

# Spiritual Health and Physical Activity Among Iranian Pregnant Women

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**Abstract** This study was aimed to investigate the relationship between spiritual health and physical activity among Iranian pregnant women during 2015. A cross-sectional descriptive-analytic design was adopted. A total number of 411 participants were selected by convenience sampling from Iranian women who regularly attended health centers for prenatal care. Data were collected using demographic questionnaire and Health-Promoting Lifestyle Profile questionnaire, 2nd edition. (Spiritual health and physical activity are two components of health-promoting lifestyle.) The data were analyzed, using descriptive statistics, *t* test, one-way ANOVA, Pearson's correlation coefficient, and regression. *p* values <0.05 were considered significant. The mean age of pregnant women was  $27.90 \pm 6.03$  years. Spiritual health had the highest score ( $25.86 \pm 4.7$ ) and physical activity had the lowest score ( $11.31 \pm 3.27$ ), among six Health-Promoting Lifestyle Profile subscales. In fact, there was a statistically significant correlation between spiritual health and physical activity ( $p = 0.000$ ). According to results, pregnant women have higher spiritual health and lower physical activity scores. There was a statistically significant correlation between spiritual health and physical activity. The findings of this study can be used in prenatal care, midwifery education, and maternal health policies.

**Keywords** Spiritual growth · Physical activity · Pregnancy · Health-promoting lifestyle

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## Introduction

Health promotion is a process that was empowered by community members to improve their health and control their life. Health-promoting lifestyle subscales are classified by Pender consisting of nutrition, physical activity, stress management, interpersonal relationships, spiritual health, and health responsibility (Walker et al. 1987). Regular physical activity has undeniable effect on public health and treatment of chronic diseases. Any type of physical activity is helpful in promoting and maintaining public health including continuous repetitive bodily movement based on the American College of Sports Medicine (ACSM) recommendations which include the mode of activity, frequency, intensity, and duration of training (Powell et al. 1987).

Physical activity during pregnancy can promote maternal weight gain and fresh placental volumes (Melzer et al. 2010) as well as can reduce the risk of gestational diabetes, hypertension, preeclampsia, and preterm birth (Tobias et al. 2011). Moreover, a moderate-intensity physical activity program during pregnancy can improve maternal health status (Barakat et al. 2011; Weir et al. 2010). Despite public opinion, physical activity is trying to keep women in good shape or strengthen their internal organs. Physical activity practitioners and spiritual advisers declare that exercise promotes mental health and sparks spirituality within an individual, reconnecting him to his environment.

Similarly, spirituality has significant health outcomes in human communities. Spirituality, as is distinguished from bodily affairs, is related to the soul and is alongside being an important component of health and well-being (Chattopadhyay 2007). It is a condition of mental and psychological attachment to the sacred experience and refers to personal experiences and expresses (Puchalski et al. 2009). Research suggests that “the spiritual dimension is thought to integrate all human dimensions such as mind, body, and spirit, for a sense of wholeness and well-being” (Meraviglia 2006).

Spirituality is a multidimensional concept and influences health through various ways beyond bodily practices that have accumulative effects on individual health across her life course, particularly during pregnancy. Accumulative effects of healthy habits, such as regular exercise, non-smoking, good dietary plans, relaxation, and contemplation practices, can be further facilitated by spiritual health (Udermann 2000). It should be noted that people who have regular physical activities and spiritual practices will experience better health status. Thus, it seems to be a significant relationship between physical activity and spiritual health.

However, the relationship between spiritual health and physical activity during pregnancy is complex. Pregnancy is a highly complex period in a woman’s life (Kaiser and Allen 2008), and spirituality is able to enhance the care of them in this period. According to narratives of mothers, there is a little focus on spirituality during pregnancy (Rosato et al. 2006); indeed, spirituality is establishing a powerful relationship between pregnant women and their unborn children (Hall 2006; Hall and Taylor 2004). In a study conducted on pregnant mothers in low-income urban area, the authors explored the meaning of spirituality as a resource of coping strategies for pregnant women and reported that spirituality for these women was positively associated with a sense of well-being, confidence and peace because guidance and protection of God resulted in communication with God (Jesse et al. 2007).

The present study was aimed to identify the rate of spiritual health and physical activity. Also it was aimed to evaluate the relationship between spiritual health and physical activity.

