data, we found that open procedure is performed for 44.9% of women's admitted to hospitals for EP management. Laparoscopy was the least procedure 20.5%.and out of the surgical interventions 69.3% of the women's have one tube removed.

Table (6.23): Surgical intervention.

	Frequency	Percent
Laparoscopy	16	20.5
Laparoscopy then laparotomy	27	34.6
Laparotomy	35	44.9
Total	78	100.0

Table (6.24): Tubal surgical intervention.

	Frequency	Percent
Salpingectomy	54	69.3
Salpingotomy	9	11.5
Tubal compression	3	03.8
Not mentioned	12	15.4
Total	78	100.0

6.6.1.9. Hospitalization.

From date of admission and discharge of the women's under study from hospital, 76.9% of them were stay more than three days.

Table (6.25): Hospital sty by days.

	Frequency	Percent
1-2	18	23.1
3-4	43	55.1
5-6	13	16.7
More than one week	4	05.1
Total	78	100.0

6.6.2. Mortality.

By reviewing women's record and ministry of health annual reports mortality from ectopic pregnancy not reported during the study period (2001-2005).

6.7. Summary.

This chapter covered the data presentation and the results of the study. Demographic characteristics, incidence of ectopic pregnancy, the revealed risk factors of ectopic pregnancy and morbidity and mortality were also explored.

Chapter Seven

7. Discussion.

7.1. Introduction.

This study was restricted to women who were admitted to Ramallah hospitals for surgical interventions after being diagnosed as ectopic pregnancy in Ramallah district to determine and identify the risk factors of ectopic pregnancy in Ramallah region. The ages of the women ranged between 19 and 42 years with a mean of 28 years.

7.2. Demographic Background.

The majority of the women in our study live in the non-urban areas (villages and camps), 60.3% of the sample surveyed live in villages, 29.5% live in the city and 10% in camps, 60% of the women reported have Tawjihi and more, 75.6% of the family income is less than 3000 NIS/ month. Where 80% of those who have 3000 NIS, and more are employed in a paid job and 75.6% of studied population is living in private houses and nuclear families away from the extended traditional households.

I can assume here that there is a relationship between the places of residence and experiencing ectopic pregnancy where living in rural areas and camps may increase the risk of ectopic pregnancy to some extent. This may be related to the questionable access to primary health care services in these areas and the low level of knowledge and awareness regarding the health of the women in general and the sexual health awareness.

7.3. Incidence.

Based on the Ministry of Health reports regarding the number of deliveries (live births and still births) in Ramallah district from 2001-2005 year, I found surgical incidence of ectopic pregnancies in Ramallah governorate which is 3.53/1000 deliveries.

Women in Palestine constitute about 50% of the total population. Total fertility rate (TFR) in Palestine is high when it is compared with other countries. It was calculated to be 3.89 according to the data on number of women and live births. The fertility hit the highest point is among the age group of 25-29 years. (MoH Report, 2004)

The incidence rate of EP / 1000 reported pregnancies increases from 5.8 to 11.1 during 1962-1977 in Sweden, from 5.7 to 9.3 during 1971 –1980 in Canada, from 4.5 to 16.8 during 1970-1987, in USA , from 3.22 to 5.9 during 1968-1974, in Norway, 7.4/1000 deliveries during 2000 in KSA and 6.1/1000 deliveries during 1983 in Jordan.

This trend put ectopic pregnancy as a major health problem in western countries in the period 1960`s-1980`s. Ectopic pregnancy Ectopic pregnancy.
(www.gfmer.ch/endo/fellow_11/pdf/ectopic_pregnancy.pdf)

7.4. Risk Factors.

7.4.1 Age.

Age has long been suspected to play a role in ectopic pregnancy risk. But studies have provided conflicting result James and Jordon, in 1984 concluded that there is a temporal relationship between age and EP where age specific fertility rates reveilles a greater relative decline in fertility in older women who have the highest risk of an extra uterine pregnancies.

Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in obstetric and gynecology department and they found that 56% of the studied population was between 21-30 years of old.

Clark and Baranyai, 1987; Ankum, et al.1996; and Hadgu, et al.1997 concludes pathogenesis of EP is considered multifactorial, with incidence usually lower in women less or equal to 24 years old. However, post-inflammatory lesions of the fallopian tubes due to an ascending infection from the lower genital urinary tract are a major etiological factor. In fact, a previous PID has been shown to be the strongest predictor.

In our study which is a descriptive one in nature. We can assume that there is a significant relationship between age and ectopic pregnancy where 68% of our sample were above the age of 24 years of old. We can also claim that advance age is related to the risk of EP due to the changes in the tubal function and increase in the risk of developing other risk factors such as urinary tract infections and multiparity and the increase in sexual activity.

7.4.2. Women Reproductive Profile.

7.4.2.1. History of Abortion.

From our results we can notice clearly the relationship between ectopic pregnancy and the prior history of abortion regardless the nature of that abortion, where 63.8% of the sample has

history of abortion for one time or more. Consequently, we can bring to an end that history of experiencing abortion plays a role in developing ectopic pregnancy.

Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in obstetric and gynecology department and they found that no previous history of abortion is found in 60% of the patients. Coulam, et al (1989) in an epidemiological study among 630 patients with a diagnosis of Recurrent Spontaneous Abortion (RSA) in a Methodist hospital in Indiana, found out that there is an increase of EP 2.2 folds among women with a history of RSA.

7.4.2.2. Parity.

Parity play an important role in increasing the risk of ectopic pregnancy, where increasing the number of pregnancies increase the chance of ectopic pregnancy. In this study, the majority of the women have one or more child, here we can assume and propose that parity in combination with age and increasing the sexual intercourse and activity will lead to some physiological changes such as pelvic inflammatory disease increases the risk of ectopic pregnancy.

Archibong, (2000) studied 82 cases of EP in Abha, Saudi Arabia in obstetric and gynecology department and they reported the incidence of EP 7.4/1000 live birth, 56% of the studied population was between 21-30 years of old, 56% parous women.

7.4.2.3. Intra-Uterine Contraceptive Device (IUCD).

In previous studies, Raziel, et al (2004) conducted a retrospective study in department of obstetric and gynecology in Israel between "1990-2001" on 694 cases of EP, 19 of them were ovarian, and found that there was a strong relationship between IUCD users and EP (ovarian). Bouyer, et al. (2002) conducted a survey at Auvergne region in France on 243 women having IUCD and found out that 25% of them reported EP. They suggested that IUD itself may have an etiological role of EP. Tuomivaara, Kanppila, and Puoakka (1996) conducted a retrospective study about EP on 552 cases treated for EP, during 1973-1982; found that there was a significant positive correlation between increase of EP and the use of IUCD.

In our study about half the women were using contraceptive methods, among them 82% are IUCD users. We can assume that IUCD use has an etiologic role in ectopic pregnancy, not only through an association with increasing the chance of risk of urinary tract infection. In our study, we did not know the duration of past intrauterine device use, and we could not study the types of the IUCD.

7.4.2.4. Pelvic Inflammatory Disease (PID).

In previous studies EP is considered multifactorial, post-inflammatory lesions of the fallopian tubes due to an ascending infection from the lower genital urinary tract are a major etiological factor. In fact, a previous PID has been shown to be the strongest predictor. (Clark and Baranyaij, 1987; Ankum, et al.1996; Hadgu, et al.1997).

Regarding the history of pelvic inflammatory diseases and infections, we obtained the nature of the history from the women themselves. We adopt this verbal information because the patient history was not clear neither enough in hospital record. This information results may be biased due to inability to recall the information from the side of the women.

However the results showed us that 74.4% of the women under study reported positive history of vaginal infection. We can claim that there is a strong relationship between vaginal infection, urinary tract infection and ectopic pregnancy. It seems that control of urinary tract infection will reduce the incidence of PID which in turn will decrease the occurrence of its long term effect and more importantly ectopic pregnancy.

