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Use of herbal medicines during pregnancy in a group of Palestinian women



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ABSTRACT

Ethnopharmacological relevance: The use of herbal medicines during pregnancy is common worldwide due to physiological changes that lead to pregnancy related problems.

Objectives: The aims of this study were to measure the prevalence and predictors of herb use among a group of Palestinian pregnant women and the possible influence of herbal consumption on pregnancy outcomes.

Methods: This study was a questionnaire-based cross sectional descriptive study. It was conducted in the maternity ward of a 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.

Results: Out of 300 women, 120 women (40.0%) used herbs during pregnancy; most women preferred to use herbs because they thought herbs are safer than medications (82.5%), women based in their choices mainly on advice from family or doctors (36.7%, 33.0%, respectively), 65.8% of them told their doctors that they used herbs, 91.7% considered these therapies beneficial, and 99.2% reported no side effects. The most commonly used herbs were anise (*Pimpinella anisum*) (61.7%), chamomile (*Matricaria recutita*) (53.3%), sage (*Salvia officinalis*) (55%), mixture of herbs (33.3%), and thyme (*Thymus vulgaris*) (29.2%). Most women were using herbs on as needed bases. There were no statistically significant differences between users and non-users of herbs in all socio-demographic variables and pregnancy outcomes.

Conclusions: This study found that the use of herbs during pregnancy is very common among Palestinian women. Infrequent use of herbs during pregnancy seems to be safe and beneficial. To provide the best care to pregnant women who use herbal products, clinicians and pharmacist are recommended to stay up to date with herb use and their safety in pregnancy. Not all women tell their doctors about herbal products use, so the physicians are recommended to ask pregnant women about this to avoid any possible negative outcomes on the mother or the fetus.

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1. Introduction

The physiological changes that occur in pregnant women lead them to self treatment. Women try to turn to natural herbal medicines rather than prescription medications, mainly because they are concerned about the safety of the fetus (Holst et al., 2009). Herbal medicines are defined as plant-derived or preparations perceived to have therapeutic benefits, they include herbs, herbal materials, and finished herbal products that contain parts of plants or other plant materials as active ingredient (World Health Organization, 2013). Use of herbs during pregnancy is a very interesting area. The prevalence of using herbal products during pregnancy varies widely and ranges from 7% to 55%, these percentages depend on the geographic area surveyed and the

surveyed group's socio-cultural aspect and ethnicity (Dugoua, 2010). The physiological changes will lead to pregnancy-related problems, therefore pregnant women try to treat these problems by using over the counter medications (OTC), prescribed medications, herbs or life style modifications. The most common reasons for herb use are related to pregnancy problems as nausea, vomiting, skin problem, constipation, heart burn, and indigestion (Cuzzolin et al., 2010; Holst et al., 2011). 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). The most commonly used herbs among pregnant women according to other studies included ginger, cranberry, chamomile, peppermint, echinacea, and castor oil (Holst et al., 2009, 2011; Cuzzolin et al., 2010). Pregnant women use *Rubus idaeus* L. (raspberry) leaves to relief nausea, increase milk production, and for labor induction. *Mentha piperita* L. (peppermint) is used for nausea, vomiting, flatulence, indigestion and heart burn. The uses of *Matricaria chamomilla* L. (chamomile) include gastrointestinal

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irritation, insomnia, joint pain and relaxation. *Vaccinium oxycoccos* L. (cranberry) is used for urinary tract infections. *Prunus amygdalus* Stokes (almond) oil is used to prevent stretch mark. *Zingiber officinale* Roscoe (ginger) is commonly used for nausea and vomiting. *Caulophyllum thalictroides* (L.) Michx (blue cohosh) is used for labor induction and *Ricinus communis* L. (castor) oil is used to facilitate labor. *Echinacea purpurea* (L.) Moench (echinacea) is thought to be useful for upper respiratory tract infection, cold and flu and to boost immunity. *Hypericum perforatum* L. (St Johns Wort) is used for depression and relaxation while *Urtica dioica* L. (nettle) and *Taraxacum officinale* Webb (dandelion) are used as nutritional supplements (Pinn and Pallet, 2002; Forster et al., 2006; Dugoua, 2010; Holst et al., 2011; Nordeng et al., 2011;). Exposure of pregnant women to chemicals such as medications, herbs, and supplements during pregnancy period could affect their fetuses (Bercaw et al., 2010). Several studies about the prevalence of herbal use among pregnant women in other parts of the World can be found, but little is known about outcomes of this use on pregnancy.