## Methods

### Design and Participants

A cross-sectional descriptive-analytic design was adopted in the present study. A convenient sample of 411 pregnant women who paid routine prenatal visits to health centers were selected to examine spiritual health and physical activity among Iranian pregnant women.

### Data Collection Procedures

After obtaining the approval of the institutional review board and the health centers, the researcher explained the purpose of this study to potential participants with different socioeconomic status who regularly attended health centers of Urmia. Four urban centers were randomly selected from each region of the city. Moreover, four rural centers were chosen from north and south of Urmia.

Inclusion criteria included healthy pregnant women from each trimester without mental or physical illness who volunteered to participate. After giving written informed consent, they were administered the questionnaire approximately within 15 min. Our sample size was determined by the study of Lin et al. (2009) that had a power of 80% to identify differences with type I error probability of 5%. All of 411 participants were informed about the questionnaire.

### Demographic Characteristics Questionnaire

Data were collected using a researcher-made questionnaire which addressed the demographic and obstetrical characteristics of the pregnant women including age, level of education, employment status, economic status, smoking status, number of pregnancies and pregnancy trimester, and planned pregnancy. The content validity of questionnaire was affirmed by five faculty members of Urmia University of Medical Sciences.

### Spiritual Health and Physical Activity

Spiritual health and physical activity are two components of health-promoting lifestyle. The validity and reliability of this questionnaire for pregnant women have been confirmed by Walker et al. (1987) in all subdomains. All 52 items of the HPLP scale are positive. It is a Likert-type scale and is scored as “never = 1,” “sometimes = 2,” “frequently = 3,” and “regularly = 4.” Every subscale consists of different items and different scores: Spiritual health (min–max 9–36) including 9 items; Health responsibility (min–max 9–36) including 9 items; Physical activity (min–max 8–32) including 8 items; Nutrition (min–max 9–36) including 9 items; Interpersonal relationship (min–max 9–36) including 9 items; Stress management (min–max 8–32) including 8 items. In total, HPLP scale (min–max 52–208) includes 52 items. A higher point in the scale indicates that the individual practices healthy lifestyle behaviors regularly. The Persian version of the HPLP was previously validated by Mohammadi et al. (2011), and Cronbach’s alpha was 0.82 for the total scale and ranged from 0.64 to 0.91 for subscales.

## Data Analysis

The Statistical Package for the Social Sciences (SPSS, SPSS Inc., Chicago, IL, U.S.A.), version 22.0, was used to analyze the data. Descriptive statistics (means, standard deviations, and frequency distributions) of demographic variables and physical activity and spiritual health variables were calculated. One-way ANOVA and *t* test were employed to evaluate the differences among spiritual health/physical activity and demographic data such as age and education. Pearson's correlation was applied to examine the relationships among the variables. In addition, linear regression was used to examine the relationship between spiritual health and physical activity. *p* values <5% were considered significant.

## Ethical Considerations

Before collecting the data, the proposal of this study was approved by the institutional review board and local ethics committee (with No. umsu.rec.1393254). The objectives of the study were explained to all participants, and all of them accepted to participate and were assured of the confidentiality of their individual information as well as the voluntary nature of participating in the study.

## Results

This study was conducted on 213 urban and 198 rural pregnant women. The mean age of pregnant women was  $27.90 \pm 6.03$  years. The majority of patients (90.5%) were housewives with high school or higher levels of education (46.7%). Furthermore, 83.5% of them declared that their income and expenditure are equal. In their obstetrical history, 32.1% were primigravidas. The mean age of gestational was  $22.64 \pm 9.52$  weeks. The majority of patients ( $n = 193$ , 47.0%) were in the second trimester of pregnancy. A considerable number of participants planned their pregnancy (82.7%).

The mean of total score for HPLP II was  $127.95 \pm 19.18$  (min. 83, max. 188). The score of physical activity was lowest ( $11.31 \pm 3.27$ ), while the score of spiritual health was highest ( $25.86 \pm 4.7$ ) (Table 1). The score of physical activity for urban and rural pregnant women was  $11.79 \pm 3.70$  and  $10.80 \pm 2.65$ , respectively. The score of spiritual health for urban and rural pregnant women was  $26.29 \pm 4.42$  and  $25.40 \pm 5.06$ , respectively.

