Deanship of Graduate Studies

Al - Quds University

Risk factors of breast cancer among Palestinian in southern area of the West Bank.

Ala' Said Hussein Sarahneh

Master Thesis

Jerusalem – Palestine

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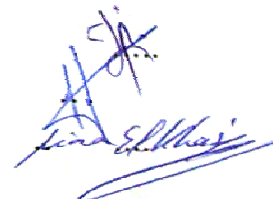
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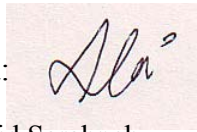3- External Examiner (Dr. Lina El-Khairy)   signature

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Declaration

I certify that thesis submitted for the degree of master is the result of my own research, except where otherwise referenced, and that this thesis (or part of the same) has not been submitted for any other degree or qualification .

Signed:

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Date :

Abstract

Background: Breast cancer is an international public health problem affecting more than one million women every year in the world. It is classified as the second most common type of cancer after lung cancer, and is ranked as the third cause of deaths of all cancer deaths among Palestinians. Research on breast cancer in Palestine is limited. This study we providedresults on risk factors of breast cancer among females from Southern area of the West Bank.

Objective: To determine the risk factors associated with breast canceramong Palestinian females in Southern area of the West Bank- Palestine.

Material and methods: We used a case control study. The study was conducted in October 2013 in BietJala hospital which is located in the southern area of the WestBank .Through interview with cases and controls demographic data, history of the disease, family history, and reproductive and lifestyle information were collected using structured questionnaire. Data of the questionnaire was entered and analyzed using statistical package for social sciences (SPSS).Diagrams and tables are included to describe the frequencies in the variables.Odds ratiosand 95% confidence intervals were used to show the difference in risk between independent variables.Chi–square test was used to build 2x2 tables for categorical data and cross tabulation and examine if there is statistically significance proportion differences to enter into multivariate analyze.

Results: A total number of 100 cases and 100 controls aged 18-74 years were enrolled. Women who married before age 20 years were at double risk to develop BC compared to older women. Also, women who had a menarche before or equal of 12 years of age were triple risk to develop BC compared to women had it after 12 years. In addition postmenopausal women were at 9 fold increased risk to develop BC compared to premenopausal women. Moreover,womenwith history of use oral contraceptive pills were at triple risk to develop BC compared to women didn't have a history of OCS. Where history of breastfeed was reduce risk of develop BC.

Women who current smoking were at 4 fold increased risk to develop BC compared with all lifetime non smokers, as well as the risk increased about 6 fold among women who had smoked for 15 years or more. Also ten or more of cigarettes per day were increased risk about 5 fold, and triple risk to develop BC risk if women have water-pipe smoking compared with all lifetime non smokers.In addition women who live in the area close to landfill, industrial area, and quarries were at higher risk to develop BC (OR=2.231, 4.457, 4.457 respectively). Where postmenopausal obesity among cases were not significant associated with development BC (p>0.05).
In multivariate analysis showthatfamily history of ovarian cancer, menopause status, history of OCS, food habits, and home close to quarries were strong significantly associated with breast cancer development (p<0.05).

Conclusion: Study suggests that the changes in reproductive health parameters among women(i.e. early age at menarche, postmenopausal period, and history of oral contraceptive) with other lifestyle (current smoking, smoked for 15 years or more, smoking 10 or more cigarettes per day,and smoking water-pipe "Arjeleh"), and environmental factors (women who live in area close

to landfill, industrial area, and quarries) may have contributed to the increase in breast cancer risk in southern area of the west bank among Palestinian women particularly younger ones.

العوامل المساهمة في الاصابة بسرطان الثدي بين الفلسطينيون في جنوب الضفة الغربية

اسم الطالبة : الاء سعيد سراحنة

المشرف الدكتور :غسان بعلوشة

ملخص الدراسة

مقدمة :يعد سرطان الثدي مشكلة صحية عالمية يصيب أكثر من مليون امرأة سنوياً حول العالم ,وهو ثاني انواع السرطانات انتشارا بعد سرطان الرئة ,ويأتي سرطان الثدي في المرتبة الثالثة بين الوفيات منمجموعحالاتالسرطانالمبلغعنهافي الضفة الغربية. الدراسات والأبحاث عن هذا المرض محدودة في فلسطين ,لذلك من خلال هذه الدراسة سيتم اعطاء نتائج واضحة عن عوامل الخطورة المساهمة في الاصابة بهذا المرض في جنوب الضفة الغربية .

الاهداف : تهدف هذه الدراسة الى التعرف على عوامل الخطورة المساهمة في الاصابة بسرطان الثدي بين النساء الفلسطينيات في جنوب الضفة الغربية.

منهجية الدراسة: تقارن الدراسة بين مجموعة من النساء اللاتي أصبن بسرطان الثدي (100 امرأة) ,والعينة الضابطة من النساء الاصحاء الغير مصابات بأي نوع من انواع السرطان عدد(100 امرأة).

الأدوات:تمت الدراسة في شهر اكتوبر لعام 2013 في مستشفى بيت جالا الحكومي الواقع في جنوب الضفة الغربية ,تمجمعالمعلوماتالديمغرافية والطبيةوالإنجابية بواسطةاستبيانوإجراءمقابلةمباشرةمعالسيداتالمصابات والغير مصابات. وتم تحليل المعلومات عن طريق برنامج التحليل الاحصائي SPSS.

النتائج :تشير نتائج الدراسة الى ان عمر الزواج قبل 20 سنة يزيد من خطر الاصابة بسرطان الثدي بمقدار الضعفين مقارنة بعمر الزواج بعد 20 سنة ,أيضا الدورة الشهرية في عمر مبكر اقل من او يساوي 12 سنة يزيد من معدل الخطورة بمقدار ثلاثة أضعاف ,كذلك تزداد نسبة الخطورة بمقدار تسعة أضعاف بين النساء بعد انقطاع الدورة الشهرية (بعد سن اليأس) ,النساء اللواتي استخدمن حبوب منع الحمل تزداد نسبة الاصابة بمقدار ثلاثة أضعاف مقارنة بالنساء اللواتي لم يستخدمن حبوب منع الحمل ,تشير الدراسة الى ان الرضاعة الطبيعية تقلل من خطر الاصابة بسرطان الثدي.

النساء المدخنات تزداد نسبة الاصابة بسرطان الثدي بمقدار أربعة أضعاف مقارنة بالنساء الغير مدخنات ,وأيضا التدخين لمدة 15 سنة او اكثر يزيد الخطر بمقدار ستة اضعاف ,وتدخين 10 او اكثر من السجائر يوميا يزيد الخطورة بمقدار خمسة أضعاف ,وتدخين الارجيلة يزيد الخطر بمقدار ثلاثة أضعاف مقارنة بالنساء الغير مدخنات.
بالإضافة إلى النساء اللواتي يسكن بالقرب من مكبات النفايات فان خطر الاصابة يزداد بمقدار الضعفين ,ويزداد بمقدار أربعة اضعاف لنساء اللواتي يسكن بالقرب من المناطق الصناعية والمحاجر.

الملخص : تشير الدراسة الى أن التغير في بعض العوامل الانجابية مثل (الدورة الشهرية في عمر مبكر,و النساء في عمر ما بعد توقف الدورة الشهرية ,واستخدام حبوب منع الحمل) وبعض انماط الحياة مثل (تدخين السجائر , و التدخين لمدة 15 سنة وأكثر , و تدخين 10 او اكثر من السجائر يوميا , و تدخين الارجيلة) و بالإضافة الى النساء اللواتي يكسن بالقرب من مكبات النفايات او المناطق الصناعية او المحاجر ,يساهم كل ذلك في زيادة خطر الاصابة بسرطان الثدي في جنوب الضفة الغربية بين النساء الفلسطينيات.

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List of Abbreviations:

BC: Breast Cancer.

US: United State of America.

MECC: MiddleEast Cancer Consortium.

ASRs :Age standardized incidence rates.

WB: West Bank.

GS: Gaza Strip.

PCBS : Palestinian Central Bureau of Statistics .

MOH: Ministry Of Health.

WBCR: West Bank Cancer Registry.

UNRWA: United Nations Relief and Works Agency.

NGO'S: Non-governmental organizations

DCIS: Ductal Carcinoma in situ.

LCID: Lobular Carcinoma in situ.

IDC: Invasive Ductal carcinoma.

ILC: Invasive Lobular carcinoma.

IBC: Inflammatory Breast Cancer

TNM system: Tumor size, Node involvement, Metastasis.

HRT: Hormone replacement therapy.

BMI: Body Mass Index.

FFTP: First Full-Term Pregnancy.

OCs: Oral Contraceptives.

DES: Diethylstilbestrol

UK: United Kingdom

OR: Odds Ratio

SPSS:Statistical Package for Social Science.

Chapter one: Introduction

1.1 Background

Breast cancer (BC) is a malignant tumor that starts in the cells of the breast in both females and males. A malignant tumor is a group of cancer cells that can grow into surrounding tissue that called (invasion) or spread to distant areas of the body called(metastasis) (ACS, 2012). Worldwide, BC incidence has increased in most countries in the last decades (WHO, 2011). It is classified as the second most common type of cancer after lung cancer (Boyle and Levin, 2008). In 2008, an estimated 1.38 million women across the world were diagnosed with breast cancer (WHO, 2011).

More than 22 million people in the world are cancer patients, about 10 million people are diagnosed with cancer annually, and more than 6 million die of the disease every year. The estimated incidence of 12.7 million new cancer cases in 2008 and will rise to 21.4 million by 2030 (World Health Statistic, 2012).The most common cancers in the world are lung accounts for 12.3% of all cancer , breast(10.4%) ,and colon-rectum (9.4%) (Stewart and Kleihues, 2003).

Cancer is the cause of around 14% of all deaths in the world (WHO, 2011). It is a major leading cause to increasing deaths from 7.6 million in 2008 to over 13.1 million in 2013 (WHO, 2013b). In the United State (US) there are 39,520 women and approximately 450 men who die from BC yearly (ACS, 2013).

Female BC continues to be the most lethal malignancy across the world. In 2008, BC incidence rates among females ranged from around 20 per 100,000 in Eastern and Middle Africa to 90 per 100,000 in Western Europe (WHO, 2011).

BC is classified as the fifth of cancer death (ACS, 2009). The mortality rates ranged from 6 per 100,000 in Eastern Asia to 19 per 100,000 in Southern and Western Africa in 2008 (WHO, 2011).

Case fatality rates from BC are very high in many developing countries, as well as in the developed countries, due to a lack of awareness of the benefits of detection and treatment, as well as inequities in early detection and access to primary treatment (Shulman et al., 2010).

The definite causes of breast cancer are not fully defined. However, researchers have identified a number of factors that increase (or decrease) the chances of getting breast cancer, these are called risk factors. Several studies showed certain risk factors associated with BC development, some of them cannot change such as age, gender (Najjar and Easson, 2010). Other factors such as family history of BC and ovarian cancer (Freedman et al., 2013), personal history of BC (Tirona et al., 2010), spontaneous abortion (Clavel-Chapelon et al., 1995) are different from one patient to the other. Reproductive variables play an important role in development of the disease including: age at first menarche (Meshram II et al., 2009), age at first full term pregnancy (Kobayashi et al., 2012), age at menopause (Clavel-Chapelon, 2002), nulliparity (Kumle et al., 2002), oral contraceptive pills (Bhavna et al., 2012). Environmental factors such as exposure to ionizing radiation and man-made chemicals have been also to increase risk of breast cancer development (Health and Environment Alliance (HEAL), 2008). Also lifestyle factors such as: lack

physical activity, alcohol consumption (Hamajima et al., 2002), obesity (Atoum and Al Hourani, 2004), diet (Aune et al., 2012b), and smoking (Luo et al., 2011) are considerable.

Breast cancer survival rate is defined as the percentage of women who will survive for a given period of time after breast cancer diagnosis (ACS, 2013b). Great survival rate is improved if breast abnormalities are detected at early stages through breast self exams and/or mammography (Abdullah et al., 2013) The relative survival rate is 39% at 5 years after diagnosis, 83%after 10 years, and 78% after 15 years (ACS, 2013b).

Breast cancer occurs almost in women, but rare in men, this disease is 100 times more common in women than it is in men (Tirona et al., 2010), representing only 0.2%-0.5% of all malignancies in males in all registries include MECC, incidence rate of BC is less than 1/50 000 case in men (Peter Boyle and Bernard Levin, 2008). In the US there were an estimated 182,460 cases in women of BC compared with 1,900 new cases in men during 2008 (Tirona et al., 2010).

Both female and male, have the same breast tissue. During puberty, the estrogen and testosterone hormones send growth signals to our tissues. In women the estrogen help to develop breast glandular tissue, but men get an increase in testosterone, which prevents breast development and encourages testicular growth. Therefore, BC is less common in men because their breast tissue are less developed than those of women, even though men do not develop milk-producing breasts, they still have a small amount of breast tissue. Anyone who has breast tissue is at a risk for developing BC (ACS, 2012).

According to the Middle East Cancer Consortium (MECC) incidence of female breast cancer was higher about 37.6% of all reported tumors in Egyptian compared with 27.7% of all reported tumors in Arab who live in Israel. Age standardized incidence rates (ASRs) per 100,000 females were highest among Israeli Jews (93.1) than those reported in Cypriot (57.7), Egyptian (49.6), Jordanian (38.0), and Israeli Arab (36.7) females. The high incidence rates described in Israeli Jews were similar to those described in North American and West European countries, while the lower rates in the other Middle Eastern groups were more similar to rates in Mediterranean Europe, Eastern Europe, and some of Asia and Africa (Freedman et al., 2013).

Incidence o BC is higher in developed Western countries and is becoming more significant in many developing countries due to increasing life expectancy, changes in reproductive factors and lifestyle associated with increased breast cancer risk (Shulman et al., 2010).

Incidence of BC is highest among women in upper social classes, and among women living in urban areas than in rural areas (Abdulrahman and Rahman, 2012a) more than half of the incident cases in the world occur in Europe and North American countries (Beiki et al., 2012).

In low- and middle-income countries BC is a leading cause of death and disability among young women (Shulman et al., 2010), and more than half of the BC mortality is reported from low- and middle-income countries (Beiki et al., 2012).

In Palestine, no enough published data was observed to indicate the risk factors of BC in Palestinian population due to social political situation and variety of health service

providers, i.e. as the MOH, UNRWA, the various non-governmental organizations (NGOs) and the private sector. .

1.2 The West Bank

The West Bank (WB) covers an area of 5,655 square kilometers. Its land boundaries border Jordan and Israel (PCBS, 2011a).

The estimated population of Palestine in mid 2012 was about 4.29 million, 2.65 million in the WB and 1.64 million in Gaza Strip (GS) (MOH, 2012a).WB population distributed over all 11 governorates. In mid year 2012, there was 1.35 million males and 1.30 million females. The percentage of individuals aged under 15 years constituted 38.4% . The elderly population aged 65 years and above constituted 3.3% (PCBS, 2011b). Approximately 3.3% lived in rural area, 37.8% in urban area , and 9.4% live in refugee camps (PCBS, 2011a) .

