An-Najah National University
Faculty of Graduate Studies

Prevalence and Predictors of Herb Use during Pregnancy (A study at Rafidia Governmental Hospital/ Palestine)

By
Deema Hilmi Adawi

Supervisor
Dr. Rowa' Al-Ramahi
Co-supervisor
Dr. Nidal Jarradat

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This thesis was defined successfully on 28/11/2012, and approved by

Defense Committee Members	**Signature**
1. Dr. Rowa' Al-Ramahi / Supervisor	.....
2. Dr. Nidal Jaradat / Co- Supervisor	.....
3. Prof. Mahmoud Abu Haded / External Examiner	.....
4. Dr. Mohammad Mosmar / Internal Examiner	.....

Dedication

To my family

specially my mother and father

Acknowledgement

Greeting goes to my supervisors Dr. Rowa' Al-Ramahi and Dr. Nidal Jarradat for their sincere encouragement, helpful, and close supervision which has been invaluable for me throughout all stages of this study. Also my sincere thanks go to my doctors Dr. Sa'ed H Zyoud, Dr. Samah-Al Jabi, and Professor. Waleed Sweileh for their help and support during my study.

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الإقرار

أنا الموقعة أدناه، مقدمة الرسالة التي تحمل العنوان:

Prevalence and Predictors of Herb Use during Pregnancy (A study at Rafidia Governmental Hospital/ Palestine)

مدى الانتشار والمؤثرات على استخدام الأعشاب الطبية خلال الحمل (دراسة في مستشفى رفيديا الحكومي/ فلسطين)

أقر بأن ما اشتملت عليه هذه الرسالة إنما هو نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيثما ورد، وأن هذه الرسالة كاملة، أو أي جزء منها لم يُقدم من قبل لنيل أي درجة أو لقب علمي أو بحثي لدى أي مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: **اسم الطالب:**

Signature: **التوقيع:**

Date: **التاريخ:**

Abbreviations

Abbreviations	Meaning
ASB	Asymptomatic Bacteriuria
LMP	Last Menstrual Period
BDS	Birth Defects Study
NBDPS	National Birth Defect Prevention Study
BDS	Birth Defects Study
DNA	DeoxyriboNucleic Acid
GERD	Gastroesophagial Reflux Disease
NSAIDS	Nonsteroidal Antiinflammatory Drugs
OTC	Over the Counter Medications
RNA	Ribonucleic Acid
UTI	Urinary Tract Infection
MOH	Ministry Of Health
WHO	World Health Organization
FDA	Food and Drug Administration

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Abstract

The use of herbal products among pregnant women is high Worldwide because they consider them safer than medication. They use herbs for nausea, vomiting, and other pregnancy related problems. Pregnant women like to use herbal products despite limited data on safety and efficacy. The objectives of this study are to measure the prevalence and predictors of herb use among a sample of Palestinian pregnant women and the possible influence of herbal consumption on pregnancy outcomes. This study was a questionnaire-based cross sectional descriptive study. It was conducted in the maternity ward of Rafedia Governmental Hospital between March and May 2012, a random sample of women who gave birth during the study period were met and asked to answer a face to face questionnaire. The results showed that the prevalence of using herbal products among pregnant women was 40.0%, the most common herbs were anise (61.7%), chamomile (53.3%), sage (55%), mixture of herbs (33.3%), and thyme (29.2%). The women preferred the herbs because they considered herbs safer than medications. There was no relation between herbal products use and any variable (age, educational level, living place, medical insurance, family income, work, chronic disease, parity and

medication use). No negative relationship between herbal use and outcome on pregnant women and infants was found. This study found that the use of herbs during pregnancy is very common among Palestinian women. To provide the best care to pregnant women who use herb products, clinicians and pharmacist are recommended to stay up to date with herb use and their safety in pregnancy. The physicians are recommended to ask pregnant women about herb use because this practice is common among pregnant women, so doctors need to consider this to avoid any possible drug-herb interaction or negative outcomes on the mother or the fetus.

Chapter one

Introduction

Chapter one
Introduction

1.1 Background

Use of herbs during pregnancy is a very interesting area; based on literature review more research is definitely needed. The prevalence of using herbal products during pregnancy varies widely and ranges from 7-55%, these percentages depend on the geographic area surveyed and the surveyed group's socio-cultural aspect and ethnicity (Dugoua, 2010). The physiological changes that occur in pregnant women lead them to self treatment (Holst *et al.*, 2009). Women turn to natural herbal products rather than prescription medications, mainly because they are concerned about the safety of the fetus. There are very few studied and clinical trials on the safety and efficacy of using herbs during pregnancy and their effects on pregnancy outcomes.

1.2 Pregnancy and physiological changes

The duration of pregnancy is approximately 280 days or 40 weeks when calculated from the first day of the last menstrual period till birth. Pregnancy is typically divided into three periods, each three months is called trimester (Wells, 2009). Pregnancy includes numerous physiological changes that occur in almost all maternal organs during this period to support growth and development of the fetus (Wells, 2009), these physiological changes include the skin (pigmentation increases), cardiovascular system (cardiac output, heart rate and blood volume

increase while blood pressure decreases), hematologic changes (hemodilution causes physiological anemia and apparent decrease in hemoglobin and hematocrite, gestational thrombocytopenia and hypercoagulable state), respiratory system (nasal congestion increases), gastrointestinal system (the chance of gastroesophagial reflux disease (GERD) increases due to increased abdominal pressure and progesterone, in addition to constipation and hemorrhoids due to decreased GI motility caused by progesterone), genitourinary system (urinary frequency and incidence of urinary tract infection increase), neurologic system (incidence of carpal tunnel increase), endocrine system (thyroid problems) and cervix (Gödell's sign, Hegar's sign and Chadwick's sign) (Gillian *et al*., 2011).

Physiological changes occur during pregnancy affect absorption, distribution, metabolism and elimination of medications (Kimey and McNulty, 2009). Pregnancy is associated with psychological stress as well as physiological stress, such as fear and anxiety. In addition to hormonal changes and increase in stress hormones including adrenaline and cortisol (Vanitallie, 2002).

Requirement of pregnant women to supplements increase, prenatal vitamins should be taken before month of conception to meet requirements of fetus in period of organogenesis and fetal growth, iron requirements increase during pregnancy also due to plasma volume expansion, fetal needs, placenta and cord needs and blood lose during delivery. Folic acid is essential in the synthesis of Ribo Nucleic Acid (RNA) and Deoxyribo

Nucleic Acid (DNA) of fetus cells, and calcium is needed during pregnancy for adequate mineralization of fetal skeleton and teeth especially during the third trimester when teeth and skeletal bones are formed (Kimey and McNulty, 2009).

The physiological changes will lead to pregnancy - related problems such as nausea, vomiting, constipation, cold, skin problems, heartburn and indigestion (Kimey and McNulty, 2009; Gillian *et al*., 2011). Therefore pregnant women try to treat these problems by using Over the Counter Medications (OTC), prescribed medications, herbs or life style modifications (Wells, 2009). Pregnant women like to use herbal products despite a clear evidence of negative effects in some cases and limited data on safety and efficacy (Cuzzolin *et al.*, 2010).

1.3 Management of some pregnancy-related problems

The management of constipation includes non pharmacological treatment at first by physical exercise, biofeedback therapy, and increase fiber and water intake. Women can use stool softener such as lactulose, sorbitol, biscodyle or senna also but castor oil and mineral oil should be avoided (Wells, 2009).

Gastroesophagial reflux disease (GERD) can be treated by lifestyle and dietary modifications, also drug therapy can be used as anti-acids, ranitidine, cimetidine, omeprazole, lansoprazole, sucralfate and metoclopramide. Sodium bicarbonate and magnesium trisilicate should be avoided (Wells, 2009).

Hemorrhoids can be managed by increasing intake of fibers and fluids, sitz path or topical medication (astingent, anasthesia skin pretectant) can be used also (Wells, 2009).

Nausea and vomiting can be managed by changing dietary habits or by using medications such as doxylamine, pyridoxine, antcholinergic (dicyclomine, scopolamine), or dopamine antagonists (metoclopramide). Ondansetrone can be used if other medications fail. Dexamethasone and prednisolone are effective for hyperemesis (Wells, 2009).

1.4 Herbal medicine definition

Herbal medicines are defined as plant –derived or preparations perceived to have therapeutic benefits, they contain raw or processed ingredients from one or more plants (World Health Organization, 2000). In 2008, the World Health Organization (WHO) added to the definition that they also include herbs, herbal materials, and finished herbal products that contain parts of plants or other plant materials as active ingredient *(*World Health Organization, 2008*)*. Plants and plant extracts have been used for medical purpose since before recorded time, patients Worldwide are more and more frequently turning to natural therapies and taking herbs to enhance their health and as treatment for their diseases (Henrry *et al.*, 2007). According to the WHO 80% of the world population cover their needs of medicines through herbal medicines (World Health Organization, 2002).

1.5 Safety and efficacy of herbal medicine during pregnancy

Women have used herbal medicines historically to treat pregnancy-related problems (Glover *et al*., 2003). Although there are very little real evidence and limited data about safety and efficacy of these herbs (Pinn and Pallet, 2002; Cuzzolin *et al.*, 2010; Pinn, 2001). Risks that could potentially be associated with the use of herbs during pregnancy include toxicity on mothers, developmental malformations in fetuses, increased risk of miscarriage and health effects on the child on short term or long term (e.g. increased risk of cancer) (Simpson *et al*., 2001; The Essential Guide to Herbal Safety, 2005). In addition to interactions with prescribed medicines and anesthesia (Scott and Elmer, 2002; Sood *et al.*, 2008). Effects and safety of herbs depends on the trimester. Herbs like the pharmaceuticals should be used with caution in the first trimester because there is no pharmaceutical or herb that is absolutely safe in the first trimester where rapid cellular development and organogenesis take place, so this period of pregnancy can be affected by any compound (Henry *et al*., 2007).

Some remedies of herbs might be contraindicated in pregnancy as bearberry, borage, deadly night shade, fox glove, juniper, parsley, pennyroyal, blue cohosh and gingko (Tiran, 2006; Mills *et al*., 2006; Tiran, 2003). Reasons differ from one herb to another, for example, gingko can cross the placenta and has been implicated in fetal anomalies (Tiran, 2003), blue cohosh is associated with risk of fetal hypoxia and cardiac condition (Mills *et al.*, 2006; Tiran, 2003), echinacea use for prolonged periods may

lead to liver toxicity (Tiran, 2003). Other remedies such as black cohosh, blazing star, fever few, flax and gentian should be used with caution (Mills *et al*., 2006). For many other herbs, studies on safety and efficacy are not found; examples include passiflora, peppermint and chamomile (Mills. *et al*, 2006; Holst *et al*., 2011).

Ginseng should be avoided by women taking estrogens and warfarin, prolonged use of ginseng can lead to unexplained vaginal bleeding. Raspberry leaf should be used in the third trimester in slowly increasing dosing only (Tiran, 2003).

There are very few studied and clinical trials on the safety and efficacy of using herbs during pregnancy and their effects on pregnancy outcomes. In a study by Holst *et al*. (2011) only fourteen studies focusing on safety and efficacy of herbs in human pregnancy were identified, ten studies of ginger one of cranberry, two of raspberry leaf and one of echinacea were located.

1.6 Commonly used herbs during pregnancy

The most commonly used herbs among pregnant women according to other studies include chamomile, cranberry, echinacea, ginger, peppermint, castor oil, dandelion, alfalfa, oat and oat straw, nettle leaf, almond oil and green tea (Holst *et al*., 2009; Cuzzolin *et al*., 2010; Holst *et al*., 2011; Moussally *et al*., 2009; Nordeng *et al*., 2011; Forster *et al*., 2006; Bishop *et al*., 2011; Henry *et al*., 2007; Lapi *et al*., 2008).