7.4.3. Smoking.

Smoking of the women or the husband may play a role at various stages in the reproduction, our study revealed that 20 % of the women are smokers, however this percentages may not reflect the truth about the real smoking status of them because in our culture the woman consider the smoking as a taboo for the women in the society, even if the woman is smoker she will claim that she is not. On the other hand, 80% of the husbands are smokers, this will induce an environment of passive smoking at the houses, consequently, and we can wind up with a relation between smoking and ectopic pregnancy that smoking will increase the chance

of ectopic pregnancy. Cigarette smoking has been shown to be a risk factor for developing an EP.

Studies have confirmed elevated risk ranging from 1.6-3.5 times that of nonsmokers. These methods include one or more of the following: delayed ovulation, altered tubal and uterine motility, or altered immunity. To date, no study has supported a detailed mechanism by which cigarette smoking affects the occurrence of EP. (Saraiya et al, 1998)

7.4.4. Abdominal Surgery.

Klinika, et al (2005) conducted a survey over 214 patients aged 18-44 years in department of Reproductive Medicine and Gynecology of Pomeeranian University in Poland between the years 1993-2002, and found that 48.5% of the target group had a history of lower abdominal surgical procedures as a main risk factor. Previous history of abdominal surgeries plays an important role in increasing the risk of ectopic pregnancy.

In our study 50% of the women has a positive history of abdominal surgeries, and as in the literature, abdominal surgeries constitutes for increasing the risk of ectopic pregnancy where adhesions after any abdominal surgery may form a compression on the fallopian tubes and obstruct the process of ovulation or change the normal pathway of the ovum.

In our study, 21.8% of the sample surveyed has history of Cesarean Section (CS) before ectopic pregnancy; here we can reveal that CS and lower abdominal surgeries plays an important role in increasing the risk of ectopic pregnancy.

7.4.5. Seasonal trend of ectopic pregnancy.

Cangalli et al (1999) studies 15639 pregnancies in 5.5 years (January 1992- June 1997), and the results showed that rhythm of EP increased in June and December, 37.4% in comparison to other months of the year.

Seasonal variations seems very clear in our study where most of the cases were presented to the hospital during winter and summer. This is consistent with some literature where most of the cases of ectopic pregnancy occurred in summer. We can not adopt this trend as a risk

factor for ectopic pregnancy. We highly recommend further studies to determine and argue this seasonal trend in ectopic pregnancy.

7.5. Outcomes.

7.5.1. Mortality.

Campbell and Monga (2000) conclude that ectopic pregnancy sometimes presents as an acute emergency and a life-threatening, accounting for up to 10% of all maternal mortality according to a confidential inquiry into maternal death (1999-2002) in the United Kingdom EP is the fifth most common cause of maternal mortality.

During hospitals women's record review and MoH annual reports mortality of ectopic pregnancy not reported during the study period (2001-2005). EP was not reported to be a cause of maternal mortality in Palestine. However they report that maternal mortality rate in Palestine are about 12.7 per 100,000 live births among women aged 15-49 years (21.3 in GS and 6.7 in WB). The causes of maternal mortality were reported to be Amniotic fluid embolism, Myocardial infarction, Pre-eclamptic toxemia, Post partum hemorrhage and Septicemia shock. (MoH Report, 2004).

6.5.2. Morbidity.

The length of hospital stay (76.9% of women's stayed more than three days) by the means of wound infections and cost of treatment and prolonged recovery, Women with ectopic pregnancy may have massive hemoperitoneum. In this study 34.6% of the studied population has had blood loss and blood transfuse are at risk of the most fatal blood transfusion born diseases (HIV and hepatitis).

Therefore, it is important for health provider, obstetrics and gynecology to be proficient in managing occurrences of massive hemorrhage and the practice of the most commonly used blood components.

Fertility outcome EP affected the desire to get pregnant 56.4% did not get pregnant after the accident of ectopic pregnancy.