1.3 Cancer registry in West Bank

The Palestinian MOH (MOH) in conjunction with the MECC established the West Bank Cancer Registry (WBCR) in 1996 (Bailony et al., 2011). There are two cancer registry in the West Bank: one at the Biet Jala Hospital in Bethlehem, a 100-bed hospital with four permanent and six floating pediatric hematology–oncology beds, and Al-Watani center at Al Watani Hospital in Nablus, a 94-bed hospital with two to four floating pediatric hematology–oncology beds. Both hospitals contain substandard hospital equipment and personal, and patients are often shuffled among public and private hospitals in Ramallah, Nablus, Hebron and Bethlehem for biopsies, surgery and radiographic imaging. Both Radiation Therapy (RT) and Bone Marrow Transplant (BMT) are not available in the WB, and most patients are referred to hospitals in East Jerusalem, Israel, Jordan and Egypt during the course of their treatment (Bailony et al., 2011).

Biet jala hospital was established in 1908 in Bethlehem district. In 1975 it started manual recording of cancer cases. The oncology department was established in 2006. The capacity of this department was 20 bed, 8 of them for men and 12 for women. The pediatric cancer department was established in April 2013, the capacity of this department is 14 beds (Bailony et al., 2011)..

According to Palestinian cancer registry center in Biet Jala hospital, all cancer cases in WB were registered from1996- 2007. The total number of BC was 1613 cases. 46 cases of them were males representing 2.9%, and 1567 were females representing (97.1%). The mean age of onset for both genders was 60.7 years, ranging from 17-105 years. Hebron governorate was the highest in incidence representing 339 cases (21%), then Nablus with 312 cases (19.3%),then Ramallah with 194 cases(12%), and the lowest incidence was observed in Bethlehem 162 cases (10%).

1.4 Health situation in south West Bank:

The number of hospitals in the southern of the WB is 17 hospitals, 5 of them are governmental hospitals, and others are non-governmental. The number of beds in the southern WB was 1,099 beds, with an average of 1.4 beds per 1000 person. The highest rate was in Bethlehem by 3.0 beds per 1,000 person, and Hebron 0.9 beds per 1,000 persons (PCBS, 2012).

The number of primary health care centers in 2010 in the southern West Bank governorates were 188 health centers, where the ministry of health supervised 145 health center, and 33 centers supervised by the non-governmental organizations, and 10 health centers are run by the United Nations Relief and Works Agency UNRWA (PCBS, 2012).

1.5 Risk factors of breast cancer:

A review of potential risk factors associated with BC is important in understanding various risk reduction strategies to prevent breast cancer. Risk factors for the development of BC can be grouped into categories, including familial/ genetic factors ; reproductive history ; environmental factors ; and other life style factors (Bevers et al., 2010):

1.5.1   Person characteristics

1-   Gender:

Both genders male and female are at risk to develop BC, but it is rare in men .This is likely because men have less than females estrogen and progesterone hormones, which can promote BC cell growth (ACS, 2012).

2-Age at onset:

Age is believed to be a strong risk factor after gender for developing BC. The incidence and death rates of breast cancer generally increase with age, ranging between 45–50 years. Two thirds of breast cancer cases occur after the age of 55 (Tirona et al., 2010). In Arab world the average age at diagnosis was 48 years, which is considered as a young age (Najjar and Easson A, 2010).

1.5.2   Familial history \ Genetic factors:

1- Family history of breast cancer and genetic predisposition:

 The risk of BC is two or more greater if women has a first degree relative (mother, sister, daughter, father, or brother) who developed the disease, and the risk increased about 3 fold if two or more relatives are affected (ACS, 2012). A family history of ovarian cancer is also associated with an increased risk of BC. Approximately 15% of all BC cases can be attributed to familial and genetic influence (Freedman et al., 2013) .

However, over 80% of women with BC have no family history of the disease (Israyelyan, 2003),and over 85% of women who have a close relative with BC will never develop the disease (Darweesh, 2009) and less than 15% of women with BC have a family member with this disease (ACS, 2012). The effect of family history on BC risk is due to genetic factors, about 5% to 10% of BC cases result from inherited mutations of BRCA1 and BRCA2 susceptibility genes (ACS., 2013); Israyelyan, 2003). It is estimated 44% to 78% risk for developing BC in women with BRCA1 by 70 years of age; the corresponding risk for BRCA2 mutations is 31% to 56% (ACS, 2009).

2-Personal history of breast cancer:

A woman with cancer in one breast has a 3- to 4-fold increased risk of developing a new cancer in the other breast or in another part of the same breast. Absolute risk is 1% per year for premenopausal women and 0.5% per year for postmenopausal Women (Tirona et al., 2010).

3- Benign breast lesions:

Women diagnosed with benign breast disease slightly have an increased risk of BC. According to ACS, doctors often divide benign breast conditions into 3 general groups depending on how they affect this risk.

I- Non-proliferative lesions: these conditions are not associated with increased risk of BC.
II- Proliferative lesions without atypia: these conditions are associated with a twofold increase in risk (Tirona et al., 2010).
III- Proliferative lesions with atypia: these conditions are associated with a fivefold increase in risk (Tirona et al., 2010).

The most important risk factors of developing a BC in women is the family history of breast cancer and either having hyperplasia or atypical hyperplasia (Berkowitz, 1988).

4- Spontaneous abortion:

A history of spontaneous abortion had no significant effect on the risk of breast cancer diagnosed in pre and postmenopausal women (Clavel-Chapelon et al., 1995; Clavel-Chapelon, 2002).

1.5.3   Reproductive\ Hormonal factors:

The effect of these reproductive factors differed according to menopausal status. Risk of BC increased in developed countries compared with women in less developed due to fewer children on average and a limited duration of breastfeeding (Clavel-Chapelon et al., 1995).

1-Age at menarche:

Early age at menarche (before the age of 12 years) has been associated with an increased risk of BC. Age at menarche was similar in both pre and postmenopausal this effect due to prolonged exposure of breast epithelium to estrogen produced by regular ovulation cycle (Meshram et al., 2009). The risk decreasing with increasing age of menarche (after 12 years) has been decreased risk by 7% for premenopausal women, and 3% for postmenopausal women (Clavel-Chapelon, 2002)

2- Age at first full-term pregnancy (FFTP) :

Early age at FFTP before 20 years of age had a 50 % reduced risk of BC (Kobayashi et al., 2012). On other hands, late age at FFTP above age 30 has been associated with an increased risk of BC, increasing age of FFTP has been an increased risk by 4% per year

for BC diagnosed in premenopausal women and by 2% per year for breast cancer diagnosed in postmenopausal women (Clavel-Chapelon, 2002) .

3-Time interval between age at first menarche and age at first pregnancy :

Decreasing time interval between age menarche and age at first pregnancy associated with decreased risk of BC(Clavel-Chapelon et al., 1995).

4- Age at menopause:

Late menopause after the age of 55 years has been associated with slightly higher risk of BC. For every year delayed there is 3% increase in the risk of developing breast cancer (Clavel-Chapelon, 2002) .

5-Parity:

Nulliparity have been associated with an increased risk of BC compared with multiparity that had a protective effect in the postmenopausal women whereas it increased risk in the youngest age group (Kumle et al., 2002). Low parity seems to be a risk factor for postmenopausal and older women (Clavel-Chapelon et al., 1995; Clavel-Chapelon, 2002).

6-Endogenous hormones:

Higher levels of all endogenous sex hormones have been strongly associated with increased risk of BC in postmenopausal women (Key et al., 2002). The link between these hormones and premenopausal breast cancer risk is not clear (Kaaks et al., 2005). The relative risk of BC for women who have high level of estradiol was increased twice compared with women with low level of estradiol (Key et al., 2002).

7-Exogenous hormones :

I-Oral Contraceptives (OCs):

History of using oral contraceptive pills was associated significantly with the occurrence of BC (Langer Bhavna et al., 2012). Current use of OCs slightly increase the risk of BC, the risk is higher about 30% among women having ever used OCs than never-users (Kumle et al., 2002). Dose and type of hormone within the contraceptives, duration of use, and age at first use had little additional effect on breast cancer risk (Parkin, 2011).

Use hormonal contraceptives became widespread since in the 1960s. Cohort study among 100,000 Swedish Women's were done to estimate that the BC risk was increased among women who were current or recent users of OCs, short term users (less than one year) , users before age 20 years, and before first full-term pregnancy (Kumle et al., 2002).

II-Hormone replacement therapy(HRT):

Study among Slovenian postmenopausal women show that HRT use was inversely associated with BC risk, and longer duration of HRT use did not result in a significant change in risk, the inverse effect of HRT was observed in women who use estrogen therapy (Archer et al., 2000).

The Million Women Study was show that women currently taking HRT have a 66% increased risk of BC compared to non users. The risk is larger for use of estrogen-progesterone therapy compared to estrogen only (Beral, 2003).

The risk of BC for current or recent users of HRT increases by 1% for each year of use. For women who had used it for at least five years (average 11 years) the risk increase was 35% (Collaborative Group on Hormonal Factors in Breast Cancer, 1997).

8-Breast tissue density :

The use of exogenous hormones were associated with increase mammographic density. In postmenopausal women whose high breast density, as reflected on mammography films, has been strongly and independently related to increase the risk of BC with an approximately fourfold (Tamimi et al., 2007). Breast tissue is composed of fatty (non dense) tissue and connective (dense) tissue. Breast with a high proportion of fatty tissue are described as less dense. Increasing breast density is associated with an increased risk of BC and that the magnitude of this association is fivefold for the most dense (equal or greater 75%) compared with the least dense category (less than 5%) (McCormack, 2006).

1.5.4   Environmental factors :

1-Exposure to ionizing radiation:

Dose-response relationship depend on age at exposure, women who received radiation therapy to the chest area as treatment disease (such as Hodgkin disease or non-Hodgkin lymphoma) have increased risk for BC. The risk was higher between the ages of 10 and 20 years while breast tissue was still developing and decreased after age 30 with little or no risk before age 10 or after age 40 (Kelsey, Berkowitz, 1988).

2- Exposure to chemicals:

Chemical exposures come from many sources such as work place, residency of area, food, product we use(for example shampoos, paints, cleaning products).Frequent exposure to harmful environmental toxins are related to increased BC risk, people at risk group when exposed to toxic chemicals and ionizing radiation at work place such as farmer, radiology technicians, and chemists. Timing of exposure is more harmful, so exposure to toxic environment during period of breast development it's associated with increased BC risk (Health and Environment Alliance (HEAL), 2008).

1.5.5   Life style factors:

1- Breastfeeding:

Women with history of not breastfeed increased their risk compared with women who have history of breastfeed (Lodha et al., 2011). Some studies have shown breastfeeding as a protective factor for BC (Collaborative Group on Hormonal Factors in Breast Cancer, 2002; Lodha et al., 2011). Long duration of breastfeeding decreased risk by 4.3% for every year , and decrease of 7% for each birth (Clavel-Chapelon, 2002) but a short duration of breastfeeding did not show a positive association with breast cancer (CGHFBC, 2002; Lodha et al., 2011).

2-Alcohol Consumption:
A positive association between alcohol consumption and BC, the risk increases with the amount of alcohol consumed (Hamajima et al., 2002). About 7.1% risk increase for each additional 10 g per day intake of alcohol compared with non-drinkers, women who consume 1 alcoholic drink a day have a very small increase in risk (Hamajima et al., 2002).The risk increase about 1½ time among women who have 2 to 5 drinks of alcohol daily (ACS, 2012). Excessive alcohol use is also known to increase the risk of developing several other types of cancer (ACS, 2012).

3-Obesity:

Overweight and obesity, as measured by body mass index (BMI), obesity is inversely associated with premenopausal BC and positively associated with postmenopausal women, and high BMI may be modifiable risk factors for breast cancer.

Postmenopausal obesity is a significant risk factor of breast cancer (Atoum and Al Hourani, 2004).In postmenopausal women, fatty tissue is primary source of estrogen ,obese women have more fat tissue increases estrogen levels and the likelihood of developing BC (ACS, 2013a).

Weight gain during adulthood also increases the risk of BC in postmenopausal women (Eliassen et al., 2006),whereas weight loss after menopause is associated with a decreased risk of BC (ACS, 2013a).

Women who gained 25 kg or more after age 18 had approximately 50% greater risk of BC; a gain 10 kg or more after menopause was associated with an increased risk of 18% (Eliassen et al., 2006).The risk of death increased about 30% in obese BC compared to those who maintain a healthy weight (ACS, 2013a).

4-Smoking:

Smoking 10 or more cigarettes per day show 70% increased the risk of BC (Archer et al., 2000) . A prospective study show that 35% increased the risk of BC among women who had smoked for 50 years or more compared with all lifetime non-smokers, women who have exposure to passive smoking had a 32% excess risk of BC compared with those who had never been exposed to passive smoking (Luo et al., 2011).

5-Diet:
Higher intakes of fat and meat was associated with an increased risk of BC, approximately 19% for fat, and 17% for meat. A meta-analysis showed an inverse association in BC risk for a higher intake of dietary fiber (Aune et al., 2012a), another meta analysis showed a higher intake of fruit is associated with a small decrease in BC risk (Aune et al., 2012b).

6-Night shift:

Women who do night shift work have a moderately increase risk of BC, due to body exposure to light during night suppresses melatonin production, also changes in level of melatonin which has been shown to have anti carcinogenic properties (Schernhammer et al., 2001).

7-Lack of physical activity:

Moderate physical activity may reduce risk of BC, especially in postmenopausal women (Pronk et al., 2011), and that the increase in activity in postmenopausal women may beneficial (Eliassen et al., 2010).In the study Women's Health Initiative, risk reduced by 18% if brisk walking as little as 1.25 to 2.5 hours per week. Walking 10 hours or more per week reduced the risk as little more (ACS, 2012).

8-Diethylstilbestrol (DES) exposure:

Pregnant women who given the drug DES because it was thought to lower their chances of abortion, women who used DES during pregnancy have slightly increased risk for developing BC (ACS, 2012).

1.6 Study justification

Breast cancer was shown to be increased in the last decade worldwide and in Palestine. It was assigned as the most common cancer among females, and the first causes of death of all reported cancers. Researches and reports about breast cancer risk factors released by the Palestinian MOH were extremely limited and lacking comprehensive idea about the suggestive risk factors playing a role in pathogenesis of such a disease. In this study we are identifying the major risk factors associated with breast cancer in south area of the West Bank\ Palestine.

Our study is focusing on the interaction of risk factors with other parameters obtained from a specially designed questionnaire to highlight the sequence of events in breast cancer pathogenesis.

According to Palestine health annual report, in 2012, there were (1802) new cancer cases reported in West Bank , 899 were females (49.9%), and 903 were males (50.1%) (MOHMOH, 2013).