Pregnant women use Raspberry leaves to relief nausea, increase milk production, and for labor induction (Hernry *et al*., 2007; Holst *et al.*, 2011; Nordeng *et al.*, 2011; Forster *et al.*, 2006). Peppermint is used for nausea, vomiting, flatulence, indigestion and heart burn (Henry *et al*., 2007; Holst *et al*., 2011; Westfall, 2004). The uses of chamomile include gastrointestinal irritation, insomnia, joint pain and relaxation (Henry *et al*., 2007; Holst *et al*., 2011; Nordeng *et al*., 2011; Forster *et al.*, 2006). Cranberry is used for urinary tract infections (Holst *et al*., 2011; Forster. *et al.*, 2006). Almond oil is used to prevent stretch mark. Ginger is commonly used for nausea and vomiting (Dugoua, 2010; Nordeng *et al*., 2011; Forster *et al.*, 2006; Tiran, 2002; Ebrahimi *et al*., 2010; Westfall, 2004; Ozgoli *et al*., 2009; Pinn and Pallett, 2002). Raspberry leaves and blue cohosh are used for labor induction and castor oil is used to facilitate labor (Dugoua, 2010; Pinn and Pallett, 2002; Nordeng *et al.*, 2011). Echinacea is thought to be useful for upper respiratory tract infection, cold and flu, and to increase immunity (Nordeng *et al*., 2011; Forster *et al.*, 2006; Dugoua, 2010). St Johns Wort is used for depression and relaxation (Lapi *et al.*, 2008; Dugoua, 2010) while nettle and dandelion are used as nutritional supplements (Pinn and Pallett, 2002).

1.7 Significance of the study

There are limited data on the extent of women's use of herbal products during pregnancy in our country. It is important to know the prevalence of using herbal products and the herbs used so that proper

counselling can be provided. It is important to obtain herbal use history at any time but particularly in pregnancy. Herbs may have unrecognized effects on pregnancy or labor, have interactions with prescribed medications and have potentially serious complications on the fetus.

1.8 Objectives of the study

- To measure the prevalence of medication use during pregnancy (OTC and prescribed).
- To measure the prevalence of herbal products use during pregnancy.
- To identify the most frequently consumed herb products during gestation.
- To investigate the impact of socio-demographic factors on the use of herbal products in pregnancy.
- To find the possible relation between herb consumption and pregnancy outcome.
- To review evidence-based safety and efficacy of the most commonly used herbal products.

Chapter two

Literature review

Chapter two
Literature review

2.1 Studies related to herb use during pregnancy

Exposure of pregnant women to chemicals such as medications, herbs, and supplements during pregnancy period could affect their fetuses (Becaw *et al.*, 2010). So several studies about use of herbal products among pregnant women in other parts of the World can be found about prevalence, but little is known about outcomes of this use on pregnancy. For example, in a study conducted in the United Kingdom in 2009 a questionnaire was handed out to 1037 expectant mothers more than 20 weeks pregnant presenting at antenatal clinic, 578 questionnaires were returned, 57% of them used herbal remedies during pregnancy, the most commonly used remedies were ginger, cranberry, and raspberry leaf, the main source of information for the women was family and friends, 75% of users didn't tell the doctor about the use of herbs (Holst *et al*., 2009).

In another study from Norway, a survey among 400 post partum women within three days after giving birth to investigate the use of herbal drugs by pregnant women found that 36% used herbal drugs during pregnancy, the use of herbs increased throughout the first, second, and third trimester, also they found that echinacea, iron rich herbs, ginger, chamomile, and cranberry were the most commonly used herbs. Among the women having used herbal drugs in pregnancy, 39% had used herbal drugs that were considered possibly harmful or herbs where information about safety in pregnancy was missing. Use of herbal drugs in pregnancy had

most commonly been recommended by family or friends (Nordeng and Havnen, 2004).

In Canada in 2009 Moussally *et al*. studied prevalence and predictors of herbal product use during pregnancy, questionnaires were mailed to 8505 women selected from the Quebec pregnancy registry, from them 3354 answered the questionnaire, they found that 9% used herbal products during pregnancy. Among users, 69% took at least one prescribed medication concomitantly. Chamomile, green tea, peppermint and flax were the most frequently herbal products used (Moussally *et al*., 2009).

In Australia, a study was conducted to assess the frequency of alternative medicine usage in an antenatal population. A survey was carried out among 305 consecutive patients over 2 months at their registration in mid-pregnancy at an Australian Antenatal Clinic. The study showed that around 40% of patients used alternative medical therapy, including 12% herbal therapy (Pinn and Pallett, 2002).

Another study from Australia to measure the prevalence of herbal medicine use in a group of pregnant women attending a public tertiary maternity hospital found that 36% out of 588 pregnant women took at least one herbal supplement during pregnancy, the most common supplements taken were raspberry (14%), ginger (12%), chamomile (11%), cranberry juice (8.7%), echinacea (2.9%), and evening primrose oil (1.9%). There was no pattern between type of herbs and gestational age except for raspberry which was used from 30 weeks gestations or later (89%) and

ginger which was taken in early pregnancy (98%). Reasons for supplements use were relatively consistent for each herb for example ginger was used for nausea and vomiting and raspberry was for uterine tonic (Forster *et al.*, 2006).

A study from the United States to examine antenatal herbal and natural product use among mothers of non-malformed infants in 5 geographic centers found that among 4866 mothers of non-malformed infants, 282 (5.8%) reported use of herbal or natural treatments. Use varied by center and increased with increasing age. The most commonly herbal preparations were ginger (0.6%), echinacea (0.6%), herbal tea (0.4%) and cranberry (0.2%). The most common uses were for vomiting, nausea, upper respiratory tract infection, cough and cold, and urinary tract infection (Louik *et al.*, 2010).

In a study by Bercaw *et al*. (2010) to investigate the use of herbs, vitamins, OTC and prescribed medications among pregnant Hispanic women and reasons for use, and to assess physician-patient level of communication about women's use, a total of 485 Hispanic women were surveyed by means of a self-administered questionnaire immediately postpartum in a public hospital in Houston, Texas. The study found that 19% took herbs, 47% took vitamin supplements, 23% took OTC, and 29% took prescribed medications. The most common reason for using herbs and supplements was to improve the women’s health and energy (59%), 12% had used them for specific pregnancy related problems. The most

commonly used herb was chamomile, the most common supplements were folic acid and iron, the most common OTC medication was acetaminophen, and the most commonly prescribed medications were glyburide, insulin, macrodantin. 20% of women believed herbs and supplements were safer than prescribed medications, also one third of women had not disclosed information about supplements use to their physicians.

Studies focusing on the outcomes of herbal use during pregnancy are limited. A study by cuzzolin *et al.* in 2010 in Italy investigated the use of herbal products among 392 Italian women; they found that 109 out of 392 women (27.8%) reported taking one or more herbal products during pregnancy, in the 36.7% of cases the use of herbs was throughout pregnancy. The most frequently herbs taken were chamomile, licorice, fennel, aloe, valerian, echinacea, almond oil, propolis, and cranberry. Four out of 109 women (3.7%) reported side-effects. The decision to use herbal products mainly based on personal judgment and on the conviction that these natural substances would be safer than traditional medicines. Neonates of users were more frequently small for their gestational age. A higher incidence of threatening miscarriages and preterm labors was observed among regular users of chamomile and licorice.

Another study evaluated the use of herbal drugs during pregnancy among 600 Norwegian women in relation to concurrent use of conventional drugs and pregnancy outcomes, the data collected by interviewing women within five day after delivery, 39.7% of the women reported having used

herbal drugs during pregnancy, most commonly used herbs were ginger, iron-rich herbs, echinacea and cranberry. Although 86.3% of the women reported having used conventional drugs during pregnancy there were few potential interactions between herbal drugs and conventional drugs. There was a significant association between the use of iron-rich herbs during pregnancy and high birth weight, and use of raspberry leaves and caesarean delivery (Nordeng *et al*., 2011).

Holst *et al.* (2008) studied the characteristics of women using herbal drugs and the possible impact of use early in pregnancy on pregnancy outcome. The data obtained from Swedish Medical Birth Register during the period of 1St July 1995 to the end of 2004, women who reported use of herbal drugs were compared to all women giving birth during the period. Among 860215 women, 787 reported use of herbal product during early pregnancy (0.9%). The most common herbs were floradix (iron rich herbs), ginseng and valerian. The most common drugs were multivitamins, folic acid, antihypertensive drugs, nonsteroidal anti-inflammatory drugs (NSAIDs), analgesics and psycholeptics. There was no association between maternal age, weight, education and herb use. None of infant characteristics studied influenced significantly by the mother's use of herbal drugs in early pregnancy.

Another study measured the association between herbal product use during the last 2 trimesters and more particularly, between use of chamomile, falx, peppermint, or green tea and the risk of low birth weight.

Defined cases as women who delivered a newborn <2500g and controls as women who delivered a newborn ≥2500g. Among the selected 3183 participants, 424 (13.32%) fit to criteria. After adjusting for potential confounders, no statistically significant associations were found between the use of any herbal product during the last 2 trimesters of pregnancy and the risk of low birth weight (Moussally and Berard, 2012).

In the Arab World, studies regarding herbal product use during pregnancy are very limited; we could find only one study by Sawalha in 2007 from Palestine that investigated the consumption of prescription and non-prescription medications by a group of pregnant women attending the prenatal clinic at Rafedia Governmental Hospital in Nablus. The study asked about herb use, it was found that 45.8% of the pregnant women interviewed have used one or more type of herbal therapy. Pregnant women who used herbal medications did so based on their own decision in most of the cases (55.1%). The most commonly used herbs were sage, anise, chamomile, and thyme (Sawalha, 2007).

A study by Holst *et al*. (2011) to review the literature on efficacy of the most commonly used herbs to enable midwives to give evidence –based information to pregnant women, found that 57.8% of 578 participants used at least one herbal remedy during pregnancy, the most commonly used herbs and the reasons for use were ginger for morning sickness, nausea, vomiting and indigestion, cranberry to treat and prevent urinary tract infection, raspberry to induce and ease labor, chamomile for

relaxation, sleeping aid and calming, peppermint for digestion, heart burn, nausea, and morning sickness, and echinacea to treat and prevent cold or flu, and to boost immune system. Altogether, 14 studies focusing on the safety and/or efficacy of these herbs in human pregnancy were identified. Ten studies for ginger, one for cranberry, two for raspberry leaf and one for echinacea were located. So they concluded that there is limited documentation on the safety and efficacy of many herbs commonly used during pregnancy (Holst *et al.*, 2011).

Regarding attitude and knowledge on use of herbs during pregnancy in Norway there was a study about impact of socio-demographic factors, knowledge and attitude on the use of herbal drugs in pregnancy. The study included 400 women who gave birth at Ulleval University Hospital in 2001. They were interviewed by using a structured questionnaire within 3 days after childbirth and 36% of women reported herbal use during pregnancy. Both women who used and didn't use herbal products had positive attitude toward using herbs during pregnancy, echinacea was the most common herb used. The factors that increased use of herbs were prior use of herbs, high knowledge about herbs and age between 26-35 years. There was no association between herbal use and educational level (Nordeng and Haven, 2005).

Another study was conducted in Nigeria to investigate attitude and use of herbal medicine among pregnant women, 595 pregnant women in three geographic zones in Nigeria were included. They were interviewed by

using a structured questionnaire. The results showed that 67.5% had used herbal medicine, 74.3% preferred self prepared formulations, 30 % of herb users believed that use of herbal medicine during pregnancy is safe. The most common reasons that forced them to use herbs were herbs having better efficacy than conventional medicine, herbs being natural, they are safer during pregnancy than conventional medicine, easier access to herbal medicines, traditional and cultural belief and low cost. Their percentages were 22.4%, 21.1%, 11.2%, 12.5%, 11.2%, and 5.9% respectively. About 33.4% believed herbal medicines didn't have side effects, 30.4% thought that adverse/side effects of some herbal medicines could be dangerous. There was significant effect between marital status, geographic zone and educational level and side effects of herbs, while only geopolitical zone and educational level had statistically significant effects on their opinion on the harmful effects of herbal medicine to the fetus (Fakeye *et al.*, 2009).

