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The Perspectives of Pregnant Women on Health-Promoting Behaviors: An Integrative Systematic Review

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Abstract

Objectives: The adoption of health-promoting behaviors is an important strategy for achieving desirable pregnancy outcomes. It also affects maternal and neonatal health. The aim of this systematic review was to assess health-related behaviors in pregnancy.

Materials and Methods: In this systematic review, databases including Google Scholar, Web of Science, PubMed (MEDLINE), Scopus, Irandoc, SID, Magiran, Iranmedex, and ProQuest were searched for retrieving articles published from 1995 to 2016. English and Persian keywords used in this study were "health promotion", "pregnancy" and their equivalents in Mesh. Screening and selection of articles were conducted in 3 stages by 2 investigators independently and the quality of studies was assessed using the NOS and COREQ scales.

Results: Of 2366 articles, 21 articles were included in this study. There were low and average scores of health-promoting behaviors among pregnant women. Various factors such as maternal demographic characteristics, pregnancy and environmental factors influenced this condition. The most important motivator for health behaviors was the health of the fetus and newborn. The level of knowledge pertaining to the adoption of a healthy lifestyle was insufficient, and the main obstacles in dealing with health behaviors were time and a lack of a comprehensive approach in the healthcare system. Group activities and participation of men were considered facilitators. Nevertheless, due to differences in the study design and heterogeneous samples, no similar results were achieved.

Conclusions: Improving our knowledge about the healthy lifestyle can improve pregnancy outcomes. In this regard, carrying out well-designed studies within the social and cultural backgrounds for need assessment is suggested.

Keywords: Health-promoting behaviors, Pregnancy, Lifestyle, Systematic review

Introduction

Nowadays, the lifestyle and unhealthy behaviors are considered 2 major reasons of death across the globe (1). Since the philosophy of providing healthcare services has shifted from the treatment of diseases to the prevention and promotion of health (1,2), the significance of health-promoting behaviors has found a pivotal role in the healthcare system (3,4). Hence, it is considered the most important strategy for the promotion of community health (5-7). Health promotion is a broad term encompassing social, physical, mental and spiritual aspects (1,4). It refers to any kind of conscious planning and performance, which aims to improve health, prevent diseases, prevent negative consequences, increase productivity, and achieve individual and collective self-actualization (6,8,9). Additionally, appropriate nutrition, regular exercise, avoiding destructive behaviors, being responsive, controlling emotions, managing stressful situations, and establishing individual relationships are considered health-promoting behaviors (4, 10).

Pregnancy as a unique event causes changes in the various aspects of physiological, psychological, and social life (11-13). It needs that mothers adopt pregnancy-related roles and increase their attention to family members' health (14). Therefore, the major concern of pregnant women is looking for a method to safely pass pregnancy and childbirth (8, 15) .Pregnant women should do some actions to reach favorable outcomes (2,16). Therefore, their performance, decisions, and behaviors related to the health and lifestyle such as activities, nutrition, relationships with others, and the performance of healthcare providers during pregnancy not only has an impact on the health but also influences the growth and development of the fetus. They can also have lifelong consequence to the life of women and their infants (15,17,18). Dealing with healthy and sanitary behaviors such as regular pregnancy care, receiving proper nutrition, regular physical activity, and receiving adequate social support can have positive effects on pregnancy and childbirth's outcome (11,19). Conversely, unhealthy eating habits, smoking, alcoholic drinks, inability to manage stress, and passive lifestyle can all lead to unfavorable consequences such as preterm childbirth, high blood pressure in pregnancy, and low birth weight (20). For instance, vegetarian diet during pregnancy expose the women to a low intake of energy, nutrients, vitamins and minerals, which causes

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intrauterine growth restriction (21).

When the birthrate is decreased (16), there is a need to adopt interventions to achieve optimal health (14,16). Before carrying out any intervention, a systematic review of previous studies for data collection about the general status of pregnant women concerning healthcare behaviors is required. To the best of our knowledge, no systematic review was carried out concerning the overall situation of health-promoting behaviors. Available systematic reviews concerning health-promoting behaviors are related to either before pregnancy or interventions carried out during this period. The overall situation of such behaviors during pregnancy has not yet been studied. Consequently, the initial objective of the present systematic review was to assess the situation and position of pregnant women's behaviors related to the lifestyle promoting health. The secondary objectives included studying factors related to these behaviors and assessment of attitudes, barriers, and facilitators of health-promoting behaviors.