The results of one-way ANOVA and *t* test and the score of spiritual growth and physical activity indicated that there were statistically significant differences between the score of

**Table 1** Descriptive statistics for health-promoting lifestyle ( $N = 411$ )

Health-promoting lifestyle	Mean $\pm$ SD
Health responsibility	24.09 $\pm$ 5.43
Physical activity	11.31 $\pm$ 3.27
Nutrition	25.17 $\pm$ 4.30
Spiritual growth	25.86 $\pm$ 4.7
Interpersonal relationship	24.06 $\pm$ 4.40
Stress management	17.43 $\pm$ 3.23
Total	127.95 $\pm$ 19.18

spiritual health and age ( $p = 0.000$ ), level of education ( $p = 0.000$ ), economic status ( $p = 0.001$ ), number of pregnancies ( $p = 0.002$ ), and planned pregnancy ( $p = 0.015$ ) (Table 2).

In addition, there were statistically significant differences among the score of physical activity and place of residence ( $p = 0.002$ ), level of education ( $p = 0.000$ ), economic status ( $p = 0.000$ ), planned pregnancy ( $p = 0.015$ ), and number of pregnancies ( $p = 0.008$ ) (Table 3).

There was a statistically significant correlation between spiritual health and physical activity ( $p = 0.000$ ,  $r = 0.4$ ). In other words, pregnant women with high spiritual health were more active physically. This relationship was confirmed by linear regression test which showed that for every one with an increase in physical activity, the score of spiritual growth increases by 0.61. Moreover, this relationship was observed even after adjusting variables of age, education, economic status, and number of pregnancies ( $p = 0.000$   $r = 0.417$ ).

**Table 2** Differences among personal characteristics and spiritual growth scores ( $N = 411$ )

Personal characteristics	<i>n</i>	Mean $\pm$ SD	<i>p</i>
Age			0.000
18>	17	26.17 $\pm$ 5.43	
18–35	54	26.22 $\pm$ 4.76	
35<	54	23.50 $\pm$ 3.82	
Gestational age			0.351
First trimester (14>)	93	26.43 $\pm$ 5.11	
Second trimester (14–28)	193	25.83 $\pm$ 4.41	
Third trimester (28<)	125	25.48 $\pm$ 5.00	
Educational level			0.000
No formal education	35	23.51 $\pm$ 4.21	
Primary and secondary school	184	24.53 $\pm$ 4.53	
High school	123	27.01 $\pm$ 4.41	
University	69	28.55 $\pm$ 4.49	
Whether the pregnancy was planned			0.015
Yes	340	26.10 $\pm$ 4.83	
No	71	24.70 $\pm$ 4.23	
Economic status			0.001
Expenses lower than income	59	24.03 $\pm$ 4.21	
Income equals expenses	343	26.09 $\pm$ 4.75	
Expenses higher than income	9	29.22 $\pm$ 5.26	
Passive smoker			0.214
Yes	158	25.49 $\pm$ 4.75	
No	253	26.09 $\pm$ 4.75	
Gravidity			0.002
First pregnancy	132	26.43 $\pm$ 5.11	
Second pregnancy	147	25.83 $\pm$ 4.41	
Third pregnancy or more	132	25.48 $\pm$ 5.00	

**Table 3** Differences among personal characteristics and physical activity scores ( $N = 411$ )

Personal characteristics	<i>n</i>	Mean $\pm$ SD	<i>p</i>
Age			0.272
18>	17	10.82 $\pm$ 2.06	
18–35	340	11.43 $\pm$ 3.32	
35<	54	10.72 $\pm$ 3.20	
Gestational age			0.115
First trimester (14>)	93	11.93 $\pm$ 3.69	
Second trimester (14–28)	193	11.16 $\pm$ 3.19	
Third trimester (28<)	125	11.09 $\pm$ 3.01	
Educational level			0.000
No formal education	35	10.14 $\pm$ 2.40	
Primary and secondary school	184	10.22 $\pm$ 2.30	
High school	123	11.88 $\pm$ 3.21	
University	69	13.79 $\pm$ 4.27	
Whether the pregnancy was planned			0.015
Yes	340	11.49 $\pm$ 3.41	
No	71	10.46 $\pm$ 2.35	
Economic status			0.000
Expenses lower than income	59	10.28 $\pm$ 2.95	
Income equals expenses	343	11.32 $\pm$ 3.04	
Expenses higher than income	9	17.55 $\pm$ 6.28	
Passive smoker			0.214
Yes	158	10.58 $\pm$ 2.38	
No	253	11.77 $\pm$ 3.65	
Gravidity			0.008
First pregnancy	132	11.93 $\pm$ 3.69	
Second pregnancy	147	11.16 $\pm$ 3.19	
Third pregnancy or more	132	11.09 $\pm$ 3.01	