There are limited data on the extent of herbal product use 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 herb 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. The aims of this study were to measure the prevalence of herb use during pregnancy, to identify the most frequently consumed herbs, to investigate the impact of socio-demographic factors on the use of herbal products and the possible influence of herbal consumption on pregnancy outcomes among a sample of Palestinian pregnant women.

2. Methods

The study was a questionnaire-based cross sectional study; it was conducted in the maternity ward of Rafedia Governmental Hospital between March 2012 and May 2012, after having the approval from the Institutional Review Board (IRB) at An-Najah National University and the required permission from the Palestinian Ministry of Health. The population of study was all women who delivered at the hospital during the study period. 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 3 months it was expected to be around 1200 women. Based on this, Raosoft software was used to calculate a suitable sample size and it was 292, so we decided to include 300 pregnant women. According to the registration records during the time of this study; the average number of delivered women was 387.6 per month with a total of 1168 cases, so this sample size was more than 10% of the population.

A random sample of women who gave birth at the hospital were met by a researcher (2 h per day for 3 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 3 days of delivery; each interview lasted approximately 7–10 min. The questionnaire was anonymous, pretested by a pilot study of 10% of sample for reliability and to check the validity and clarity of the questionnaire. The World Health Organization definition of herbal medicines was used to define herbs.

Statistical analyses were performed by using Statistical Package for Social Sciences (SPSS version 17.0). Mean \pm standard deviation were computed for continuous data. Frequencies and percentages were calculated for categorical variables. Means were compared using Student's *t*-test. 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.

3. Results

Among 330 women approached, 300 accepted to participate in the study giving a response rate of 90.1%. Women were mainly between 20 and 30 years of age (69.7%), most of them 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%). During pregnancy 288 women used supplements (96%), 147 women (49.0%) took at least one prescribed medication and 136 (45.3%) women took at least one over the counter (OTC) medication.

Out of 300 women, 120 women (40.0%) used herbs during pregnancy, most of the pregnant women used more than one herb

Table 1
Association between socio-demographic characteristics and the use of herbs during pregnancy.

Variable	User (N=120) (n, %)	Non user (N=180) (n, %)	p-Value
<i>Age</i>			
Less than 20	8 (6.7)	14 (7.8)	0.647
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)	
<i>Educational level</i>			
Primary and illiterate	8 (6.7)	12 (6.7)	0.335
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)	
<i>Living place</i>			
City	26 (21.7)	43 (23.9)	0.902
Village	82 (68.3)	119 (66.7)	
Camp	12 (10.0)	18 (9.4)	
<i>Medical insurance</i>			
Yes	115 (95.8)	175 (97.2)	0.511
No	5 (4.2)	5 (2.8)	
<i>Family monthly income</i>			
≤ 600 JD	115 (95.8)	163 (90.6)	0.086
> 600 JD	5 (4.2)	17 (9.4)	
<i>Work</i>			
Yes	7 (5.8)	10 (5.6)	0.919
No	113 (94.2)	170 (94.4)	
<i>Chronic disease</i>			
Yes	2 (1.7)	3 (1.7)	1.0 (fisher)
No	118 (98.3)	177 (98.3)	
<i>Parity</i>			
First child	36 (30.0)	60 (33.3)	0.544
More than one	84 (70.0)	120 (66.7)	
<i>OTC medication use</i>			
Yes	60 (50.0)	76 (42.2)	0.185
No	60 (50.0)	104 (57.8)	
<i>Prescribed drug use</i>			
Yes	57 (47.5)	90 (50.0)	0.671
No	63 (52.5)	90 (50.0)	
<i>Supplement use</i>			
Yes	117 (97.5)	171 (95.0)	0.374 (Fisher)
No	3 (2.5)	9 (5.0)	

Table 2
The most frequently used herbs and the reported reasons for use (N=120).