Materials and Methods

This systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.

Inclusion and Exclusion Criteria

Observational (cross-sectional, case-control cohort studies) and qualitative articles in English and Persian from 1995 to the end of September 2016 entered the study. Clinical trials, letters to the editor, review studies, studies in other languages and dealing with the assessment of health-promoting behaviors among non-pregnant women were excluded from the study. Moreover, survey studies in which an instrument (HPLP: Health Promoting Lifestyle Profile) was used to assess health-promoting behaviors were included.

Search Strategy

Databases such as PubMed (Medline), ScienceDirect, Scopus, SID, Magiran, MEDLIB, IranMedex, Google Scholar, and ProQuest were searched for the relevant dissertations. In order to collect data, advanced search strategies with the keywords 'health promotions', 'pregnancy' and their equivalents in the Mesh and their synonyms in Persian were used for the search in the titles, abstracts and keywords (Box 1; search strategy in PubMed).

Study Selection

After an initial review of retrieved articles and removing duplicate and irrelevant ones, a manual search was conducted in the reference list of the articles. Screening of the articles was conducted in 3 stages independently by 2 of the authors (A.FK and S.H). In the first and second stages, studies were selected based on their titles and abstracts. Next in the third stage, the full-text of the articles was assessed for the relevant studies. Disagreements among the researchers were resolved by consensus.

Risk of Bias Assessment

Qualitative assessment of the articles was carried out independently by 2 of the authors (A.FK and S.H), for observational and qualitative studies using the Newcastle-Ottawa scale (NOS) and consolidated criteria for reporting qualitative research (COREC), respectively. Disagreement between the researchers was resolved by consensus.

Data Extraction

Data was extracted independently by 2 of the authors (M.EM and M.KHK). General information including

Box 1. Search Strategy in PubMed

#1 "Health promotion" in Mesh
#2 Promotion, Health; Promotion of Health; Health Promotions; Item, Promotional
;Promotional Item; Program, Wellness; Wellness Program; Campaign, Health; Health Campaign
#3 Combination #1 and #2: ("Health promotion" OR (Promotion AND Health) OR "Promotion of Health" OR "Health Promotion" OR (Item AND Promotional) OR "Promotional Item" OR (Program AND Wellness) OR "Wellness Program" OR (Campaign AND Health) OR
"Health Campaign")
4# Pregnancy in Mesh
5#Gestation
#6 Combination #4 and #5: Pregnant* OR Gestation
#7 Combination #3 and #6
#8 1995:2016[dp]
#9 Combination #7 and #8
("Health promotion" OR (Promotion AND Health) OR "Promotion of Health" OR (Item AND Promotional) OR "Promotional Item" OR (Program AND Wellness) OR "Wellness Program" OR (Campaign AND Health) OR
"Health Campaign") AND (pregnant* OR Gestation) AND 1995:2016[dp]
#10 ("Health promotion"[tiab] OR (Promotion[tiab] AND Health[tiab]) OR "Promotion of Health"[tiab] OR (Item[tiab] AND Promotional"[tiab]) OR "Promotional Item"[tiab] OR (Program[tiab] AND Wellness[tiab]) OR "Wellness Program"[tiab] OR (Campaign[tiab] AND Health[tiab]) OR "Health Campaign"[tiab]) AND (pregnancy*[tiab] OR Gestation[tiab]) AND 1995:2016[dp]
#11 ("Health promotion"[tiab] OR (Promotion[tiab] AND Health[tiab]) OR "Promotion of Health"[tiab] OR (Item[tiab] AND Promotional"[tiab]) OR "Promotional Item"[tiab] OR (Program[tiab] AND Wellness[tiab]) OR "Wellness Program"[tiab] OR (Campaign[tiab] AND Health[tiab]) OR "Health Campaign"[tiab]) AND (pregnancy*[ti] OR Gestation[ti]) AND 1995:2016[dp]

the type of articles, sample size, purpose, measurement method and results of the study, subdomain scores, the relationship between health-promoting behaviors and themes developed in qualitative studies were extracted. In case of any disagreement, discussions were held to reach consensus.

