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Herb Use, Vitamin Use, and Diet in Low Income Postpartum Women

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Abstract

Introduction—Little is known about herb use among underserved postpartum women and their patterns of communication about herb use with prenatal providers.

Methods—We interviewed women from the postpartum unit at an urban hospital about herb use during pregnancy, socioeconomic factors, prenatal vitamin use, and diet. We asked women if they discussed use of herbs and vitamins with their prenatal care provider, and their satisfaction with these discussions. We reviewed inpatient chart medication lists for herb use.

Results—Of 160 women surveyed, 39% reported using herbs during pregnancy. Sixty five percent of subjects took a prenatal vitamin. Fifty-seven percent of herb users ($n=40$) reported taking prenatal vitamins. Herb users were significantly more likely to report making *any* dietary change during their pregnancy than non-herb users ($P=0.03$). Only 38% of herb users discussed it with their prenatal provider and 82% were satisfied with the conversation. Of all 160 subjects, 125 had prenatal vitamin use documented and no women had herbal medicine use documented in the medical record during their delivery hospitalization.

Discussion—We report a higher frequency of herb use during pregnancy than other studies. The fact that women of all backgrounds and economic status report using herbs during pregnancy makes it even more important for all women to be asked about their use of herbs.

Keywords

herbal medicine; complementary and alternative therapies; survey research; nutrition

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INTRODUCTION

Herbs (also called botanicals or herbal medicine) are defined by the National Center for Complementary and Alternative Medicine as a plant or plant part used for its flavor and/or therapeutic properties to supplement the diet.¹ Various national surveys estimate that approximately 1 in 5 people in the United States population uses herbal medicine.² In the United States, few clinical surveys have reported the prevalence of herb use during pregnancy. Reports of herb use vary extensively in the United States and have shown rates ranging from 4% to 45%.³⁻⁶

Little is known about how pregnant women from low income populations use herbs and how they communicate this information to their health care providers. Although it is a standard practice for a clinician to recommend prenatal vitamins during pregnancy, the conversation does not always extend to non-vitamin/mineral dietary supplements such as herbal products. In the 2007 National Health Interview Survey of 2,673 women seeing an obstetrician-gynecologist, 20% used herbal supplements. However, only 52% of the women using complementary and alternative medicine (CAM) disclosed that use to their physician.⁷ In a Houston study of 485 Hispanic postpartum women, 19 % of the participants took herbs and 47 % took vitamin supplements other than prenatal vitamins and one-third had not disclosed information about supplement use to their physicians.⁵ Additionally, few studies have addressed herb use and its association with health behaviors (healthy eating or taking prenatal vitamins), or chronic health conditions. Several studies have found that anxiety about harming her baby leads some women to avoid pharmaceutical treatment and use herbal medicine.⁸⁻¹¹

Some research has indicated that herb use during pregnancy may have a role for women during pregnancy. For example, there has been extensive research into the use of ginger for nausea and vomiting.¹²⁻¹⁶ Other popular herbs used for pregnancy symptom relief include: raspberry leaf for preparing the uterus for birth, chamomile for relaxation and sleep, cranberry for urinary tract infection prevention, and peppermint for indigestion/morning sickness.^{17,18} Past studies have also indicated that castor oil, green tea, evening primrose, and ginseng are frequently used by pregnant women.^{17, 19} Women use herbs based on recommendations by family members, friends, and their health care provider.²⁰

The Joint Commission notes that all clinicians should ask and document discussion on herbs and other dietary supplements in the medical record.²¹ Therefore, it is important for all prenatal providers to ask about and document products used during pregnancy. In addition to the prenatal course, the practice of using a “home supply” of herbs makes identification of herb use among pregnant patients admitted to a health care facility important. This is particularly true because of the risks of herb/vitamin-drug interactions, complications during delivery, or special risks encountered during surgeries such cesarean sections (e.g. interference with hemostasis, interactions with sedatives or anesthetic agents).