Among the most common cancer cases in WB in 2012, BC ranked first, with (292) reported cases and (16.2%) of all reported cancers. BC is highest among females and present in the age group between (20-59) years (MOH, 2013).Compared with 2010, the total numbers of BC cases was (254) representing (18.8%) from all reported cases, where female (251) cases (34.9%), and three cases were males (0.5%) (MOH, 2011). Colon cancer ranked second with (187) reported cases and (10.4%) of all reported cancers. Lung cancer was in third place with (185) reported cases and (10.3%) of all reported cancers (MOH, 2013).
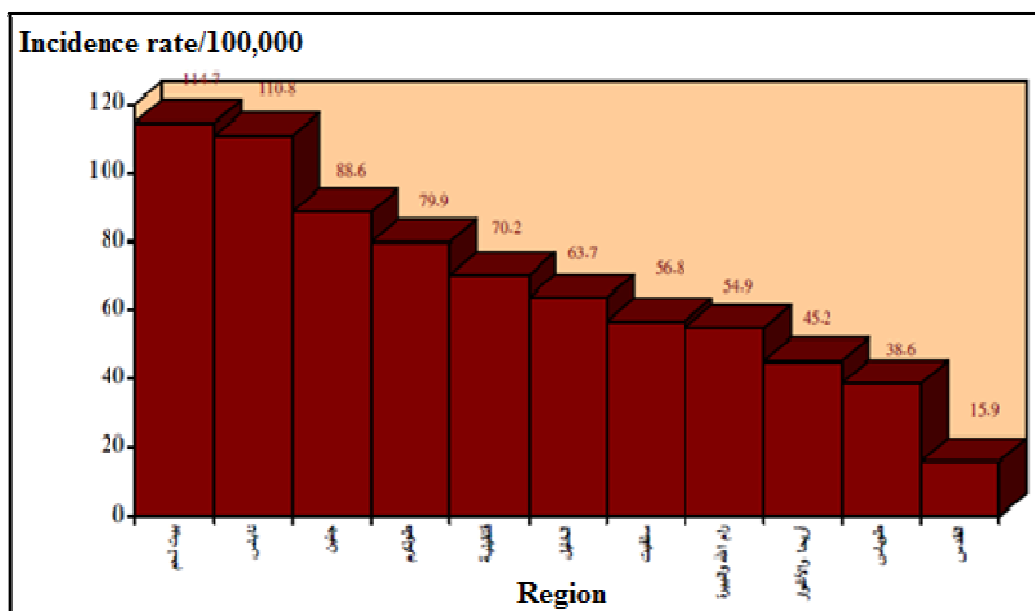
Figure 1.1: Distribution of Reported Cancer Cases Incidence Rate per 100,000 by Governorate, West Bank, Palestine, 2012*. *Source: MOH, 2013.

According to the MOH annual report in 2012, figure (1) shows that Bethlehem governorate was the highest reported with (232) cases of all cancers and incidence rate was 114.7 per 100,000 population, while Nablus governorate ranked the second place with (399) cases with an incidence rate 110.8 per 100,0000 population. Jenin is in the third place with (259) cases and incidence rate 88.6 per 100,000 of population. Obvious under reporting of cancer cases were observed in Jerusalem governorate due to complicated political situation and occupation (MOH, 2013).

The percentage of total Palestinians cancer deaths were 13.7% in 2013 (MOH, 2013) compared with 10.8% in 2010 MOH of all deaths. The first leading cause of death due to cancer in the WB was lung cancer (16.3%) of the all deaths, followed by colon cancer in the second place (13.7%), BC (10.0%) in third place , brain cancer and nervous system cancer (9.9%) in the fourth place (MOH, 2013).

Lung cancer is the most common cause of deaths among males, followed by colon cancers, and then prostate. While Breast cancer is the most common cause of deaths among females, followed by colon cancer, and then bone marrow (MOH, 2012b).

Cancer has an economic burden to the government, and is ranked first in terms of referrals. There are 9,898 referral cases (17.7%) of all reported referral during the year 2012. Where (7,420) cases out of them were in West Bank, and (2,478) cases were in Gaza Strip, while cost reached (102,512,405) NIS, representing (21.1%) of the total cost of referrals (MOH, 2013).

1.7 Study problem

Several studies in Palestine investigated breast cancer, and only one study in the north area was on the epidemiology of breast cancer. This study will cover the south area of Palestine. To determine BC risk factors would increase the knowledge about these determinants and reveals the specific risk and protective factors in the Palestinian community, as well as addresses the risky groups. Hence, any research that focuses on the issue of breast cancer determinants would be of great value to help start establishing national programs dealing with the risk and protective factors of this cancer.

1.8 Study design

A case control study

1.9 Study aim

To determine the risk factors associated with breast cancer among Palestinian females in Southern area of the West Bank- Palestine.

1.10 Study objectives

1- To identify the reproductive factors associated with breast cancer.
2- To identify the lifestyle indicators (smoking, diet and physical activity) associated with breast cancer.
3- To determine the association between family history of cancer with breast cancer occurrence.

1.11 Thesis chapters

Chapter one: Introduction

This chapter contains the background and significance of the study, problem statement and study justification, objectives, research questions as well as study limitations.

Chapter two: conceptual frame work

It explains study operational definition, and the major study independent variables in the model.

Chapter three: methodology

It includes the study methods, population, sampling and sample size, ethical considerations, the way data was collected, coded and analyzed.

Chapter four: literature review

This chapter includes the local and the international studies and research that were conducted concerning solid waste management and its separation. In addition all Palestinian reports and studies that were published in this area are included.

Chapter five: Results

In this chapter results are presented, frequencies, percentages and associations between the studied variables are included.

Chapter six: Discussion and recommendations

 The main results of the studies are discussed in this chapter. Comparison between our study findings and international and regional ones are presented. Conclusions, recommendations and suggested future research plans are included in this chapter.

Chapter two: Conceptual Framework

2.1. Definition of Breast cancer

"Breast cancer is a group of cancer cells begins in the breast tissue that is made up of glands for milk production, called lobules, and the ducts that connect the lobules to the nipple. The remainder of the breast is made up of fatty, connective, and lymphatic tissues" (ACS, 2013b).

2.2 Conceptual framework

We adopted the Mayo clinic risk factors model for breast factors that contains the following factors that are associated with an increased risk of breast cancer include (Mayo clinic, 2014):

- **Being female.** Women are much more likely than men are to develop breast cancer.
- **Increasing age.** Your risk of breast cancer increases as you age.
- **A personal history of breast cancer.** If you've had breast cancer in one breast, you have an increased risk of developing cancer in the other breast.
- **A family history of breast cancer.** If your mother, sister or daughter was diagnosed with breast cancer, particularly at a young age, your risk of breast cancer is increased. Still, the majority of people diagnosed with breast cancer have no family history of the disease.
- **Inherited genes that increase cancer risk.** Certain gene mutations that increase the risk of breast cancer can be passed from parents to children. The most common gene mutations are referred to as BRCA1 and BRCA2. These genes can greatly increase your risk of breast cancer and other cancers, but they don't make cancer inevitable.
- **Radiation exposure.** If you received radiation treatments to your chest as a child or young adult, your risk of breast cancer is increased.
- **Obesity.** Being obese increases your risk of breast cancer.
- **Beginning your period at a younger age.** Beginning your period before age 12 increases your risk of breast cancer.
- **Beginning menopause at an older age.** If you began menopause at an older age, you're more likely to develop breast cancer.
- **Having your first child at an older age.** Women who give birth to their first child after age 35 may have an increased risk of breast cancer.
- **Having never been pregnant.** Women who have never been pregnant have a greater risk of breast cancer than do women who have had one or more pregnancies.
- **Postmenopausal hormone therapy.** Women who take hormone therapy medications that combine estrogen and progesterone to treat the signs and symptoms of menopause have an increased risk of breast cancer. The risk of breast cancer decreases when women stop taking these medications.
- **Drinking alcohol.** Drinking alcohol increases the risk of breast cancer.

Therefore, figure 2.1 is the study conceptual framework which is built on the Mayo clinic model.

Socio-demographic factors

- Age
- Marital status
- Educational level
- Age at marriage
- BMI
- Residence
- Level of income
- Profession

Family history

- Family history of ovarian cancer
- Family history of breast cancer
- Personal history of other cancer
- Personal history of Breast disease

Reproductive factors

- Age at menarche
- Menopause
- age at menopause
- Number of deliveries
- Age at first delivery
- History of OCS
- History of abortion
- History of HRT

Lifestyle factors

- Smoking status
- Pipe-water status (Arjeleh)
- Alcohol consumption
- Breastfeed
- Food habits
- Physical activity status

Risk factors of breast cancer

Environmental factors

- Home close to:
- Landfill
- Industrial area
- Settlement
- Quarries
- High- pressure power lines
- Telecom Towers

Development of breast cancer

Figure 2.1   Study conceptual framework model

2.3 Definition of independent variable:

Definition of all independent variables which affect in breast cancer development

Reproductive factors

- Age at menarche: refers to age at first menarche.
- Menopause: refers to women menopause status.
- Age at menopause: refers to women age at menopause, it's classified to < 50 years and ≥ 50 years
- Number of deliveries: refers to number of delivers
- Age at first delivery: refers to age at first delivery, it's classified to 25 years and ≥ 25 years
- History of OCS: refers to history of use oral contraceptive pills.
- History of abortion: refers to history of abortion.
- History of HRT: refers to history of use hormone replacement therapy.

Socio-demographic factors

- Age of women
- Marital status: refers to women marital status (married, single)
- Educational level: refers to education level primary, secondary, diploma and higher.
- Age at marriage: refers to the age at marriage for women it classified to < 20 years and ≥20 years
- BMI : refers to height and weight for women, it measured by
- Residence: it refers to women address and it's classified to urban and rural residence
- Level of income: refers to level of income, it's classified to low, medium and high.
- Profession: refers to profession of women, it's classified to profession or not.

Lifestyle factors

- Smoking status: it's classified to current smoker, passive smoker, and former smoker
- Pipe-water status (Arjeleh): refers if women smoking Arjeleh or not
- Alcohol consumption: refers if women drink alcohol or not.
- Breastfeed: refers to history of breastfeed
- Food habits : refers to eat preserved and canned foods
- Physical activity status: refers to physical activity of women, it's classified to kind of activates and duration per day.

Family history

- Family history of ovarian cancer: refers to present or absent of family history of ovarian cancer
- Family history of breast cancer: refers to present or absent of family history of BC.
- Personal history of other cancer: refers to any other type of cancer.
- Personal history of Breast disease : refers to previous breast disease of women

- **Environmental factors:** refers to women who live in home close to: landfill, or industrial area, or settlement or quarries, or high- pressure power lines, or telecom Towers.

Chapter three : Methodology

3.1 Study design:

This study is a case control study was conducted in October 2013. Cases were defined as patients who were clinically and pathologically diagnosed for BC, and controls were defined as patients without any history of neoplastic disease and not had any other cancers. Cases and controls were selected from those attending Biet Jala hospital in Bethlehem , once on this hospital the only oncology and pathology departments in southern area of the West Bank.

3.2 Target population:

The target populations for this study were Palestinian women who live in the south area of the West Bank which consist of two major governorates Hebron and Bethlehem , particularly from those attending to Biet Jala hospital through the study period.

3.3 Sampling:

According to the study aims and objectives, a case control study and random sample were used to collect data from all cases and controls. The BC patients were interviewed during their attendance of oncology clinic two days a week, thus collecting data was performed in these days through October 2013. The controls were interviewed in other departments of hospital (obstetrics, surgery, internal medicine, and outpatient clinics). The sample size was 200 participants were including (100 BC cases, and 100 controls). The number determine using empirical values of preceding studies took place at the northern area of the West Bank, and calculating what was possible for a repeated study in the given time, and the number of sample is selected during one month. All samples are residents of the southern area of West Bank distributed as follow in table 1.

Table 1: Distribution of the case and control according to their district:

District	Case(%)	Control(%)	Total
Hebron Governorate	72 (72%)	16(16%)	88 (44%)
Bethlehem Governorate	28 (28%)	84(84%)	112(56%)
Total	100	100	200

3.4 Inclusion Criteria:

1-Cases should have proven pathologically as breast cancer.
2-Participants should be residents in southern area of the West Bank.
3-Controls shouldn't have any history of breast cancer or any other cancers.

3.5 Exclusion Criteria:

1- Participants who are not resident in southern area of West Bank.
2- Controls with a history of breast cancer or any other neoplastic disease.

3.6 Definition of Study Area:

The study was conducted in southern area of the West Bank, which consists of two major governorates Hebron and Bethlehem (appendix 1.3). According to PCBS in mid 2012, the estimated population in the south WB was about 841,000 population, representing about 19.6% of the total population in the WB. The estimated population in Hebron is about 641 thousand population, where about 199 thousand population in Bethlehem.

3.7 Data collection tools:

3.7.1 Description study tools

The questionnaire (see appendix 1.5) was designed by the supervisor after a thorough review of similar studies and to fit the needs of the researcher and to meet the purpose of the study.

The questionnaire was used to collect the data of the study, also the data was filled by the researcher during interview with both case and control groups were conducted at the hospital. Before the interview, the researcher explained the aim of the study and obtained oral informed consent from all participants of the study.

The height and weight were measured by the researcher for each participant through a special tool to measure the height in meters and weight in kilograms. BMI was calculated from body height and weight as (BMI = weight in kg/height in m^2). No data collected from patient files.

The questionnaire is composed of five sections. The first section illustrating demographic information which contained questions about age, marital status, age at marriage (<20 years, ≥ 20 years), profession, BMI, level of education, and area of residence. The second section illustrating history of the disease such as age at diagnosis, site of breast cancer, duration of disease, first symptoms, and type of treatment.

The third section asked about family history, such as the presence of first, second, and third degree relative with BC in the family, where first degree was(father, mother, brother, sister, daughter) and second degree was (grandmother, grandfather, aunt, uncle) and third degree was (cousins), personal history of breast disease, and family history of ovarian cancer.

The fourth section was about reproductive health that recruiting age at menarche (mean age =12.3 years old), menopause status, age at menopause(<50 years, ≥ 50 years), age at first delivery, hormone replacement therapy and oral contraceptive uses, number of deliveries and abortion. The fifth section was about environment and lifestyle information such as BMI (BMI <30, BMI≥30), smoke(former smoker, second hand smoke), water-pipe smoking, physical activities (type and duration) and history of breastfeeding.

3.7.2 Questionnaire validation and reliability

The questionnaire was checked by tow experts (Dr.Ghassan Balousha from Al Quds University and Dr Abed El-Razak Slhab from Beit Jala Hospital) for the accuracy, clarity and appropriateness of the questionnaire. Then the questionnaire was modified according to purpose of the study.

Cronbach's Alpha coefficient was analyzed to assess the reliability of the questionnaire. As shown in table 2, questions for reproductive health and demographic information had strong reliability, environment and lifestyle parameters were of moderate reliability, but family history and history of disease were lower.

Table 2: Reliability test

Variables	NO. of Questions	Reliability Analysis (CRONBACH'S A)
Demographic information	11	0.754
History of the disease	16	0.570
Family history	5	0.554
Reproductive health parameters	9	0.852
Environment and lifestyle parameters	16	0.629

3.7.3 Questionnaire pilot study

Questionnaire pilots were carried out on 20 participations before the beginning of the study from different departments at Biet Jala Hospital, these participants did not included in the final study questionnaires. Through the notes and comments of pilot participant, changes in wording and questions had been done, then the final questionnaire was done.

3.8 Data analysis:

Data collected from the questionnaire was entered and analyzed using Statistical Package for Social Science (SPSS) version 20.Diagrams and tables are included to describe the frequencies in the variables.
Statistical analysis test for analysis of dependent variable, the study used the following tests:

- Count, percentage and descriptive statistics.

- Odds ratio and 95% confidence intervals which used to show the difference in risk between independent variables.

- Chi–square test to build 2x2 tables for categorical data and cross tabulation and examine if there is statistically significance proportion differences to enter into the multivariate analyze.

- Logistic regression analysis contains all variables which were significant in the univariate analysis.

3.9 Ethical Consideration:

Ethical approval for this study was approved by Al Quds University ethical committee for medical. This committee follow the moral aspect and high privacy in dealing with the data contained in the questionnaire, where it is encoded these data and tabulated without mentioning to the participants. The study also was approved, and permission for the research was given by Palestinian MOH and administration of Biet Jala hospital in Bethlehem, Palestine. Verbal informed consent was obtained during recruitment for each woman enrolled.

Chapter four: Literature review

4.1 Background

Breast cancer is the most common malignancy among American women with 209,060 an cases of invasive BC in 2010. And the second most common cause of death about 39,840 women will die of breast cancer in the United States in 2010. The lifetime occurrence of BC was recently reported as approximately 1 in 8 women (Bevers et al., 2010).

