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The Effectiveness of Reflexology on Fatigue, Constipation, Nausea and Vomiting During Pregnancy: A Narrative Review

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Abstract

Context: Complications during pregnancy can lead to issues during pregnancy, delivery, and postpartum. Therefore, employing appropriate treatment methods with minimal side effects is a concern for obstetrics and gynecology specialists, midwives, healthcare workers, and pregnant mothers. The primary aim of this study was to evaluate the effect of reflexology (REF) on fatigue, constipation, nausea, and vomiting during pregnancy in the form of a narrative review.

Evidence Acquisition: This narrative review identified 232 studies by searching relevant keywords in Web of Science, Islamic World Science Citation Center (ISC), Scopus, PubMed, Magiran, IranDoc, and Google Scholar from 1990 to 2024. After applying inclusion and exclusion criteria, 18 studies were selected for the final analysis, and their results were used to compile this review.

Results: The study results indicated that constipation, fatigue, nausea, and vomiting are significant complications during pregnancy that can lead to issues during pregnancy, delivery, and postpartum. These complications included premature birth, low birth weight, increased labor duration, cesarean section, and postpartum depression. The general findings of this study demonstrated that REF, particularly foot REF, can significantly reduce constipation, fatigue, nausea, and vomiting during pregnancy.

Conclusions: Based on the results, it can be concluded that REF has a significant effect in reducing complications during pregnancy. Unlike medicinal methods, REF has no side effects for pregnant mothers. Therefore, it is recommended that healthcare personnel, midwives, and even pregnant mothers themselves consider using this treatment method during pregnancy.

Keywords: Reflexology, Fatigue, Constipation, Nausea, Vomiting, Pregnancy Complications, Women

1. Context

Pregnancy is a physiological phenomenon accompanied by numerous changes in various body systems. The primary goal of prenatal care is to identify maternal and fetal problems and implement necessary interventions. It is crucial to recognize the physical and psychological factors affecting pregnant women's health and distinguish between normal and abnormal cases to ensure a healthy family and social environment (1). Pregnancy complications include fatigue, nausea and vomiting (NAV), heartburn, constipation, leg and spine pain, depression, anxiety, and more. Therefore, it is essential to mitigate these side effects using pharmaceutical and non-pharmaceutical methods (2).

Fatigue is a common issue among pregnant women, though its mechanism is not fully understood. According to physiological principles and theories, fatigue results from disturbances in the body's energy balance due to hormonal changes, metabolic

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alterations, mental and physical issues, or pregnancy-related diseases (3, 4). Increased fatigue can lead to complications during pregnancy, childbirth, and postpartum, including premature birth, low birth weight, prolonged labor, cesarean section, and postpartum depression (5, 6).

Nausea and vomiting is one of the most prevalent gastrointestinal complaints in early pregnancy, with a global prevalence ranging from 35% to 91%, averaging 69% (7). Nausea and vomiting significantly impacts the quality of life and personal and social functioning of pregnant women, potentially causing sleep disorders, fatigue, malnutrition, irritability, and decreased efficiency (8). Severe and prolonged nausea and vomiting during pregnancy (NVDP) can lead to hyperemesis gravidarum, resulting in weight loss, severe dehydration, electrolyte imbalance, and ketonuria. This condition also increases the risk of premature birth and low birth weight (9).

Constipation is a common digestive complaint during pregnancy, particularly in the first and third trimesters. Decreased stool frequency and difficulty in defecation are typical clinical symptoms of constipation during pregnancy (CDP) (10).

Reflexology (REF) is a branch of complementary medicine involving the massage of reflex points in the hands and feet. Reflexology encompasses pain gate control theory, nerve impulse theory, and increased release of endorphins and enkephalins. These mechanisms contribute to pain control, improved lymphatic flow, enhanced immune function, deep relaxation, muscle relaxation, improved nerve flow and blood circulation, and toxin elimination due to improved blood flow (11-13). Today, REF is frequently used in medical centers and clinics to reduce pregnancy complications. Given the absence of side effects compared to pharmaceutical methods, assessing the efficacy of REF for pregnant women is vital. The main aim of this study was to evaluate the effect of REF on fatigue, constipation, nausea, and vomiting during pregnancy in the form of a narrative review.