Our goal was to determine the prevalence of herb use in our underserved postpartum women, types of herbs used, factors associated with herb use such as medical conditions, dietary habits, and prenatal vitamin use. We also studied patterns of communication and documentation on use of these in the inpatient medical record. We hypothesized that women would be more likely to discuss prenatal vitamin use than herb use with their prenatal providers and that herb use would be associated with healthy dietary changes during pregnancy.

METHODS

All study procedures were approved by the Institutional Review Board at Boston Medical Center and the Maternal and Child Health Perinatal Committee before beginning any data collection.

Patient population

Women were recruited for this study from a convenience sample on the inpatient postpartum unit of Boston Medical Center (BMC). BMC is the largest safety net hospital in New England. It has a long history of serving the healthcare needs of immigrant and low income populations with 50% of its patients having an annual income below \$17,000. Each year, approximately 2,400 babies are delivered at BMC.²²

Survey administration

Surveys were administered from 2008 to 2010. Eligible participants were women at least eighteen years old, with enough English fluency to understand and respond to the interviewer-administered survey. Eligibility for participation in the study was determined by the post-natal patient care team who identified medically stable patients. Interested and eligible participants reviewed the informed consent form with a research assistant, and consent was obtained both for the interviewer-administered survey and the medical chart review. The research assistant administered the survey during the inpatient postpartum hospital stay.

Survey questions

We asked the following questions: “During your pregnancy, did you use herbs, teas or home remedies for your own health or treatment? What herbs or home remedies did you use? (teas, rubs, pills, lotions, oils)”. We also asked specifically about use of the following herbs: ginger, chamomile, ginseng, evening primrose, Echinacea, castor oil, green tea, peppermint, raspberry leaf, cranberry, and other. These herbs were selected based on previously published surveys as well as surveys conducted at our hospital which found that these were popular among our patients.^{2,23} We also asked the open ended question about if they took any other herbs that were not asked about.

We asked women about their socioeconomic factors such as: age, race, education, number of previous pregnancies, place of birth, how long they have lived in the United States, primary language, and self-described health status. A chart review documented acute and chronic medical conditions.

All women were asked whether they made any changes to their diet during their pregnancy (yes or no). At BMC there is a multicultural patient population where eating certain plants or food may represent a cultural tradition or health practice. We were interested in assessing changes in diet as well as any changes in herb use. A subset of 100 women were asked more specific questions about whether they increased their intake of dairy (yes / no), increased their intake of fruit (yes / no) or made some other dietary change (yes / no). Additionally, women were asked about their consumption of fish during the pregnancy. These additional questions were added after data collection started and only asked to a subset of 100 women.

We asked “Did you discuss using herbs with your prenatal provider and how satisfied were you with the counseling on herbs and home remedies.” Satisfaction was ranked on a 4-point Likert scale, from “very satisfied” to “not satisfied”. Women were also asked whether or not they used prenatal care vitamins during their pregnancy, and whether they discussed prenatal

care vitamin use with their provider. Satisfaction with that discussion was ranked using the same 4-point Likert scale.

An inpatient chart review documented any prescription medication, vitamins, minerals, and other supplements such as herbals, fish oil, etc. From the inpatient chart review data, we collected co-morbid medical and obstetrical conditions (hypertension, gestational diabetes, preeclampsia, hyperemesis gravidarum, miscarriage, vaginal bleeding, fertility issues, ectopic pregnancy, advanced maternal age, no or scant prenatal care, previous C-section). The chart review assessed only inpatient charts during the hospitalization of delivery; we did not review prenatal visit charts.

Statistical analysis

We used descriptive statistics to report frequency of herb use and types of herbs used.

We identified herb users based on self-reported use of any herbs or use of a specific herb listed in the survey. In our patient population, some women use green tea for weight loss and drink cranberry juice for UTI prevention. On the survey, we did not ask why women were drinking cranberry and green tea so we do not know if they were using it for medicinal purposes or as a beverage. Therefore, we completed our analysis with and without cranberry juice and green tea users to account for those who used it as a beverage, and found the same results. We report the results excluding cranberry and green tea users to give a more conservative estimate.

