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Survey of Pregnant Women's Attitude towards Healthy Nutrition in Yazd City

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ABSTRACT

Background: Healthy nutrition is a part of a healthy pregnancy. Having a poor food attitude towards healthy nutrition often leads to unfavorable consequences for the mother and her baby. Health care providers need to be aware of these attitudes, so that they can focus their attention on pregnant women during this critical period. Therefore, the present study aims to determine the attitude to healthy nutrition of pregnant women in Yazd city, Iran. **Methods:** The present cross-sectional descriptive study included 250 pregnant women aged 18-49 years who referred to community health centers, without any background diseases using random sampling method. The face and content validity of the researcher-made questionnaire was confirmed by experts. Its reliability was evaluated by Cronbach's alpha method and completed by self-reporting. The data were analyzed by SPSS software. **Results:** The mean score of pregnant women's attitude towards healthy nutrition was 132.7 ± 22.0. According to the results, despite the obstacles to providing healthy and practical food for pregnant women, such as their high cost, research units sought to provide healthy food during this period. Also, there was an inverse relationship between nutrition-related attitudes during pregnancy and higher pregnancy rates. Multiparous women had fewer misconceptions than primiparous women, which require training of health professionals to prescribe appropriate food attitudes. **Conclusion:** In general, it can be inferred that the women of the present study adhered to their nutritional attitudes that originated from their culture, and this study was able to provide a clear picture of the cultural attitudes to healthy nutrition of pregnant women in Yazd.

Keywords: *Pregnancy; Healthy Nutrition; Attitude*

Introduction

Pregnancy is one of the most important and risky periods in the life of mother and her fetus, which is of great health and social importance for the individual, family, and society. Different factors affect maternal and fetal health, one of which is proper nutrition during this period. The full

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development of the fetus is closely related to the mother's nutrition and meeting the fetus' needs depends on receiving nutrients from mother (Safari *et al.*, 2007).

Pregnancy is associated with many physical and psychological changes in women. Even in a normal pregnancy, the ability to perform normal life roles is affected. These changes, in many women, reduce the quality of life. Paying attention to the variables affecting a reduction in the quality of life during pregnancy and planning to reduce these effects can improve one's quality of life during pregnancy (Abbaszadeh *et al.*, 2009). Nutrition is an essential pillar of human life and a person's need for nutrition depends on their age, gender, and different periods of life, such as pregnancy, during which the diet is different due to physiological changes (Abbaszadeh *et al.*, 2009).

A mother's nutrition is related to her success during pregnancy and childbirth. Growth and development of a fetus is dependent on proper diet (Mirmolaei *et al.*, 2009). Pregnancy is a good time to change your eating habits (Ahmadpoor *et al.*, 2015). Various studies have shown that improving maternal nutrition both before pregnancy and during pregnancy is a more important factor in reducing infant mortality and improving their health than the quantity and quality of nutrition during infancy (Scott and Duncan, 1999).

Proper nutrition is an important part of a healthy pregnancy and proper nutrition education can play an important role in promoting the health of a mother and her child (Kamalifard *et al.*, 2012). Proper nutrition is essential in preventing and improving some of the problems during pregnancy and maintaining the health of a mother and fetus (Kamalifard *et al.*, 2013). One of the determinants of a pregnant mother's health is proper nutrition during pregnancy. It should be balanced and undereating or overeating should be avoided. Pregnancy and lactation require proper nutrition and special attention due to the body need for high nutrients and the important role of nutrition for a fetus. Emphasis on achieving and maintaining a proper diet to maintain maternal health during pregnancy and lactation is very important. The use of different types of food, such as milk, yogurt, cheese, meat, eggs, a variety of fresh grains, vegetables, and fruits, is recommended during this period. Nutritional needs at different stages of pregnancy vary based on fetal development and maternal status (Stewart, 2006). Recent studies have shown that maternal diet during pregnancy has long-term effects on their offspring (Vanhees *et al.*, 2011). Understanding healthy nutrition during pregnancy is part of the outcome of a healthy pregnancy. The optimal nutritional status before and during pregnancy is to achieve a normal body mass index (BMI). Pregnant women can reduce their risk of cancer and pregnancy-related risks, such as gestational diabetes and eclampsia. Normal BMI also reduces the risk of some consequences at birth, including birth defects, reduced intrauterine growth, and other chronic diseases)Kaiser and Allen, 2008). Today, diets are not meeting health recommendations very well. Many studies have shown that consumers' food choices are influenced by their preferred diet. Training programs can influence many of the behavioral characteristics of a person, such as dietary habits (Verbeke and De Bourdeaudhuij, 2007). Also, during pregnancy, the training of proper nutrition and selection of various foods with appropriate amounts under the care of health experts is emphasized (Farahaninia *et al.*, 2013).