Results

Description of the Included Studies

Based on the databases search, 2366 articles were extracted and 2346 articles were excluded as they were duplicates and irrelevant ones. Screening was carried out in the 2 stages. First, the titles and abstracts of the articles were reviewed using the inclusion criteria. Studies on non-pregnant women, clinical trials, and surveys were excluded (Figure 1).

A total of 21 articles (4 qualitative, 2 mixed-methods and 15 observational studies) were included. Three articles were carried out inside the country (2 articles in Persian and 1 article in English) and others were carried out in different countries such as the the United States (8), Turkey (4), southeast countries of Asia like Taiwan and Thailand (2), Jordan (1), Sweden (1), and Australia (1). Of 14 observational studies, 13 were cross-sectional and 1 was a correlational prospective study on the status of health-promoting behaviors and its related factors (See online Supplementary file 1). Moreover, of qualitative studies, 2 studies were quantitative content analysis, 2 studies were qualitative content analysis, 1 study was a mixed-method article as consecutive exploration and 1 study was equivalent. These studies mainly investigated understandings, beliefs, barriers, and facilitators related to a healthy lifestyle in pregnancy (Table 1). The sample size varied from 69-400 individuals and 21-115 individuals in quantitative and qualitative studies, respectively.

Risk of Bias Assessment

Qualitative assessment based on NOS (22) showed that 9 studies were very well-designed, 4 were well-designed and 1 had a satisfactory design (Tables 2 and 3). No studies were excluded due to being highly biased or having low quality.

Comprehensive Report of Results

The results were reported in the categories of observational and qualitative studies.

Observational Studies

Studies showed that the samples under study in 8 studies were low-risk pregnant women, and in 5 studies were high-risk pregnant women and in 1 study were both cases. The results of this study were expressed in the 2 parts as health-promoting behaviors based on questionnaire (HPLP-II), and factors affecting these behaviors.

According to the scores obtained from the questionnaire (HPLP-II), consisting of 52 items and 6 sub-domains including nutrition, physical activity, spiritual growth, stress management, health responsibility, interpersonal relations (1,11,18), regarding the total score of health-promoting behaviors, pregnant women's status ranked as