Family Scientific name	Common name	Number (n)	Percentage (%)	Route of administration	Aim of use
Apiaceae <i>Pimpinella anisum</i> L.	Anise	74	61.7	Oral	Flue and cough Abdominal pain Vomiting Diuretic Chest pain Laxative Infections Flatulence Relaxation Stomachache
Asteraceae <i>Matricaria chamomilla</i> L.	Chamomile	64	53.3	Oral	Cough and flue Abdominal pain Infections Diuretic Flatulence Relaxation Pharyngitis Laxative
Lamiaceae <i>Salvia officinalis</i> L.	Sage	55	45.8	Oral Vaginal path Mouth wash	Vomiting Abdominal pain Infections heartburn Teeth pain Flue
–	Mixture of herbs	40	33.3	Oral	Cough and flue Abdominal pain Relaxant Laxative Pharyngitis
Lamiaceae <i>Thymus vulgaris</i> L.	Thyme	35	29.2	Oral	Cough and flue Chest pain Relaxation Pharyngitis
Arecaceae <i>Phoenix dactylifera</i> L.	Dates	34	28.3	Oral	Energy Facilitate delivery Laxative
Lamiaceae <i>Mentha piperita</i> L.	Peppermint	17	14.2	Oral	Abdominal pain Flue heartburn Relaxation Facilitate delivery Cough Flatulence
Lauraceae <i>Cinnamomum verum</i> J. Presl	Cinnamon	13	10.8	Oral	Anemia Facilitate delivery Laxative Abdominal pain
Leguminosae <i>Trigonella foenum-graecum</i> L.	Fenugreek	11	9.2	Oral	Cough Infection
Apiaceae <i>Cuminum cyminum</i> L.	Cumin	8	6.7	Oral	Facilitate delivery Flatulence Abdominal pain
Zingiberaceae <i>Zingiber officinale</i> Roscoe	Ginger	4	3.3	Oral	Cold and flue Cough Vomiting
Amaryllidaceae <i>Allium sativum</i> L.	Garlic	3	2.5	Oral Vaginal path	Hemorrhoid Urinary tract infections Ameba
Apiaceae <i>Carum carvi</i> L.	Caraway	3	2.5	Oral	Facilitate delivery
Myrtaceae <i>Psidium guajava</i> L.	Guava leaves	3	2.5	Oral	Cough Pharyngitis
Apiaceae <i>Foeniculum vulgare</i> Mill.	Fennel	2	1.7	Oral	Flue Infections Relaxation
Rosaceae <i>Prunus amygdalus</i> Stokes	Almond	2	1.7	Oral	Heartburn
Apiaceae <i>Petroselinum crispum</i> (Mill.) Nyman ex A.W. Hill	Parsley	2	1.7	Oral, Vaginal path	Urinary tract infections
Euphorbiaceae <i>Ricinus communis</i> L.	Castor oil	1	0.8	Oral	Facilitate delivery
Theaceae <i>Camellia sinensis</i> (L.) Kuntze	Green tea	1	0.8	Oral	Laxative
Myrtaceae	Clove	1	0.8	Mouth wash	Teeth pain

Table 2 (continued)

Family Scientific name	Common name	Number (n)	Percentage (%)	Route of administration	Aim of use
<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry Rutaceae	Lemon	1	0.8	Oral	Flue
<i>Citrus limon</i> (L.) Burm. f. Capparaceae	Caper	1	0.8	Oral	Abdominal pain
<i>Capparis spinosa</i> L. Ranunculaceae	<i>Nigella sativa</i> L.	1	0.8	Oral	Flatulence Abdominal pain

Table 3
Association between pregnancy and neonatal characteristics and the use of herbs during pregnancy.