However, male BC is a rare disease. Less than 1% of all BC patients are men. Incidence rates in developed countries provide limited evidence of geographical and interracial variations, except for Jewish men who have higher than average rates. There is no clear correlation between incidence rates in men and women (Peter Boyle and Bernard Levin, 2008).

The average age at diagnosis of breast cancer was 48 years in Arab nations women. The age standardized incidence rate for breast cancer in Arab women is approximately one fourth to one third that of Western women, there may be due to social, economic and population differences in the age of presentation of BC between Arab and Western populations (Najjar H, Easson A, 2010).

The BC survival rates depend on prognostic variables (stages of the disease, tumor size, menarche status, and the histopathology). Also influenced by other factors such as age, socio-economic status, and availability of effective health care system which promote the early detection cases (Abdullah et al., 2013) .

White women are more likely to develop BC than blacks, Asians, Hispanics, and American Indians/Alaska natives women (Abdulrahman and Rahman, 2012a; Barcenas et al., 2010). Some studies have shown that black women have higher mortality rate than other major racial groups ,attributed to both more advanced stage at diagnosis and higher stage-specific mortality (Barcenas et al., 2010). Ethnic differences due to lifestyle and socioeconomic status such as access to diagnosis and treatment, genetics and/or biological factors (Tirona et al., 2010)

4.2 Breast cancer worldwide

The incidence of the malignancy is still low in Africa compared to the incidence in Europe. In 2008, approximately 450000 women were diagnosed with the disease in Europe with a corresponding 140000 deaths, while 68000 women were reportedly diagnosed with the disease in Africa with a corresponding 37000 deaths (Abdulrahman and Rahman, 2012b).

Breast cancer is the most frequent type of cancer in women. The incidence rates vary worldwide being the highest in Europe, and they are increasing in Asian and American countries mainly related to the age of population and screening practice. BC still a public health issue in most of the countries in the world; however its incidence is decreasing in North America. In Asia the breast cancer incidence rate is low and the mortality rate is high (Curado, 2011)

In 2012, 1.7 million women across the world were diagnosed with BC. The incidence increased by more than 20%, while mortality has increased by 14%. BC is a major cause of

morbidity and cancer related mortality among women (522 000 deaths in 2012) and the most frequently diagnosed cancer among women in 140 of 184 countries worldwide(WHO, 2013a). Incidence rates are highest in more developed regions, but mortality is relatively much higher in less developed countries due to a lack of early detection and access to treatment facilities. For example, in Western Europe, BC incidence has reached more than 90 new cases per 100 000 women annually, compared with 30 per 100 000 in eastern Africa (WHO, 2013a).

In US, an estimated 296800 new cases of breast cancer are diagnosed among women, approximately 39,620 women who die from BC. And about 2,240 men will be diagnosed with BC and 410 men who die from the disease (ACS, 2013b).

In the Middle east, the high incidence rates of breast cancer described in Israeli Jews were similar to those described in North American and West European countries, while the lower rates in the other Middle Eastern groups were more similar to rates in Mediterranean Europe, Eastern Europe, and some of Asia and Africa(Laurence Freedman et al., 2013).

In Palestine, breast cancer it was assigned the most common cancer among Palestinian women, representing 16.2% from all reported cancer case, and focus in the age group between 20-59 years. Also BC is the first causes of deaths among women representing 10 % of all cancer deaths (MOH, 2013) .

BC rates in the Middle East registries have showed the Israeli Jewish population having one of the highest rates worldwide, and the neighboring Arab populations having some of the lower world rates. Such a major difference between populations living in a relatively small area emphasizes the importance of both lifestyle and genetic factors in the causation of BC(Laurence Freedman et al., 2013).

In some regions, including North America, Western Europe and Australia, BC mortality rates have started to decline, mainly due to improvements in early detection and treatment (chemotherapy and tamoxifen). Five year survival rates are higher than 70% in most developed countries (Stewart and Kleihues, 2003)

Also this disease is the most common cancer in women in developed Western countries and is becoming ever more significant in many developing countries. Although incidence rates are increasing, mortality rates are stable, representing an improved survival rate. This improvement can be attributed to effective means of early detection, mainly mammography, as well as to significant improvement in treatment option (Laurence Freedman et al., 2013). In addition the rates of the disease are increasing with industrialization and urbanization and are higher in high income countries than in low- and middle-income countries (Aune et al., 2012b).

4.3 Risk factors of breast cancer

There are different kinds of risk factors. Some factors, like a person's age or race, can't be changed. Others are linked to cancer-causing factors in the environment. Still others are related personal behaviors, such as smoking, alcohol drink, and diet. Some factors influence risk more than others, and your risk for breast cancer can change over time, due to factors such as aging or lifestyle (ACS, 2012).

Matched paired case–control study was conducted at Bhopal urban agglomerate from October 2008 to August 2009. The study provide that the history of using oral contraceptive pills, history of not having breastfeeding, and family history of BC were associated significantly with the occurrence of BC in multivariate analysis(Lodha et al., 2011).

A case–control study was conducted from April 1997 to April 1998 in Tehran, Iran. In all, 286 women with BC and 249 control women were interviewed. In multivariate analysis only marital status (never married and divorced have an increased risk of development breast cancer) and positive family history of BC were associated with significantly increased risk for BC (Ebrahimi. et al., 2002).

A study published in December 2011 estimated that around 1% of BC in women in the UK in 2010 were linked to OCs(Parkin, 2011). Use of combined OCs has been associated to slightly increase BC risk. The effect is highest among current users and disappears within 10 years after cessation of use. With regard to use of progestin-only pills, the results are inconsistent, but there is some suggestion that the risk is slightly elevated in current and recent users (Kumle et al., 2002).

Geographical variations in incidence and mortality rates of BC suggest that the known risk factors for BC may vary in different part of the world and that environmental factors are of greater importance than genetic factors (Beral, 2003).

The incidence of BC increases with age. Age is a major risk factor for BC among females. Recent studies have shown that about 5% to 10% of BC cases are hereditary because of inherited mutations of BRCA1 and BRCA2 susceptibility genes. Woman having one first-degree relative (mother, sister or daughter) with breast cancer approximately doubles risk of development BC, and woman having two first degree relatives are increases her risk 3 folds (Darweesh, 2009; Israyelyan, 2003).

Women with personal history of breast cancer; women who have benign breast disease; women who used Diethylstilbestrol during pregnancy; and a history of radiation to the chest in relatively large doses, have associated with increased risk of developed BC (Kelsey, Berkowitz, 1988).

Women whose early age at menarche, late age at first pregnancy, late age at menopause ,and low parity have a positive association with BC risk, whereas spontaneous abortions have no overall effect (Clavel-Chapelon, 2002).The risk decreased with a shorter time interval between age at menarche and age at first pregnancy (Clavel-Chapelon et al., 1995).

A case control study show that the protective effect of early age at first full term birth against BC was50 % reduced risk of BC if mothers have first full term birth before 20 years, and the risk increased about 22% among those who had their first baby after age 35 (Kobayashi et al., 2012).

Women who breastfeed are shown in literature to be more protected against breast cancer. The lack of or short lifetime duration of breastfeeding typical of women in developed countries makes a major contribution to the high incidence of BC in these countries (Beral, 2003).

Mammographic density is one of the strongest predictors of BC risk, in nested case control study has show that circulating sex steroid levels and mammographic density appear strongly and independently associated with the risk of BC in postmenopausal women (Tamimi et al., 2007).

Physical activity is modifiable risk factors through which women can reduce their risk for BC, prospective studies have investigated the association between physical activity and BC risk, with most finding a 10% to 30% lower risk comparing the highest with lowest activity levels (Pronk et al., 2011).

Aune et al, 2012, show that higher intake of dietary fiber is often associated with other lifestyle factors including higher levels of physical activity, lower prevalence of obesity and lower intakes of alcohol and dietary fat, which had a associated with reduced BC risk. While higher intake of fat and meat might positive associated with BC .However, in the meta-analysis of prospective studies, higher intake of fruits, and vegetables are associated with a weak reduction in risk of BC (Aune et al., 2012b).

Prospective cohort study within the Nurses' Health Study provide that weight gain during adult life, specifically since menopause, increases the risk of BC among postmenopausal women, whereas weight loss after menopause is associated with a decreased risk of BC (Eliassen et al., 2010).The study done in the Kingdom of Jordan during the period 2000 through to 2002 provide that obesity among postmenopausal woman has a significant risk factor of BC (Atoum and Al Hourani, 2004).

 Luo et al. 2011, reported in a prospective cohort study among postmenopausal women show that active smoking was associated with an increase in BC risk among postmenopausal women. There was also a suggestion of an association between passive smoking and increased risk of BC (Luo et al., 2011).

In UK million women aged 50-64 years were recruited into the study between 1996 and 2001, it is estimated that 20,000 extra BC cases have occurred among women as a result of HRT use and 15,000 of these additional breast cancers are due to the use of estrogen-progesterone therapy (Beral, 2003).

Levels of endogenous sex hormones are strongly associated with BC risk in postmenopausal women. The risk is increased statistically significantly with increasing concentrations of all sex hormones examined: total estradiol, free estradiol, non-sex hormone-binding globulin (SHBG)-bound estradiol, estrone, estrone sulfate, and rostenedione, dehydroepiandrosterone, dehydroepi and rosterone sulfate, and testosterone (Key et al., 2002).

The prevalence of HRT is highly associated with socioeconomic status; women of higher socioeconomic status were three times more likely to use hormone replacement. A case control study among Slovenian postmenopausal women shows that the use of HRT was inversely associated with BC risk (Cerne et al., 2011).

Women who regularly consume alcohol may be at a slightly increased risk of the disease (Hamajima et al., 2002), While Caffeine consumption does not appear to be related to BC risk (Kelsey, Berkowitz, 1988).

Women who work on night shifts with at least three nights per month, in addition to days and evenings in that month, appear to have a moderately increased risk of BC after extended periods of working night shifts (Schernhammer et al., 2001).

The effect of reproductive factors differed according to menopausal status. Age at menarche had an effect on premenopausal breast cancer risk, with a decrease in risk with increasing age of 7% per year. Age at first full-term pregnancy had an effect on both pre- and postmenopausal BC risk. A first full-term pregnancy above age 30 increased a risk in the pre- and postmenopausal. A protective effect of high parity was observed only for postmenopausal BC risk. A history of spontaneous abortion had no significant effect on the risk of BC diagnosed before or after menopause (Clavel-Chapelon, 2002). Late age of menopause after 55 years have been associated with increase BC risk. History or current use of OCS slightly increase the risk of BC (Bhavna et al., 2012). A positive family history of BC is a strong risk factor for BC (Lodha et al., 2011). Also a family history of ovarian cancer is also associated with an increased risk of BC (Freedman et al., 2013) .

Several studies have identified a number of lifestyle factors that may influence BC risk. Alcohol consumption and smoking were associated with increased risk of BC, about 7.1% risk increase for each additional 10 g per day intake of alcohol (Hamajima et al., 2002), and current smoking is associated with an increased risk of breast cancer among postmenopausal women, and exposure to passive smoking may increase breast cancer risk (Luo et al., 2011). Significant protective effect of breastfeeding from breast cancer but a short duration of breastfeeding (<12 months) did not show a positive association with breast cancer (Lodha et al., 2011). Moderate physical activity such as brisk walking, may reduce postmenopausal BC risk and that increases in activity after menopause may be beneficial (A PronkB et al., 2011). Food habits such as high intake of fruit and vegetables combined is associated with a weak reduction in risk of BC (Aune et al., 2012b). Dietary fiber has been reduce BC risk, it has been shown that dietary fiber may inhibit intestinal absorption of estrogens and may increase fecal excretion of estrogens (Aune et al., 2012b).

4.4   At the regional level

To compare the lifestyle related risk factors for BC such as physical activity, cigarette smoking, the use of contraceptive pills and increased body weight between non-familial and familial BC females between the years 2000 to 2002 a case control study was done in the Kingdom of Jordan, the result showed that postmenopausal obesity is a significant risk factors among Jordanian BC females, where physical activity, contraceptive methods, and smoking were not significant difference between familial, non-familial BC females and controls (Atoum and Al Hourani, 2004).

A case–control study was done in Tehran, Iran, the result show that marital status (never married: OR 4.24; widowed/divorced: OR 1.71) and family history (positive family history of BC: OR 2.95) were associated with significantly increased risk for BC(Ebrahimi. et al., 2002). To detect the association of reproductive risk factors with BC in an urban set up at central India a matched paired community-based case–control study was done, the study show that family history of breast cancer and history of using OCS may be the epigenetic factors promoting the occurrence of breast cancer while breastfeeding reduces the possibility of acquiring breast cancer (Lodha et al., 2011).

4.5   Studies in Palestine

A case control study that recruited its cases from Al Watani hospital in Nablus district in done in the north area of the West Bank, suggested that BC patients in Palestine are relatively young, and suggested that age at menarche, abortion and a positive family history of cancer are risk factors for BC in Palestine. The associations between some known risk factors for BC may differ in Palestine as compared with Western countries such as mean age at diagnosis, parity, marital status. Reproductive variables appeared to show differing associations with breast cancer among the two tumor receptor categories. There was a strong association between positive estrogen receptor and age at menarche below 13 years. Abortion showed a strong significance in cases with negative estrogen receptor (Darweesh, 2009).

A study that investigated the factors associated with the low screening of mammography among Palestinian women showed that to be less religious, lower personal barriers, lower fatalism increased the probability to do mammography.   Also, the more educated women, living in cities, having a first degree relative with breast cancer, perceived higher effectiveness and benefits of BC screening (Azaiza , 2010).

A case control study that investigated the environmental factors associated with BC in Gaza showed that marital status, educational status, physical trauma on breast, medication for infertility treatment, eating red meat 500g or more weekly, eating canned food, eating chicken skin, eating raw and cooked vegetables, using oils with saturated fats in cooking, living beside solid waste disposal sites, exposing to source of pollution during work such as fertilizers, pesticides, and dusts, living in or beside a farm, dealing with crops with naked hands, working in a farm during pesticides application or during 24 hours of pesticides application, cleaning pesticides' equipments, living with people working in a farm or a agricultural field, and application of pesticides personally are significant risk factors for BC (Ashour, 2011).

Chapter five: Results

5.1 Demographic data:

In this case control study reveals that mean age of cases with BC in southern WB was 48.3 years, where the age was ranging from 18 to 74 years old. Majority of cases(96%) were 25 years or older. Marital status in both groups was not significantly associated with BC risk (88% of cases were married and 83% of controls were married). Early age at marriage (less than 20 years) showed strong significant association with risk of developing BC with (OR = 2.28, CI95% 1.24-4.22). Where 54% of cases were married younger than 20 years or older, whereas 34% of controls.

High level of education 79% was seen among case participating in the study. Otherwise 56%of controls claim as a high education level. The high education level showed strong association with breast cancer risk of development (OR =3.00, CI 95% 1.58-5.50). Also a 77% of cases are rural residence compared with 57% of controls, it was showed significant association with BC risk (P-value = 0.003). However income level of family was not significant association with BC risk (P-value = 1.00). Our result show unemployed was inversely effect on BC risk where (OR = 0.456, CI 95% 0.24 - 0.87).All demographic data for cases and controls are demonstrated in Table 3.