We used descriptive statistics to report factors associated with herb use, such as demographic, social, and health-status variables. We also assessed dietary changes made during pregnancy (yes or no responses) among herb users and non-herb users with chi-square analysis. Finally, we analyzed communication between subjects and their prenatal care provider around herb use, and compared it to that of prenatal vitamin use.

RESULTS

We recruited 160 women to this study. Thirty-nine percent reported using herbs during pregnancy. Table 1 gives a descriptive overview of demographic and social characteristics. Women who reported using herbs were significantly more likely to have graduated from high school (92% vs 78%, $P=0.07$), and more likely to identify racially as black than non-herb users (65% vs 53%, $P=0.03$). There were no significant differences between herb users and non-herb users in place of birth or primary language. For 49% of women in this study, this was their first pregnancy.

The most common medical diagnosis among women in this study was an obstetrical co-morbidity including conditions such as preeclampsia, and gestational diabetes (18%), and women who reported using herbs were more likely to have these diagnoses (27% vs 12%, $P=0.02$). There were no other statistically significant differences in comorbid diagnoses between the two groups.

Sixty five percent of participants took a prenatal vitamin. Sixty-three percent of herb users ($n=40$) reported taking prenatal vitamins. Eighty-eight percent of herb users ($n=56$) had documentation of prenatal vitamins in the chart. Side effects of prenatal vitamins were constipation (9%, $n=15$), nausea or vomiting (13%, $n=20$) or other symptoms (1%, $n=2$). Fifty-nine women reported no side effects. Non-prenatal vitamin/mineral products taken by participants included: iron (33%), vitamin D (2%), calcium (5%), and 13% reported taking some other vitamin supplement. Vitamin use was not significantly different between herb and non-herb users.

Table 2 describes dietary changes reported during this pregnancy. Sixty-one percent of the women in this study reported making any dietary change. Herb users were significantly more likely to report making any dietary change during their pregnancy than non-herb users ($P=0.03$). Thirty three percent increased their intake of dairy, and 51% ate more fruits. Fifty-eight percent reported making some other dietary change such as reducing salt intake ($n=6$) reducing caffeinated beverages and drinking more water ($n=14$), or eating less junk food ($n=6$). These changes did not differ significantly between herb users and non-herb users. Table 3 describes the most frequently reported herbs used by the women. The most common herbal products that women reported using during their pregnancy were ginger (14%, $n=22$), peppermint (14%, $n=22$).

Table 4 provides information on counseling about the use of herbs and prenatal vitamins during pregnancy. Of women who reported using herbal supplements during their pregnancy, 38% of them reported discussing herb use with their prenatal care providers. Of those that discussed herb use, 82% were either very or fairly satisfied with the conversation. Of the 104 women reporting using a prenatal vitamin, 82% of them discussed vitamin use with their prenatal care provider. Ninety percent of women reported being very or fairly satisfied with the discussion. Thus, more women discussed vitamin use than herb use.

Figure 1 compares self-report of vitamins, herbal supplements, iron, vitamin D, calcium and other supplements documented in the medical record among the population. In terms of documenting discussions about herbs in the inpatient medical record, in our chart review we found that of the 160 participants, 125 had prenatal vitamin use documented and no women had herbal medicine use documented.

DISCUSSION

This study is one of the first to report herb use in low income, multicultural postpartum women. In this study, we found that 39% of postpartum women reported using an herb during their pregnancy. Additionally, 65% of postpartum women reported taking a prenatal vitamin which is lower than we expected. Of all 160 participants, 125 (78%) had prenatal vitamin use documented and no women had herbal medicine use documented in the medical record during their delivery hospitalization. Our group is the first to show that herb users are significantly more likely to report making a dietary change during their pregnancy than non-herb users ($P=0.03$).