Bio psychosocial effect of the surgical procedure on women health and fertility outcome, Barnhart (1994) says after one EP, a patient sustains a 7- to 13-fold increase in the likelihood of another EP. In general, a patient with previous EP has a 50-80% chance of having a consequent intrauterine gestation, and a 10-25% chance of a future tubal pregnancy. In this study open procedure is performed for 44.9% of women's admitted to hospitals for EP management. Laparoscopy was the least procedure 20.5% which means shortage of laparoscopy specialist and awareness of the benefits.

Out of the surgical interventions 69.3% of the women have one tube removed. The results of this study support the traditional intervention (laparotomy) is the most common used. More than half of the women under study had no idea that they are pregnant on the time of admission to the hospital.

This could be related to the short time between fertilizing and getting EP and majority of doctors were not explaining the nature of the ectopic pregnancy and the surgical intervention and the possible future effect on the woman's health. This indicates that 87.2% of the women did not inform a about complications before EP surgical intervention. This reflects to some extent the biomedical nature and technicality of our doctors in dealing with their patients ignoring the social and human aspects of the human body.

Women's perception about EP that it was a painful experience, on the other hand, more than half of the women in our sample claimed that the effect of the EP on their husbands perception were very much negative regarding the fertility of the woman and future pregnancy hope, as expressed by the women themselves.

7.6. Summary.

This chapter introduced the discussion for the revealed data in the study, and here the conclusions for the risk factors of Ectopic Pregnancies, the estimated incidence and the outcomes of the EPs were mentioned.

Chapter Eight

8.1. Introduction.

In this chapter researcher going to point out the consequences of the study and the suggestions that help in minimize the complication of ectopic pregnancy.

8.2. Recommendations.

Ectopic pregnancy is a common and serious problem, with a significant morbidity rate and the potential for maternal death; many patients have no documented risk factors and no physical indications of ectopic pregnancy to some extent. Consequently, we can not prevent ectopic pregnancy, but we can minimize the risk factors, ectopic pregnancy can be avoidable by

preventing and minimize the risk factors that precipitate and reinforce the occurrence of ectopic pregnancy.

On the other hand increasing our knowledge of risk factors for ectopic pregnancy may improve our understanding of the causes of infertility, further research may concern both ectopic pregnancy epidemiology and the wider field of infertility. Enhance health provider awareness in treating woman of reproductive age, who has history of one or more risk factor complains of missed period, irregular vaginal bleeding and abdominal pain, must be considered to have ectopic pregnancy until proven otherwise.

To limit the bias of the hospital based studies, population-based studies should be performed to evaluate the overall incidence of ectopic pregnancy in Palestine to follow trends over time.

Further researches may concern ectopic pregnancy, pelvic inflammatory diseases, and intra uterine contraceptive device, invitro fertilization and assisted reproductive technology epidemiology and the wider field of infertility.

Upright awareness of safe sex behavior and sexual education among the women and early diagnosis, treatment and of pelvic inflammatory diseases, might account for the improved reproductive performance.

It would also be valuable to identify the ectopic pregnancy risk factors in our country, to make it possible to develop specific health programs.

Increase awareness of the role of smoking in developing and increasing the risk of getting some health problems.

The importance of developing specific protocols to create a clinical environment that supports the effective use of medical therapy (Methotrexate) for ectopic pregnancy is confirmed by the associated cost savings, decreased morbidity, and women's preference.

Increase health provider (including primary, secondary and tertiary) awareness regarding the importance of addressing preconception health among all women of the childbearing age especially late 20s and 30s.

Promote national strategies for ectopic pregnancy programs and setting up a preventive and control measures of sexual transmitted diseases.

Encourage national strategies for information and reporting system.

8.3. Conclusion.

The results of this study suggest that the hospital based incidence of ectopic pregnancy per delivery has increased over the past years in Ramallah district, from 17 cases in 2001 to 22 cases in 2005.