2.2 Studies related to safety and efficacy of some commonly used herbs

2.2.1 Ginger

Ginger is a well known remedy for gestational sickness, its antiemetic effects are probably due to local gastrointestinal anti-cholinergic and anti-histamine actions (Quian and Liu,1992), and it is thought to be serotonin antagonist (Pertz *et al.*, 2011). In 1990 Fisher –Rasmussen *et al.* had a double-blind, randomized study; thirty participants were given 1gram of powdered ginger in capsule daily for 4 days or a placebo (lactose). Then after 2 days, they were given the alternate. Seventy percent of women

showed preference for ginger, also nausea and vomiting decreased significantly, and there were no adverse event on pregnancy or pregnancy outcome (Fisher –Rasmussen *et al.*, 1990). More recently, a second double-blind, randomized controlled trial was conducted by Vutyavanich *et al.* in 2001. Seventy women were given powdered ginger in capsule 1gram or placebo for 4 days, the results showed also a decrease in vomiting and nausea and no adverse event on pregnancy or pregnancy outcome (Vutyavanich *et al.*, 2001). In 2002 Keating and Chez published a double-blind, randomized controlled study where they used ginger syrup for twenty four pregnant women (1gram per day for two weeks), the authors concluded that ginger may be useful in some patients, experiencing nausea and vomiting in the first trimester of pregnancy and no major complications were found (Keating and Chez, 2002). Another study was conducted by Sripramote and Lekhyananda and published in 2003. It was a double-blind, randomized controlled study also, 128 women with nausea and vomiting of pregnancy at or before 16 weeks of gestation attended antenatal care clinic were included to compare the efficacy of ginger to vitamin B6 in the treatment of nausea and vomiting of pregnancy. The subjects were allocated into two groups to take either 500 mg of ginger orally or identical 10 mg of vitamin B6 one capsule three times daily for three days. There was no significant difference between ginger and vitamin B6, also the nausea and vomiting decreased significantly, with no adverse effects on pregnancy and pregnancy outcome (Sripramote and Lekhyananda, 2003).

Willets *et al.* investigated the effect of a ginger extract on the symptoms of morning sickness, 120 women less than 20 weeks pregnant were included in the study, it was double-blind, randomized placebo controlled trial random allocation of 125 mg ginger extract or placebo given for four times per day for 4 days, the authors concluded that ginger can be considered a useful treatment option for morning sickness in pregnancy and there were no adverse effects on pregnancy and pregnancy outcome (Willets *et al.*, 2003). Another study by Portnoi *et al.*, to examine the safety and effectiveness of ginger for nausea and vomiting of pregnancy was published in 2003. It was a prospective comparative study, women who took ginger in the first trimester enrolled in the study and then they were compared with a group of women who were exposed to non teratogenic drugs that were not antiemetic medications, the women were followed up for the outcome of pregnancy and health of their infants, the results showed there were no statistical differences in outcome between the ginger group and comparison group but infants whom their weight was less than 2500 gram were exception, and the ginger had mild effect in the treatment of nausea and vomiting (Portnoi *et al.*, 2003). Recently there were two studies about safety and effectiveness of ginger during pregnancy, one of them in 2009 made by Giti Ozgoli *et al.*, it was a single – blind clinical trial study, 67 pregnant women were included, and they were randomly assigned to two group, an experimental and control group, the experimental group took ginger 250 mg capsule for four days, and control group received placebo, the results showed that the ginger users

demonstrated a higher rate of improvement than placebo and a decrease in vomiting times.

Another study in 2012 was published by Kristine Heitmann *et al.*, it was cohort prospective study, data used in this study from Norwegian Mother and Child Cohort Study and Medical Birth Registry of Norway (pregnancy outcome), women received questionnaire during 17-30 weeks of the pregnancy and when their child was 6 month of old, to get data on ginger use and socio -demographic factors, the target population was women who gave birth in period (1999-2008), the results were among 68,522 women, in the study 1.5% women reported using ginger, also use of ginger during pregnancy didn't seem to increase the risk of congenital malformations, stillbirth, perinatal death, low birth weight, or low Apgar score.

There were studies to compare ginger with other antiemetic medication such as vitamin B6, dimenhydrinate and metoclopramide. Smith *et al.* conducted a randomized controlled trial in Australia to estimate whether the use of ginger to treat nausea and vomiting in pregnancy is equivalent to B6, 291 women less than 16 weeks were involved in the study, women took 1.05 gram of ginger or 75 mg of B6 daily for three weeks, they found that ginger was equivalent to vitamin B6 in reducing nausea and vomiting (Smith *et al.*, 2004). Another study by Chittumma *et al.*, confirmed that both ginger and B6 were effective to treat nausea and vomiting, in fact, ginger was more effective (Chittumma *et al.*,

2007). Ensiyeh and Sakineh in 2009 agreed that ginger is more effective than vitamin B6. Pongrojpaw *et al.*, had a randomized double blind controlled trial to compare ginger with dimenhydrinate in the treatment of nausea and vomiting in pregnancy, the authors concluded that ginger is effective as dimenhydrinate and has fewer side effects (Pongrojpaw *et al*., 2007).

Another study compared ginger and meteoclpramide, it was a randomized double blind controlled trial also, there was no statistical difference between ginger and metoclopramide, according to this study ginger was less effective than metoclopramaide in reducing nausea and vomiting but it could be a good alternative for metoclpramide (Mohammadbeigi *et al*., 2011).

Regarding to previous studies we conclude that ginger is effective as antiemetic agent and it is safe to be used by pregnant women because the data show no harmful effect related to ginger.

2.2.2 Cranberry

Cranberry is commonly used to prevent urinary tract infections. Scientific evidence to support the use of cranberry in prevention and treatment of urinary tract infections (UTI) is limited, also data regarding the efficacy of cranberry in pregnancy for prevention of asymptomatic bacteriuria is limited (Jepson and Craig, 2007). Only there is a randomized, controlled pilot study by Deborah *et al.*, to compare daily cranberry to

placebo during pregnancy on asymptomatic bacteriuria and symptomatic urinary tract infections. From July 2005 through July 2007, a total of 188 women were enrolled, eligible pregnant women at less than 16 weeks gestation presented initially for prenatal care at University of California were included all subjects were instructed to ingest one 240 ml bottle containing either cranberry or placebo at each meal until delivery, women were followed through delivery and immediate puerperium, each woman was contacted, weekly for six weeks, the results showed that from 188 women, 73 withdrew due to gastrointestinal upset, there was no difference between the groups with regard to obstetric and neonatal outcomes, also no statistically difference between the treatment trends towards fewer UTIs with multiple daily dose versus placebo and a weaker trend for a single daily dose, data suggest cranberry may have a protective effect to asymptomatic bacteriuria (ASB), and symptomatic UTI (Wing *et al.*, 2008).

2.2.3 Raspberry

Raspberry is commonly taken as a tea, it is used for fertility, and some women take it as labor aid during the last two months before delivery. The mechanism of action of raspberry is unclear, human data show that it may have stimulatory or spasmolytic effects on the uterus depending on the dose, in low doses it causes more contraction, while in higher dose, it may have spasmolytic effects and decrease contraction (Dugoua, 2010). It should be avoided before the third trimester unless

prescribed by a qualified medical herbalist (Tiran, 2003). Only two studies on raspberry could be found, one of them was by Parsons *et al.*, it was a retrospective study and included 108 pregnant women, 57 women who received raspberry were less likely than placebo to take an artificial rupture of their membranes, or to need caesarean section, forceps or vacuum birth, and also no adverse effect on mother or babies were seen. Raspberry decreases likely hood of preterm or post term gestation, and has no statistically difference effect on the duration of labor (Parsons *et al.*, 1999).

In another double-blind randomized placebo-controlled trial, 192 women at 32 weeks gestation were included, they received 1.2 gram of raspberry tablet twice daily, no adverse effects on mother or infants were found, raspberry shorted the second stage of labor, but it has no significant reduction in the first stage, it lowered forceps delivery also (Simpson *et al.*, 2001).

2.2.4 Castor oil

Castor oil is commonly used as a potent laxative. Pregnant women use it to initiate labor (Dugoua, 2010). Castor oil increases contractile activity by enhancing oxytocin in human myometrium (O'Sullivan, 2010), it increases prostaglandin production also, which stimulates uterine activity (Garry *et al.*, 2000).

In a prospective cohort study of 100 women with intact membrane 40-42 weeks gestation to evaluate the relationship between the use of castor

oil and the onset of labor, patients were divided into two groups, first group included 52 women received 60 ml of castor oil (single oral dose), second group included 48 women received no treatment, 30 of 52 (57.7%) of the first group went into active labor within 24 hours as compared to 2 of 48 (4.2%) from the second group, the authors concluded that in women who took castor oil, initiation of labor within 24 hours increased compared to women who took no treatment (Garry *et al.*, 2000).

In Iran another study was conducted by Azhari *et al.* determined the effect of castor oil on initiating labor in term pregnant women. It was a randomized control clinical trial on 47 pregnant women. There was a significant increase in labor initiation rate in the castor oil group compared with control group (54.2%), the authors also concluded women who took castor oil showed an increase of initiation of labor within 24 hours compared to women who took no treatment (Azhari *et al.*, 2006).

On the other hand, Boel *et al.* concluded that castor oil has no harmful effect on mother or fetus but for induction of labor it had no effect on time of birth, the study included 612 pregnant women with a gestation more than 40 weeks, 205 of them received castor oil, and 407 did not, the results showed there was no significant different between the two groups in the time of birth (Boel *et al*., 2009).

2.2.5 Echinacea

Echinacea is commonly given to treat upper respiratory tract infection (Dugoua, 2010), the safety of echinacea prior to and during

pregnancy has not been confirmed although the incidence of major embryonic malformation appears to be not greater than in non-users (Gallo *et al.*, 2000) as shown in a prospective study that included a cohort of 206 women using echinacea in the first trimester versus 206 control group, in the echinacea group, there were 195 live births, 13 spontaneous abortions, 1 therapeutic abortion, and 6 major malformations. In the control group, there were 198 live births, 7 spontaneous abortions, 1 therapeutic abortion, and 7 major malformations, there were no statistically significant differences between the two groups, and the authors concluded the use of echinacea during organogenesis in pregnancy is not associated with an increased risk of major malformations (Gallo *et al.*, 2000).

In another study that was conducted on mice, about influence of echinacea purpurea intake during pregnancy on fetal growth and tissue angiogenic activity, Female mice from the first day of fertilization until 18 day of pregnancy were daily fed 0.6 mg of echinacea or water (control group), the results showed that angiogenic activity of tissue homogenate was increased in echinacea group. In case of control group there was no significant differences in angiogenic activity. The author concluded echinacea purpurea might influence fetal development in human, because it interfered with embryonic angiogenesis, and should not be recommended for pregnant women (Barcz *et al.*, 2007).

A systemic review found that there is good scientific evidence from a prospective cohort study that oral use of echinacea during the first trimester

does not increase the risk for major malformations. Low-level evidence based on expert opinion shows that oral use of echinacea in recommended doses is safe for use during pregnancy and lactation. The author concluded echinacea is non teratogenic and must be used with caution in pregnancy and lactation (Perri *et al.,* 2006).

2.2.6 ST. John's Wort

It is well-known for treating mild to moderate depression, including premenstrual or menopausal symptom (Stevinson *et al.*, 2000). The whole evidence regarding the safety of St. John's Wort in pregnancy seems to depend on one case report, the case was a 38 years old women who started taking ST. John's Wort at 24 weeks gestation, her pregnancy was ordinary, except of late onset of thrombocytopenia, the author did not consider thrombocytopenia related to ST.John's Wort, the fetus was born healthy and normal, also behavioral assessment up to 4 and 23 days was within normal limits (Crush *et al*., 1998).

In Dugoua *et al.*, systematical review, there was very weak scientific evidence based on a case report that St. John's Wort is of minimal risk when taken during pregnancy. There is in vitro evidence from animal studies that St. John's Wort does not affect cognitive development nor cause long-term behavioral defects during pregnancy, but may lower offspring birth weight. Also there is weak scientific evidence that St. John's Wort use during lactation does not affect maternal milk production nor affect infant weight, but in a few cases it may cause colic, drowsiness or

lethargy. St John's Wort induces CYP450 enzymes but with weak scientific evidence. The author concluded St John's Wort must be used with caution in pregnancy and lactation (Dugoua *et al.*, 2006a).