Table 3: Frequencies distribution and risk factors of demographic characteristics among cases and controls:

Parameter	Case(n=100)	Control(n=100)	OR (95%CI)	P-Value
Age(years)				
< 20years	4	8	(ref.)	
20-39 years	21	28	0.41(0.11-1.51)	0.174
40-59 years	35	29	0.67(0.18-2.51)	0.55
≥ 60 years	40	35	0.44(0.12-1.58)	0.198
Marital status				
Married	88	83	(ref.)	
Single	12	17	1.50(0.67-3.33)	0.315
Age at marriage				
<20 years	54	34	(ref.)	
≥20 years	34	49	2.28(1.24-4.22)	0.008
Not married	12	17		
Profession				
Employee	19	34	(ref.)	
Not-employee	81	66	0.46(0.24-0.87)	0.024
Educational level				
Secondary &less	21	44	(ref.)	
Diploma & Higher	79	56	3.00(1.58-5.50)	0.001
Level of income				
Low	42	43	(ref.)	
Middle and high	58	57	0.96(0.54-1.68)	1.00
Residency				
Rural	77	57	2.53(1.37- 4.65)	0.003
Urban	23	43	(ref.)	

5.2 Family history of breast cancer

Family history of ovarian cancer showed a strong significant association with breast cancer risk of development (OR=12.25 , CI 95% 2.78-53.99). Table 4 indicates a strong significant association with BC risk of development (OR=3.47 ,CI 95% 1.62-7.40) this association was strong significant among first degree relative between cases and controls (OR=4.94, CI 95% 1.58-15.44).

Table 4 : Major risk factors of family history among cases and controls:

Parameter	Cases	Control	OR	P-Value
Family history				
No	70	89	(ref.)	
Yes	30	11	3.47(1.62-7.40)	0.001
First degree affected	16	4	(ref.)	
Not affected	84	96	4.95(1.58-15.44)	0.004
Second degree affected	10	4	3.10(0.93-10.25)	0.065
Not affected	90	96	(ref.)	
Third degree affected (far relative)	2	3	0.82(0.13-5.07)	0.835
Not affected	98	97	(ref.)	
Family history of ovarian cancer				
No	80	98	(ref.)	
Yes	20	2	12.25(2.78-53.99)	0.001

5.3 Reproductive health variable:

The risk increased about 3 folds if women have a history of oral contraceptive pills administration (OR= 3.02, CI95% 1.68-5.43, P=0.00). Women in menopause (postmenopausal) show a strong significant association with development of the disease (P-value=0.00), about 71% of cases were postmenopausal, and just 20% of controls. Menopause ($\geq$50 years of age) was observed to be associated with increased risk. The risk was 2.4 times more among women who are menopause at 50 years or older compared to women who had menopause before 50 years of age. Women who had menarche at early ages ($\leq$12 years) were at increased risk compared with women who had menarche after 12 years of age (OR=2.97 CI 95%1.66-5.32). Where history of breastfeed reduced the risk of developing BC (table 7).

The women who had first full term delivery at 20 years or older was not significant association   (P-value =0.080) with development the disease, 51% of cases and 37 % of controls were   first full term delivery at 20 years or older. Also history of abortion and number of abortion was not significant association with breast cancer risk (table 5), the table show that hormone replacement therapy HRT (p-value =0.157) and number of deliveries (1-4 live births p= 0.775, $\geq$ 5 live births (p= 0.640) were not significant association with development the disease.

Table 5: Frequencies distribution and risk factors of reproductive characteristics among cases and controls:

Parameter	Case (n=100)	Control (n=100)	OR (95%CI)	P-Value
Age at first menarche				
≤ 12 years	70	44	2.97 (1.66-5.32)	0.000
>12 years	30	56	(ref.)	
Menopause status				
Postmenopausal	71	20	9.79(5.09-18.82)	0.000
Premenopausal	29	80	(ref.)	
Age at menopause				
<50 years	40	7	(ref.)	
≥ 50 years	31	13	2.39(0.85-6.72)	0.092
Not menopause	29	80		
Parity				
No one	36	38	(ref.)	
1-4	48	43	0.89 (0.39-1.99)	0.775
≥ 5	16	19	0.85(0.46-1.57)	0.640
Age at first delivery				
<20	37	46	(ref.)	
≥20	51	37	0.58(0.32-1.07)	0.080
Not married	12	17		
History of OCS				
No	42	29	(ref.)	
Yes	58	71	3.02 (1.68-5.43)	0.00
Abortion				
No	53	62	(ref.)	
Yes	47	38	0.69 (0.39-1.21)	0.199
Abortion				
1-3 Times	36	32	1.32 (0.72-2.40)	0.371
≥4 Times	11	6	2.15(0.74-6.19)	0.153
No history of abortion	53	62	(ref.)	
HRT				
Yes	19	12	(ref.)	
No	81	88	1.72 (0.79-3.76)	0.157
History of breastfeed				
Yes	41	56	0.55(0.31-0.96)	0.034
No	59	44	(ref.)	

5.4 History of disease:

History of disease among 100 BC cases in the study is shown in the table 6. About the majority (51%) of cases were younger than 50 years at diagnosis of BC Figure(3). There are (61%) of the BC cases were showed that the first symptoms of the disease were observation of breast mass. 45% of the cases were having a history of the disease less than one year, however only 6% of them presented with duration more than 10 years.

Figure (4) is showing that the percentage of breast cancer distribution as a right, left or bilateral which had almost equal values in right and left breast. Approximately half of the cases perform breast self examination before discovering the disease. Figure (5) is showing that the period between the appearance of the first symptoms and the first visit to the doctor was 39% of the cases, they visit the doctor at one month or less, and just 15% of them visit doctor after one year of the first symptom appears.

9% of the cases have history of genetic disease; otherwise 26% have a history of chronic non- communicable disease. Type of treatment, site and type of surgical, and others were described in table 6.

Table 6: Characteristics of history of disease variables among cases

Parameter	Cases NO.	Cases (%)
Mammography		
Yes	92	(92%)
No	8	(8%)
Fine Needle Aspiration		
Yes	68	(68%)
No	32	(32%)
Biopsy		
Yes	93	(93%)
No	7	(7%)
Breast surgery		
Yes	78	(78%)
No	22	(22%)
Site of surgery		
Left	40	(40%)
Right	34	(34%)
Bilateral	4	(4%)
Type of surgery		
Breast lobectomy	41	(41%)
Mastectomy	33	(33%)
Both	4	(4%)
Genetic disease		
Yes	9	(9%)
No	91	(91)
Chronic disease		
Yes	26	(26%)
No	74	(74%)

Continue table 6….

Parameter	Cases NO.	Cases (%)
Duration of the disease		
less than 1 year	45	(45%)
1-5 years	42	(42%)
6-10 years	7	(7%)
More than 10 years	6	(6%)
Breast self-examination		
Yes	48	(48%)
No	52	(52%)
Genetic examination for breast cancer		
Yes	47	(47%)
No	53	(53%)
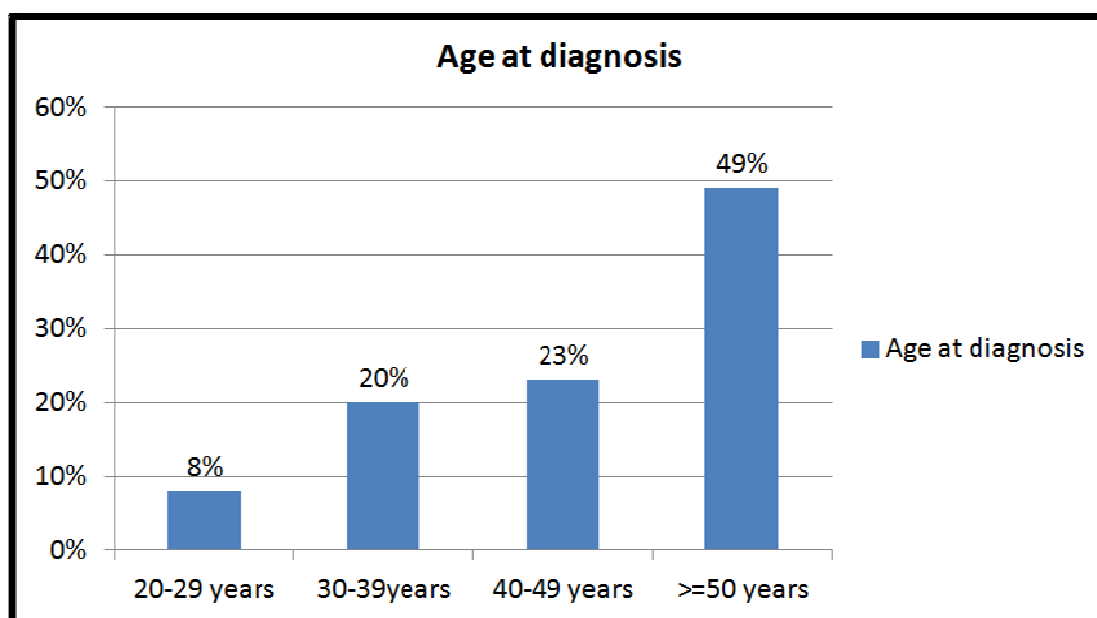
Figure 3 : Age at diagnosis of breast cancer among cases

About (51%) of cases were younger than 50 years at diagnosis BC. Of them, Most of these cases were aged 40-49 years old.
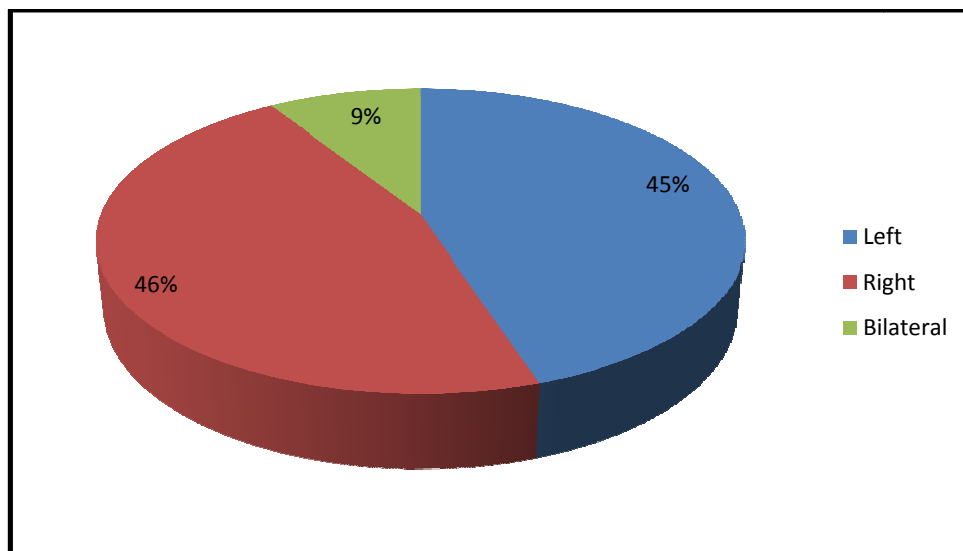
Figure 4: Site of Breast Cancer among cases

78% of cases had breast surgery, where the site of surgery more common in left breast. Figure(3) show that the percentage of breast site of diseases which had similar in right and left breast.
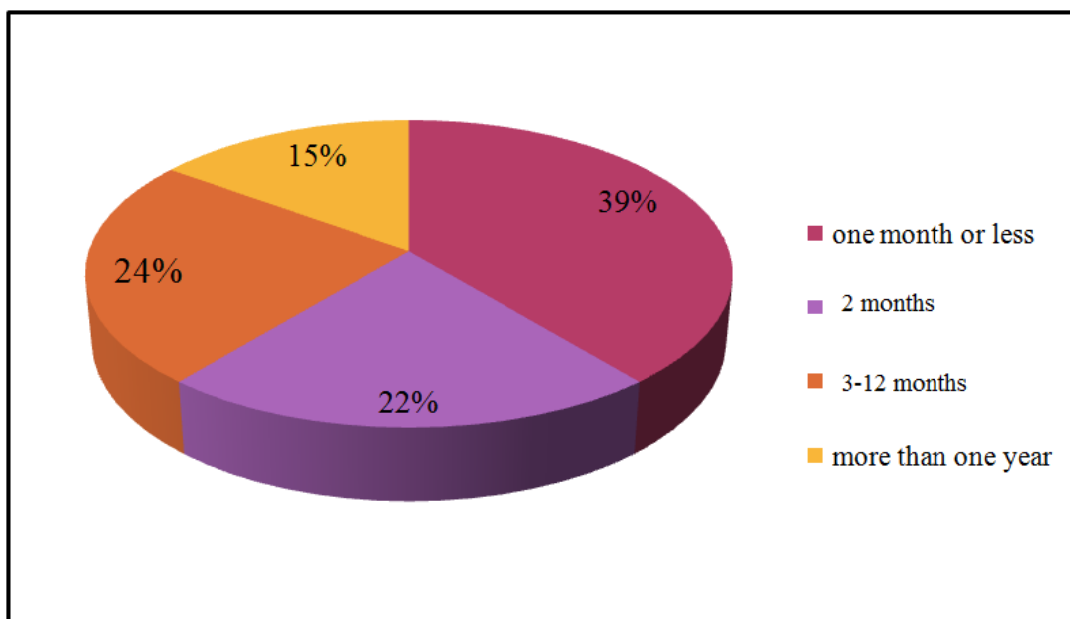
Figure 5 : Interval between the appearance of the first symptoms and the first visit to the doctor.
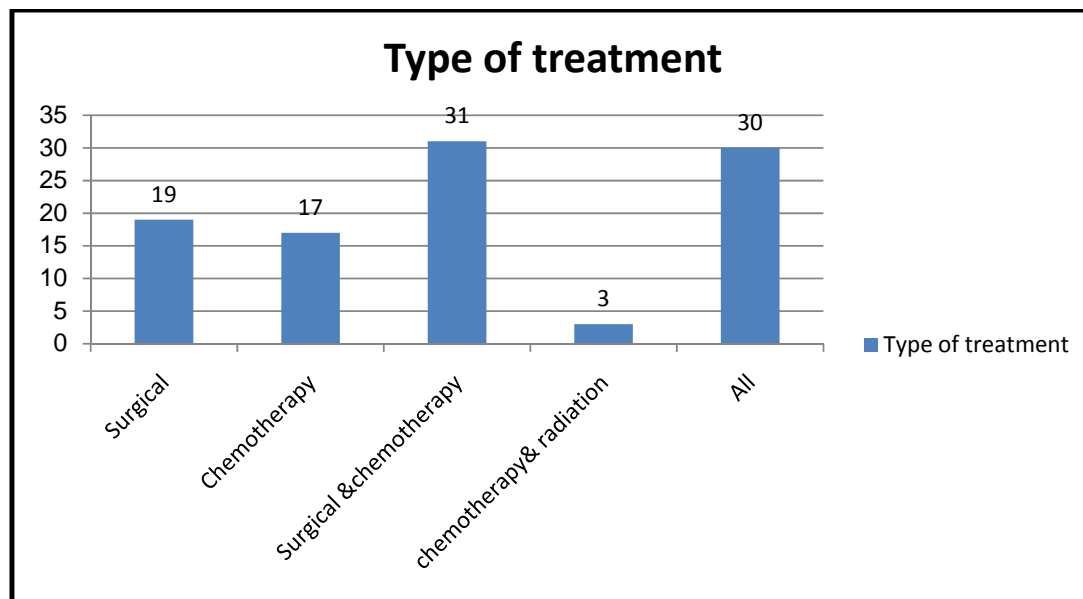
Figure 6: Type of treatment among breast cancer cases.