2. Evidence Acquisition

The present study is a narrative review conducted through a comprehensive literature search. Relevant studies from 1990 to 2024 were identified using advanced search techniques in national and international databases, including Web of Science, Islamic World Science Citation Center (ISC), Scopus, PubMed, Magiran, Google Scholar, and IranDoc. Various keywords were employed in the search, with the most pertinent being "reflexology", "foot reflexology", "pregnancy", "fatigue", "sleep disorder", "pain", "nausea", "vomiting", "constipation", "psychosocial factors", "anxiety", "women", "pregnancy complications" and "non-pharmacological treatment".

Several criteria were applied to exclude certain studies from the review process. Review articles, studies published in non-peer-reviewed journals, and those found in public internet databases were excluded. Only studies focusing on the period during pregnancy and before delivery were selected. In alignment with the study's primary objective, only research concentrating on REF was included, excluding other non-pharmacological methods for reducing pregnancy complications.

Initially, 232 studies were identified. After applying the inclusion and exclusion criteria, 18 studies were selected for this review. The inclusion criteria required that previous studies be related to pregnancy and specifically evaluate the effect of REF on fatigue, constipation, and NVDP.

3. Results

3.1. Application of Reflexology on Nausea and Vomiting During Pregnancy

Nausea and vomiting during pregnancy is one of the most common gastrointestinal complaints among pregnant women, with its primary cause remaining unknown. It is a multifactorial disorder with causes including hormonal, mechanical, biochemical, immunological, psycho-emotional, vestibular, gastrointestinal, physiological, excessive smell, and developmental factors (e.g., number of births, young maternal age, and pathological disorders) (14). Since there is no definitive index to determine which type of NVDP may lead to hyperemesis gravidarum, this complication should not be left untreated, even in normal cases (15).

Due to the unknown factors affecting NVDP occurrence, treatment options are limited. Available treatments to control NAV include dietary and lifestyle changes, drug treatments, and complementary medicine (8). Drug treatments are recommended when symptoms worsen, recovery is delayed, quality of life is impaired, and malnutrition occurs. However, under normal conditions, safer methods for both mother and

fetus are preferred (16). Consequently, the use of drugs has decreased in recent years, with non-drug methods and complementary medicine often being favored. Other adjunctive treatments for NVDP include herbal medicines, vitamin therapy, hypnotherapy, and acupressure (17).

Reflexology is a branch of complementary medicine that has shown positive effects on various pregnancy-related issues, including edema, constipation, insomnia, fatigue, and childbirth anxiety (16). Reflexology is part of traditional Chinese medicine, involving the application of pressure with fingers and toes on specific body points. It is based on the principle that reflex points correspond to internal organs and glands, mirroring the body's physical arrangement.

A significant point in REF is the solar plexus chakra (SPC), one of the body's seven main chakras, located in the chest area of the upper abdomen, behind the stomach, and in front of the aorta. The SPC is the organic center for communication with the spleen, pancreas, and digestive system, significantly affecting the function of the stomach, intestines, spleen, pancreas, liver, peristaltic movements, and glandular secretions (18, 19). Physical conditions such as digestive system disorders, urinary system issues, skin sensitivities, and blood sugar disorders are sometimes linked to solar plexus disorders (11). The SPC reflex site in REF is located at the junction of the anterior one-third and posterior two-thirds of the foot in the midline, just below the plantar eminence (8, 12).

Various studies have explored the use of REF to control NAV in contexts other than pregnancy, but less research has focused on evaluating the effect of REF on NVDP. Asadollahi et al. conducted a study to evaluate the effect of foot reflexology (FREF) of the solar plexus on the severity of NAV in women during the first half of pregnancy. In this study, 73 pregnant women between 8 and 20 weeks of gestation were selected and divided into an intervention group receiving REF (36 participants) and a control group (37 participants). The results indicated that the average NAV scores after the intervention in the REF group were significantly reduced by 0.36 units ($P = 0.04$) and 0.77 units ($P < 0.001$) compared to the control group. The researchers concluded that FREF of the solar plexus has a positive and significant effect in reducing NVDP (19).