The most commonly used herbs in our sample were ginger and peppermint - herbs commonly used to treat morning sickness.^{14, 24, 25} Peppermint, used by 14%, is known to dilate the lower esophageal sphincter which might make morning sickness worse. Other studies show similar trends of herb use with ginger, peppermint, chamomile, and raspberry tea being popular herbal remedies during pregnancy.^{12, 26, 27}

Women with an obstetric condition were more likely to use herbs ($P=0.02$); there was no difference in herb use with other medical conditions. One possible explanation is that prior obstetrical problems might cause women to try herbs during pregnancy. A recent review of the literature found that women reporting more physical symptoms during pregnancy were more likely to use CAM.²⁸ They also reported that the most commonly identified reasons for CAM use during pregnancy was for relief of stress and pregnancy-related complaints such as nausea and low-back pain. Women seeking treatment for infertility often use CAM. One survey of 428 couples seeking treatment for infertility showed that 29% used some form of CAM to attempt to get pregnant, with 17% using herbal therapy.²⁹

Women using herbs were more likely to report making a change to their diet during pregnancy ($P=0.03$), although there were no significant differences between the groups on

specific dietary changes, such as change in dairy, fruit, or fish consumption. Research examining dietary patterns during pregnancy and their role on child health outcomes has grown.^{30–33} One study suggested that there was increased motivation to change dietary habits among their pregnant participants due to concern of pregnancy related complications.³² On the other hand, Crozier et al. found that dietary patterns in pregnant women from the UK did not change significantly from before pregnancy.³⁴ Previous research has shown benefits to both mother and infant when nutrition is addressed as part of prenatal care.³⁵

This study demonstrates that herbal products are commonly used, and that this is not often discussed with a prenatal care provider. Among women reporting herb use, only 38% discussed the use of herbs with prenatal providers compared to 82% who used prenatal vitamins. Interestingly, we found that the vast majority of women who did discuss herb use with their provider were very or fairly satisfied with the discussion (82%) indicating that when these discussions do take place they are generally satisfying. This is similar to the level of satisfaction with discussions around prenatal vitamins (90% reporting very or fairly satisfied). Our findings report higher discussion and satisfaction compared to other studies. In one study, researchers found that 76% of pregnant women did not inform their providers of their herb use.¹⁸ Satisfaction with prenatal conversations with providers could be influential in building trust, addressing side effects, and monitoring for adherence. Unfortunately, we are unable to assess whether the discussions were patient or provider initiated in this study. In an age of improved quality, where providers are evaluated based on patient satisfaction, it is important for researchers to ask patients about whether they are satisfied with their care. Based on previous research about satisfaction and medication adherence, we hypothesize that women who are more satisfied would adhere more to prenatal clinical recommendations.³⁷

In our inpatient chart review, we did not find documentation of the use of herbal medicines for any women in this study. Our results, which indicate that few providers actually documented herb use, corroborate results of other studies.³⁶ Even though 63 women self-reported using herbals, not a single chart had documentation of herb use (or of a discussion regarding it) in their medical record. This is in sharp contrast to prenatal vitamin use, which was actually documented in the record more than women reported taking it (125 women had a documentation of prenatal vitamin use, while only 104 reported actually taking them). Vitamins have become part of standard of prenatal care, so providers are almost uniformly discussing them, even when women are opting not to take them for one reason or another.

Future research must examine the barriers and facilitators to discussion and documentation of herb use in the medical chart. Within the health professions, different providers have different reasons for discussing herbal medicines with patients (eg, ginger for nausea). Our study should also be repeated in non-English speaking populations to see if there are cultural differences that contribute to herb use in prenatal experiences. Also, a larger powered study would be able assess patient outcomes such as infant mortality and birth weight. Lastly, there must be more investigation into the cost of these herbal products, particularly for low income families. As prenatal vitamins are often covered by health insurance, herbal medicine is not, which is a challenge for patients and providers who may want to initiate herbs but are unable to afford high quality herbal supplements.

Limitations

This study has a number of limitations, the first of which is small sample size. Having only 160 women greatly limited our power to detect smaller differences between women who used herbs and those who did not. However, one major purpose of this study was to demonstrate the frequency of use of herbal products, and the paucity of discussion about

their use with providers; this objective was not hindered by the smaller sample size. Another limitation of this study was the exclusion of women who did not speak English. Having fewer non-English speakers may have biased our study towards women who are more acculturated to the United States and potentially less likely to use herbal products. However, this would only make our findings more striking, as still nearly 40% of women surveyed reported use of an herbal product during their pregnancy. Another limitation is the lack of distinction between herbs that women took on their own and those that were recommended by a provider. Since we are unable to assess discussions of herb use during prenatal care visits, we cannot say whether any subjects were recommended herbs or whether they took them on their own. We had access only to medical records from the hospitalization for delivery for this study, and we did not review prenatal visit charts.