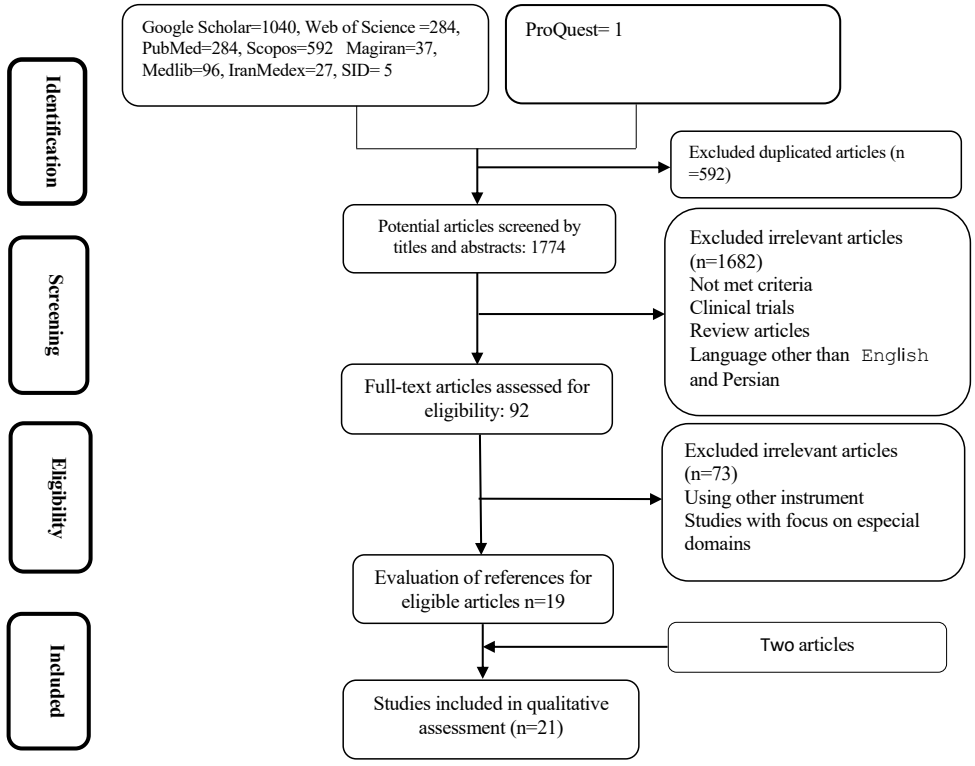

Figure 1. The Diagram of the study.

Table 1. Characteristics and Results of Qualitative Articles Related to Health-Promoting Behaviors in Pregnancy

Main Author, Country, and Year	Number	Results
Edwardson, Sweden 2011	24	- Lack of sense of urgency in regard to their health (feeling healthy and strong, ranking risks and postponing lifestyle) - Children's health as the primary motivation for a change to a healthy lifestyle - Health priorities including daily lifestyle changes, performing health behaviors to prevent the unfavorable consequences
Viau, the US, 1995	50	Mother 's concern (fetal genetic problems, anxiety and worry about family, risks associated with pregnancy such as diabetes, depression, multiparous women and abortions) - Changes in daily activities (changes in exercise, nutrition, social obligations and responsibilities associated with the job) - Health-promoting behaviors, including increased fluid intake, decreased intake of caffeine, alcohol and cigarettes, monitoring weight gain pattern, consumption of folic acid, avoiding fast food, attention to diet and getting enough energy
Higgins, the U.S, 1995	31	- The most change in diet, a change in consumption of food and self-care, respectively - Wanting a healthy baby is cited as the reasons for more changes.
Higgins, the US, 1994	115	- Changes include: nutrition, exercise, vitamins intake, elimination of alcohol-cigarette-caffeine, resting, sleeping, regular care, fluid intake, reducing stress, sedation techniques, hygiene (bathroom), lack of medication, attending classes during pregnancy, abdominal skin care
Jelsma, New York, the US, 2016	21 & 71	- Child's health has been cited as the most motivating factor for practicing health behaviors. - Barriers to physical activity included personal factors (fatigue and physical complaints) and external factors (not having enough time, mothers with children). - Preferences for a healthy lifestyle: healthy eating and physical activity
Sui, Australia, 2012	464 & 26	- According to 58 % of participants, weight gain during pregnancy was their most important concern, 75% of participants knew a bit and nearly half of the interviewees were aware of the risks of too much weight gain during pregnancy. However, none of the women was able to express neonatal outcomes. - Time factor was the most important barrier for the practice of health behaviors, and only 28 % found medical advices useful. Convergence assessment showed that with regard to perceived barriers and causes of action, agreement was observed between the 2 data.

Table 2. Newcastle-Ottawa Scale Quality Result, Cross-Sectional Study

Author	Year	Selection				Outcome		Total Score
		Representative	Sample Size	Non-respondents	Ascertainment	Assessment of the outcome	Statistical test	
Mahmoodi	2015		*		**	*	*	5*
Basharpoor	2015			*	**	*	*	5*
Malakouti	2015	*	*	*	**	*	*	7*
Cypher	2015			*	**	*	*	5*
Gokyildiz	2014				**	*	*	4*
Onat	2014				**	*	*	4*
Kavlak	2013	*	*	*	**	*	*	7*
Thaewpia	2013	*		*	**	*	*	6*
Lin	2009		*		**	*	*	5*
Esperat	2007		*	*	**	*	*	6*
Stark	2007			*	**	*	*	5*
Saydam	2007				**	*	*	4*
Gharaibeh	2005	*	*		**	*	*	6*
Bond	2002				**	*	*	4*
Kemp	1993				**	*		3*

medium and low (5, 9, 11, 23). Only the studies conducted in Thailand by Thaewpia and colleagues as well as Onat in turkey reported a better total score (24, 25). The results of the study indicated that the overall scores of behaviors were average; high scores were related to the dimension of spiritual growth (self-actualization) and nutritional status; scores related to social support and accountability were average; and the lowest score was related to stress management and physical activity (9). A review on foreign studies indicated that pregnant women had gained high scores in dimensions of self-actualization, social support, and accountability; average scores in nutrition; and low scores in stress management and physical activity (5,11,16).