In another study by Wills and Forster, REF was found to have a positive and significant effect in controlling NVDP (20). Additionally, other studies have shown that REF is effective in controlling NAV in cancer patients, as reported in review studies by Prapti et al. (21) and Kim et al. (22). Yang (2005) also reported that FREF had a positive and significant effect in controlling NAV in breast cancer patients (23). Chainakin (2006) evaluated the effect of hand reflexology (HREF) on NAV in cancer patients undergoing chemotherapy, finding that NAV intensity significantly decreased in the intervention group compared to the control group after the intervention ($P < 0.001$) (24). Similarly, Ozdelikara and Tan (2017) demonstrated the positive impact of REF on controlling NAV symptoms in cancer patients undergoing chemotherapy (25).

Compared to other methods for reducing NAV, REF is a relatively easy, non-invasive method with no side effects and low cost (11). Moreover, REF can foster a positive relationship between the patient and caregiver. One of the advantages of REF is that it can be performed by the patient themselves (19). Based on past study results and the numerous advantages of REF, it is suggested that this method be used as a supportive and palliative approach alongside other existing methods by caregivers, especially midwives, to reduce NVDP symptoms in the first half of pregnancy.

3.2. Application of Reflexology on Fatigue During Pregnancy

Fatigue is a common issue among pregnant women, though its mechanism is not fully understood. According to physiological principles and theories, fatigue results from disturbances in the body's energy balance due to hormonal, metabolic, mental, and physical adaptation, as well as contracting certain diseases during pregnancy (3-7). Increased fatigue can lead to complications during pregnancy, childbirth, and postpartum, including a higher prevalence of premature birth, decreased birth weight, prolonged labor, increased need for auxiliary equipment such as forceps, cesarean section, and postpartum depression (4, 6).

Luke et al. (2005) reported that fatigue during pregnancy (FDP) is a factor affecting premature birth (26). Magann et al. (2002) found that birth weight is a crucial indicator of societal health status, and noted that FDP has received less attention among factors affecting low birth weight (27). Chien and Ko (2004) identified FDP as a significant problem in pregnant women, potentially increasing cesarean delivery rates. They reported that FDP is often overlooked by

healthcare workers, necessitating measures to reduce FDP to decrease cesarean sections (28).

Reflexology can be employed as a nursing intervention to reduce FDP (16). Ghaffari and Pour Ghaznein (2010) conducted a clinical trial to evaluate the effect of FREF on FDP severity. In this study, 74 pregnant women were divided into a test group (36 participants) and a control group (38 participants), matched by age and occupation. The intervention group received FREF twice a week, with each session lasting 30 minutes over 5 weeks. Fatigue intensity was measured before and after the intervention for both groups. The study found that FREF significantly reduced fatigue intensity in pregnant women. Additionally, the authors noted that social support and iron supplementation also reduced FDP (29).

In a similar study by Shobeiri et al. (2017), the effects of counseling and FREF on FDP were evaluated. Three groups were studied: A counseling group (42 participants), a FREF group (42 participants), and a control group (42 participants). Fatigue intensity was measured before and after the interventions for all groups. The study concluded that both counseling and FREF interventions significantly reduced FDP (30).

Overall, based on these studies, FREF can effectively reduce FDP, while other measures, including counseling, iron supplementation, and social support, can also mitigate this pregnancy complication.

3.3. Application of Reflexology on Constipation During Pregnancy

The CDP is a common digestive issue affecting 11% to 40% of pregnancies, particularly in the first and third trimesters (31). Constipation is associated with factors such as hemorrhoids, headache, depression, and appetite disorders (10, 32). The use of laxatives to treat this problem can lead to side effects, including sodium retention, impaired absorption of fat-soluble vitamins, hypoprothrombinemia, maternal bleeding, and infant diarrhea (33, 34).

Reflexology is a complementary and alternative treatment for reducing constipation, with its positive effects reported in various studies. Bishop et al. (2003) conducted a study on 50 children aged 3 to 14 years with chronic constipation, finding that REF significantly improved constipation (35). Tovey (2002) evaluated REF's impact on 34 patients with irritable bowel syndrome, showing significant differences in abdominal pain control, constipation severity, and diarrhea between the test and control groups (36). Ponce et al. (2008) also reported significant differences in constipation severity before and after FREF (37).