Figure 6 show that type of treatment (surgical, chemotherapy, and radiation) among BC cases in Biet-Jala hospital.

5.5 Environmental variables:

Women who live in the area close to landfill, industrial area ,and quarries were significant association with BC risk (p-value =0.031, 0.002, 0.030 respectively).Otherwise no significant association with BC risk of women who live in the area close to settlement, telecom, and high pressure power lines (table 7).

Table 7: distribution of environmental variables of cases and control

Parameter	Case(n=100)	Control(n=100)	OR(95%CI)	P-Value
Home close to :				
Landfill				
Yes	25	13	2.23 (1.05-4.67)	0.031
No	75	87	(ref.)	
Industrial area				
Yes	19	5	4.46(1.59-12.47)	0.002
No	81	95	(ref.)	
Quarries				
Yes	14	5	3.09(1.07-8.95)	0.030
No	86	95	(ref.)	
Settlement				
Yes	25	14	2.05 (0.99-4.22)	0.050
No	75	86	1.00(ref.)	
High pressure power lines				
Yes	24	17	1.54 (0.77-3.08)	0.220
No	76	83	1.00(ref.)	
Telecom				
Yes	27	26	1.05(0.56- 1.97)	0.873
No	73	74	1.00(ref.)	

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5.6 Lifestyle parameters:

Smoking status (current smoking, number of cigars\day, and duration of consumption smoking\ Years), water-pipe smoking (Arjeleh), and eat preserved and canned foods show a significance difference between cases and controls (p<0.05). Obesity with (BMI ≥30) showed no significant association with BC among cases and controls (P-value =0.061), where 46% of cases were obese compared to 33% of controls. Physical activity showed no significant association with BC development (p> 0.05) , type and duration of physical activity among cases and controls were show in table 8. Other factors showed no significance difference among the two groups as shown in table 8.

Table 8: Distribution of lifestyle parameters of cases and controls:

Parameter	Case(n=100)	Control(n=100)	OR(95%CI)	P-Value
BMI (KG\M^2)				
<30	54	67	(ref.)	
≥ 30	46	33	0.6(0.32-1.02)	0.061
Smoking status				
No	47	68	(ref.)	
Yes	21	8	3.79(1.55-9.29)	0.002
Former smokers	5	4	0.56(0.14-2.17)	0.390
Passive smoking	27	20	0.51(0.26-1.01)	0.055
Number of cigars\ day				
No smoking	79	92	(ref.)	
< 10 cigar	11	6	2.13 (0.76-6.04)	0.145
≥ 10cigar	10	2	5.82(1.24-27.37)	0.013
Duration of consumption smoking				
<15 years	11	6	2.13 (0.76-6.04)	0.145
≥ 15 years	10	2	5.82(1.24-27.37)	0.013
No smoking	79	92	(ref.)	
Water- pipe smoking (Arjeleh)				
Yes	25	12	2.44(1.15-5.19)	0.018
No	75	88	(ref.)	
Number of water-pipe smoking \ day				
1 time	13	7	(ref.)	
More than 1 time	12	5	0.78(0.19-3.11)	0.717
No smoking	75	88		
Duration of consumption water-pipe smoking				
<10 years	10	9	(ref.)	
≥ 10 years	15	3	0.22(0.05-1.02)	0.046
No smoking	75	88		

Continue table 8…

Parameter	Case(n=100)	Control(n=100)	OR(95%CI)	P-Value
Alcohol consumption				
Yes	1	4	0.24(0.03-2.21)	0.174
No	99	96	(ref.)	
Eat preserved and canned foods				
Yes	46	24	2.69(1.47-4.94)	0.001
No	54	76	(ref.)	
Physical activity				
Yes	21	29	1.00(ref.)	
No	79	71	0.65(0.34-1.24)	0.191
Duration of physical activity in hours				
<1 hour	5	13	0.35 (0.12-1.02)	0.046
≥ 1 hour	16	16	0.89 (0.42-1.93)	0.784
No physical activity	79	71	(ref.)	

Table 9 : Type and duration of physical activity among cases and controls

Parameter	Cases NO.(%)	Control NO.(%)
Type of physical activity		
Walking	10 (10%)	18 (18%)
Aerobics	5 (5%)	5 (5%)
Brisk wall	4 (4%)	2 (2%)
Swimming	2 (2%)	1 (1%)
Running	0 (0%)	3 (3%)
No physical activity	79 (97%)	71 (71%)
Duration in day\ week		
Daily	7 (7%)	11(11%)
2-3 times per week	4 (4%)	9 (9%)
4-6 times per week	3 (3%)	5 (5%)
Once per month	4 (4%)	4 (4%)
1-3 times per months	3 (3%)	0 (0%)
No physical activity	79 (79%)	71 (71%)

The table 10 shows that obesity women (BMI≥ 30) among postmenopausal were not significant associated with developed breast cancer p= 0.555.

Table 10 : Postmenopausal obesity among breast cancer cases:

Parameter	BMI<30	BMI≥ 30	OR (CI95%)	P-Value
Premenopausal	17	12	(ref.)	
Postmenopausal	37	34	0.77(0.32-1.84)	0.555

5.7 Logistic regression analysis

The logistic regression analysis of factors associated with breast cancer development was conducted to test the main effect of the independent variables on the dependent variables. Separate analysis was done for independent variables to summarize them into logistic analysis. The analysis included was demographic, reproductive, family history, lifestyle, and environmental variables.

Table 10 showed that the multiple variables "Family history of ovarian cancer, menopause status, age at first menarche, and home close to industrial area " were strong significantly associated with breast cancer development (p<0.05).

Table 11: The Results of Logistic Regression analyses of some risk factors for Breast Cancer:

Factor	B	SE	df	Sig	Exp(B)	CI 95% Lower Upper
Age at marriage	0.073	0.243	1	0.762	0.929	0.577-1.496
Residency	0.115	0.456	1	0.801	0.892	1.304-7.311
Family history of BC	0.75	0.53	1	0.159	2.112	0.746-5.987
Family history of ovarian cancer	2.146	0.885	1	0.015	8.554	1.510-48.453
History of OCS	0.573	0.299	1	0.056	1.773	0.986-3.188
Menopause status	2.391	0.358	1	0.000	10.919	5.417-22.009
Age at first menarche	1.128	0.440	1	0.010	3.088	1.304-7.311
Bubbly status	0.617	0.527	1	0.242	1.853	0.660-5.202
Smoking status	0.180	0.217	1	0.408	0.836	0.546-1.279
Breastfeed	0.743	0.411	1	0.071	0.476	0.213-1.064
Home close to industrial area	1.423	0.706	1	0.044	4.148	1.039-16.565
Home close to quarries	1.277	0.717	1	0.075	3.585	0.879-14.623
Home close to landfill	0.158	0.546	1	0.773	1.171	0.402-3.414

Chapter six: Discussion and Recommendations

6.1 Demographic variables and breast cancer

6.1.1 Age of patients and breast cancer .

Breast cancer is the first occurring type of cancer among women in West Bank. A total of 100 cases and 100 controls aged between 18-74 years were enrolled in this study. Age of participants divide into 4 groups (<20 years, 20-39, 40-59, and ≥ 60 years) were not significant association with BC development. Early age at marriage (less than 20 years) showed strong significant association with risk of developing BC with (OR = 2.28, CI 95% 1.24-4.22). Where 54 % of cases were married younger than 20 years or older, whereas 34% of controls. However several studies show that the incidence and death rates of BC increase with age (Darweesh, 2009; Collaborative Group on Hormonal Factors in Breast Cancer, 2002; Tirona et al., 2010), while between 57% and 68% of all BC in the Arab populations of Egypt, Jordan, and Israel Arab were diagnosed before the age of 55 years, and 37% among Israeli Jews were diagnosed in that age group (Laurence Freedman et al., 2013).

6.1.2 Breast cancer correlation with marital status and place of residency .

Our result showed no significant difference in marital status between cases and controls (P-value=0.422).Where 12% of cases was not married, and 17% of controls. However other studies which shows that never married women are increased risk for BC (Ebrahimi. et al., 2002). Women whom married at 20 years or older were increased risk about 2 fold compared with women married before 20 years (table 3).

Abdulrahman and Rahman (2012) in their study observed the incidence of BC is highest among women who living in urban , and among women in upper social class. However, our study shows that women who live in rural area where at higher risk than women who live in urban area, the explanation could be related to presence of one or more environmental factors such as industry area, landfill, and quarries which close to their place of residency.

6.2 Breast cancer correlation with age of onset disease.

In the present study, mean age of cases were 48.3 years, the age ranging from 18-74 years, where age at diagnosis was ranging from 21-70 years, as well as maximum numbers of cases were observed at 50 years or older (49%) followed by 40 –49 age group (23%) table 6. The mean age at diagnosis was 47 years, which is considered a young age women, the effect may be due to factors occurring in early life such as menarche, first full-term pregnancy, and these factors had weak effect on the oldest age (Clavel-Chapelon et al., 1995). Also the average age at diagnosis in Arab nations were 48 years, more than half of BC cases are younger than 50 years old. The interpretation related to the fact that Arab nations have younger population than western countries (Najjar H, Easson A, 2010).

6.3 Reproductive variables and breast cancer:

6.3.1 Postmenopausal women and breast cancer.

Postmenopausal women were at higher risk compared with premenopausal women (OR= 9.79, CI 95% 5.09-18.82). The risk was more for women who had menopause at 50 years or older compared to women who had menopause younger than 50 years of age due to higher lifetime exposure to estrogen and progesterone (Meshram et al., 2009). In our study there is lack of significant associations between BC and age at menopause table 5.

6.3.2 Oral contraceptives and breast cancer

The risk increased 3 folds if women have history of OCS (OR=3.02, CI 95%1.68-5.43), similar to finding in other study which show significant association between history of OCS and breast cancer (Bhavna et al., 2012).Which might be due to non rational use which there many providers in West Bank.

6.3.3 Age at menarche and breast cancer

The mean age at first menarche was 12.3 years old, where strong significant association with BC risk (P= 0.000), women who had menarche at early age (≤ 12 years) were at increased risk compared with women who had menarche after 12 years of age (OR=2.97 , CI95% 1.66-5.32) table 5. The risk might be due to higher estrogen level for women with early menarche compared with women have later menarche for several years after menarche (Meshram II et al., 2009). Our findings are in accordance with their studies which shows that early age at menarche was significant associated with risk of BC (Cerne et al., 2011,Clavel-Chapelon, 2002 ; Meshram II et al., 2009).

6.3.4 Breast cancer correlation with abortion, parity , and age at first delivery

In our study, no association was found with parity. However, other studies showed that high parity has a protective effect on BC (Clavel-Chapelon, 2002; Clavel-Chapelon et al., 1995).Another study suggests that parity may affect on estrogen levels and long term secretion of prolactin (Meshram II et al., 2009).

Early age at first delivery is highly protective factor against BC (Kobayashi et al., 2012), and late age after 30 years were with increased risk of disease development (Clavel-Chapelon, 2002). In our study, no significant results were found when analyzed for age at first delivery among cases and controls (P=0.080), also no association with hormone replacement therapy (P= 0.157) .

A history of abortion had no significant effect on the risk of BC (Clavel-Chapelon, 2002). Also, in the present study abortion and number of abortion were no significant association with disease development (P-value= 0.371, 0.153 respectively). However, in another study history of abortion was statistically significant to BC (Bhavna et al., 2012). Abortions that result from abnormally low production of progesterone may affect BC risk as a consequence of low progesterone production (Clavel-Chapelon, 2002).

6.3.5 Breast cancer and breastfeeding

Our study showed that a protective effect of history of breastfeeding for BC risk. The protective effect is explained as breastfeeding maintains normal endocrine balance via modulation of ovarian or pituitary activity (Meshram et al., 2009).

6.4 Life style and breast cancer

Significantly higher BC risk was observed in active smokers, and among women who had smoked for 50 years or more (Luo et al., 2011). In the present study, among cases there were 21% current smoker, and 27% passive smokers, and just 5% former smokers. Which current smoking was associated with an increased risk of BC occurrence (OR=3.798, CI 95% 1.55-9.296).The highest risk of BC was found among women who had smoked for 15 years or more (OR= 5.823, CI95%1.239-27.370) compared with all lifetime non –smokers (table 8).

Ten or more of cigarettes per day were increased risk about 5 fold, which accordance with other research that indicate significant associated was observed for the smokers of ten or more cigarettes per day (Cerne et al., 2011).

Former smokers and passive smokers were significant association with BC (Luo et al., 2011) .In our study there was no significant association in former smokers and passive smoker (P-value= 0.392 and 0.55 respectively).

About 2.5 increased risk BC occurrence was shown if women smoke water-pipe "Nerjeleh" (OR=2.44, CI 95% 1.150-5.196).But there was no significant association with number of the frequency of water-pipe smoking per day and duration with breast cancer risk (P >0.05). No previous study provides a relation between water-pipe smoking and BC.

The association of smoking with increased BC risk has biological plausibility. Human biomarker studies suggested that breast tissue is a target for the carcinogenic effects of tobacco smoking, and this effect is more common in the breast tissue of smokers than in non-smokers(Luo et al., 2011) .

Physical activity was shown to have reduced risk on BC (ACS, 2012). Our study showed that lack of physical activity was not a associated with disease development (P= 0.191), also duration of exercise wasn't significant association (less than one hour\ day P= 0.046, one hour or more P=0.784). Physical activity was shown to have an effect on breast cancer risk through changes in menstrual characteristics, body size, serum hormone levels, or immune function (Pronk et al., 2011).

A positive association was found between alcohol consumption and breast cancer (Hamajima et al., 2002). However, our data indicated that no significant association between alcohol consumption and BC risk (P=0.175).

6.5 Environmental variables and breast cancer.

Our results also indicate that women who live in the area close to landfill, industrial area, and quarries were at higher risk to develop BC (OR=2.231, 4.457, 4.457 respectively). Also women with special food habits such as preserved, and canned food intake revealing higher risk for BC (OR= 2.698, CI 95% 1.474-4.937). No enough data publish in Palestine.

6.6 Family history and breast cancer

In this study family history of ovarian cancer showed a double risk for BC (OR= 12.250,CI 95 % 2.780 53.989). Also women with a family history of BC are at triple increased risk of the disease, and this risk is influenced by particular familial patterns of breast cancer, 16% of women with breast cancer had first degree relatives affected risk ratio was 4.944 (CI 95% 1.583-15.442). Our result is matching with other research findings that indicates a higher risk of developing BC in women with a positive family history of BC and ovarian cancer (Cerne et al., 2011).

Results shows that great prognosis value were 39% of cases are detect the disease at one month or less of the first symptom appears, otherwise 15% of cases detect the disease after one year of the first symptom appears which poor prognosis value of BC.

6.7 Postmenopausal obesity and breast cancer.

Our data indicated that postmenopausal obesity among cases was not associated with BC. However, a study in Jordan indicated that postmenopausal obesity is a significant risk factor for BC (Al Hourani, 2004). The explanation could be related to the high body mass among women that most likely occurs at early menarche, thus prolonged exposure to the reproductive hormones fluctuation. Therefore, the adipose tissue provides an important source of estrogen for the postmenopausal woman, which may play an important role in the development of BC (Al Hourani, 2004).

6.8 Conclusion:

Study suggests that the changes in reproductive health parameters among women (i.e. early age at menarche, postmenopausal period, and history of oral contraceptive) and being a (current smoker, smoked for 15 years or more, smoking 10 or more cigarettes per day, and smoking water-pipe "Nerjeleh" may have contributed to the increase in breast cancer risk in southern area of the West Bank among Palestinian women particularly younger ones.