Factors Affecting Health-Promoting Behaviors

Researchers studied the relationship between health-promoting behaviors and maternal age (6), education (9),

Table 3. Comprehensiveness of Reporting Assessment for Included Papers

Item	Study					
	Edvardson 2011	Sui 2012	Jelisma 2016	Viau 2002	Higgins 1995	Higgins 1994
Personal characteristics						
Researcher identified	*	*	*	*	*	
Credentials				*	*	
Occupation	*	*		*	*	
Sex		*				
Experience and training		*		*	*	
Relationship with participants						
Relationship established before study started	*			*		
Participant knowledge of interviewer			*			
Methodological theory identified	*	*	*		*	
Participant selection						
Sampling method	*	*	*	*		*
Method of approach	*			*	*	
Sample size	*	*	*	*	*	*
Non-participation			*			
Setting						
Setting of data collection	*	*		*	*	*
Presence of non-participants	*				*	
Description of sample	*		*	*		
Data collection						
Interview guide	*	*	*	*	*	*
Repeat interviews						
Audio/visual recording	*	*		*		
Field notes		*		*		
Duration	*	*	*	*		
Data saturation	*	*	*		*	
Transcripts returned				*		
Data analysis						
Number of data coders	*	*	*	*	*	*
Description of the coding tree	*	*	*	*		
Derivation of themes	*	*	*	*	*	*
Software		*				
Participant checking						
Reporting						
Quotations presented	*	*	*	*	*	*
Data and findings consistent	*	*	*	*	*	*
Clarity of major themes	*	*	*	*	*	*
Clarity of minor themes	*	*	*	*	*	*

income and job (8), marital status (1), race (3), culture and religion (2), psychological causes (4), self-care (1), efficacy (1), factors related to pregnancy (6), and social support (3). Thaewpia et al in Thailand reported that pregnant women aged over 35 years got higher scores on health-promoting behaviors (25). However, some researchers did not find any relationship between maternal age and health-promoting behaviors (9,26). According to most studies, there was a direct relationship between the education level of pregnant women and health-promoting behaviors (16,24). According to a study carried out by Gokyildiz in Turkey, the education level of mothers was one of the predicting factors of healthcare behaviors such as physical activity and diet changes (11). However, in some studies, no significant relationship was found (9,23). Income and job status of individuals were other factors under the study indicating the negative effects of poverty on healthcare behaviors (23). Moreover, employed people with high incomes had higher scores in health-promoting behaviors (2,9,26), especially in terms of self-actualization, responsibility, physical activity and nutrition (9,16,24). According to a study conducted by Esperat et al in the United States, marital status was a predictor of healthcare behaviors in such a way that single people received less support and faced problems regarding health-promoting behaviors (23). Additionally, culture, race and religion had great influences on behaviors (18,23,27). Cypher's study in the United States indicated a low participation of religious minorities in healthcare behaviors (18). In addition, Onat and Gokyildiz in Turkey implied that living in a nuclear family was linked to high scores of stress management and nutrition (11,24). Examining psychological factors had