Yang et al. (1994) investigated FREF's effect on constipation severity in 40 elderly center residents (20 with constipation and 20 without). All participants received REF treatment. The study found that the time interval between bowel movements decreased from 45 hours to 24 hours in the constipated group and from 57.5 hours to 46 hours in the non-constipated group (38).

Sehhatti et al. (2020) conducted a randomized controlled trial to determine FREF's effect on idiopathic constipation symptoms in pregnant women, showing that FREF significantly reduced CDP symptoms in the intervention group compared to the control group (39). In another study, Ghaffari et al. (2007) reported that FREF had a positive and significant effect on reducing CDP symptoms in pregnant women in the intervention group (40).

Overall, these studies demonstrate the positive effect of FREF on reducing CDP symptoms in pregnant women.

4. Conclusions

By evaluating the results of similar studies, it was found that constipation, fatigue, nausea, and vomiting are significant complications during pregnancy that can lead to issues during pregnancy, delivery, and postpartum. These complications may include premature birth, low birth weight, prolonged labor, cesarean delivery, and postpartum depression. The general findings of the present study indicate that REF, particularly FREF, can significantly reduce constipation, fatigue, nausea, and vomiting during pregnancy. Unlike medicinal methods, REF has no side effects for pregnant mothers. Therefore, it is recommended that healthcare personnel and midwives utilize this treatment method for pregnant mothers. Additionally, healthcare providers can teach this method to the caregivers of pregnant mothers within families, enabling its use by a family member or the pregnant mother herself to mitigate complications during pregnancy.

Footnotes

Authors' Contribution: N. N.: Writing original draft, and editing; Z. Z.: Supervision, investigation,

methodology and project administration; F. K.: Data collection, M. A.: Data analysis.