In another study, the women who took ST. John's Wort were followed prospectively, compared with other two groups, one of them took pharmacological therapy and the other group wasn't exposed to any known teratogen, they followed 54 pregnant women who took ST. John's Wort, 54 pregnant women on anti depressant medications, and 54 healthy pregnant women with no teratogenic exposure during pregnancy, the results indicated that the rate of major malformations were similar across the three groups (5%, 4%, and 0 %) (Moretti *et al.*, 2009).

2.2.7 Blue Cohosh

It is the most commonly used herb to induce labor (Dugoua *et al.*, 2010). According to a survey of mid wives in the United States, approximately 64% of midwives reported using blue cohosh as a labor – inducing agent. There were three case repots in scientific literature that blue cohosh taken at the time of delivery may cause; perinatal stroke, acute myocardial infarction, profound congestive heart failure, shock and severe multi-organ hypoxic injury. In vitro evidence indicates that blue cohosh may have teratogenic, embryo toxic and oxytoxic effects. In lactation the safety of blue cohosh is unknown, the authors concluded blue cohosh should be used with extreme caution during pregnancy, also used only

under medical professional supervision, and not to be available as over the counter product (Dugoua *et al.*, 2008).

2.2.8 Black cohosh

Midwives have used black cohosh during labor for induction (McFarlin *et al.*, 1999), in a systematic review; the most common indications for use of black cohosh were menopausal symptom, arthritis, induction of labor. Black cohosh alone or in combination is used by midwives as uterine stimulant and labor -inducing agent. The following concern should be taken with respect to black cohosh use during pregnancy; labor inducing effects, hormonal effects, emmenagogue properties and anovulatory effects. In lactation there is low level evidence that black cohosh have hormonal properties, the authors concluded black cohosh should be used with caution during pregnancy mainly in the first trimester and during lactation (Dugoua *et al.*, 2006b).

2.2.9 Ginkgo biloba

The most common ginkgo uses were peripheral vascular disease, dementia, cerebrovascular insufficiency, tinnitus and age-related memory impairment. There is scientific evidence from animal studies in vitro that ginkgo leaf has anti platelet activity so this may prolong bleeding time during labor who ever, however this evidence is weak. Also ginkgo may be an emmenagogue and have hormonal properties based on expert opinion with low level of evidence. The safety of ginkgo during lactation is

unknown. Ginkgo biloba should be used with caution during pregnancy mainly around labor. During lactation the safety of ginkgo is unknown and should be avoided until high quality studies are conducted to confirm safety (Dugoua *et al.*, 2006c).

In summary, we conclude that for cranberry, raspberry, castor oil, echinacea, ST.John's Wort, blue cohosh, black cohosh, and ginko biloba, there are no enough data about their efficacy and safety so pregnant women should use them with caution.

Chapter Three

Methodology

Chapter Three
Methodology

3.1 Setting

This survey was carried out at Rafedia Governmental Hospital in Nablus city. It is a major a governmental medical hospital in north Palestine. It has 215 beds and provides medical services for people who hold governmental insurance. The hospital has different wards such as surgical, pediatrics, orthopedic, and obstetrics and gynecology wards. The obstetrics and gynecology ward includes 14 beds, according to the registration records during the time of this study; the average of delivered women was 387.6 per month.

3.2 Population of the Study

The population of study was all women who delivered at Rafidia Governmental Hospital during the study period. According to the registration records from March to May in Rafedia Governmental Hospital, the total number of delivered women who were admitted to obstetrics and gynecology ward was 1168 cases.

3.3 Sample size

The expected number of women who give birth at the obstetrics and gynecology ward was around 400 women per month based on data from hospital, so within the three months it was expected to be around 1200 women. Based on this, Raosoft soft ware

(http://www.raosoft.com/samplesize.html) was used to calculate a suitable sample size and it was 292, so we decided to include 300 pregnant women.

During the study period 1168 cases were admitted to the obstetrics and gynecology ward so this sample size is more than 10% of the population.

3.4 Design, data collection and instrument of the study

The study was a questionnaire-based cross sectional study, it was conducted in the maternity ward of Rafedia Governmental Hospital between March 2012 to May 2012, after having the approval from the Institutional Review Board (IRB) at An-Najah National University (Appendix1) and the required permission from the Palestinian Ministry of Health (Appendix 2).

In this study, a random sample of women who gave birth at Rafidia hospital at the obstetrics and gynecology ward were met by a researcher (two hours per day for three months) and asked to answer a face to face questionnaire. Women were interviewed in Arabic after getting their verbal consent only once.

Women were interviewed within 3days after childbirth; each interview lasted approximately 7-10 minutes. The questionnaire was anonymous, pretested by a pilot study of 10% of sample (30 from 300) for reliability to check the validity and clarity of the questionnaire. Questionnaire contained four sections. The first section included questions

regarding age, educational level, place of living, monthly income, work, number of children, and presence of chronic diseases. The second section asked about supplements, OTC medications, and prescribed medication use. The third section was about the use of herbs during pregnancy and the type of herbal products consumed (a list was given, including products commonly used in pregnancy according to other studies) (Appendix 3), in addition to questions regarding (dosage, rout of administration, timing of administration, reasons for use, why they preferred herbs, who advised them to use herbs, side effects and benefits). The fourth section included data about pregnancy outcomes and newborn outcomes (abortion, type of delivery, gestational weeks, weight of newborn, and problems in newborn at birth) (Appendices 4 and 5).

3.5 Statistical analysis

Statistical analyses performed by using Statistical Package for Social Sciences (SPSS version 17.0). Mean ± standard deviation were computed for continuous data. Frequencies and percentages were calculated for categorical variables. Means were compared using student's t-test and ANOVA. Categorical variables were compared using Chi-squared and Fisher's exact tests, as applicable. A p-value of less than 0.05 was considered to be statistically significant for all analyses.

Chapter Four

Results

Chapter Four
Results

4.1 Socio-demographic characteristics

Among 330 women approached 300 accepted to participate in the study giving a response rate of 90.1%. As shown in table 4.1, women were mainly between 20 and 30 years of age (69.7%), most of the participants had a high school or university degree (37.3% and 39.0% respectively). Around two-third of them were multi- para (68.0%) and were from villages (67.3%). Most of them had medical insurance (96.7%), family monthly income of less than 600 Jordanian dinars (92.7%) and were not working (94.3%) (Table 4.1).

Table (4.1): Socio-demographic characteristics of women involved in the study (N=300)

Variable	Number (n)	Percentage (%)
Age		
Less than 20	22	7.3
20-30	209	69.7
31-40	65	21,7
More than 40	4	1,3
Educational level		
Primary and illiterate	20	6.7
Middle school	51	17.0
High school	112	37.3
Diploma/university education	117	39.0
Living place		
City	69	23.0
Village	202	67.3
Camp	29	9.7
Medical insurance		
Yes	290	96.7
No	10	3.3
Family monthly income		
≤ 600	278	92.7
> 600	22	7.3
Work		
Yes	17	5.7
No	283	94.3
Chronic disease		
Yes	5	1.7
No	295	98.3
Parity		
One	96	32.0
More than one	204	68.0

4.2 Medication use during pregnancy

During pregnancy 136 (45.3%) women took at least one over the counter (OTC) medication and 164 (54.7%) didn't. The most commonly used OTC medication was paracetamol (97.1%) (Figure 4.1).

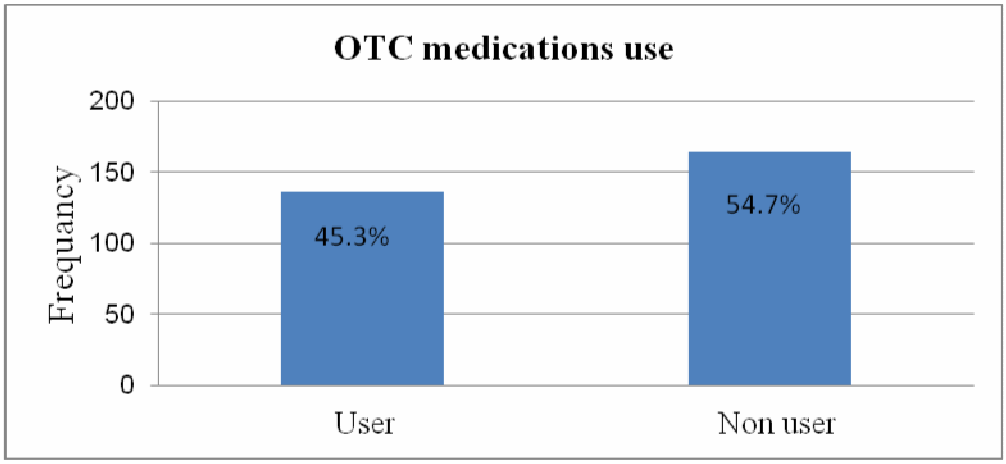
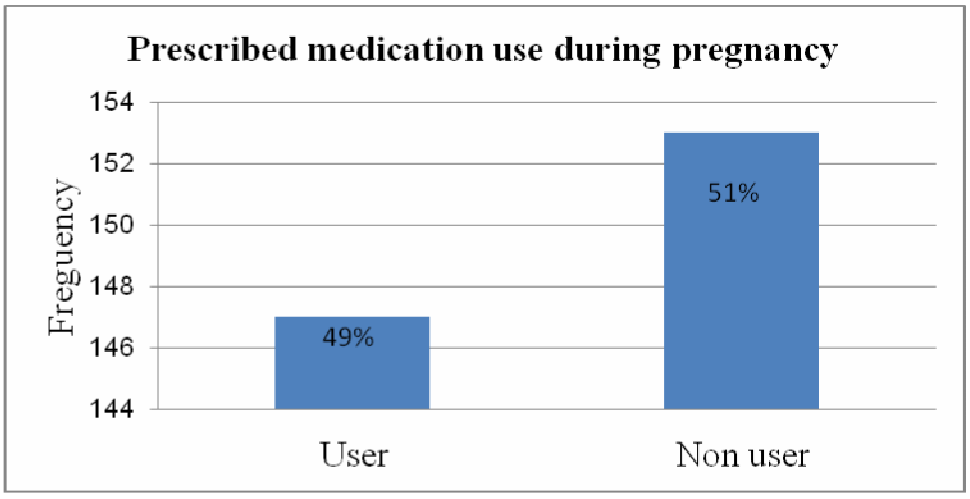


Figure (4.1): OTC medication use during pregnancy

One hundred forty seven women (49.0%) took at least one prescribed medication and 153 didn't (Fiqure 4.2). Approximately one half of them received antibiotics followed by alimentary tract and metabolite medications 23.1% as shown in table 4.2.



Fiqure (4.2): Prescribed medications use during pregnancy

Table (4.2): Classes of prescribed medications utilized by pregnant women (N=147)

Medication	Number (n)	Percentage (%)
Antibiotic	74	50.3
Alimentary tract and metabolite	34	23.1
Topical anti-fungal agent	13	8.8
Progestogen	10	6.8
Cough and cold preparation	8	5.4
Anti-thrombotic agent	5	3.4
Corticosteroid	5	3.4
Antihypertensive agent	5	3.4
Respiratory system	3	2.0
Anti-histamine	2	1.4
Nervous system	2	1.4
Urological	2	1.4
Thyroid therapy	1	0.7

Twelve women didn't use supplement, two hundred eighty eight women used supplements (96%) (Figure 4.3). Folic acid was the most commonly used one as shown in table 4.3. Among users 95.3% used more than one supplement, 4.7% used one supplement, (2.4% folic acid, 1.7% iron, 0.3% calcium and 0.3 % vitamin). Table 4.3 shows supplements used and the number of women who used them.