6.9 Study limitation:

A possible limitation of this study is its power sample size. Sample size reduces the chance of detecting a true effect, but it is less well appreciated that low power also reduces the likelihood that a statistically significant result reflects a true effect. Also, data was collected from a hospital which might cause a hospital bias, therefore, cannot be generalized to the women with BC in the community. Other sources of bias could be due to the design itself as a case control study such as selection bias, recall bias.

6.10 Recommendation:

The recommendations of the study are the following:

I- For patients:

- Regular follow-up and genetic studies for families with BC high risk.
- Rational use of oral contraceptive or the selection of other appropriate method for women with high risk of BC.
-Stopping smoking (cigarettes & water-pipe) especially in women in reproductive age.

II-For health providers:

-To identify the group of BC high risk in community.

-Designing of special national program aiming to regular check up and follow up to detect any neoplastic change on time.

-To enhance the awareness of possible risk factors of BC aiming to reduce the incidence.

III-For community leaders:

-To elevate the level of awareness about BC in the community by special lectures and discussion in the media to highlight the risk factors of BC especially the early age at first marriage.

References

- Pronk B, T Ji, X-O Shu et al. Physical activity and breast cancer risk in Chinese women. British Journal of Cancer **105**, 1443-50. 2011.
- Abdullah NA, Wan Mahiyuddin WR, Muhammad NA et al. Survival rate of breast cancer patients in Malaysia: a population-based study. Asian Pac J Cancer Prev 2013;14:4591-4.
- Abdulrahman, Rahman. Epidemiology of breast cancer in Europe and Africa. J Cancer Epidemiol 2012b;2012:915610.
- Abdulrahman and, Rahman. Epidemiology of breast cancer in Europe and Africa. J Cancer Epidemiol 2012a;2012:915610.
- Alaa Darweesh. Risk Factors of Breast Cancer among Palestinian Women in North West Bank. 1-77. 2009.
- American Cancer Society. Breast Cancer Facts & Figures 2009-2010. 2009.
- American Cancer Society. Breast cancer. What is cancer? 1-128. 2012. **2012**
- American Cancer Society. Breast Cancer Facts & Figures 2011-2012. The American Cancer Society, Atlanta, Georgia., 2013a.
- American Cancer Society. Breast Cancer Facts & Figures 2011-2012. The American Cancer Society, Atlanta, Georgia., 2013.
- Archer DF, Bush T, Nachtigall LE. Re: effect of hormone replacement therapy on breast cancer risk: estrogen versus estrogen plus progestin. J Natl Cancer Inst 2000;92:1950-2.
- Ashour A. Environmental Risk Factors Associated with Breast Cancer-Gaza Governorates. Al-Azhar University-Gaza. Thesis 2011
- Atoum MF, Al Hourani HM. Lifestyle related risk factors for breast cancer in Jordanian females. Saudi Med J 2004;25:1245-8.
- Chan D.S.M., Greenwood D.C., Vieira A.R., Rosenblatt D.A.N., Vieira R., Norat T.. Dietary fiber and breast cancer risk: a systematic review and meta-analysis of prospective studies. 2012a. Oxford University Press on behalf of the European Society for Medical Oncology.
- Aune D, Chan DS, Vieira AR et al. Fruits, vegetables and breast cancer risk: a systematic review and meta-analysis of prospective studies. Breast Cancer Res Treat 2012b;134:479-93.
- Azaiza F, Cohen M, Awad M, and Daoud F, MSN3 Factors Associated With Low Screening for Breast Cancer in the Palestinian Authority Relations of Availability, Environmental Barriers, and Cancer-Related Fatalism. Cancer October 1, 2010 4646-4655
- Bailony MR, Hararah MK, Salhab AR, Ghannam I, Abdeen Z, Ghannam J. Cancer registration and healthcare access in West Bank, Palestine: a GIS analysis of childhood cancer, 1998-2007. Int J Cancer 2011;129:1180-9.
- Barcenas CH, Wells J, Chong D, French J, Looney SW, Samuel TA. Race as an independent risk factor for breast cancer survival: breast cancer outcomes from the medical college of Georgia tumor registry. Clin Breast Cancer 2010;10:59-63.
- Beiki O, Hall P, Ekbom A, Moradi T. Breast cancer incidence and case fatality among 4.7 million women in relation to social and ethnic background: a population-based cohort study. Breast Cancer Res 2012;14:R5.

- Beral V. Breast cancer and hormone-replacement therapy in the Million Women Study. Lancet 2003;362:419-27.
- Bevers TB, Armstrong DK, Arun B et al. Breast cancer risk reduction. J Natl Compr Canc Netw 2010;8:1112-46.
- Cerne JZ, Ferk P, Leskosek B, Gersak K. Hormone replacement therapy and some risk factors for breast cancer among Slovenian postmenopausal women. Climacteric 2011;14:458-63.
- Clavel-Chapelon F. Differential effects of reproductive factors on the risk of pre- and postmenopausal breast cancer. Results from a large cohort of French women. Br J Cancer 2002;86:723-7.
- Clavel-Chapelon F, Launoy G, Auquier A et al. Reproductive factors and breast cancer risk. Effect of age at diagnosis. Ann Epidemiol 1995;5:315-20.
- Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and hormone replacement therapy: collaborative reanalysis of data from 51 epidemiological studies of 52 705 women with breast cancer and 108 411 women without breast cancer. The Lancet 1997;350:1047-59.
- Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50 302 women with breast cancer and 96 973 women without the disease. The Lancet 360, 187-95. 2002.
- College of American Pathologists. Breast Cancer Invasive Lobular Carcinoma. 2010.
- College of American Pathologists. Breast Cancer Ductal Carcinoma In Situ. 2011a.
- College of American Pathologists. Breast Cancer Invasive Ductal Carcinoma. 2011b.
- College of American Pathologists. Breast Condition Lobular Neoplasia (Lobular Carcinoma In Situ). 2011c.
- Curado MP. Breast cancer in the world: incidence and mortality. Salud Publica Mex 2011;53:372-84.
- Darwish A. Risk factors of Breast Cancer among Palestinian Women in the North Wst Bank. En Najah University. Thesis, 2009.
- Ebrahimi M, Vahdaninia M, Montazeri A Risk factors for breast cancer in Iran: a case-control study. Breast Cancer Research 4. 2002. 4(5): R10.
- Eliassen AH, Colditz GA, Rosner B, Willett WC, Hankinson SE. Adult weight change and risk of postmenopausal breast cancer. JAMA 2006;296:193-201.
- Eliassen AH, Hankinson SE, Rosner B, Holmes MD, Willett WC. Physical activity and risk of breast cancer among postmenopausal women. Arch Intern Med 2010;170:1758-64.
- Hamajima N, Hirose K, Tajima K et al. Alcohol, tobacco and breast cancer-- collaborative reanalysis of individual data from 53 epidemiological studies, including 58,515 women with breast cancer and 95,067 women without the disease. Br J Cancer 2002;87:1234-45.
- Health and Environment Alliance (HEAL). Factors infl-uencing the risk of breast cancer established and emerging. 2008.
- Israyelyan A. The Development Of Molecular Diagnostics For Breast Cancer. 2003

- Kaaks R, Berrino F, Key T et al. Serum sex steroids in premenopausal women and breast cancer risk within the European Prospective Investigation into Cancer and Nutrition (EPIC). J Natl Cancer Inst 2005;97:755-65.
- Kelsey JL, Berkowitz GS. Breast cancer epidemiology. Cancer Res 1988;48:5615-23.
- Key T, Appleby P, Barnes I, Reeves G. Endogenous sex hormones and breast cancer in postmenopausal women: reanalysis of nine prospective studies. J Natl Cancer Inst 2002;94:606-16.
- Kobayashi S, Sugiura H, Ando Y et al. Reproductive history and breast cancer risk. Breast Cancer 2012;19:302-8.
- Kumle M, Weiderpass E, Braaten T, Persson I, Adami HO, Lund E. Use of oral contraceptives and breast cancer risk: The Norwegian-Swedish Women's Lifestyle and Health Cohort Study. Cancer Epidemiol Biomarkers Prev 2002;11:1375-81.
- Langer B, Langer R, Gupta R, Singh B. Reproductive factors in relation to breast cancer: A hospital based case control study in Jammu, India. Global Journal of Medicine and Public Health. 2012.
- Laurence F. Edwards B, lynn Riles john young. Cancer Incidence inFour Member Countries (Cyprus, Egypt, Israel, and Jordan)of the Middle East Cancer Consortium (MECC)Compared with US SEER. 2013.
- Lodha R, Joshi A, Paul D et al. Association between reproductive factors and breast cancer in an urban set up at central India: a case-control study. Indian J Cancer 2011;48:303-7.
- Luo J, Margolis KL, Wactawski-Wende J et al. Association of active and passive smoking with risk of breast cancer among postmenopausal women: a prospective cohort study. BMJ 2011;342:d1016.
- Mayo clinic staff. Breast cancer.1998-2014. http://www.mayoclinic.org/diseases-conditions/breast-cancer/basics/risk-factors/con-20029275
- McCormack VA, dos SS, I. Breast density and parenchymal patterns as markers of breast cancer risk: a meta-analysis. Cancer Epidemiol Biomarkers Prev 2006;15:1159-69.
- Meshram II, Hiwarkar PA, Kulkarni PN. Reproductive risk factors for breast cancer: A case control study. Online Journal of Health and Allied Sciences 8[3]. 2009.
- Ref Type: Magazine Article
- Ministry of Health (MOH). Health Status in Palestine 2010.Minstry of Health, 2011.
- Ministry of Health (MOH). Health annual report Palestine 2011. Palestine: Ministry of health , 2012a.
- Ministry of Health (MOH). Health Report, Palestine Mid Year 2012. 2012b.
- Ministry of Health (MOH). Health annual report Palestine 2012. 2013.
- Najjar H, Easson A. Age at diagnosis of breast cancer in Arab nations. International Journal of Surgery . 2010.
- Palestinian Central Bureau of Statistics (PCBS). Palestine in Figures 2010. Ramallah - Palestine: 2011a.
- Palestinian Central Bureau of Statistics (PCBS). West Bank Southern Governorates Statistical. Ramallah- Palestine.: 2011b.
- Palestinian Central Bureau of Statistics. West Bank Southern Governorates Statistical Yearbook. Ramallah - Palestine.: 2012.

- Parkin DM. Cancers attributable to exposure to hormones in the UK in 2010. Br J Cancer 2011;105 Suppl 2:S42-S48.
- Boyle P, and Levin B. World Cancer Report 2008. 1-260. 2008. the International Agency for Research on Cancer.
- Pronk A, Ji BT, Shu XO et al. Physical activity and breast cancer risk in Chinese women. Br J Cancer 2011;105:1443-50.
- Schernhammer ES, Laden F, Speizer FE et al. Rotating night shifts and risk of breast cancer in women participating in the nurses' health study. J Natl Cancer Inst 2001;93:1563-8.
- Shulman LN, Willett W, Sievers A, Knaul FM. Breast cancer in developing countries: opportunities for improved survival. J Oncol 2010;2010:595167.
- Stewart and Kleihues. World cancer report. 1-342. 2003. International Agency for Research on Cancer.
- Tamimi RM, Byrne C, Colditz GA, Hankinson SE. Endogenous hormone levels, mammographic density, and subsequent risk of breast cancer in postmenopausal women. J Natl Cancer Inst 2007;99:1178-87.
- Tirona MT, Sehgal R, Ballester O. Prevention of breast cancer (part I): epidemiology, risk factors, and risk assessment tools. Cancer Invest 2010;28:743-50.
- World Health Organization. Cancer Stats Cancer Worldwide. 2011.
- World Health Organization (WHO). Latest world cancer statistics: Global cancer burden rises to 14.1 million new cases in 2012. 2013a. The International Agency for Research on Cancer .
- World Health Organization (WHO). World health statistics 2012. France: World Health Organization, 2013b.

1.1 Appendix

An Arabic official letter from Al-Quds University to Biet Jala Hospital to conduct the study.

Al-Quds University		جامعة القدس
Faculty of Medicine		كلية الطب
Abu-Dies, Jerusalem		أبو ديس _ القدس

بسم الله الرحمن الرحيم

2013-08-01

حضرة السيد / مدير مستشفى بيت جالا الحكومي المحترم

تحية طيبة وبعد :

الموضوع : المساعدة في بحث

أرجو من حضرتكم التكرم بالسماح للطالبة الاء سعيد سراحنة من برنامج الماجستير في الصحة العامة بجامعة القدس في تعبئة نموذج استبيان حول العوامل المساهمة في انتشار سرطان الثدي في جنوب الضفة الغربية مع مراعاة الجانب الاخلاقي للموضوع وخصوصية المرضى ومعلوماتهم .

شاكرين لكم حسن تعاونكم .

المشرف :
د.غسان بعلوشة
استاذ مساعد ـ علم الأمراض والأنسجة
كلية الطب ـ جامعة القدس

1.2 Appendix

An Arabic official letter to conduct the study in Biet Jala Hospital .

State of Palestine

Ministry of Health

Beit Jala Governmental Hospital

Beit Jala - Bethlehem

Email: beitjala.hospital@yahoo.com

دولة فلسطين

وزارة الصحة

مستشفى بيت جالا الحكومي

بيت جالا – بيت لحم

الرقم ١٠٢٨ ٢

التاريخ 4/8/2013

No.

Date:

حضرة الدكتور غسّان موسى بعلوشة المحترم

كلية الطب /جامعة القدس

الموضوع/ الطالبة آلاء سعيد سراحنة

أود إعلامكم بأنه لا مانع لدينا من السماح للطالبة الاء سعيد سراحنة من برنامج الماجستير في الصحة العامة بجامعة القدس من تعبئة نماذج الاستبيان المطلوبة حول انتشار سرطان الثدي في جنوب الضفة الغربية مع ضرورة المحافظة على خصوصية المرضى واستخدام المعلومات لاغراض البحث.