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References

1. Bjelica A, Cetkovic N, Trninic-Pjevic A, Mladenovic-Segedi L. The phenomenon of pregnancy - a psychological view. *Ginekol Pol*. 2018;**89**(2):102-6. [PubMed ID: 29512815]. https://doi.org/10.5603/GP.a2018.0017.
2. Alves NCC, Feitosa KMA, Mendes MES, Caminha MFC. Complications in pregnancy in women aged 35 or older. *Rev Gaucha Enferm*. 2017;**38**(4):e2017-42. [PubMed ID: 29791538]. https://doi.org/10.1590/1983-1447.2017.04.2017-0042.
3. Liu N, Wang J, Chen DD, Sun WJ, Li P, Zhang W. Effects of exercise on pregnancy and postpartum fatigue: A systematic review and meta-analysis. *Eur J Obstet Gynecol Reprod Biol*. 2020;**253**:285-95. [PubMed ID: 32916639]. https://doi.org/10.1016/j.ejogrb.2020.08.013.
4. Yang CL, Chang CY. Fatigue During Pregnancy: A Bibliometric Analysis. *Matern Child Health J*. 2023;**27**(5):766-73. [PubMed ID: 36781691]. https://doi.org/10.1007/s10995-023-03609-4.
5. Reeves N, Potempa K, Gallo A. Fatigue in early pregnancy: An exploratory study. *J Nurse Midwifery*. 1991;**36**(5):303-9. [PubMed ID: 1757816]. https://doi.org/10.1016/0091-2182(91)90045-q.
6. Bossuah KA. Fatigue in pregnancy. *Int J Childbirth Educ*. 2017;**32**(1).
7. Chou FH, Lin LL, Cooney AT, Walker LO, Riggs MW. Psychosocial factors related to nausea, vomiting, and fatigue in early pregnancy. *J Nurs Scholarsh*. 2003;**35**(2):119-25. [PubMed ID: 12854291]. https://doi.org/10.1111/j.1547-5069.2003.00119.x.
8. Lee NM, Saha S. Nausea and vomiting of pregnancy. *Gastroenterol Clin North Am*. 2011;**40**(2):309-34. vii. [PubMed ID: 21601782]. [PubMed Central ID: PMC3676933]. https://doi.org/10.1016/j.gtc.2011.03.009.
9. Jarvis S, Nelson-Piercy C. Management of nausea and vomiting in pregnancy. *BMJ*. 2011;**342**:d3606. [PubMed ID: 21685438]. https://doi.org/10.1136/bmj.d3606.
10. Cullen G, O'Donoghue D. Constipation and pregnancy. *Best Pract Res Clin Gastroenterol*. 2007;**21**(5):807-18. [PubMed ID: 17889809]. https://doi.org/10.1016/j.bpg.2007.05.005.
11. Wang MY, Tsai PS, Lee PH, Chang WY, Yang CM. The efficacy of reflexology: systematic review. *J Adv Nurs*. 2008;**62**(5):512-20. [PubMed ID: 18489444]. https://doi.org/10.1111/j.1365-2648.2008.04606.x.
12. Lee J, Han M, Chung Y, Kim J, Choi J. Effects of foot reflexology on fatigue, sleep and pain: a systematic review and meta-analysis. *J Korean Acad Nurs*. 2011;**41**(6):821-33. [PubMed ID: 22310867]. https://doi.org/10.4040/jkan.2011.41.6.821.
13. Blunt E. Foot reflexology. *Holist Nurs Pract*. 2006;**20**(5):257-9. [PubMed ID: 16974182]. https://doi.org/10.1097/00004650-200609000-00009.
14. Ezzo J, Streitberger K, Schneider A. Cochrane systematic reviews examine P6 acupuncture-point stimulation for nausea and vomiting. *J Altern Complement Med*. 2006;**12**(5):489-95. [PubMed ID: 16813514]. https://doi.org/10.1089/acm.2006.12.489.
15. McParlin C, O'Donnell A, Robson SC, Beyer F, Moloney E, Bryant A, et al. Treatments for Hyperemesis Gravidarum and Nausea and Vomiting in Pregnancy: A Systematic Review. *JAMA*. 2016;**316**(13):1392-401. [PubMed ID: 27701665]. https://doi.org/10.1001/jama.2016.14337.
16. McCullough JE, Hughes CM. Reflexology use during Pregnancy. *J Yoga Physical Ther*. 2015;**5**(2):1.
17. Davis M. Nausea and vomiting of pregnancy: an evidence-based review. *J Perinat Neonatal Nurs*. 2004;**18**(4):312-28. [PubMed ID: 15646303]. https://doi.org/10.1097/00005237-200410000-00002.
18. Valiani M, Shiran E, Kianpour M, Hasanpour M. Reviewing the effect of reflexology on the pain and certain features and outcomes of the labor on the primiparous women. *Iran J Nurs Midwifery Res*. 2010;**15**(Suppl1):302.
19. Asadollahi F, Babazdadeh R, Abdi H, Esmaeli H. The Effect of Foot Solar Plexus Reflexology on the Severity of Nausea and Vomiting in the First Half of Pregnancy: A Randomized Control Trial. *Biomed J Sci Tech Res*. 2019;**17**(1). https://doi.org/10.26717/bjstr.2019.17.002948.
20. Wills G, Forster D. Nausea and vomiting in pregnancy: what advice do midwives give? *Midwifery*. 2008;**24**(4):390-8. [PubMed ID: 17850938]. https://doi.org/10.1016/j.midw.2007.05.002.
21. Prapti NKG, Petpichetchian W, Chongcharoen W. Development of foot massage program on nausea and vomiting for cancer patients: a literature review. *Nurse Media J Nurs*. 2012;**2**(1):325-55.
22. Kim J, Myeong Soo L, Jung Won K, Do Young C, Ernst E. Reflexology for the Symptomatic Treatment of Breast Cancer: A Systematic Review. *Integrative Cancer Therapies*. 2010;**9**(4):326-30. https://doi.org/10.1177/1534735410387423.
23. Yang JH. [The effects of foot reflexology on nausea, vomiting and fatigue of breast cancer patients undergoing chemotherapy]. *Taehan Kanho Hakhoe Chi*. 2005;**35**(1):177-85. [PubMed ID: 15778569]. https://doi.org/10.4040/jkan.2005.35.1.177.
24. Chainakin P. *Effects of hand reflexology on nausea, retching and vomiting in cancer patients receiving chemotherapy [Master thesis]*. Bangkok, Thailand: Mahidol University; 2006.
25. Ozdelikara A, Tan M. The effect of reflexology on chemotherapy-induced nausea, vomiting, and fatigue in breast cancer patients. *Asia-Pacific J Oncol Nurs*. 2017;**4**(3):241-9. https://doi.org/10.4103/apjon.apjon_15_17.
26. Luke B, Mamelle N, Keith L, Munoz F, Minogue J, Papiernik E, et al. The association between occupational factors and preterm birth: a United States nurses' study. Research Committee of the Association of Women's Health, Obstetric, and Neonatal Nurses. *Am J Obstet Gynecol*. 1995;**173**(3 Pt 1):849-62. [PubMed ID: 7573257]. https://doi.org/10.1016/0002-9378(95)90354-2.
27. Magann EF, Evans SF, Weitz B, Newnham J. Antepartum, Intrapartum, and Neonatal Significance of Exercise on Healthy Low-Risk Pregnant Working Women. *Obstetrics Gynecol*. 2002;**99**(3):466-72. https://doi.org/10.1097/00006250-200203000-00016.
28. Chien LY, Ko YL. Fatigue during pregnancy predicts caesarean deliveries. *J Adv Nurs*. 2004;**45**(5):487-94. [PubMed ID: 15009351]. https://doi.org/10.1046/j.1365-2648.2003.02931.x.
29. Ghaffari F, Pour Ghaznein T. The reflexology of sole on tiredness intensity in pregnant women. *Caspian J Inter Med*. 2010;**1**(2):58-62.
30. Shobeiri F, Manoucheri B, Parsa P, Roshanaei G. Effects of Counselling and Sole Reflexology on Fatigue in Pregnant Women: A Randomized Clinical Trial. *J Clin Diagn Res*. 2017;**11**(6):QC01-4. [PubMed ID: 28764252]. [PubMed Central ID: PMC5535443]. https://doi.org/10.7860/JCDR/2017/22681.9972.