Variable	User (N=120) (n, %)	Non user (N=180) (n, %)	p Value
<i>Pregnancy at term</i>			
Term	102 (85.0)	158 (87.8)	0.488
Preterm	18 (15.0)	22 (12.2)	
<i>Parity</i>			
One	36 (30.0)	60 (33.3)	0.544
More than one	84 (70.0)	120 (66.7)	
<i>Miscarriage</i>			
Yes	8 (6.7)	17 (9.4)	0.394
No	112 (93.3)	163 (90.6)	
<i>Delivery</i>			
Normal	77 (64.2)	109 (60.6)	0.528
Caesarian	43 (35.8)	71 (39.4)	
<i>Gestational age</i>			
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)	
<i>Medical problem at birth</i>			
Yes	10 (8.3)	18 (10.0)	0.627
No	110 (91.7)	162 (90.0)	
<i>Weight</i>			
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)	

(90.0%), 35.8% used herbs in the third trimester of pregnancy. Most women preferred to use herbs because they thought herbs are safer than medications (82.5%), women based in their choices mainly on advice from family or doctors (36.7%, 33.0%, respectively), 65.8% of them told their doctors that they used herbs, 91.7% considered these therapies beneficial, and 99.2% reported no side effects. There were no statistically significant associations between socio-demographic characteristics and the use of herbs as shown in Table 1.

The most frequently used herbs were *Pimpinella anisum* L. (anise) (61.7%), *Matricaria chamomilla* L. (chamomile) (53.3%), *Salvia officinalis* L. (sage) (45.8%), herbal mixture (33.3%), *Thymus vulgaris* L. (thyme) (29.2%) and *Phoenix dactylifera* L. (dates) (28.3%), some women were regular users, in most 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, heartburn, 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 2).

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, and the incidence of threatened miscarriage was 8.3%. 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 meconium fluid, one had closure of ductus arterioses, one had umbilical injury, one had rash and for one neonate her mother did not know what was the problem). There were no statistically significant differences between users and non-users of herbs in any pregnancy or neonatal outcome as shown in Table 3.

4. Discussion

The evaluation of herb consumption among pregnant women is very important; herbs may have harmful effects on the mother or the fetus, in addition to possible interactions with medications. In this study, a large percentage of pregnant women used herbs (40%), this finding is close to a previous study in our country in 2006 where the percentage was 45.8% (Sawalha, 2007). However it is higher than many other studies from other parts of the World. For examples, in Louik et al. (2010) in the United States, they found that among 4866 mothers between 1997 and 2005, 282 (5.8%) reported use of herbal or natural treatment. In another study, the percentage among Hispanic women in the United States was 19% (Bercaw et al., 2010). In Norway, in 2001, 36% of women reported herbal use during their pregnancy (Nordeng and Havnen, 2005), that increased to 39.7% of women in 2011 (Nordeng et al., 2011). In Australia, it was found that 36% of the consecutive pregnant women who were approached in antenatal clinic at the birth center at around 36–38 weeks gestation took at least one herbal supplement (Forster et al., 2006), while it was 12% in 2002 (Pinn and Pallet, 2002). In Canada, the percentage of herb use during pregnancy was 9.0% (Moussaly 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. (2009) in Norway where the prevalence of using herbs during pregnancy was 57% with a mean 1.2 remedies per women. 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). Comparison between studies might not be very accurate because different studies might use different definition of the term “herb”. However, we can say that herb use during pregnancy seems to be common among Palestinian women in this study.

In this study, 90% of the herbal product 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 third 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%), this might be true because 91.7% of them did not report any side effect from

any herb. On the contrary, 99.2% told that they 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% (Kennedy, 2005; Holst et al., 2009). 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 by encouraging the doctors 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 (Hollyer et al., 2002; Nordeng and Havnen, 2004; Forster et al., 2006). This confirms the need of proper counseling because some traditional uses might not be supported by scientific evidence to be used in pregnant women.