We can not prevent ectopic pregnancy, but we can diminish some suspected risk factors such as smoking and multiparity. On the other hand, encouraging and improving MCH services may be of great importance to decrease the incidence of ectopic pregnancy.

Ectopic pregnancy is high in women age more than 24 years older.

The results of this study showed that the hospital based surgical incidence of ectopic pregnancy per delivery has increased over the past years in Ramallah district, from 17 cases in 2001 to 22 in cases in 2005.

The study materializes that ectopic pregnancy threatens woman's health from first to last, loss of pregnancy, long period for fertility and potential risk for woman's well being. It is considered a traumatic incident for the woman.

Biop sycho social consequence of the surgical procedure on both woman health and Public heath.

Mortality rate due to ectopic pregnancy is not reported refers to poor reporting system in hospitals

Reproductive performance had negative psychological out come on woman's health.

8.4. Summary.

After methodical research it was revealed that PID, IUCD, abortion, smoking and previous pelvis-abdominal surgery were concerned as risk factor for ectopic pregnancy. Accordingly we must seek to implement methods to reduce the complication of ectopic pregnancy.

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Appendix no.1

Permission request addressed to the Deputy Minister of Health.

Appendix no.2

**Permission request addressed to the Medical Director at the Red Crescent
Hospital**

Appendix no.3

**Permission request addressed to the Medical Director at the Arab Care
Hospital**

Appendix no.4

**Permission request addressed to the Medical Director at the Al Mostaqbal
Hospital**

Appendix no.5
Data Sheet for women's hospital records.

Code #.....

Record Review
Ectopic Pregnancy
Profile

Patient name: Age:

P.O.R: Phone:

Hospital: File No:

Date of Admission: Date of Discharge:

Surgical History:

- Appendectomy
- Ovarian cystectomy
- Cesarean Section
- No operation
- Others.....

Reproductive History:

Gravidity:

- Nulligravida.....
- Primigravida.....
- Multigravida.....

Parity:

- Nullipara.....
- Primipara.....

Multipara.....

Grand multipara.....

Previous ectopic pregnancy:

Yes No

If yes, how many times.....

Previous Abortions:

Yes No

If yes, how many times.....

History of Infertility:

Yes No

If yes, how many Years between date of marriage and first pregnancy.....

History of Infection:

Vaginits.....

Urinary tract infection.....

History Contraceptive:

Yes No

If yes, which type?

IUCD. (How Long.....)

Oral tablets. (How long.....)

Others (.....)

Ectopic Pregnancy Surgical intervention:

Laparoscopy.

Laparoscopy then Laparotomy.

Laparotomy.

Tubal intervention during surgery:

- Salpingectomy.
- Salpingotomy.
- Tubal compression.
- not mentioned.

History of Blood Transfusion: Yes No

Appendix no.6

Introductory Permission request addressed to the Women's under study and questionnaire admitted to them in Arabic Language.

مقدمة

انا الموقع أدناه اسمي صالح صبري إبراهيم حجير طالب ضمن برنامج الدراسات العليا في جامعة القدس/ صحة عامة. اقوم بعمل دراسة حول الحمل خارج الرحم و قد صمم هذا الاستبيان من اجل دراسة العوامل المصاحبة للحمل خارج الرحم (الحمل الهاجر) في فلسطين و حجم المشكلة في منطقة رام الله. ارجو العلم بأنه لك الحق في الاجابة او عدم الاجابة على اسئلة الاستبيان و كذلك فان المعلومات التي سوف يتم جمعها من خلال هذا الاستبيان سوف تبقى سرية و تستخدم لغرض البحث فقط. ان الاجابة على هذا الاستبيان سوف يستغرق 25 دقيقة. نتمن عاليا مشاركتكم لانجاح هذه الدراسة.

الباحث:

صالح حجير

Code #

الاستبيان

الجزء الاول (البيانات ديموغرافية)

1. العمر:

عند الحمل خارج الرحم..... العمر الحالي.....

2. مكان السكن:

مخيم قرية مدينة غير ذلك حديدي/.....