CONCLUSION

Our research shows that women in low income, inner city hospitals are using herbal medicines during the prenatal period. Additionally, we found little to no documentation in the inpatient medical record of this herb use. Under the Joint Commission Guidelines, all herbs and dietary supplements should be documented in the inpatient medical record. Some providers may be uncomfortable with discussing and documenting these topics because of a lack of knowledge or training around them. Our study points to the fact that women appreciate and are satisfied with these discussions when they do occur. Patient satisfaction is important particularly during prenatal care when patients rely on advice and guidance from trusted clinicians. It is important that providers be given tools to empower them to discuss herbal medicine with their patients, and encouraged to do so.

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References

1. National Center for Complementary and Alternative Medicine. [Accessed 11/03, 2011] Herbs at a glance. <http://nccam.nih.gov/>. Updated 2010.
2. Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United states, 2007. Natl Health Stat Report. 2008; 12(12):1–23. [PubMed: 19361005]
3. Refuerzo JS, Blackwell SC, Sokol RJ, et al. Use of over-the-counter medications and herbal remedies in pregnancy. Am J Perinatol. 2005; 22(6):321–324. [PubMed: 16118721]
4. Broussard CS, Louik C, Honein MA, Mitchell AA. National Birth Defects Prevention Study. Herbal use before and during pregnancy. Am J Obstet Gynecol. 2010; 202(5):443.e1–443.e6. [PubMed: 20035911]
5. Bercaw J, Maheshwari B, Sangi-Haghpeykar H. The use during pregnancy of prescription, over-the-counter, and alternative medications among Hispanic women. Birth. 2010; 37(3):211–218. [PubMed: 20887537]
6. Glover DD, Rybeck BF, Tracy TS. Medication use in a rural gynecologic population: Prescription, over-the-counter, and herbal medicines. Obstet Gynecol. 2004; 190(2):351–357.
7. Harrigan JT. Patient disclosure of the use of complementary and alternative medicine to their obstetrician/gynaecologist. J Obstet Gynaecol. 2011; 31(1):59–61. [PubMed: 21280996]