The most commonly used herbs in this study included *Pimpinella anisum* L. (anise), *Matricaria chamomilla* L. (chamomile), *Salvia officinalis* L. (sage), herbals mixture, *Thymus vulgaris* L. (thyme) and *Phoenix dactylifera* L. (dates). In a previous study in our country, sage was the most common one then anise, chamomile, thyme, and fenugreek (Sawalha, 2007). In other studies ginger (Holst et al., 2009, 2011) peppermint (Glover et al., 2003), raspberry leaves (Forster et al., 2006), floradex (Holst et al., 2008), and chamomile (Moussaly et al., 2009) were most common ones. This is expected because common herbs differ among different cultures and countries.

Anise was used by a high percentage of women (61.7%), although no studies about its 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, so women on warfarin should be careful (Skidmore-Roth, 2004). Chamomile was among the herbs widely used during pregnancy, 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 (Newall et al., 1996; Johns and Sibeko, 2003). 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 (Newall et al., 1996; Mills and Bone, 2000). 33.3% of women used a mixture of herbs that is available in our market. Pregnant women did not know the contents so they are recommended to be careful and avoid any unknown herb during pregnancy. Many of pregnant women used dates during the third trimester of pregnancy with a peak in the ninth month to induce labor. In a study on a small group of women, 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, urinary tract infections, to facilitate and induce labor and for 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, examples include sage for vomiting and heartburn, peppermint for delivery and cough, cinnamon for anemia, to facilitate delivery, laxative, and abdominal pain, fenugreek for cough, cumin for delivery, and caraway to facilitate delivery (Evan, 2009).

Obviously, the safety of herbs depends on the rout of administration and the frequency of administration, the most common route of administration of herbs between pregnant women in this study was oral route and herbs were used mainly on as needed

bases which reflects infrequent use. This decreases the possibility of side effects and complications and explains that almost all women told that the herbs were useful to them and did not cause any side effect. 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 statistically significant differences between any variable and using herbs. In other studies from other countries in the World statistically significant differences were reported 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 (Forster et al., 2006; Holst et al., 2009; Cuzzolin et al., 2010). Another study found that the youngest and the oldest women used less frequently herbal drugs compared with women in the in between age groups (Nordeng and Havnen, 2005).

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

5. Conclusion

Herb use among pregnant women was very common in this study. Utilization of herbs among pregnant women was not related to any socio-demographic variable. Infrequent use of herbs which was reported by most women in this study seems to be safe and beneficial because no association between utilization of herbs and pregnancy outcomes was seen, although further studies are needed to confirm this. To provide the best care to pregnant women who use herbal products, clinicians and pharmacist are recommended to stay up to date with herb use and their safety in pregnancy. Not all women tell their doctors about herbal products use, so the physicians are recommended to ask pregnant women about this to avoid any possible negative outcomes on the mother or the fetus.