31. Jewell D, Young G. Interventions for treating constipation in pregnancy. *Cochrane Database Syst Rev*. 2001;**2015**(9). https://doi.org/10.1002/14651858.Cd001142.
32. Wald A. Constipation, diarrhea, and symptomatic hemorrhoids during pregnancy. *Gastroenterol Clin North Am*. 2003;**32**(1):309-22. https://doi.org/10.1016/s0889-8553(02)00069-9.
33. Trottier M, Erebara A, Bozzo P. Treating constipation during pregnancy. *Can Fam Physician*. 2012;**58**(8):836-8. [PubMed ID: 22893333]. [PubMed Central ID: PMC3418980].
34. Bradley CS, Kennedy CM, Turcea AM, Rao SS, Nygaard IE. Constipation in Pregnancy. *Obstetrics Gynecol*. 2007;**110**(6):1351-7. https://doi.org/10.1097/01.AOG.0000295723.94624.b1.
35. Bishop E, McKinnon E, Weir E, Brown DW. Reflexology in the management of encopresis and chronic constipation. *Paediatric Nurs*. 2003;**15**(3):20-1. https://doi.org/10.7748/paed.15.3.20.s17.
36. Tovey P. A single-blind trial of reflexology for irritable bowel syndrome. *Br J Gen Pract*. 2002;**52**(474):19-23. [PubMed ID: 11791811]. [PubMed Central ID: PMC1314196].
37. Ponce J, Martinez B, Fernandez A, Ponce M, Bastida G, Pla E, et al. Constipation during pregnancy: a longitudinal survey based on self-reported symptoms and the Rome II criteria. *Eur J Gastroenterol Hepatol*. 2008;**20**(1):56-61. [PubMed ID: 18090992]. https://doi.org/10.1097/MEG.0b013e3281108058.
38. Yang YR, Chao LY, Meng GL, Cao SW, Hao JM, Zhang S. *Exploring the application of foot reflexology for the prevention and treatment of functional constipation*. InChina Reflexology Symposium Report. Beijing, China: China Reflexology Association; 1994.
39. Sehhatti F, Hughes C, Mirghafourvand M, Anjoman Azari Z. The Effect of Short-term Foot Reflexology in Improving Constipation Symptoms During Pregnancy: A TwoArmed, Randomized Controlled Trial. *Int J Women's Health Reprod Sci*. 2019;**8**(3):303-10. https://doi.org/10.15296/ijwhr.2020.49.
40. Ghaffari F, Poor Ghaznain T, Shamsalinia A. [Effect of sole reflex on pregnant women's constipation severity]. *Iran J Obstetrics, Gynecol Infert*. 2007;**10**(2):27-38. FA.