During pregnancy and after childbirth, women experience cultural customs, religious beliefs, and common values that govern their society (Abdollahi et al., 2014). Nutritional patterns and behaviors of pregnant women have a strong cultural burden and cultural beliefs and values can determine the type of food consumed, prohibitions and superstitions during pregnancy.

Dietary habits during pregnancy are influenced by various factors. Numerous studies have shown that nutritional counseling during pregnancy affects a pregnant mother's diet. Nutritional counseling at health care centers can affect the diets of pregnant women (Ilmonen *et al.*, 2011). Nutritional patterns and behaviors of pregnant women are highly dependent on culture, and cultural beliefs and values can determine the type of food consumed,

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prohibitions, and superstitions during pregnancy. Health practitioners should be aware of these beliefs in order to act according to social norms. Those beliefs that are beneficial to pregnant women and their infants should be encouraged with scientific explanations and vice versa. Those beliefs that have little scientific evidence of being beneficial should be eliminated with proper education given to the local people (M'soka *et al.*, 2015). Although health education experts consider it important to teach nutrition to pregnant mothers, there are problems with educating them. The barriers include the lack of time, equipment, and insufficient skills to carry out the training. Appropriate solutions should be taken to solve these problems during pregnancy (Lucas *et al.*, 2014).

The malnutrition of pregnant women, especially in rural areas, has a negative effect on pregnancy and childbirth. In many local communities, pregnant women have food superstitions that lead to nutrient deficiencies (Oni and Tukur, 2012). Food superstitions are present in almost all human societies and may be found in various forms around the world. Pregnancy is seen as a critical period in a woman's life, and this period of her life is usually influenced by food superstitions in order to save her and her baby's life (Zepro, 2015). Some pregnant women believe in false and baseless superstitions due to their lack of awareness and literacy (Rajkumar *et al.*, 2010). In order to achieve proper nutrition during pregnancy, the values and cultural practices of proper nutrition must be included in the programs and services provided to women. Therefore, explaining women's perceptions and experiences about nutrition during pregnancy, health education, and promoting the health of women and children is very important. Therefore, this study was conducted to extract the nutritional attitudes of pregnant women in Yazd city.

Materials and Methods

Study design and participants: The present study is a cross-sectional descriptive study that was performed on pregnant women referring to medical centers in Yazd in 2018 with the aim of determining nutritional attitude in pregnant women. Women who met the inclusion criteria, such as being pregnancy, willing to participate in the study, being native to Yazd, an age range of 18-49 years, having a file at a health center near their place of residence, were included in the study. The exclusion criteria were a history of an underlying disease and psychological illnesses during pregnancy.

Measurements: In order to conduct this research, a researcher-made questionnaire was used, the face and content validity of which was confirmed by the panel of experts, including 10 professors in health education and department. The reliability of the questionnaire was evaluated and confirmed by Cronbach's alpha method (r = 0.85). The questionnaire consisted of three parts including a) personal and background information (age, education, men education, occupation, men occupation, pregnancy ranking, and family income), b) items related to nutritional attitudes (44 items), and c) observing proper nutrition during pregnancy (1 item). The answers were based on a Likert scale with a range from 5, "strongly agree", to 1, "strongly disagree", and "always" to "never" options with a score from 5 to 1.

Ethical considerations: The informed consent form was completed by pregnant women. The aims of the study were explained to the participants. The following information was given to the participants: the voluntary nature of the participation, their right to privacy, anonymity, and confidentiality as well as right to withdraw from the study at any time without any penalty. The participants then signed an informed consent form. This research was supported and approved by the Research Council and Ethics Committee affiliated to Shahid Sadoughi University of Medical Sciences, Yazd, Iran (with No IR.SSU.SPH.REC.1397.02).

Data analysis: Data of the present study was performed by SPSS software version 24. First, the normality of the quantitative data was checked using the Shapiro-Wellik test. Because the data did not have a symmetrical distribution, the Mann-Whitney test and Kruskal-Wallis test was used

Results

Based on the demographic data of the participants

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in this study, the mean age of the participants was 28.9 ± 6.14 years. Most of the participants (52.4%) had a university education, 39.6 pregnant women were primiparous, and 74.2% of them were housewives (**Table 1**).

In this study, the relationship between demographic variables and nutritional attitudes of pregnant women was measured. Based on the Kruskal-Wallis test, the median score of attitude to healthy nutrition of the participants of third pregnancy rank and above was higher and in pregnant women with primiparous rank was reported lower than others (**Table 1**). The mean score of nutritional attitudes among pregnant women was 132.27 ± 22.8 and because the score of nutritional attitudes had an abnormal distribution, non-parametric tests were used.