References

- Al-Kuran, O., Al-Mehaisen, L., Bawadi, H., Beitawi, S., Amarin, Z., 2011. The effect of late pregnancy consumption of date fruit on labour and delivery. *Journal of Obstetrics and Gynecology* 31, 29–31.
- Al-Shahib, W., Marshall, R.J., 2003. The fruit of the date palm: it's possible use as the best food for the future. *International Journal of Food and Nutrition* 54, 247–259.
- Bercaw, J., Maheshwari, B., Sangi-Haghpeykar, 2010. The use during pregnancy of prescription, over-the-counter, and alternative medications among Hispanic women. *Birth* 37, 211–218.
- Cuzzolin, L., Francini-Persenti, F., Verlato, G., Joppi, M., Baldelli, P., Benoni, G., 2010. Use of herbal products among 392 Italian pregnant women: focus on pregnancy outcome. *Pharmacoepidemiology and Drug Safety* 19, 1151–1158.
- Dugoua, J.J., 2010. Herbal medicines and pregnancy. *Journal of Population and Therapeutics and Clinical Pharmacology* 17, e370–8.
- Evan, W.C., 2009. *Trease and Evans pharmacognosy*, 16th ed Elsevier, New York.
- Forster, D.A., Denning, A., Wills, G., Bolger, M., McCarthy, E., 2006. Herbal medicine use during pregnancy in a group of Australian women. *BMC Pregnancy Childbirth* 6, 21–29.
- Glover, D.D., Amonkar, M., Rybeck, B.F., Tracy, T.S., 2003. Prescription, over-the-counter, and herbal medicine use in a rural. *American Journal of Obstetrics and Gynecology* 188, 1039–1045.
- Hollyer, T., Boon, H., Georgousis, A., Smith, M., Einarson, A., 2002. The use of CAM by women suffering from nausea and vomiting during pregnancy. *BMC Complementary and Alternative Medicine* 2, 5.
- Holst, L., Nordeng, H., Haavik, S., 2008. Use of herbal drugs during early pregnancy in relation to maternal characteristics and pregnancy outcome. *Pharmacoepidemiology and Drug Safety* 17, 151–159.
- Holst, L., Wright, D., Haavik, S., Nordeng, H., 2009. The use and the user of herbal remedies during pregnancy. *Journal of Alternative and Complementary Medicine* 15, 787–792.
- Holst, L., Wright, D., Haavik, S., Nordeng, H., 2011. Safety and efficacy of herbal remedies in obstetrics-review and clinical implications. *Midwifery* 27, 80–86.
- Johns, T., Sibeko, L., 2003. Pregnancy outcomes in women using herbal therapies. *Birth Defects Research* 68, 501–505.

- Kennedy, J., 2005. Herb and supplement use in the US adult population. *Clinical Therapeutic* 27, 1847–1858.
- Louik, C., Gardiner, P., Kelley, K., Mitchell, A.A., 2010. Use of herbal treatments in pregnancy. *American Journal of Obstetrics and Gynecology* 202, 439.e1–439.e10.
- Mills, S., Bone, K., 2000. *Principles and Practice of Phytotherapy*. Churchill Livingstone, London.
- Moussaly, K., Oraichi, D., Berard, A., 2009. Herbal use during pregnancy: prevalence and predictors. *Pharmacoepidemiology and Drug Safety* 18, 454–461.
- Newall, C.A., Anderson, L.A., Phillipson, J.D., 1996. *Herbal Medicines. A guide for Health—Care Professionals*. Pharmaceutical Press, London.
- Nordeng, H., Bayne, K., Havnen, G.C., Paulsen, B.S., 2011. Use of herbal drugs during pregnancy among 600 Norwegian women in relation to concurrent use of conventional drugs and pregnancy outcome. *Complementary Therapies in Clinical Practice* 17, 147–151.
- Nordeng, H., Havnen, G.C., 2004. Use of herbal drugs in pregnancy: a survey among 400 Norwegian women. *Pharmacoepidemiology and Drug Safety* 13, 371–380.
- Nordeng, H., Havnen, G.C., 2005. Impact of socio-demographic factors, knowledge and attitude on the use of herbal drugs in pregnancy. *Acta Obstetrica and gynecologica Scandinavica* 84, 26–33.
- Pinn, G., Pallet, L., 2002. Herbal medicine in pregnancy. *Complementary Therapies in Nursing and Midwifery* 8, 77–80.
- Sawalha, A., 2007. Consumption of prescription and non-prescription medications by pregnant women: a cross sectional study in Palestine. *The Islamic University Journal* 15, 41–57.
- Skidmore-Roth, L., 2004. *Mosby's Handbook of Herbs and Natural Supplement*, second ed. Mosbys.
- World Health Organization. *Traditional and Complementary Medicine*. Available at (<http://www.who.int/medicines/areas/traditional/en/>) (accessed on Jan, 25, 2013).