8. Hollyer T, Boon H, Georgousis A, Smith M, Einarson A. The use of CAM by women suffering from nausea and vomiting during pregnancy. *BMC Complement Altern Med*. 2002; 2:5. [PubMed: 12033990]
9. Nordeng H, Havnen GC. Use of herbal drugs in pregnancy: A survey among 400 Norwegian women. *Pharmacoepidemiol Drug Saf*. 2004; 13(6):371–380. [PubMed: 15170766]
10. Hepner DL, Harnett M, Segal S, Camann W, Bader AM, Tsen LC. Herbal medicine use in parturients. *Anesth Analg*. 2002; 94(3):690–693. table of contents. [PubMed: 11867399]
11. Koren G, Bologa M, Long D, Feldman Y, Shear NH. Perception of teratogenic risk by pregnant women exposed to drugs and chemicals during the first trimester. *Am J Obstet Gynecol*. 1989; 160(5 Pt 1):1190–1194. [PubMed: 2729394]
12. Forster DA, Denning A, Wills G, Bolger M, McCarthy E. Herbal medicine use during pregnancy in a group of Australian women. *BMC Pregnancy Childbirth*. 2006; 6:21. [PubMed: 16780602]
13. Fischer-Rasmussen W, Kjaer SK, Dahl C, Asping U. Ginger treatment of hyperemesis gravidarum. *Eur J Obstet Gynecol Reprod Biol*. 1991; 38(1):19–24. [PubMed: 1988321]
14. Ensiyeh J, Sakineh MC. Comparing ginger and vitamin B6 for the treatment of nausea and vomiting in pregnancy: A randomised controlled trial. *Midwifery*. 2009; 25(6):649–653. [PubMed: 18272271]
15. Chittumma P, Kaewkiattikun K, Wiriyasiriwach B. Comparison of the effectiveness of ginger and vitamin B6 for treatment of nausea and vomiting in early pregnancy: A randomized double-blind controlled trial. *J Med Assoc Thai*. 2007; 90(1):15–20. [PubMed: 17621727]
16. Vutyavanich T, Kraissarin T, Ruangsri R. Ginger for nausea and vomiting in pregnancy: Randomized, double-masked, placebo-controlled trial. *Obstet Gynecol*. 2001; 97(4):577–582. [PubMed: 11275030]
17. Bishop JL, Northstone K, Green JR, Thompson EA. The use of complementary and alternative medicine in pregnancy: Data from the Avon longitudinal study of parents and children (ALSPAC). *Complement Ther Med*. 2011; 19(6):303–310. [PubMed: 22036522]
18. Holst L, Wright D, Haavik S, Nordeng H. The use and the user of herbal remedies during pregnancy. *J Altern Complement Med*. 2009; 15(7):787–792. [PubMed: 19538045]
19. Kelly AJ, Kavanagh J, Thomas J. Castor oil, bath and/or enema for cervical priming and induction of labour. *Cochrane Database Syst Rev*. 2001; 2(2):CD003099. [PubMed: 11406076]
20. Nordeng H, Bayne K, Havnen GC, Paulsen BS. Use of herbal drugs during pregnancy among 600 Norwegian women in relation to concurrent use of conventional drugs and pregnancy outcome. *Complement Ther Clin Pract*. 2011; 17(3):147–151. [PubMed: 21742280]
21. Joint Commission on Accreditation of Healthcare Organizations. [Accessed 11/21, 2011] 2005 National Patient Safety goals FAQs. www.jcaho.org.
22. Boston Medical Center. [Accessed 12/21, 2011] Labor and delivery. <http://www.bmc.org/obgyn/services/laboranddelivery.htm>.
23. Louik C, Gardiner P, Kelley K, Mitchell AA. Use of herbal treatments in pregnancy. *Am J Obstet Gynecol*. 2010; 202(5):439.e1–439.e10. [PubMed: 20452484]
24. Jenny MW. What do we know about herbal morning sickness treatments? A literature survey. *Midwifery*. 2000; 16(3):224–228. [PubMed: 10970756]
25. Chittumma P, Kaewkiattikun K, Wiriyasiriwach B. Comparison of the effectiveness of ginger and vitamin B6 for treatment of nausea and vomiting in early pregnancy: A randomized double-blind controlled trial. *J Med Assoc Thai*. 2007; 90(1):15–20. [PubMed: 17621727]
26. Pinn G, Pallett L. Herbal medicine in pregnancy. *Complement Ther Nurs Midwifery*. 2002; 8(2):77–80. [PubMed: 12188161]
27. Gibson PS, Powrie R, Star J. Herbal and alternative medicine use during pregnancy: A cross-sectional survey. *Obstetrics & Gynecology*. 2001; 97 Supplement 1(4):S44–S45.
28. Adams J, Lui C, Sibbritt D, et al. Women's use of complementary and alternative medicine during pregnancy: A critical review of the literature. *Birth*. 2009; 36(3):237–245. [PubMed: 19747271]
29. Smith JF, Eisenberg ML, Millstein SG, et al. The use of complementary and alternative fertility treatment in couples seeking fertility care: Data from a prospective cohort in the United States. *Fertil Steril*. 2010; 93(7):2169–2174. [PubMed: 20338559]