3. المستوى التعليمي للمرأة:

اكثر من ثانوي اقل من ثانوي

4. المستوى التعليمي للزوج:

اكثر من ثانوي اقل من ثانوي

5. الحالة الوظيفية للمرأة:

تعمل بوظيفة مدفوعة الأجر تعمل بمشروع للأسرة بدون اجر لا تعمل

6. الحالة الوظيفية للزوج:

يعمل بوظيفة مدفوعة الأجر يعمل بمشروع للأسرة بدون اجر لا يعمل

7. مستوى دخل العائلة:

اقل من 1800 شيقل 1800 شيقل-3000 شيقل اكثر من 3000 شيقل

8. طبيعة السكن:

بيت مستقل للزوج و الزوجة مع الاهل و داخل العائلة

9. العمر عند الزواج بالسنوات المكتملة:

اقل من 15 سنة 15-19 سنة 20-24 سنة 25-29 سنة اكثر من 30 سنة

الجزء الثاني (التاريخ الإيجابي)

10. الفترة الزمنية بين الزواج واول حمل بالاشهر المكتملة

مباشرة 1 - 12 (شهر) 13-24 (شهر) 25-36 (شهر) أكثر من 37 شهر

11. هل انت مدخنة:

نعم لا

12. هل الزوج مدخن:

نعم لا

13. هل تعاطيتي إي نوع من الهرمونات المساعدة على الحمل قبل الحمل خارج الرحم ؟

نعم لا

14. هل كنت تعلمي مسبقا بانك حامل قبل الذهاب للمستشفى عندما اجریت لك عملية استئصال

للحمل خارج الرحم:

نعم لا

15. اذا كانت الاجابة بنعم كيف:

لوحدهك اجریت فحص الحمل عن طريق زيارة الطبيب

16. من يرافقك عادة لزيارة الطبيب:

الزوج والدة الزوج لوحده غير ذلك/حدي.....

17. عدد الولادات الاحياء قبل الحمل خارج الرحم.....

18. عدد الولادات الاحياء بعد الحمل خارج الرحم.....

19. عدد مرات الاجهاض قبل الحمل خارج الرحم.....

20. عدد مرات الاجهاض بعد الحمل خارج الرحم.....

21. هل سبق لك استخدام موانع الحمل قبل الحمل خارج الرحم؟

نعم لا اذا كان الجواب نعم:

22. اي نوع من الأنواع التالية استخدمته:

لولب حبوب غير ذلك/حدي.....

23. هل عانيت من التهابات مهبلية قبل الحمل خارج الرحم؟

نعم لا

24. إذا كان نعم هل سبق وان قمت بزيارة للطبيب للعلاج من الالتهابات المهبلية؟

نعم لا

25. هل سبق وان عانيت من الالم باسفل البطن قبل الحمل خارج الرحم؟

نعم لا

26. اذا كان الجواب بنعم هل هذا الالم كان مصحوبا بافرازات مهبلية؟

نعم لا

27. هل هذا الالم كان مصحوبا بارتفاع او بدون ارتفاع في درجة الحرارة؟

نعم لا

28. حتى حملك بعد عملية الحمل خارج الرحم, كم من الزمن انقضى الى ان حدث الحمل

التالي؟.....

الجزء الثالث (التجربة الجراحية)

29. هل تم اعلامك بمخاطر العملية مسبقا؟

نعم لا

30. هل كنت على معرفه بالاسباب الموجبة للعملية حين تقرر ذلك؟

نعم لا

31. الى اي مدى شعرت بان العملية كان تأثيرها سلبي على نظرة الزوج لك من حيث قدرتك

على الانجاب؟

كثيرا جدا كثيرا قليلاً قليلاً جداً لا تأثير

32. هل سبق ان اجريت عمليات جراحية قبل الحمل خارج الرحم في منطقة البطن؟

نعم لا

33 . اذا كان الجواب نعم ما هو نوع

العملية؟.....

انتهى

شكرا على تعاونك