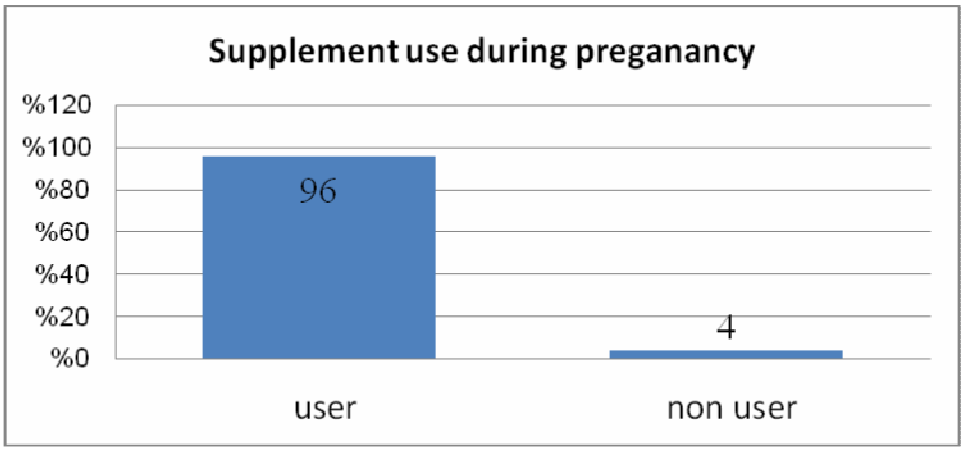


Figure (4.3): Supplement use during pregnancy

Table (4.3): Supplement intake during pregnancy (N= 288)

supplement	Number (n)	Percentage (%)
Folic acid	280	93.3
Iron	276	92.0
Calcium	181	60.3
Vitamin	124	41.3

4.3 Herb use during pregnancy

Users of herbs during pregnancy were 120 women (40.0%) (Figure 4.4).

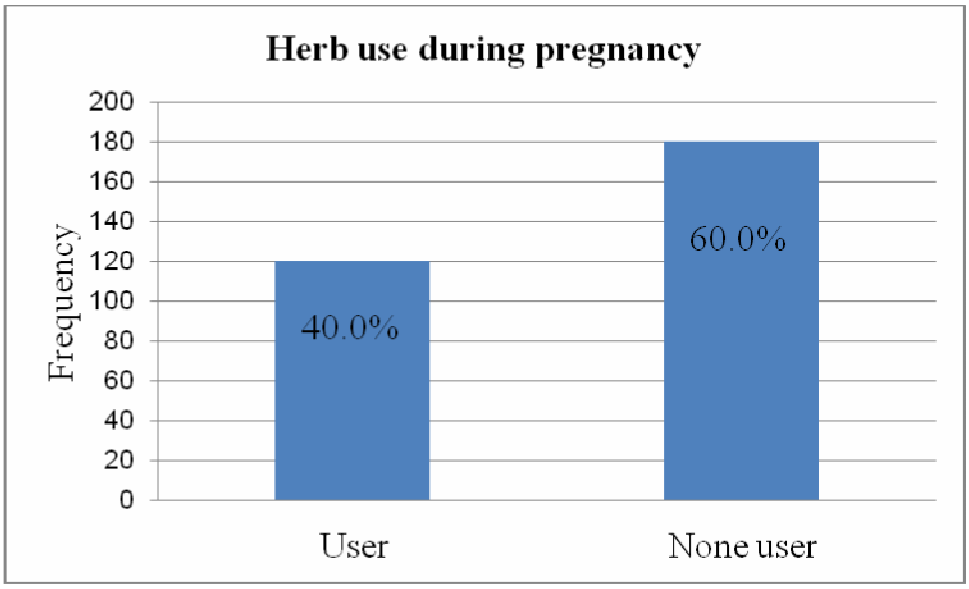


Figure (4.4): herb use during pregnancy

As shown in table 4.4 most of the pregnant women used more than one herb (90.0%), 35.8% used herbs in the third trimester of pregnancy, they preferred to use herb mainly because they thought the herbs are safer than medications (82.5%), in most of cases they based on advice from family or doctor (36.7%, 33.0% respectively), most of them told their doctors (65.8%) that they used herbs, one hundred and ten (91.7%) considered these therapies beneficial, and 99.2% reported no side effects.

Table (4.4): Details about herb use during pregnancy (N=120)

Variable	Number (n)	Percentage %
Period of use during pregnancy		
First trimester	9	7.5
Second trimester	24	20.0
Third trimester	43	35.8
Throughout the pregnancy	28	23.3
Second and third trimester	9	7.5
First and Third trimester	5	4.2
First and Second trimester	2	1.7
Number of herbs used		
One	12	10.0
>1	108	90.0
Why they preferred		
Safer than medications	99	82.5
Availability	10	8.3
Safe and available	10	8.3
More effective than medications	1	0.8
Who advised them to use herbs		
No one (myself)	35	29.2
Family	43	35.8
Doctor	39	32.5
Pharmacist	1	0.8
Family and doctor	2	1.7
Did they tell the doctor		
Yes	79	65.8
No	41	34.2
Herbs were effective		
Yes	110	91.7
No	10	8.3
Side effects		
Yes	1	0,8
No	119	99,2

The most frequently used herbs were anise (61.7%), chamomile (53.3%), sage (45.8%), mixture of herbs (33.3%), thyme (29.2) and date (28.3%) (Table 4.5), some women were regular users, in other cases herbs were taken as needed. The most common reasons for using herbs were: vomiting, constipation, flue, cough, abdominal pain, urinary tract infection,

flatulence, relaxation, GERD, ulcer, upper and lower respiratory tract infection, and to facilitate delivery. Almost all herbs were taken by the oral route, three cases as vaginal path, and two cases as mouth wash (Table 4.5).

Table (4.5): The most frequently used herbs and the reported reasons for use (N=120)

Herb	Number (n)	Percentage (%)	Route of administration	Aim of use
Anise	74	61,7	Oral	Flue and cough Abdominal pain Vomiting Diuretic Chest pain To fix pregnancy Laxative Infection Flatulence Relaxation Stomachache
Chamomile	64	53.3	Oral	Cough and flue Abdominal pain Infection Diuretic Flatulence Relaxation Pharyngitis Laxative
Sage	55	45.8	Oral vaginal path Mouth wash	Vomiting Abdominal pain Infection GERD Teeth pain Flue
Mixture of herbs	40	33.3	Oral	Cough and flue Abdominal pain Relaxant Laxative Pharyngitis
Thyme	35	29.2	Oral	Cough and flue Chest pain Relaxation Pharyngitis

Herb	Number (n)	Percentage (%)	Route of administration	Aim of use
Date	34	28.3	Oral	Energy Facilitate delivery Laxative
Peppermint	17	14.2	Oral	Abdominal pain Flue GERD Relaxation Facilitate delivery Cough Flatulence
Cinnamon	13	10.8	Oral	Anemia Facilitate delivery Laxative Abdominal pain
Fenugreek	11	9.2	Oral	Cough Infection
Cumin	8	6.7	Oral	Facilitate delivery flatulence abdominal pain
Ginger	4	3.3	Oral	Cold and flue Cough Vomiting
Garlic	3	2.5	Oral Vaginal path	Hemorrhoid UTI Ameba
Caraway	3	2.5	Oral	Facilitate delivery
Guava leaves	3	2.5	Oral	Cough Pharyngitis
Fennel	2	1.7	Oral	Flue Infection Relaxation
Almond	2	1.7	Oral	GERD
Parsley	2	1.7	Oral , Vaginal path	Infection (UTI)
Castor oil	1	0.8	Oral	Facilitate delivery
Green tea	1	0.8	Oral	Laxative
Clove	1	0.8	Mouth wash	Teeth pain
Citrus	1	0.8	Oral	Flue
Plant caper	1	0.8	Oral	Abdominal pain Flatulence
Nigella seeds	1	0.8	Oral	Abdominal pain

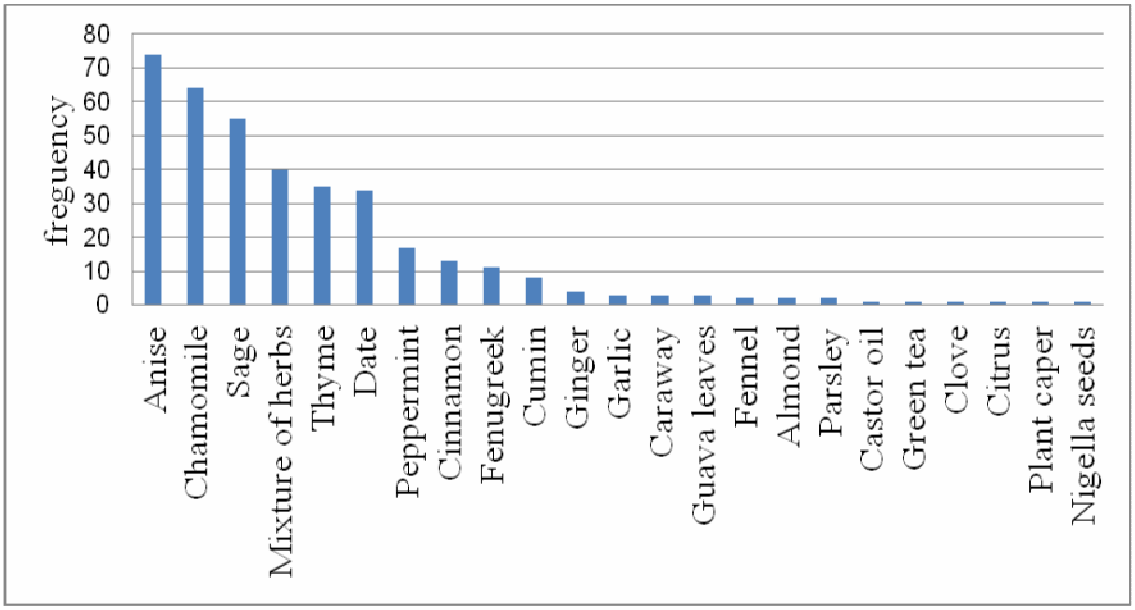


Figure (4.5): The most frequently used herbs

4.4 Factors associated with herb use

Results show that there is no significant association between any scio-demographic characteristic and the use of herbs as shown in table 4.6.

Table (4.6): Association between scio-demographic characteristics and use of herbs during pregnancy

variable	User (N=120) (n, %)	Non user (N=180) (n, %)	P-value
Age			
less than 20	8 (6.7)	14 (7.8)	
20-30	81 (67.5)	128 (74.1)	
31-40	30 (25.0)	35 (19.4)	
more than 40	1 (0.8)	3 (1.7)	0.647
Educational level			
Primary and illiterate	8 (6.7)	12 (6.7)	
Middle school	15 (12.5)	36 (20.0)	
High school	50 (41.7)	62 (34.4)	
Diploma/University education	47 (39.2)	70 (38.9)	0.335
Living place			
City	26 (21.7)	43 (23.9)	
Village	82 (68.3)	119 (66.7)	
Camp	12 (10.0)	18 (9.4)	0.902
Medical insurance			
Yes	115 (95.8)	175 (97.2)	
No	5 (4.2)	5 (2.8)	0.511
Family monthly income			
Less than600 or equal	115 (95.8)	163 (90.6)	
More than 600	5 (4.2)	17 (9.4)	0.086
Work			
Yes	7 (5.8)	10 (5.6)	
no	113 (94.2)	170 (94.4)	0.919
Chronic disease			
Yes	2 (1.7)	3 (1.7)	1.0
No	118 (98.3)	177 (98.3)	(fisher)
Parity			
First child	36 (30.0)	60 (33.3)	
More than one	84 (70.0)	120 (66.7)	0.544
OTC medication use			
Yes	60 (50.0)	76 (42.2)	
No	60 (50.0)	104 (57.8)	0.185
Prescribed drug use			
Yes	57 (47.5)	90 (50.0)	
No	63 (52.5)	90 (50.0)	0.671
Supplement use			
Yes	117 (97.5)	171 (95.0)	0.374
No	3 (2.5)	9 (5.0)	(fisher)

4.5 Information about pregnancy and delivery

As shown in table 4.7, two hundred and sixty women delivered at term (86.7%), mean of gestational age was 39.2 ±1.762 weeks. 62.0% of deliveries were normal, the incidence of threatened miscarriage was 8.3% between women.