30. Klemmensen A, Tabor A, Osterdal ML, et al. Intake of vitamin C and E in pregnancy and risk of pre-eclampsia: Prospective study among 57 346 women. *BJOG*. 2009; 116(7):964–974. [PubMed: 19522799]
31. Saito K, Yokoyama T, Miyake Y, et al. Maternal meat and fat consumption during pregnancy and suspected atopic eczema in Japanese infants aged 3–4 months: The Osaka maternal and child health study. *Pediatr Allergy Immunol*. 2010; 21(1 Pt 1):38–46. [PubMed: 19552790]
32. Rifas-Shiman SL, Rich-Edwards JW, Kleinman KP, Oken E, Gillman MW. Dietary quality during pregnancy varies by maternal characteristics in project viva: A US cohort. *J Am Diet Assoc*. 2009; 109(6):1004–1011. [PubMed: 19465182]
33. Mikkelsen TB, Osterdal ML, Knudsen VK, et al. Association between a mediterranean-type diet and risk of preterm birth among Danish women: A prospective cohort study. *Acta Obstet Gynecol Scand*. 2008; 87(3):325–330. [PubMed: 18307073]
34. Crozier SR, Robinson SM, Godfrey KM, Cooper C, Inskip HM. Women's dietary patterns change little from before to during pregnancy. *The Journal of Nutrition*. 2009
35. Gardiner PM, Nelson L, Shellhaas CS, et al. The clinical content of preconception care: Nutrition and dietary supplements. *Am J Obstet Gynecol*. 2008; 199 Suppl 2(6):S345–S356. [PubMed: 19081429]
36. Howell L, Kochhar K, Saywell R Jr, et al. Use of herbal remedies by Hispanic patients: Do they inform their physician? *J Am Board Fam Med*. 2006; 19(6):566–578. [PubMed: 17090790]
37. Ortega F, Otero A, Crespo JF, et al. Satisfaction and adherence with immunosuppressant treatment in renal transplant patients living with a working graft. *J Nephrol*. 2012 0.

Figure 1.
Self-reported versus Chart-documented use of Vitamins and Herbs

Table 1

Demographics for herb users and non-herb users in a sample of low-income postpartum women (N=160)

	Total Sample	Herb Users N=63 (39%)	Non-Herb Users N=97 (61%)	
Total	160			
Age, n (%)				<i>P</i> =0.12
18–25	61 (38)	18 (29)	43 (44)	
26–35	77 (48)	34 (54)	43 (44)	
36–45	22 (14)	11 (17)	11 (11)	
Education, n (%)				<i>P</i> =0.07
Less than HS	26 (16)	5 (8)	21 (22)	
HS grad	64 (40)	24 (38)	40 (41)	
Some college	44 (28)	22 (35)	22 (23)	
College grad	26 (16)	12 (19)	14 (14)	
Race/Ethnicity, n (%)				<i>P</i> =0.03
White	35 (22)	16 (25)	19 (20)	
Hispanic	19 (12)	2 (3)	17 (18)	
Black/African American	92 (58)	41 (65)	51 (53)	
Other	14 (9)	4 (6)	10 (10)	
Language, n (%)				<i>P</i> =0.18
English	107 (69)	46 (73)	61 (63)	
Spanish	12 (8)	2 (3)	10 (10)	
Haitian Creole	14 (9)	7 (11)	7 (7)	
Other	27 (17)	8 (13)	19 (20)	
Parity, n (%)				<i>P</i> =0.91
1	78 (49)	31 (49)	47 (48)	
2	50 (31)	18 (29)	32 (33)	
3	13 (8)	6 (10)	7 (7)	
4	19 (12)	8 (13)	11 (11)	
How Long in US, n (%)				<i>P</i> =0.71
Born in US	92 (58)	34 (54)	58 (60)	
>10 years	28 (18)	14 (22)	14 (14)	
5–10 years	16 (10)	6 (10)	10 (10)	
1–5 years	18 (11)	6 (10)	12 (12)	
<1 year	6 (4)	3 (5)	3 (3)	
Self-Described Health Status, n (%)				<i>P</i> =0.92
Poor/Fair	13 (8)	6 (10)	7 (7)	
Good	65 (41)	25 (40)	40 (41)	
Very Good	46 (29)	19 (30)	27 (28)	
Excellent	36 (23)	13 (21)	23 (24)	