## Discussion

The results showed that the score of HPLP among pregnant women was  $127.95 \pm 19.18$ . In comparison with previous studies, it was found that the mean score of HPLP was  $121.3 \pm 21.0$  among women with high-risk pregnancy (Saydam et al. 2007). In another study, it was found that the mean score of HPLP was  $112.7 \pm 20.8$  among women aged 15–49 years who were chosen by a random sampling method from Manisa of Turkish and the level of education among participants in our study was higher than in the study of Altıparmak and Kutlu (2009). Nevertheless, there were three studies with similar findings and the same score of HPLP (Gharaibeh et al. 2005; Lin et al. 2009; Onata and Abab 2014).

In the absence of spirituality, a comprehensive assessment of pregnant women will be incomplete (Tanyi 2006). Compared to other studies (Callister and Khalaf 2010; Hall and Taylor 2004; Price et al. 2007), our study showed the highest score of spiritual health ( $25.86 \pm 4.7$ ) among pregnant women, suggesting childbearing was a powerful and spiritually transforming experience for these women who developed a higher sense of

spirituality during pregnancy and childbirth. According to Adams and Bianchi (2008), “the spirituality or faith of woman may help as a source of inner strength during pregnancy” (Adams and Bianchi 2008). Spirituality, in this sense, goes beyond devotion to a specific religious tradition and needs to be embedded in prenatal health care to enrich patients’ childbearing experience and provide holistic care services [28, 32]. Thus, midwife and childbirth educators are encouraged to realize the significance of spiritual dimensions during pregnancy [30] in order to improve their health care (Eldridge 2007). Assessment of pregnant women may include the question, “do you have any spiritual beliefs [or religious practices] that will help us provide better care during your pregnancy?” (Jesse et al. 2007).

The findings of this study showed that younger pregnant women had higher spiritual health compared to older women. But Lin et al. (2009) found the opposite findings. A possible explanation for this could be differences in sample size (411 vs. 172 participants). In addition, most of women who were chosen to be pregnant in early ages have planned pregnancy and they are more likely to have higher spiritual health. On the other hand, women who were chosen to be pregnant in late ages (>35) have unplanned pregnancy and may suffer from prenatal complications during their pregnancy (Thaewpia et al. 2013), tending to develop lower spiritual health.

In our study, physical activity had the lowest score. Other studies reported the same trend (Altuparmak and Kutlu 2009; Gharaibeh et al. 2005; Lin et al. 2009; Onata and Abab 2014; Yadollahi et al. 2008) that showed that the physical activity during pregnancy in Iranian women is less than other countries. For instance, in a study conducted in Western Massachusetts, the results showed that only 15.1% of pregnant women had regular physical activity during pregnancy, which was significantly lower than the general population 45% (Hawkins et al. 2014; Lewis et al. 2008; Northridge 2014). These findings suggest that the lack of physical activity is a problem not only among pregnant women but also at any period of their life (Barakat et al. 2011). Recent studies showed that lower levels of education and socioeconomic status are associated with the reduction of physical activity during pregnancy (Dumith et al. 2012; Gouveia et al. 2007; Hegaard et al. 2007; Lin et al. 2009).

It is well known that pregnant women in the first and third trimester might abstain from physical activity because of related complaints. However, the second trimester is usually free of the pregnancy-related complaints. In our study, almost all the participants were in their second trimester (the mean gestational age of women was  $22.64 \pm 9.52$  week). But, even if all women were free of complaints, we can say that their physical activity level was not as high as it is desired.