Table (4.7): Information about pregnancy and delivery (N=300)

	Number (n)	Percentage %
Pregnancy at term		
Term	260	86.7
Post term	0	0.0
Preterm	40	13.3
Threatened miscarriage		
Yes	25	8.3
No	275	91.7
Delivery		
Normal	186	62.0
Caesarian	114	38.0

There were no significant differences between users and non-users of herbs in any pregnancy outcome as shown in table 4.8.

Table (4.8): Association between pregnancy outcome and herb use during pregnancy

Variable	Herb use (N=120) (n,%)	Non herb use (N=180) (n,%)	P value
Pregnancy at term			
Term	102 (85.0)	158 (87.8)	0.488
preterm	18 (15.0)	22 (12.2)	
Parity			
One	36 (30.0)	60 (33.3)	0.544
More than one	84 (70.0)	120 (66.7)	
Miscarriage			
Yes	8 (6.7)	17 (9.4)	0.394
No	112 (93.3)	163 (90.6)	
Delivery			
Normal	77 (64.2)	109 (60.6)	0.528
Caesarian	43 (35.8)	71 (39.4)	

4.6 Neonatal characteristic

Average weight of neonates was 3.2 ±0.565 Kg, two hundred and sixty of neonates were within gestational age 38-42 weeks and forty were less than 38 weeks. Some neonates had problems at birth (28, 8.2%), (eighteen had respiratory problems, one was premature, four were premature and had respiratory problem, one aspirated moconium fluid, one had closure of ductus arteioses, one had umbilical injury, one had rash and for one neonate her mother didn't know what was the problem in her daughter) (Table 4.9).

Table (4.9): Neonatal characteristics (N=300)

Variable	Number (n)	Percentage (%)
Gestational age		
38-42	260	76.5
Less than 38	40	11.8
More than 42	0	
Medical problem at birth		
Yes	28	8.2
No	272	80.0
Weight		
less 1.5 Kg	1	0.3
less than 2.5 Kg	28	9.3
2.5-4.0 Kg	261	87.0
more than 4.0 Kg	10	3.3

There were no significant differences between users and non-users of herbs in any of neonates' outcomes as shown in table 4.10.

Table (4.10): Association between neonates' outcomes and use of herbs during pregnancy

Variable	User (N=120) (n, %)	Non user (N=180) (n, %)	P-value
Gestational age			
38-42	102 (85.0)	158 (87.8)	0.488
Less than 38	18 (15.0)	22 (12.2)	
More than 38	0 (0.0)	0 (0.0)	
Medical problem at birth			
Yes	10 (8.3)	18 (10.0)	0.627
No	110 (91.7)	162 (90.0)	
Weight			
Less 1.5	0 (0.0)	1 (0.6)	0.375
Less than 2.5	12 (10.0)	16 (8.9)	
2.5-4.0	106 (88.3)	155 (86.1)	
More than 4.0	2 (1.7)	8 (4.4)	
Respiratory problem	8 (6.7)	10 (5.6)	
Premature	1 (0.8)	0 (0.0)	0.279
Rash	1 (0.8)	0 (0.0)s	
Respiratory and premature	0 (0.0)	4 (2.2)	
Moconium aspiration	0 (0.0)	1 (0.6)	
Don’t know	0 (0.0)	1 (0.6)	
Heart disease(valve closure)	0 (0.0)	1 (0.6)	
Umbilical injury	0 (0.0)	1 (0.6)	

Chapter Five

Discussion

Chapter Five
Discussion

Pregnant woman may become ill during pregnancy and require treatment to protect her life and health as well as the life and health of the fetus. So she may need to use OTC medications, prescribed medications or complementary alternative therapy. This study was conducted to shed light on herbs consumption among a sample of pregnant women in Palestine.

5.1 Consumption of medications by pregnant women

Close to half the pregnant women interviewed in our study had consumed OTC medications (45.3%). Almost all of the OTC users used acetaminophen (97.7%), and four women used ibuprofen as an analgesic (2.9 %), this percentage in 2006 was 33.3% and the antipyretics were the most common medications (76.8%) (Sawalha, 2007). Previous studies suggest that 29-93% of pregnant women use over the counter medication during their gestation (Aviv *et al.*,1993; Matts and Crowther, 2002; Glover *et al.*, 2003; Refuerzo *et al.*, 2005; Forster *et al.*, 2006), for example 23% of Hispanic women in the United State used OTC medications, also the most common type was acetaminophen (13%) followed by NSAIDs such as ibuprofen and aspirin (Bercaw *et al.*, 2010), in Virginia Glover *et al.* in 2003 found that 92% of pregnant women used OTC medication, acetaminophen was taken by 73.2% of women during pregnancy, also 15% of them took ibuprofen (Glover *et al.*, 2003), in France the percentage of OTC medications user was 23.3% (Moussaly *et al.*, 2009), both the National Birth Defect Prevention Study (NBDPS) and Boston University

Slone Epidemiology Center Birth Defects Study (BDS) showed that approximately two-thirds of women took acetaminophen and approximately 1 in 6 women had a decongestant or ibuprofen during pregnancy (Werler *et al.*, 2005). The harmful effects of OTC medications are known, for example, aspirin has been associated with increased neonatal hemorrhage, decreased birth weight, prolonged gestation, and prolong labor (Collins, 1981). Large doses of aspirin have been shown to have teratogenic effects in animal species (Conover, 2003), the only confirmed association is between late pregnancy aspirin use and intracranial hemorrhage in new born infants (Briggs *et al.*, 2003), Food and Drug Administration (FDA) classified aspirin as category C.

Ibuprofen during pregnancy may be a risk factor for premature closure of fetal ductus, persistent pulmonary hypertension of newborn, fetal nephro-toxicity, pre ventricular hemorrhage, and gastroschisis (Macones *et al.*, 2001; Werler *et al.*, 2002; Alano *et al.*, 2001), ibuprofen use is contraindication during the third trimester of pregnancy (Briggs *et al.*, 2002), FDA classified ibuprofen as category C during the first and second trimester and as category D during third trimester.

Acetaminophen was widely used among pregnant women .It is important to understand that acetaminophen can be used during pregnancy but it shouldn't be overused or misused. It cross the placenta in its unconjucated form (Rayburn *et al.*, 1986), it is considered a drug without teratogenic effects (Rathmell *et al.*, 1997), there are no controlled studies in

pregnant women in the first trimester (Burdan, 2003), it is consider by FDA as category B. Even though few obstetric complications have been noted with the occasional use of acetaminophen, hepatotoxicity and nephrotoxicity have been reported at high level in adults and babies born to women who have taken large doses (Conover, 2003).

Data from epidemiological and animal studies are reassuring regarding the risk of malformations, except for complex abnormalities of ear, face and neck (Rebordosa *et al.*, 2008). Acetaminophen intake among women reporting infection and fever in the first trimester decreased risk for anencephaly or craniorachischisis (Feldkamp *et al.*, 2010), on the other hand exposure to acetaminophen during the first and second trimesters was also associated with increased incidence of cryptochidism (Jensen *et al.*, 2010), more over exposure to acetaminophen during the third trimester increases risk of preeclampsia, particularly before the 32nd gestational week (Rebordosa *et al.*, 2010), there are number of reports on fatal complications of acetaminophen overdose for both mother and fetus (McElhatton *et al.*, 1997; Prescott,1996; Wang *et al.*, 1997; Wilkes *et al.*, 2005). In conclusion, use of acetaminophen during pregnancy is accepted if it is highly needed.

As for prescribed medication 49% of pregnant women were prescribed medications during this current pregnancy, in 2006 the percentage was 56%, the major categories of prescribed medications were antibiotics 50.3%, alimentary tract and metabolite (23.1%), topical

antifungal agent (8.8%), progestogen (6.8%), cough and cold preparation (5.4%), antithrombotic agent (3.4%), corticosteroid (3.4%), antihypertensive agent (3.4%), respiratory system (2%), antihistamins (1.4%), nervous system (1.4%), urological (1.4%), and thyroid therapy (0.7%). In 2006 the categories were as following: antibiotics (39.6%), GIT medications (22.6%), prescribed analgesics (19.5%), decongestants and anti-allergics (10.7%), and cardiovascular system medication (5.7%) (Sawalha, 2007).

Glover *et al.*, in their study found that 95.8% of pregnant women received a prescription medication, the most common category was antibiotics (Glover *et al*., 2003), also Glover and Larsen reported that emergency and family medicine physicians prescribed approximately 40% of the antibiotics that were consumed by obstetric patients (Glover and Larsen, 1998); Bercaw *et al.*, in their study found that 29% of their sample was prescribed a medication during their pregnancy, most often for urinary tract infection (48.0%) and diabetes (29.0%) (Bercaw *et al.*, 2010), many of prescribed medications had no evidence of safety for use during pregnancy (Andrade *et al.*, 2004).

Antibiotic constitute the majority of prescription medications in this study, this is in agreement with many studies Worldwide (Henry and Crowther, 2000; Rizk *et al.*, 1993; Riley *et al.*, 2005; Heikkila *et al.*, 1994; Nordeng *et al.*, 2001), and in total a high percentage of women (49%) used prescribed medications during pregnancy, this requires special attention

regarding the safety of these medications during pregnancy. Physicians are recommended to prescribe medications when they are truly needed and must choose medications with FDA pregnancy category A or B.

5.2 Consumption of supplements by pregnant women

In this study we found that 96% of the sample used supplements, this is close to Oman where the consumption of supplements and vitamins ranged from 84-95% through pregnancy (Al-Riyami *et al.*, 2011). In this study, 93% of pregnant women were using folic acid. This is much higher than what was reported in 2006 in our country where folic acid was used by 48.6% of pregnant women (Sawalha, 2007). This percentage is higher than that prescribed in the available reports in others countries also. Folic acid use was 21% in the United State (Hispanic women) (Bercaw *et al.*, 2010), 79% in Australia (Forster *et al.*, 2006), 69% in Hungary (Bognar *et al.*, 2006), 59.2% in Brussels (Baraka *et al.*, 2011) and 80.7% in Kenya (Maina-Gathigi *et al.*, 2012). The use of folic acid is highly recommended. All women planning a pregnancy are recommended to consume 0.4 mg of folic acid daily before pregnancy, and in the first trimester. Pregnant women who take 0.4 mg-0.8 mg of folic acid are significantly less likely to have a child with neural tube defect (Kimey and McNulty, 2009). This high percentage of folic acid use in this sample reflects high awareness among physicians and women regarding the importance of its use.

Another supplement was iron, there is an increase in the percentage reported in 2006 also (92.3% versus 63.3%) (Sawalha, 2007). In contrast in

Kenya the percentage was 51.2% (Maina-Gathigi *et al.*, 2012). Iron is recommended for pregnant women (18-21mg/day) because their requirements increase during pregnancy (Kimey and McNulty, 2009). Anemia is common among pregnant women and this high percentage of iron use is suitable and recommended. Use of calcium in this study (60.3%) was close to the results in Sawalha study (57.8%) (Sawalha, 2007). Calcium is needed during pregnancy for adequate mineralization of fetal skeleton and teeth especially during the third trimester when teeth and skeleton growth is high (Kimey and McNulty, 2009), also women who consume more calcium during pregnancy may have higher level of calcium in their breast milk (Ortega *et al.*,1998), inadequate calcium intake represents a factor associated with an increased incidence of hypertensive disease (Patrelli *et al.*, 2012). So this use of calcium is recommended and women who don't use calcium are encouraged to use supplements during pregnancy or increase calcium intake.

Prenatal vitamin use has decreased from 56.4% (Sawalha, 2007) to 41.3% in our group, this percentage was lower if we compare it to Hispanic women in the United State (77%) (Bercaw *et al.*, 2010). Prenatal vitamins should be taken month before conception to ensure that proper nutrient requirements are met during critical periods of organogenesis and fetal growth (Kimey and McNulty, 2009). Using vitamins during pregnancy is controversial some vitamins may be unsafe for use in pregnancy, for example vitamin C increase risk of giving preterm birth compared to placebo (Rumbold and Crowther, 2005), also taking vitamin E (Boskovic

et al., 2005), C (Balluz *et al.*, 2000), and D (Mahomed and Gulmezoglue, 2000) may increase the risk of low birth weight.