	Total Sample	Herb Users N=63 (39%)	Non-Herb Users N=97 (61%)	
Comorbidities, n (%)				
Chronic Disease	16 (10)	4 (6)	12 (12)	
GI	29 (18)	13 (21)	16 (16)	
Gyn/Abnl PAP	27 (17)	6 (10)	21 (22)	
Hypertension	8 (5)	5 (8)	3 (3)	
History of STDs	23 (14)	7 (11)	16 (16)	
OB	29 (18)	17 (27)	12 (12)	
Asthma	15 (9)	6 (10)	9 (9)	
Endocrine	23 (14)	10 (16)	13 (13)	
Heme	25 (16)	13 (21)	12 (12)	
Mental/Neuro	24 (15)	7 (11)	17 (18)	
Renal	5 (3)	3 (5)	2 (2)	
Pain	5 (3)	3 (5)	2 (2)	
Poor birth outcome	11 (7)	5 (8)	6 (6)	
Substance abuse	15 (9)	5 (8)	10 (10)	

Table 2

Dietary changes made during pregnancy as reported by postpartum women who used or did not use herbs

	Overall	Herb Users	Non-Herb Users	
Any Dietary Change, n (%)				<i>P</i> =0.03
Yes	97 (61)	45 (71)	52 (54)	
No	62 (39)	18 (29)	44 (46)	
Increased Dairy ^a , n (%)				<i>P</i> =0.95
Yes	33 (33)	16 (33)	17 (33)	
No	67 (67)	32 (67)	35 (67)	
Increased Fruits ^a , n (%)				<i>P</i> =0.84
Yes	51 (51)	25 (52)	26 (50)	
No	49 (49)	23 (48)	26 (50)	
Other Dietary Change ^a , n (%)				<i>P</i> =0.64
Yes	58 (58)	29 (60)	29 (56)	
No	42 (42)	19 (40)	23 (44)	
Ate Fish During Pregnancy ^b , n (%)				<i>P</i> =0.08
Yes	105 (76)	50 (83)	55 (70)	
No	33 (24)	10 (17)	23 (30)	
Iron Supplementation, n (%)				<i>P</i> =0.52
Yes	53 (33)	19 (30)	34 (35)	
No	107 (67)	44 (70)	63 (65)	
Vitamin D Supplementation, n (%)				<i>P</i> =0.33
Yes	3 (2)	2 (3)	1 (1)	
No	157 (98)	61 (97)	96 (99)	
Calcium Supplementation, n (%)				<i>P</i> =0.91
Yes	8 (5)	3 (5)	5 (5)	
No	152 (95)	60 (95)	92 (95)	
Other vitamin supplement, n (%)				<i>P</i> =0.07
Yes	21 (13)	12 (19)	9 (9)	
No	139 (87)	51 (81)	88 (91)	

^aThese questions were asked of a subset of 100 women, 1 person answering “not sure” excluded^bFish question does not include 1st 21 women surveyed and does not include 1 person answering “not sure”

Table 3

Herbs Most Commonly Used during pregnancy as reported in a sample of low income postpartum women (N=160)

Herb	n (%)
Ginger	22 (14)
Peppermint	22 (14)
Chamomile	12 (8)
Raspberry Leaf	8 (5)
Ginseng	3 (2)
Castor Oil	3 (2)
Evening Primrose	1 (0.6)
Echinacea	1 (0.6)

Table 4

Counseling on Herb and Vitamin Use and Satisfaction with Counseling in a sample of low income postpartum women who reported taking dietary supplements in pregnancy

Questions and Response Categories	
Did you discuss herbs with prenatal care provider? n (%)	Herb Users (N=63)
Yes	24 (38)
No	37 (59)
Not Sure	2 (3)
Are you satisfied with the counseling you received? ^a n (%)	
Very Satisfied	12 (55)
Fairly Satisfied	6 (27)
Somewhat Satisfied	4 (18)
Not Satisfied	0 (0%)
	Vitamin Users (N=104)
Did you discuss vitamin use with prenatal care provider? n (%)	
Yes	85 (82)
No	19 (18)
Are you satisfied with the counseling you received? ^b n (%)	
Very Satisfied	59 (70)
Fairly Satisfied	17 (20)

^a 1 woman excluded for missing data

^b 2 women excluded for missing data