In the present study, it is demonstrated that pregnant women with high level of education had better socioeconomic status and their spiritual growth and physical activity status during pregnancy was better than that of women with low level of education. Similar results have also been reported (Lin et al. 2009; Saydam et al. 2007). Studies also found that spiritual health and physical activity are associated with level of education and higher socioeconomic status (Crozier et al. 2009; Elsenbruch et al. 2007; Elsinga et al. 2008; Thornton et al. 2006; Yadollahi et al. 2008). Level of education and socioeconomic affect all six subscales of the HPLP II. High socioeconomic status provides more facilities and comfortable life during pregnancy, which influence the scores of spiritual growth and physical activity.

The present study showed that women with planned pregnancy had high score of spiritual health/physical activity. Some other studies reported similar findings (Lin et al. 2009; Onata and Abab 2014; Tesfay et al. 2015; Yadollahi et al. 2008). Unwanted pregnancies were the causes of unhealthy lifestyles in pregnant women. This could be that women with unwanted pregnancies may initially attempt to deny and conceal their

pregnancy to others. They do not tend to practice health-promoting activities, compared to those with intended pregnancy.

We also found one active and 158 (38.44%) passive smokers among pregnant women. Onat et al. (2014) found that 3.8% of women were smoking during pregnancy. Also, it is also reported to be 9.5% smokers in similar studies (Verbeke and De Bourdeaudhuij 2007). Graham et al. (2010) found that 56% of women quit smoking at least for one week during pregnancy (Graham et al. 2010). Also, the prevalence of smoking during pregnancy showed no difference in 1987 and 1997 (15%), while it is increasing in recent years (Jaakkola et al. 2001). Maybe the rate of passive smokers during pregnancy was not reported in those studies and only active smoker pregnant women were studied. Iranian women generally avoid smoking as they are well aware of its negative consequences and feel less appealing and smoker women are stigmatized in the culture of Iran.

In the current study, women who were pregnant for the first time had a higher score of spiritual health and physical activity than multigravida women (Lin et al. 2009). It indicates that pregnant women, especially pregnant in their first child, are usually motivated to correct their health-promoting lifestyle. Another explanation is that women with children have less time to develop a healthy lifestyle.

## Conclusion

According to results, physical activity can reduce the level of stress and anxiety as well as can manage possible pregnancy complications. Nevertheless, our results indicated that women have less physical activity during pregnancy. Considering the correlation between spiritual health and psychical activity, healthcare professionals including nurses, midwives, and physicians are encouraged to provide effective spiritual care consistent with their professional scopes of practice. Our findings can be used in prenatal care, midwifery education, and maternal health policies.

## Recommendations

In future studies, we suggest that researchers use other sampling methods (non-convenience sampling). Further studies are suggested to consider meditative effects of other variables such as self-efficacy of health behaviors, perception of family or peer's health-promoting behaviors, self-esteem, and poor marital support as key factors in explaining health-promoting lifestyle for pregnant women. Also, it is required to further explore the relationship between spirituality and well-being of pregnant women.

## Study Limitations

In this current study, we used convenience sampling method. The major limitation of the present study was unavailability of related studies about the relationship between spiritual health and physical activity during pregnancy to compare with the obtained results.

**Acknowledgements** This article is the result of my Master of Science thesis. We appreciate Urmia University of Medical Science for financial support. Our thanks go to the women who participated in the survey, as well as to the health centers for their permission alongside their assistance with us.



**Funding** Our financial source in the current study was Urmia University of Medical Sciences. It financially supported us during research, such as providing research design, transportation, and duplicating papers.

### Compliance with Ethical Standards

**Conflict of interest** All authors report no conflicts of interest with the topic matter of this manuscript, as described in the instructions to authors.