5.3 Consumption of herbs among pregnant women

The evaluation of herb consumption among pregnant women is important for medical community, not only because of the toxicity of herbs themselves but also because possible herb-drug interaction. In this study, a large percentage of pregnant women used herbs (40%), this finding is close to Sawalha's result in 2006 (45.8%) (Sawalha, 2007). However it is higher than many other studies from other parts of the World. For examples, in Louik *et al* study in the United States, they found that among 4866 mothers of non malformed infants with last menstrual period (LMP) years between 1997-2005, 282 (5.8%) reported use of herbal or natural treatment (Louik *et al*., 2010). In Bercaw *et al.* study, the percentage among Hispanic women in the United States also was19% (Becaw *et al*., 2010). In Norway, they found that about 39.7% of women reported having used herbal drugs during pregnancy (Nordeng *et al*., 2011). In another study made by Holst *et al.* in 2008, they found the percentage to be 0.9% in the period between 1995-2004 (Holst *et al*., 2008). In Australia Forster *et al*, found that 36% of the consecutive pregnant women who were approached in antenatal clinic at the birth centre at around 36-38 weeks gestation took at least one herbal supplement (Forster *et al*., 2006), but it was in 2002 (12%) (Pinn and Pallett, 2002). In Norway, in 2005 Nordeng and Havnen found in their study that 36% of women reported herbal use during their pregnancy

(Nordeng and Havnen, 2005). In Canada, the percentage of herb use during pregnancy was 9.0% (Moussally *et al*., 2009). In Italy, 27.8% of pregnant women reported taking one or more herbal products during pregnancy (Cuzzolin *et al*., 2010).

On other hand, the rate of herb use in this study is lower than the rate in other studies. Examples include: Holst *et al.* in 2007-2008 in Norway where the prevalence of using herbs during pregnancy was 57% with a mean 1.2 remedies per women (Holst *et al*., 2009). In another study by the same author, 57.8 % of pregnant women used one or more herbal remedies during their pregnancy (Holst *et al*., 2011). In United States 45.2% of women from rural outreach Clinic and Physician Center of West Virginia University used herbs during pregnancy (Glover *et al*., 2003).

In summary, we can say that herb use during pregnancy is common among women in Palestine and in other parts of the World. 90% of the herbal products users utilized more than one herb during pregnancy, also the proportion of women who used herbs increased throughout pregnancy with the a peak in the 3rd trimester (35.8%) and this may be explained by concerns about the safety of conventional drug use in the organogenetic period and it is relation with pregnancy related problem .

Majority of herbal product users preferred herbs because they considered them safer than medications (82%), also 91.7% of them didn't have any side effect from any herb. On other hand 99.2% had benefit from using herbs. Most of the women reported informing their doctor that they

were utilizing herbal products (65.8%). In other countries, informing doctors ranged from 24% to 52% (Holst *et al*., 2009; Kennedy, 2005; Thomas and Coleman, 2004). This shows high awareness among our women. However, there is a room for improvement in this field because all women should tell their doctors if they use herbs. This can be improved if the doctors are encouraged to ask women about this because some women may forget to do so. The most important source of information about herbal remedies was found to be family which is similar to other studies (Holst *et al*., 2009; Hollyer *et al*., 2002; Nordeng and Havnen, 2004, Forster *et al*., 2006) then doctor (35.8% and 32.5% respectively) .

The most common herbs used by pregnant women in this study included anise, chamomile, sage, mixture of herbs, thyme and date. In Sawalha study sage was the most common one then anise, chamomile, thyme, and fenugreek (Sawalha, 2007). In other studies ginger was most common one (Nordeng *et al*., 2010; Holst *et al*., 2011; Holst *et al*., 2009), peppermint (Glover *et al*., 2003), raspberry leaf (Forster *et al*., 2006), floradex (Holst *et al*., 2008), and chamomile (Moussaly *et al*., 2009). This is expected because common herbs differ among different cultures and countries.

Anise was used by a high percentage of the users in this study (61.7%), despite that no studies about their safety and efficacy in pregnancy can be found and some books even consider it as not recommended for therapeutic use during pregnancy. Anise increases the

action of warfarin (Skidmore-Roth, 2004), so women on warfarin should be careful.

Chamomile was among the herbs regularly taken during pregnancy by our women, although no studies could be found about its safety and efficacy also (Holst *et al*., 2011). Excessive use of chamomile has to be considered potentially harmful in pregnancy due to its contraction inducing properties (Jones and Sibeko, 2003; Newall *et al*., 1996).

Sage was commonly taken during pregnancy by women in this study although sage was reported to have abortifacient properties so its use in pregnancy is therefore not recommended (Mills and Bone, 2000; Newall *et al*., 1996), 33.3% of women used a mixture of herbs that is available in our market. Pregnant women didn't know the contents so we must take care about using this mixture during pregnancy.

Many of pregnant women used dates especially at the third trimester of pregnancy with a peak in their ninth month to induce labor in our study. The consumption of date fruit in the last 4 weeks before labor significantly reduced the need for induction and augmentation of labor (Al-Kuran *et al*., 2011). Date fruit can contribute significantly to healthy pregnancy by preventing anemia, reducing nausea, controlling blood pressure, regulating blood sugar level, helping to restore depleted calcium, expelling toxins, and increasing strength and immune resistance (Al-Shahib and Marshall, 2003).

The most common reasons to use herbs during pregnancy in this study were for treatment of flue, cough, UTI, to ease labor and

gastrointestinal problem. This is similar to finding in other studies (Holst *et al*., 2009), however in some cases herbal use was unjustified or not supported by scientific clinical evidence, for example sage for vomiting and GERD, peppermint for delivery, cough, and flatulence, cinnamon for anemia, facilitate delivery, laxative, and abdominal pain, fenugreek for cough, cumin for delivery, caraway to facilitate delivery (Evans, 2009).

Obviously, the safety of herbs depends on the rout of administration and the frequent of administration, the most common route of administration of herbs between pregnant women in this study was oral route and herbs were used mainly as needed which means infrequent use. This decreases the possibility of side effects and complications.

Regarding socio-demographic characteristics of the sample, herb users were similar to non-users in all variables included in the study and there were no significant differences between any variable and using herbs. In other studies from other countries in the World a statistically significant difference was reported only in relation to age and place of residence, the use of herbs was higher among pregnant women living in rural areas and aged 31-40 years (Cuzzolin *et al*., 2010; Forster *et al*., 2006; Holst *et al*., 2009; Broussard *et al*., 2010) also Norddeng and Havnen in their study found that the youngest and the oldest women used less frequently herbal drugs compared with women in the in between age groups (Norddeng and Havnen, 2005).

In our study, no statistically significant differences were evident between herb users and non-users in pregnancy outcomes, this is similar to another study findings (Holst *et al*., 2008), but in Cuzzolin *et al*, study they reported higher incidence of newborns small gestational age in herbal product users (Cuzzolin *et al*., 2010).

5.4 Limitations of the study

The study may have some limitations

- First, the seasonal occurrence of certain diseases could affect the prevalence of herb use and the types of herbs used.
- Second, some women didn't accept to answer the questionnaire, because they were tired and suffered from post partum symptoms.
- Third, for many herbs that are commonly used among Palestinian pregnant women, limited data about safety and efficacy could be found.

5.5 Conclusion

To our knowledge this is the first study regarding herb utilization among pregnant women in Palestine. The following are important study conclusions.

Pregnant women commonly use supplement, OTC medication and prescribed medication in our study. So it can be concluded that physicians and pharmacists need to review pregnant women medications and ask them

about any supplement or OTC use to avoid drug-drug interactions, and to avoid drugs with unsafe FDA pregnancy categories.

Herb use among pregnant women was common in our study. This requires special attention from physicians and pharmacists to avoid harmful effects and interactions with medications.

No association was found between utilization of herbs among pregnant women and socio-demographic variables. So it can be concluded that herb use during pregnancy is common among women from all ages, educational levels, economical classes and living places.

No association between utilization of herbs among pregnant women and outcomes of pregnancy and infants was seen, so it can be concluded that the use of herbs infrequently as the way which was described by most of the women in this study is probably safe, although further studies are needed to confirm this.

5.6 Recommendations

More research to investigate the outcomes of herb use on pregnancy and infants are recommended in our country and all over World because data about the effect of herbs on pregnancy outcomes are very limited.

We recommend that the ministry of health (MOH) should implement clear laws and regulations to ensure safety and efficacy of herbal products in the Palestinian market.

To provide the best care to pregnant women who use herb products, clinicians and pharmacist are recommended to stay up to date in herb use and their safety in pregnancy

The physicians are recommended to ask pregnant women about herb use because this practice is common among pregnant women, so doctors need to consider this to avoid any possible drug-herb interaction or negative outcomes on the mother or the fetus.

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Appendices

Appendix (1)

An-Najah
National University
Faculty of Medicine

بسم الله الرحمن الرحيم

جامعة
النجاح الوطنية
كلية الطب

Appendix -1-

IRB Approval letter

Study title:
Prevalence and Predictors of Herbs Use during Pregnancy (A study at Rafidia Governmental Hospital)

Submitted by:
Deema Hilmi Adawi

Date Reviewed:
Jan 8, 2012

Date approved:
Jan 31, 2012

Your study titled" Prevalence and Predictors of Herbs Use during Pregnancy (A study at Rafidia Governmental Hospital) ". Was reviewed by An-Najah National University IRB committee & approved on Jan 31, 2012

Samar Musmar,MD, FAAFP
IRB Committee Chairman,
An-Najah National University

IRB

نابلس - ص.ب ٧٠٧,٧ هاتف: ٠٩-٢٣٤٢٩٠٢/٤/٧/٨/١٤، فاكسميل ٠٩-٢٣٤٩٧٣٩ (٩٧٢)
Nablus - P.O.Box 7,707 - Tel. (972)(09)2342902/4/7/8/14 - Facximile (972)(09)2349739
Web Site:www.najah.edu

Appendix (2)

Palestinian National Authority
Ministry of Health - Nablus
General Directorate of Higher & Continuing Education

السلطة الوطنية الفلسطينية
وزارة الصحة- نابلس
الإدارة العامة للتعليم الصحي

Appendix -2-
Ref.: .....
Date:.....

الرقم: ٢٠١٤/٢٢٢/١٦٢
التاريخ: ٢٠١٤/٢/١٩

الاخ مدير عام الإدارة العامة للمستشفيات المحترم،،،

تحية واحترام،،،

الموضوع: تسهيل مهمة طلاب

تماشياً مع سياسة وزارة الصحة المتعلقة بتعزيز التعاون مع الجامعات والمؤسسات الأكاديمية بإتاحة فرص التدريب أمام الطلبة والخريجين والباحثين في المؤسسات الوطنية وإسهاماً في تنمية قدراتهم.

يرجى تسهيل مهمة **الطالبة ديمة حلمي عدوي- ماجستير صيدلة سريرية/ جامعة النجاح الوطنية** بجمع معلومات من م. رفيديا لإجراء بحث حول موضوع مدى الانتشار والمؤثرات على استخدام الأعشاب الطبية خلال الحمل

"Prevalence and Predictors of Herbs Use During Pregnancy "

مع الاحترام،،،

الدكتور سعيد الهموز
مدير عام التعليم الصحي

/ نسخة عميد كلية الطب وعلوم الصحة المحترم- جامعة النجاح الوطنية.

P.O .Box: 14
Tel.:09-2384771 -6 Fax: 09-2384777
E-mail: pnamoh@palnet.com
ص.ب. 14
تلفون: 6-2384771-09 فاكس: 09-2384777

Appendix (3): Scientific name of plants

Herb	**Scientific name**
Anise	*Pimpinella anisum*
Chamomile	*Anthemis nobilis*
Sage	*Salvia officinalis*
Thyme	*Thymus vulgaris*
Date	*Phoenix dactylifera*
Peppermint	*Mentha piperita*
Cinnamon	*Cinnamomum zeylanicum*
Fenugreek	*Trigonella foenum graecum*
Cumin	*Cuminum cyminum*
Ginger	*Zingiber officinalis*
Garlic	*Allium sativum*
Caraway	*Carum carvi*
Guava leave	*Psidium guajava*
Fennel	*Foeniculum vulgare*
Almond	*Prunus communis*
Parsley	*Petroselium sativum*
Castor oil	*Ricinus communis*
Green tea	*Camellia sinensis*
Clove	*Eugenia caryophyllus*
Plant caper	*Capparis spinosus*
Gazha	*Nigella sativa*

Appendix (4): Data Collection Form

What is your age?