negative effects on anxiety(28), and stress (26,29) had a negative effect on the total score and different dimensions of health-promoting behaviors, though Campbell could not find any relationship between anxiety levels and the total score of HPLP (6). On the other hand, studies implied the importance of believing and understanding health in the promotion of mental and physical health as well as increased scores in health-promoting behaviors, especially in nutrition and immunity dimensions (16,24,28). Lin et al suggested that the perception of family health-promoting behaviors, self-efficacy, level of understanding of health and disease were 4 predicting factors of health-promoting behaviors (16). Saydam et al found a direct relationship between the scores of health-promoting behaviors and increased self-care in pregnant women, expressing that self-care in women with high-risk pregnancy was an important factor of accountability and self-actualization. However, they found no relationship between self-care and doing exercise (2), even though evidence suggested that intended and planned pregnancy was associated with the increased capacity of self-care leading to the increased likelihood of healthcare behaviors (2,9). The relationship between pregnancy age and health-related behaviors was another important factor. An increase in the total score and score of nutrition dimension was associated with increased pregnancy age (2,9,24). Stark and Brinkley did not find any relationship between pregnancy age and behaviors scores (26). In terms of number of pregnancies, some studies found no relationship between the number of pregnancies and the scores of health-promoting behaviors (2,11,24). Gharaibeh et al in Turkey explained that multiparous women earned higher scores in the self-actualization dimension compared to primiparous women (5). Considering pregnancy status (low-risk and high-risk), studies implied that women with high-risk of pregnancy had an additional stress, which originated from the present situation and could influence their performance concerning health behaviors (2,6,29). Likewise, a significant relationship was observed in the total score of HPLPII between the 2 groups of women with low-risk and high-risk pregnancies (26,29). Meanwhile, there was a significant relationship between the social support perception and health-promoting behaviors in such a way that the paternal role was expressed as an effective factor for pregnancy follow-up care (23).

Qualitative Studies

Extracted studies were carried out in the United States (4), Sweden, and Australia. The themes extracted from these studies were as follows:

Behavioral Changes in Pregnancy

The studies concerning health behaviors in pregnant women implied that pregnant women changed their behavioral patterns including diet, physical activities, rest and sleep, stopping drinking alcohol and smoking, attending classes during pregnancy, increased fluid intake, monitoring weight gain, intake of folic acid and avoiding fast food (30,31). Regarding healthcare behaviors of addicted pregnant women, Higgins et al indicated that the most change in pregnant women was in the diet, drug use and self-care(32).

Understanding and Belief of Pregnant Women About Health-promoting Behaviors

According to Edwardson et al, individuals do not have a sense of urgency to take care of their own health behaviors. They believe that they are healthy and strong, and lifestyle is an everyday subject. As a result, they prioritize their behavioral changes (33). Viau et al expressed that women experience worries related to the health of fetus, changes in daily activities, risks related to pregnancy such as abortion and social commitment during their pregnancy (31). Various studies on women implied fetal health was the most important motivating factor for making changes in the lifestyle (31,33,34). Addicted women's reasons to change their lifestyle were concerns about the health of the fetus and newborn, loving children and belief that they deserved to have the chance for a healthy life. Therefore, they were too eager to get health-related messages to improve neonatal outcomes (33). On the other hand, studies suggested that pregnant women were not informed enough concerning the issues related to health (33,35), so they were unable to express the benefits of changing the diet and physical activities (35), plus they did not have sufficient information about obesity and overweight (33,35).

Barriers and Facilitators of Health-Promoting Behaviors

According to Sui et al, most pregnant mothers wished to change their behaviors, but many of them believed that adoption of such changes was beyond their control. According to the women, having another child and child care, consequences of pregnancy, lack of awareness and family support, changes in the mood, tiredness of pregnancy and worries regarding the security of behavioral changes in children were all considered barriers (35). However, in most studies, time was mentioned as the most important barrier from the women's points of view (33,34). Another barrier was the lack of a comprehensive approach in sanitary care (33). According to the pregnant women's opinions, despite their trust on sanitary nurse assistants, they generally assumed that nurse assistants' recommendations were imperative and repetitive, so they were very resistant to them (31,33). Besides, because nurse assistants were very busy, they did not have enough time to ask questions concerning the women's lifestyles. The existence of traditional perspectives in providing healthcare services and men's lack of participation in prenatal care were considered as barriers to the fulfillment of health behaviors (33). Women believed facilitating factors such as having the opportunity to talk to nurse

assistants and having various options in terms of time, location and other communication channels (face-to-face interview, telephone and internet) could affect behavioral changes (33, 36).