## References

- Adams, E. D., & Bianchi, A. L. (2008). A practical approach to labor support. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 37(1), 106–115.
- Altıparmak, S., & Kutlu, A. K. (2009). The healthy lifestyle behaviors of 15-49 age group women and affecting factors. *Türk Silahlı Kuvvetleri, Koriyucu Hekimlik Bülteni*, 8(5), 421–426.
- Barakat, R., Pelaez, M., Montejo, R., Luaces, M., & Zakythinaki, M. (2011). Exercise during pregnancy improves maternal health perception: a randomized controlled trial. *American journal of obstetrics and gynecology*, 204(5), 402. e401–402. e407.
- Callister, L. C., & Khalaf, I. (2010). Spirituality in childbearing women. *The Journal of perinatal education*, 19(2), 16.
- Chattopadhyay, S. (2007). Religion, spirituality, health and medicine: Why should Indian physicians care? *Journal of Postgraduate Medicine*, 53(4), 262.
- Crozier, S. R., Robinson, S. M., Borland, S. E., Godfrey, K. M., Cooper, C., & Inskip, H. M. (2009). Do women change their health behaviours in pregnancy? Findings from the Southampton Women's Survey. *Paediatric and Perinatal Epidemiology*, 23(5), 446–453.
- Dumith, S. C., Domingues, M. R., Mendoza-Sassi, R. A., & Cesar, J. A. (2012). Physical activity during pregnancy and its association with maternal and child health indicators. *Revista de Saúde Pública*, 46(2), 327–333.
- Eldridge, C. R. (2007). Meeting your patients' spiritual needs. *American Nurse Today*, 2(10), 51–52.
- Elsenbruch, S., Benson, S., Rucke, M., Rose, M., Dudenhausen, J., Pincus-Knackstedt, M. K., et al. (2007). Social support during pregnancy: Effects on maternal depressive symptoms, smoking and pregnancy outcome. *Human Reproduction*, 22(3), 869–877.
- Elsinga, J., de Jong-Potjer, L. C., van der Pal-de, K. M., le Cessie, S., Assendelft, W. J., & Buitendijk, S. E. (2008). The effect of preconception counselling on lifestyle and other behaviour before and during pregnancy. *Women's Health Issues*, 18(6), S117–S125.
- Gharaibeh, M., Al-Ma'aitah, R., & Al Jada, N. (2005). Lifestyle practices of Jordanian pregnant women. *International Nursing Review*, 52(2), 92–100.
- Gouveia, R., Martins, S., Sandes, A. R., Nascimento, C., Figueira, J., Valente, S., Silva, L. J. (2007). Gravidez e exercício físico: mitos, evidências e recomendações.
- Graham, H., Hawkins, S. S., & Law, C. (2010). Lifecourse influences on women's smoking before, during and after pregnancy. *Social Science and Medicine*, 70(4), 582–587.
- Hall, J. (2006). Spirituality at the beginning of life. *Journal of Clinical Nursing*, 15(7), 804–810.
- Hall, J., & Taylor, M. (2004). *Birth and spirituality* (pp. 41–56). Normal childbirth: Evidence and debate.
- Hawkins, M., Chasan-Taber, L., Marcus, B., Stanek, E., Braun, B., Ciccolo, J., et al. (2014). Impact of an exercise intervention on physical activity during pregnancy: the behaviors affecting baby and you study. *American Journal of Public Health*, 104(10), e74–e81.
- Hegaard, H. K., Pedersen, B. K., Bruun Nielsen, B., & Damm, P. (2007). Leisure time physical activity during pregnancy and impact on gestational diabetes mellitus, pre-eclampsia, preterm delivery and birth weight: A review. *Acta Obstetrica et Gynecologica Scandinavica*, 86(11), 1290–1296.
- Jaakkola, N., Jaakkola, M. S., Gissler, M., & Jaakkola, J. (2001). Smoking during pregnancy in Finland: determinants and trends, 1987–1997. *American Journal of Public Health*, 91(2), 284.
- Jesse, D. E., Schoneboom, C., & Blanchard, A. (2007). The effect of faith or spirituality in pregnancy: A content analysis. *Journal of Holistic Nursing*, 25(3), 151–158.
- Kaiser, L., & Allen, L. H. (2008). Position of the American Dietetic Association: Nutrition and lifestyle for a healthy pregnancy outcome. *Journal of the American Dietetic Association*, 108(3), 553–561.
- Lewis, B., Avery, M., Jennings, E., Sherwood, N., Martinson, B., & Crain, A. L. (2008). The effect of exercise during pregnancy on maternal outcomes: Practical implications for practice. *American Journal of Lifestyle Medicine*, 2(5), 441–455.