مع الاحترام

الدكتور سعيد السراحنة

مدير المستشفى

Tel.:02-2741161/2/3
Fax: 02-2742434

تلفون: ٠٢-٢٧٤١١٦١/٢/٣
فاكس:٢٧٤٢٤٣٤-٠٢

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1.3 Appendix :Definition of the study area:

عدد السكان المقدر في محافظات جنوب الضفة الغربية منتصف العام، 2012
Estimated Population in the West Bank Southern Governorates at Mid, 2012

N

199,463

641,170

بيت لحم
Bethlahm

الخليل
Hebron

0 2 4   8   12 Kilometers

المصدر: الجهاز المركزي للإحصاء الفلسطيني، 2012
Source: Palestinian Central Bureau of Statistics, 2012
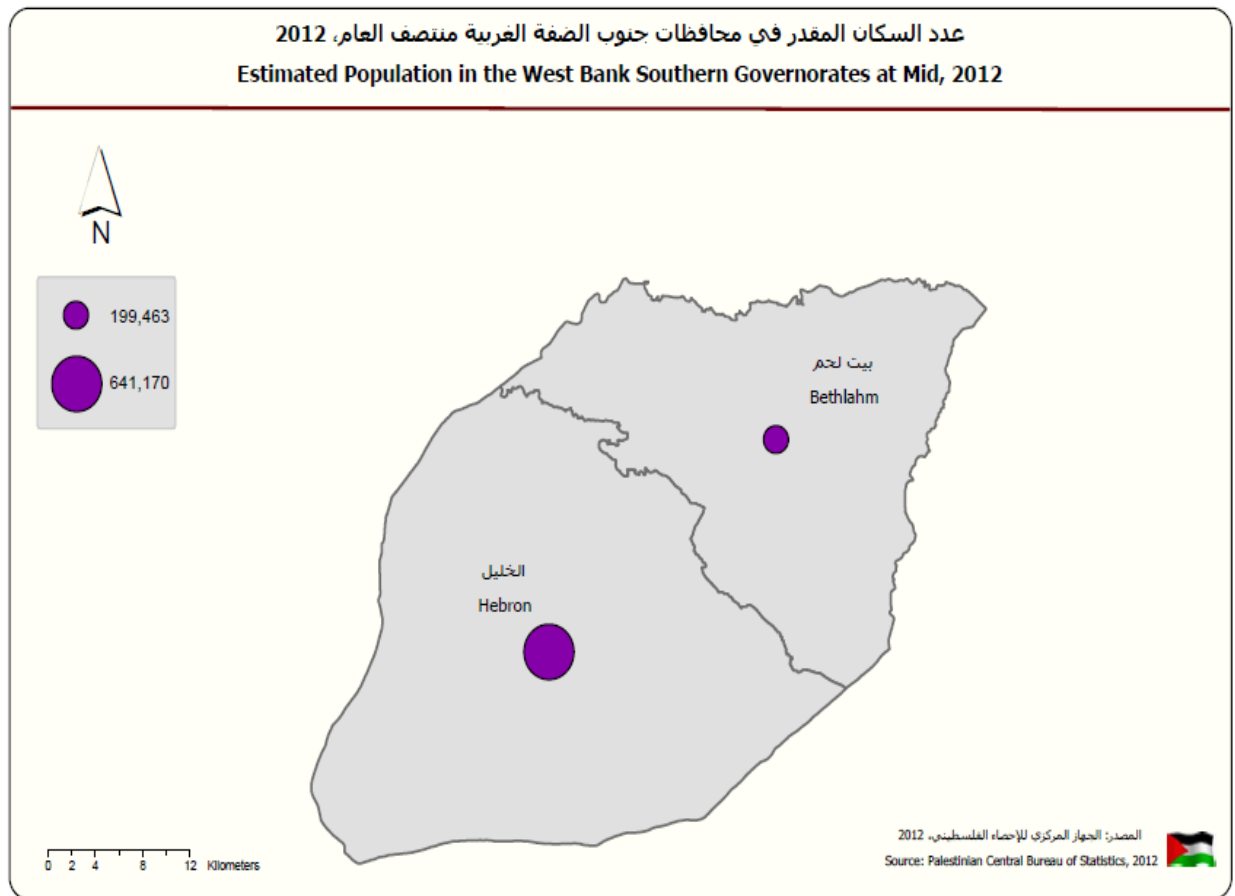
1.4 Appendix :The study questionnaire (Arabic copy)

بسم الله الرحمن الرحيم
جامعة القدس – كلية الصحة العامة

نموذج موافقة في دراسة \ بحث علمي

عنوان الدراسة: " العوامل المساهمة في الاصابة بسرطان الثدي في جنوب الضفة الغربية"

الباحثة الرئيسية: ألاء سعيد السراحنة, طالبة ماجستير صحة عامة

البريد الالكتروني:alaa.sarahneh @students.alquds.edu

أهداف الدراسة:

تهدف الدراسة الى التعرف على أهم العوامل ذات العلاقة و المسببة لسرطان الثدي لدى المرضى الفلسطينيين في جنوب الضفة الغربية.

الفئة المستهدفة: الأشخاص المصابون بسرطان الثدي.

لماذا تم اختياري: تم اختيارك دون تخصيص كمشارك طوعي و كأحد الأشخاص المصابون بسرطان الثدي.

ألية المشاركة: بعد اقرار المشاركة الطوعية ستقوم بتعبئة استبيان متعلق بموضوع الدراسة و من ثم اعادته للباحثة , و في حالة وجود صعوبات في فهم أو تعبئة جزء منه يرجى الرجوع للباحثة للمساعدة.

المخاطر و الفوائد الناتجة عن المشاركة: لا توجد أي مخاطر في المشاركة و بمشاركتكم تساهمون في فائدة عظيمة و هي تحديد انتشار هذا المرض في مناطقنا الفلسطينية لكي تسهل متابعته و علاجه و الحد من انتشاره.

الخصوصية: أن هذا البحث يتم تحت اشراف لجنة هلسنكي المحلية لاخلاق البحث العلمي بجامعة القدس و التي تتابع الجانب الأخلاقي و الخصوصية العالية في التعاطي مع المعطيات الواردة في الاستبيان حيث يتم ترميز هذه المعطيات و جدولتها دون الاشارة تلميحا و لا تصريحا الى صاحبها أو ما يدل عليه من قريب أو بعيد.

الأستمرار في المشاركة: الاستمرار في المشاركة طوعي و يحق للمشارك وقف ذلك بمراسلة الباحثة

الأطلاع على نتائج البحث: يحق للمشارك \ ة الاطلاع على نتائج البحث بالاشارة الى ذلك في الاستبيان.

استخدام المعطيات: يحق للباحثين استخدام هذه المعطيات الواردة في الاستبيان لأبحاث أخرى في جامعة القدس ما لم يطلب المشارك عكس ذلك.

استبيان رقم ....

الجزء الاول : المعلومات الشخصية

الفئة العمرية : ....

الحالة الاجتماعية :

- أعزب \ عزباء ☐   - متزوج \ متزوجة ☐

العمر عند الزواج :

- أقل من 20 سنة ☐   -20 سنة ا و أكثر ☐   - غير متزوج ☐

- **الوزن (كغم) : --------**

- **الطول (سم) : ---------**

المهنة :

- موظف ☐   - غير موظف ☐

مستوى الدخل :

- متدني ☐   - متوسط او عالي ☐

مستوى التحصيل العلمي :

- ثانوي أو أقل ☐   - دبلوم او أعلى ☐

مكان السكن :

- مدينة ☐   - قرية او مخيم ☐

المحافظة:

-الخليل ☐   -بيت لحم ☐

الجزء الثاني : تاريخ المرض

ـ ما هو العمر عند تشخيص المرض ؟

- 20 – 29 سنة   □   - 30 – 39 سنة   □   - 40- 49سنة   □   - 50 سنة وأكثر   □

هل المرض لديك في ؟

- الثدي الأيمن   □   - الثدي الأيسر   □   - كلاهما   □

مدة الاصابة بالمرض؟

-اقل من سنة   □   -1-5 سنة   □   - 6- 10 سنوات   □   - اكثر من 10 سنوات   □

ما هو أول الاعراض ظهورا لديك ؟

- ألم في الثدي   □   - كتلة في الثدي   □   - كتلة تحت الابط   □   -احمرار   □

- غير ذلك حدد\ي : ....

قبل تشخيصك هل قمتي بالفحص الذاتي للثدي ؟

- نعم   □   - لا   □

هل قمتي بعمل فحص جينات لسرطان الثدي ؟

- نعم   □   - لا   □

هل قمتي بعمل الفحوصات التالية:

- التصوير الماموغرافي: - نعم   □   -لا   □

رشف بالإبرة :   - نعم   □   -لا   □

خزعة :   - نعم   □   - لا   □

ما هي الفترة بين ظهور أول الاعراض المرضية لديك وأول زيارة لطبيب ؟

-شهر او اقل   □   -شهرين   □   -اكثر من شهرين واقل من سنة   □   - سنة وأكثر   □

نوع العلاج الذي تعرضتِ له :

- جراحي ☐   - كيماوي ☐   - اشعاعي ☐   - جميع ما ذكر ☐

هل تعرضتِ لجراحة في الثدي؟

- نعم ☐   - لا ☐

اذا كان الجواب نعم :

- الثدي الأيمن ☐   - الثدي الأيسر ☐   - كلاهما ☐

نوع العملية :

- استئصال كتلة من الثدي ☐   - استئصال الثدي كاملا ☐   كلاهما ☐

- غير ذلك حدد\ي: ....

هل تعاني من امراض وراثية ؟

- نعم ☐   - لا ☐

هل تعاني من أمراض مزمنة ؟

- نعم ☐   - لا ☐

الجزء الثالث : تاريخ العائلة

هل هناك أحد من أفراد العائلة سبق وأصيب بسرطان الثدي ؟

- نعم ☐   - لا ☐

اذا كان نعم , حدد صلة القرابة : ....

هل هناك أحدى أفراد العائلة سبق وأصيب بسرطان المبيض؟

- نعم ☐   - لا ☐

هل أصبتي بأمراض سابقة في الثدي ؟

- نعم ☐   - لا ☐

هل أصبتي بأمراض سرطانية من قبل   ؟

- نعم ☐   - لا ☐

الجزء الرابع : المعلومات الانجابية :

العمر عند أول دورة شهرية : ------

هل الدورة الشهرية متوقفة :

نعم-   لا -

اذا كانت الاجابة نعم ,ما العمر عند توقف الدورة الشهرية :

- أقل من 50 سنة   □   - أكثر او يساوي 50 سنة   □

عدد الولادات :

- أكثر او يساوي 5   □   1- 4 مرات   □   - لا يوجد   □

العمر عند الولادة الاولى :

- أكثر او يساوي من 25 سنة   □   - أقل من 25 سنة   □

هل استخدمتي حبوب منع الحمل ؟

- نعم   □   لا-   □

هل تعرضتِ للإجهاض من قبل :

- نعم   □   لا-   □   غير متزوج   □

اذا كانت الاجابة نعم ,عدد مرات الإجهاض   1-3 مرات   □   - أكثر من 5 مرات

هل تلقيتِ علاجات هرمونية لانقطاع الدورة الشهرية ؟

- نعم   □   لا -   □

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الجزء الخامس : جودة الحياة و البيئة

هل يوجد بالقرب من منزلك:

- منطقة صناعية ☐   - مكبات نفايات ☐   - كسارات و محاجر ☐

- مستوطنة ☐

- خطوط كهرباء ضغط عالي ☐   - أبراج اتصالات خليوية ☐

هل أنتي مدخنة ؟

- نعم ☐   - لا ☐   - مدخن سابق ☐   - معرض لتدخين من قبل شخص اخر ☐

اذا كان الجواب نعم , ما هو عدد السجائر في 24 ساعة؟

- اقل من 10 ☐   - أكثر من 10 سيجارة ☐

مدة التدخين (بالسنوات) :

-أقل من 15 سنة ☐   - أكثر او يساوي 15 سنة ☐

هل تدخني الأرجيلة؟

- نعم ☐   - لا ☐

اذا كان الجواب نعم ما هو عدد المرات في 24 ساعة ؟

مرة واحدة ☐   أكثر من مرة ☐

مدة التدخين (بالسنوات):

-أقل من 10 سنة ☐   - أكثر او يساوي 10 سنة ☐

هل تشربين الكحول ؟

- نعم ☐   - لا ☐

هل قمتي بالرضاعة الطبيعية ؟

- نعم ☐   - لا ☐

هل تتناولين الأطعمة المحفوظة و المعلبة:

- نعم ☐   - لا ☐

هل تمارسين الرياضة ؟

- نعم   ☐   - لا   ☐

اذا كانت الاجابة نعم :

نوع الرياضة التي تمارسينها ؟

مدة الرياضة التي تمارسينها في اليوم الواحد (بالساعات) ؟

-اقل من ساعة ☐   أكثر او تساوي ساعة ☐

مدة الرياضة التي تمارسينها بالأيام :

-يوميا ☐   2-3 مرات اسبوعيا ☐   6-4 مرات اسبوعيا ☐   مرة بالأسبوع ☐   1-3 مرات بالشهر ☐

Appendix 1.5   **The study questionnaire(English copy)**

Number of questionnaire ……..

Fist section : Demographic information

 -Age : ……….

-Marital status: □ Single   □ Married

-Age at marriage :   □ < 20 years   □ ≥20 years   □ Not married

- Weight (kg) : ………….
 - Height (cm): ………….

-Profession : □ Employee   □ Un employee

-Level of income : □ Low   □ Medium and high

-Education level :   □ Secondary and less   □ Diploma and higher

-Residence :   □ Rural   □   Urban

-District :   □ Hebron   □ Bethlehem

Section two : History of disease.

- Age at diagnosis: □20-29 years   □ 30-39 years   □ 40-49 years   □ ≥50 years

- Site of disease : □ Right   □ Left   □ Both

-Duration of disease : □ < 1 year   □ 1-5 years   □ 6-10 years   □ > 10 years

-First symptoms: □ Mastalgia   □ Breast mass   □ Lymph node   □ Redness

- Do you do breast self-examination: □ Yes   □ No

-Are you do genetic examination for breast cancer : □ Yes   □ No

-Do you do this examination ?
-Mammography :   □ Yes   □ No
- Fine Needle Aspiration : □ Yes   □ No
-Biopsy :   □ Yes   □ No

-What is period between the appearance of the first symptoms and the first visit to the doctor?

□ ≤ 1 month   □ 2 Months   □ 3- 11 Months   □ ≥ 1 year

-Type of treatment : □ Surgical   □ Chemotherapy   □ Radiation   □ All
- Have you had breast surgery? □ Yes   □ No
If the answer yes, the site of surgery :   □ Right   □ Left   □ Both
Type of surgical : □ Breast lobectomy   □ Mastectomy   □ Both
-Do you suffer from genetic disease ?   □ Yes   □ No
-Do you suffer from chronic disease ? □ Yes   □ No

Section three : Family history

-**Do you have a family history of breast cancer?**   □ Yes   □ No

 If yes , what are relative with breast cancer? …..

-**Family history of ovarian cancer?**   □ Yes   □ No

-**Personal history of Breast disease ?**   □ Yes   □ No

-**Personal history of other cancer ?**   □ Yes   □ No

Section four :   Reproductive information:

-Age at menarche: ……..

-Menopause ?   □ Yes   □ No

If yes, age at menopause?   □ < 50 years   □ ≥ 50 years

 -Number of deliveries?   □ No one   □ 1-4   □ ≥ 5

-Age at first delivery?   □ < 25 years   □ ≥ 25 years   □ Not married

-History of oral contraceptive pills OCS ?   □ Yes   □ No

 -History of abortion :   □ Yes   □ No   □ Not married

  If yes, number of abortion :   □ 1-3 times   □ ≥ 4 times

-History of hormone replacement therapy HRT ? □ Yes   □ No

Section five : Quality of life and environment

-Are your home close to: □ Industrial area   □ Landfill   □ Quarries

□ Settlement   □ High- pressure power lines   □ Telecom Towers

-Smoking status: □ Yes   □   No   □ Former smoker   □ Passive smoking

 If yes, what is number of cigarette in 24 hours ?

□ <10 cigarettes   □≥10 cigarettes

Duration of smoke in years:

□ < 15 years   □ ≥ 15 years

-Pipe-water status (Arjeleh) :   □ Yes   □   No

 If yes, how many time in 24 hours ?

 More than 1 time   □ 1 time   □

  Duration of smoke pipe-water in years:

□ < 10 years   □ ≥ 10 years

-Alcohol consumption : □ Yes   □No

-Breastfeed: □ Yes   □No

-Do you usually eat preserved and canned foods?

□ Yes   □ No

-Physical activity status :   □ Yes   □   No

If yes, what kind of physical activity do ……………

How many time do in hours\day ?

□ <1 hour   □ ≥ 1 hour

Duration of physical activity (in days)?

□ Daily   □ 2-3 Times per week   □ 4-6 Times per week   □ Once per week
□ 1-3 times per month