Discussion

The performance of the women during pregnancy was in moderate level for promoting the lifestyle (11,23,37). Appropriate results were only achieved in the studies (24,25) in which sampling was done in the second trimester of pregnancy as women in this period adapted themselves to pregnancy changes, had low risk of problems such as nausea, vomiting and abortion and did not experience stress pertaining to giving birth and coping with the child in the third trimester (24). However, in the study by Mahmoodi et al, behavior score in the third trimester was fairly high (9), while based on the study of Stark, pregnancy age did not have any influence on health-promoting behaviors (26). This contradiction may be due to a lack of homogeneity in terms of the number of groups compared with the pregnancy age. In general, despite the low sample size of the studies, convenient sampling and individuals' self-report concerning health-promoting behaviors, gaining average scores in the total scores and low scores in terms of stress management and physical activity highlight the need for interventions in this field of study. Individuals' health services not only depend on the type of healthcare services they receive, but also are related to the context in which they live, study, work and have fun (38). Various factors affected of healthcare behaviors including age, education level, mothers' job and socioeconomic and psychological factors as well as factors related to pregnancy (5,9,11). Studies showed controversial results possibly due to the study design such as convenient sampling, small sample size, or heterogeneous groups in terms of maternal age and pregnancy age, and lack of consideration of confounding variables such as unwanted pregnancy and other confounding factors. Therefore, the results need to be expressed with caution.

Regarding the second goal of the study, qualitative and mixed-method studies dealt with understandings and beliefs, barriers and facilitators of health-promoting behaviors from pregnant women's points of view. However, studies conducted in this field have some limitations and focused on some aspects or behavioral changes during pregnancy in a retrospective approach. Nevertheless, pregnant women were highly motivated to adopt health-promoting behaviors (32,34). Moreover, the motivating factor was the health of the fetus and achieving a desirable outcome in pregnancy (30,33). In addition, in spite of particular troubles in pregnancy, pregnant women tried to find a secure method to pass through this period. From the women's point of view, pregnancy was a growth and evolutionary period, leading to a sense of responsibility for the health of the child and family. If they were supported, they were willing to make changes in their own lifestyle. However, they faced barriers that made changes beyond their control. Furthermore, a lack of time especially in multiparous women and being unable to establish communication with nurse assistants for various reasons were mentioned as main barriers (33,36). According to some studies, the training program, the implementation of risk assessment (39,40), customer-centered interventions, short-term motivational interviews, or an increased frequency of being exposed to individuals were facilitators to adopting healthy behaviors (5). Specifically in women with high-risk pregnancy, psychological consultation, stress management techniques and self-care behaviors can be provided by health service providers (26). Although the qualitative studies were on changing behaviors in various populations, their main goal was changes in pregnant women's health. Therefore, studies in different cultural contexts are required for the assessment of adoption of changes in health behaviors.

Limitations

The aim of this systematic review was the summation of results gained from each study, combining the results of different studies, and providing a general interpretation of the studies. Language restrictions, quantitative assessment of the studies and lack of search in conference articles were some limitations of this study. It was noted that the meta-analysis was impossible due to the heterogeneity of the studies.

Conclusions

The adoption of a healthy lifestyle and health-improving behaviors in the pregnant women was in an average level. In addition, they were not informed about this important issue. Worries about fetal and neonatal health made them to find ways to ensure the achievement of the desired outcome. Consequently, they were highly motivated to change their behaviors, though they faced some barriers, the most important of which was the factor of time and lack of time for dealing with health behaviors. Besides, the participation of their husbands was a facilitator. In general, it can be concluded that regarding high motivation of women to adopt health behaviors during pregnancy, healthcare providers can use incentives and improve accountability of pregnant women, and create an opportunity for education and consultation to optimize health promotion and pregnancy outcomes. The assessment of health behaviors in individuals should be done based on the needs and situation of each individual. Eventually, well-designed qualitative studies are recommended so that the designed interventions and strategies are examined in cultural-social backgrounds based on the needs of individuals and families.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

This article was part of a research project approved by the Research Council affiliated with Shahid Beheshti University of Medical Sciences, Tehran, Iran (under the ethics code IR.SBMU.PHNM.1395.498, dated 24 October 2016).

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Supplementary Materials

Supplementary file 1. Characteristics of Various Related Studies.

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