- Lin, Y.-H., Tsai, E.-M., Chan, T.-F., Chou, F.-H., & Lin, Y.-L. (2009). Health promoting lifestyles and related factors in pregnant women. *Chang Gung Med J*, 32(6), 650–661.
- Melzer, K., Schutz, Y., Boulvain, M., & Kayser, B. (2010). Physical activity and pregnancy. *Sports Medicine*, 40(6), 493–507.
- Meraviglia, M. (2006). *Online Exclusive*. Paper presented at the Oncology Nursing Forum.
- Mohhamadi, I., Pak, A., & Mohhamadi, B. (2011). Validity and reliability of Iranian version of health promoting behaviors. *Mazandaran Medical Journal*, 21, 103–113.
- Northridge, M. E. (2014). The social justice agenda. *American Journal of Public Health*, 104(9), 1576–1578.
- Onata, G., & Abab, Y. A. (2014). Health-promoting lifestyles and related factors among pregnant women. *Turkish Journal of Public Health*, 12(2), 69–80.
- Powell, K. E., Thompson, P. D., Caspersen, C. J., & Kendrick, J. S. (1987). Physical activity and the incidence of coronary heart disease. *Annual Review of Public Health*, 8(1), 253–287.
- Price, S., Lake, M., Breen, G., Carson, G., Quinn, C., & O'Connor, T. (2007). The spiritual experience of high-risk pregnancy. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 36(1), 63–70.
- Puchalski, C., Ferrell, B., Virani, R., Otis-Green, S., Baird, P., Bull, J., et al. (2009). Improving the quality of spiritual care as a dimension of palliative care: the report of the Consensus Conference. *Journal of palliative medicine*, 12(10), 885–904.
- Rosato, M., Mwansambo, C. W., Kazembe, P. N., Phiri, T., Soko, Q. S., Lewycka, S., et al. (2006). Women's groups' perceptions of maternal health issues in rural Malawi. *The Lancet*, 368(9542), 1180–1188.
- Saydam, B., Bozkurt, O., Hadımlı, A., Can, H., & Soğukpınar, N. (2007). Evaluation of the effects of self-care capacity on healthy life style behaviors in risky pregnant. *Perinatal Journal*, 15(3), 131–139.
- Tanyi, R. A. (2006). Spirituality and family nursing: Spiritual assessment and interventions for families. *Journal of Advanced Nursing*, 53(3), 287–294.
- Tesfay, K., Gebrehiwot, H., Bruh, G., & Fantahun, A. (2015). Health promotion practice and its associated factors among pregnant mothers attending ANC services in public health institution of Mekelle City. *Tigray Ethiopia*, 4, 18–25.
- Thaewpia, S., Howland, L. C., Clark, M. J., & James, K. S. (2013). Relationships among health promoting behaviors and maternal and infant birth outcomes in older pregnant Thais. *Pacific Rim International Journal of Nursing Research*, 17(1), 28–38.
- Thornton, P. L., Kieffer, E. C., Salabarría-Peña, Y., Odoms-Young, A., Willis, S. K., Kim, H., et al. (2006). Weight, diet, and physical activity-related beliefs and practices among pregnant and postpartum Latino women: The role of social support. *Maternal and Child Health Journal*, 10(1), 95–104.
- Tobias, D. K., Zhang, C., van Dam, R. M., Bowers, K., & Hu, F. B. (2011). Physical activity before and during pregnancy and risk of gestational diabetes mellitus: A meta-analysis. *Diabetes Care*, 34(1), 223–229.
- Udermann, B. E. (2000). The effect of spirituality on health and healing: A critical review for athletic trainers. *Journal of athletic training*, 35(2), 194.
- Verbeke, W., & De Bourdeaudhuij, I. (2007). Dietary behaviour of pregnant versus non-pregnant women. *Appetite*, 48(1), 78–86.
- Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The health-promoting lifestyle profile: Development and psychometric characteristics. *Nursing Research*, 36(2), 76–81.
- Weir, Z., Bush, J., Robson, S. C., McParlin, C., Rankin, J., & Bell, R. (2010). Physical activity in pregnancy: A qualitative study of the beliefs of overweight and obese pregnant women. *BMC Pregnancy and Childbirth*, 10(1), 18.
- Yadollahi, P., Davazdahemami, S., Bromandfar, K., & Fathizadeh, N. (2008). The relationship between life style and individual reproductively characteristics of pregnant woman. *Iranian Journal of Nursing and Midwifery Research*, 12(3), 58–65.