□ under 20 □ 20 – 30 □ 31 – 40 □ >40

What is your educational level?

□ Primary and illiterate □ Middle school □ High school □ Graduate

□ Postgraduate

Where do you live in Palestine?

□ City □ Village □ Camp

Do you have a health insurance?

□ Yes □ No

What is your family monthly income in JD?

□<200 □200-400 □401-600 □601-800 □801-1000 □> 1000

Do you work?

□ Yes □ No (housewife)

Do you have any chronic diseases?

□ Yes □ No if yes what?_____

Are you a smoker?

□ Yes □ No if yes, for how long?_____

How many children do you have?

□ This is my first child □ second □ Third □ Fourth □ Fifth □ >5

Did you take any of the following supplements during your pregnancy?

□ Folic acid □ Iron salts □ Calcium □ others _____

Did you take any self-administered medications (OTC) during your pregnancy?

□ Yes □ No if yes, what?_____

Did you take any prescription only medications (Prescribed by your doctors) during your pregnancy?

□ Yes □ No if yes, what?_____

Did you take any herb during your pregnancy? □ Yes □ No

If your answer is yes, please answer the following questions:

In which period did you use herbs?

□ First trimester □ Second trimester □ Third trimester

□ Throughout pregnancy

What was the number of herbs that you used during pregnancy?

□ One □ Two □ Three □ Four □ Five □ >5

Which plant(s) did you take and for what problem(s)?

Please choose from the list

Name of plant	**Route of administration & frequency**	**Problem**
Sage		
Anise		
Chamomile		
Thyme		
Fenugreek		
Mixture of herbs		
Garlic		
Ginger		
Liquorice		
Peppermint		
Cinnamon		
Cumin		
Fennel		
Aloe		
Senna		
Parsley		
Valerian		
Almond		
Cranberry		
raspberry leaf		
Caster oil		
Echinacea		
Dates		
Saffron		

Other plants----------

Why did you prefer herbal products rather than traditional drugs?

□ They are safer than medications

□ Their cost is less than medications

□ They are available

Who recommended you to take the herbal product?

□ No one (myself) □ Family □ Friends □ Doctor

□ Pharmacist

In case of herbal use without a medical advice, did you tell your physician?

□ Yes □ No

If no, why not?

Did you perceive benefits from taking herbs?

□ Yes □ No

Did you observe any possible side effects due to herbs use?

□ Yes □ No

If yes, like what?_____

Did you suffer from threatened miscarriage during this pregnancy?

□ Yes □ No

How was your delivery?

□ Normal □ Caesarian section

Did your due date was:

□ At term □ preterm □post term

What was the gestational age in weeks of your neonate?

□ <25 □ 25-28 □ 29-32 □ 33-36 □ ≥ 37

What was the birth weight (g) of your neonate?

□ <800 □ 800-1499 □ 1500-1999 □ 2000-2500 □ ≥ 2500

Did your newborn suffer from any problem at birth?

□ Yes □ No

If yes, what was that?

□ Malformations □ Respiratory problems □ Jaundice

□ Others_____

Appendix (5)

المعلومات الشخصية:

العمر:

أقل من 20 عاما ☐ من 20-30 ☐ 31-40 ☐ أكبر من 40 عاما ☐

المستوى التعليمي:

أمي أو ابتدائي ☐ إعدادي ☐ ثانوي ☐ بكالوريوس ☐ دراسات عليا ☐

مكان الإقامة

مدينة ☐ قرية ☐ مخيم ☐

هل تملكين تأمين صحي؟

نعم ☐ لا ☐

ما هو معدل الدخل الشهري للعائلة بالدينار الأردني؟

أقل من 200 ☐ 200-400 ☐ 401 -600 ☐ 601- 800 ☐

801-1000 ☐ أكثر من 1000 ☐

هل تعملين؟

نعم ☐ لا ☐

هل تعانين من مرض مزمن؟

نعم ☐ لا ☐

إذا كانت إجابتك نعم ما هو ----------

كم عدد الأطفال لديك؟

انه الطفل الأول لي ☐ الثاني ☐ الثالث ☐ الرابع ☐

الخامس ☐ أكثر من الخامس ☐

هل قمت بتناول احد المكملات الغذائية التالية إثناء فتره الحمل؟

حمض الفوليك ☐ حديد ☐ كالسيوم ☐ غير ذلك----------

هل قمت بتناول أي أدوية لا تحتاج إلى وصفة طبية أثناء فترة الحمل؟

نعم ☐ لا ☐

إذا كانت الإجابة نعم ما هو ----------

هل قمت بتناول أدوية تم وصفها من قبل الطبيب أثناء فترة الحمل؟

نعم ☐ لا ☐

إذا كانت الإجابة نعم ما هو ----------

هل قمت باستخدام الأعشاب كعلاج خلال فتره الحمل؟

نعم ☐ لا ☐

إذا كانت الإجابة نعم الرجاء الإجابة الأسئلة التالية:

في أي فتره من الحمل تم استخدام الإعشاب؟

أول ثلاث أشهر ☐ الثلاث أشهر المتوسطة ☐ الثلاث أشهر الأخيرة من الحمل ☐

كل فترة الحمل ☐

ما هو عدد الأعشاب التي تم استخدامها؟

عشبه واحده ☐ عشبيتين ☐ ثلاث أعشاب ☐ أربعة أعشاب ☐

خمسة أعشاب ☐ أكثر من خمسة ☐

أي من النباتات التاليه تم استخدامها اثناء فتره الحمل وما الهدف من استخدامها؟

الرجاء الاختيار من الجدول ونعبئه ما يخص النبتة المستخدمة

اسم العشبة	طريقة التناول وعدد المرات	الهدف من الاستخدام
الميرميه		
اليانسون		
البابونج		
الزعتر		

الحلبة		
خلطه من الاعشاب		
الثوم		
زنجبيل		
عرق السوس		
النعنع		
القرفه		
الكمون		
الشومر		
الصبار		
فليريان (الناردين)		
اللوز		
توت بري		
اوراق التوت		
الخروع		
Echinacea		
تمر		
عصفر		

نباتات اخرى:----------

لماذا تفضلين استخدام الأعشاب عوضا عن الأدوية؟

أكثر أمانا من الأدوية ☐ سعرها أقل من الادوية ☐ أكثر توافرا ☐

من الذي أوصاك باستخدامها؟

لا احد من تلقاء نفسي ☐ العائلة ☐ الأصدقاء ☐

الطبيب ☐ الصيدلي ☐

هل قمت بأعلام الطبيب عند استخدام تلك الأعشاب؟

نعم ☐ لا ☐

إذا كانت الإجابة لا لماذا لم تقومي بذلك ----------

هل شعرت بأنك حصلت على فائدة عند استخدامك للأعشاب؟

نعم ☐ لا ☐

هل لاحظت وجود أي أعراض جانبيه عند استخدامك للأعشاب؟

نعم ☐ لا ☐

إذا كانت الإجابة نعم ما هو ----------

هل تعرضت لخطرالإجهاض أثناء فتره الحمل؟

نعم ☐ لا ☐

كيف كانت ولادتك؟

طبيعية ☐ عمليه قيصرية ☐

هل كان موعد ولادتك؟

في الوقت المتوقع ☐ قبل الوقت المتوقع ☐ بعد الوقت المحدد ☐

كم عدد الأسابيع التي أمضاها الطفل من بداية الحمل المتوقع وحتى يوم الولادة في الرحم (من تاريخ الحمل حتى تاريخ الولادة)؟

اقل من 25 أسبوع ☐ 25-28 ☐ 29-32 ☐

36-43 ☐ اكثر من 37 بلغم ☐

كم كان وزن المولود عند الولادة (غم)؟

أقل من 800 ☐ 800-1499 ☐ 1500-1999 ☐

2000-2500 ☐ أكثر من 2500 ☐

هل واجه المولود مشاكل عند الولادة؟

نعم ☐ لا ☐

إذا كانت الإجابة نعم فهل كانت المشكلة تعود إلى:

تشوه خلقي ☐ مشاكل في الجهاز التنفسي ☐ التهاب كبد ☐

غير ذلك ----------

جامعة النجاح الوطنية
كلية الدراسات العليا

مدى الانتشار والمؤثرات على استخدام الأعشاب الطبية خلال الحمل (دراسة في مستشفى رفيديا الحكومي/ فلسطين)

إعداد
ديمه حلمي عبد الله عدوي

إشراف
الدكتورة رواء الرمحي
الدكتور نضال جرادات

قدمت هذه الأطروحة استكمالا لمتطلبات الحصول على درجة الماجستير في الصيدلة السريرية في جامعة النجاح الوطنية نابلس، فلسطين.

2012م

مدى الانتشار والمؤثرات على استخدام الأعشاب الطبية خلال الحمل (دراسة في مستشفى رفيديا الحكومي/ فلسطين)

إعداد

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إشراف

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الدكتور نضال جرادات

الملخص

يعد استخدام الإعشاب الطبية أثناء فترة الحمل مرتفعا؛ لأنّها أكثر أمنا من استخدام الأدوية الكيماوية في علاج الأعراض الناتجة عن الحمل: كالغثيان, والتقيؤ, وأعراض أخرى تتعرض لها النساء الحوامل.تفضل الحوامل استخدام الأعشاب, على الرغم من قلة المعلومات حول فعاليتها والأضرار الناتجة عنها.

تبرز أهمية هذه الدراسة في قياس مدى شيوع استخدام الأعشاب الطبية بين النساء الحوامل في فلسطين واحتمالية ظهور أضرار جانبية على الحامل وجنينها.

هذه الدراسة هي عبارة عن دراسة وصفية, تم تطبيقها في مستشفى رفيديا الحكومي, خلال الفترة الممتدة من شهر أذار حتى شهر أيار من عام 2012, وذلك باستخدام استبيان أعد لهذا الغرض, حيث تم تحليل البيانات بواسطة البرنامج الإحصائي SPSS.

وتوصلت الدراسة إلى أنّ هناك أربعين بالمائة من النساء الحوامل يستخدمن الأعشاب الطبية لعلاج الأعراض الناتجة عن الحمل, وأكثر هذه الأعشاب شيوعا –كما تبين الدراسة– كان اليانسون (61.7%), والبابونج (53.3%), والميرمية (45.8%), وخلطة من الأعشاب (33.3%), والزعتر (29.2%).

وأظهرت الدراسة أيضاً, أنّ النساء الحوامل يفضلن استخدام الأعشاب الطبية باعتبارها أكثر أمنا. بالإضافة إلى عدم وجود علاقة بين استخدامها, وإمكانية وجود تأثيرات جانبية على

الحوامل والأجنة. وأكدت الدراسة أنّ استخدام الأعشاب الطبية بين الحوامل كـــان شـــائعا, وانّ بعض النباتات المستخدمة قد يكون لها تأثيرات جانبية كاليانسون والبابونج والميرمية, وذلك لعدم وجود دراسات كافية حول مدى تأثيرها في فتره الحمل.

وعلى ضوء ذلك فإنّنا بحاجة إلى دراسات أخرى في هذا المجال, لعدم وجود معلومات كافية تؤكد فعالية هذه الأعشاب وتأثيرها على الحمل والأجنة, وأيضا أن تقـــوم وزاره الصـــحة بوضع الأنظمة والقوانين التي تضمن التداول, و الاستخدام الصحيح لتلك الأعشاب في الأسواق الفلسطينية.

وأن يكون الأطباء والصيادلة على دراية كاملة بالنسبة لتأثير تلك الأعشاب, وتفاعلاتها مع الأدوية والأعراض الجانبية الناجمة عن استخدامها.