Table 2 presents descriptive information about frequency distribution of answering attitude to healthy nutrition items in pregnant women participating in the study**.**

Table 1. Relationship between demographic variables and nutritional attitudes of pregnant women.

Variables	N (%)	Mean ± SD	Median (Interquarter range)	P-value
Age (year)				0.12[b]
16–21	35(14)	131.4 ± 22.3	136 (115-145)	
22-27	63 (25.2)	129.9 ± 21.8	۱۳۱(117-147)	
28–33	96 (38.4)	131.4 ± 23.4	۱۳۵ (120-144)	
34–39	43 (17.2)	141.5 ± 23.6	۱۴۲ (125-156)	
40–45	13 (5.2)	131.6 ± 17.5	۱۳۳ (117-147)	
Women education				0.44[b]
Illiterate	1 (1.4)	5.11 ± 11.46	113 (65-153)	
High school	6 (8.6)	6.12 ± 21.58	125 (110-143)	
Diploma	18 (25.7)	52.13 ± 23.48	135 (121-149)	
University	52 (74.3)	58.13 ± 21.65	136 (122-147)	
Men education				0.40 [b]
Illiterate	1 (1.4)	33.12 ± 35.75	137 (89-140)	
High school	12 (17.1)	82.12 ± 69.26	128 (113-144)	
Diploma	30 (42.9)	37.13 ± 27.60	135 (122-146)	
University	27 (38.6)	87.13 ± 20.20	137 (121-149)	
Women job				0.17[a]
Employee	54 (77.1)	80.13 ± 40.20	137 (150-124)	
Housewife	16 (22.9)	83.13 ± 89.22	135 (145-116)	
Men job				0.35[b]
Employee	16 (22.9)	10.13 ± 5.22	138 (150-126)	
Worker	15 (21.4)	87.12 ± 91.25	134 (146-110)	
Self-employed	35 (50.0)	68.13± 98.19	133 (146-123)	
Retired	3 (4.3)	66.13 ± 74.14	145 (0-123)	
Pregnancy rank				0.03[b]
First pregnancy	30 (42.9)	71.12 ± 95.24	132 (144-111)	
Second pregnancy	16 (22.9)	58.13 ± 38.20	135 (146-120)	
Third pregnancy and more	24 (34.2)	84.13 ± 32.19	139 (151-124)	

[a]: Mann-Whitney test, [b]: Kruskal-Wallis test

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Table 2. Frequency distribution of answering attitude questions in participants.

Variables	Agree	No comments	Disagree
The gynecologist has forbidden me to take unprescribed herbal medicine during pregnancy.	22 (38.5)	14 (24.6)	21 (36.9)
During my pregnancy, I increased the number of smaller meals.	49 (71)	10 (14.5)	10 (14.5)
My nutrition during pregnancy has changed.	58 (85)	3 (5)	7 (10)
My appetite has increased during pregnancy.	36 (52.2)	12 (17.4)	21 (30.4)
I eat a variety of food during my pregnancy	49 (74.2)	6 (9.1)	11 (16.7)
During my pregnancy, I use herbal medicines as needed.	29 (42.6)	15 (22.1)	24 (35.3)
My husband is sensitive to my nutrition.	40 (60.6)	6 (9.1)	20(30.3)
My husband assigns enough money for my pregnancy because he believes that our child's health is important.	64 (92.7)	2 (2.9)	3 (4.3)
My husband forbids me to eat fast food and soft drinks during my pregnancy.	43 (62.4)	13 (18.8)	13 (18.8)
Before consuming food, I pay attention to the number of calories written on the label.	24 (34.7)	16 (23.2)	29 (42.1)
I take supplements (iron and folic acid pills) during my pregnancy.	60 (44.1)	6 (4.4)	70 (51.5)
During pregnancy, I feel my taste has changed.	32 (46.4)	17 (24.6)	20 (29)
My eating habits have changed during pregnancy.	35 (51.5)	18 (26.5)	15 (22)
During my pregnancy, I eat whatever I want (crave).	44 (63.8)	17 (24.6)	8 (11.6)
During pregnancy, I am forced to consume some food because of their positive properties.	36 (52.9)	18 (26.5)	14 (20.6)
During my pregnancy, I consume food with a cool nature (chicory tea, marshmallow, jujube, etc.) to prevent jaundice in my baby.	28 (41.2)	19 (27.9)	21 (30.9)
I lost weight early in my pregnancy due to low food intake.	26 (37.7)	9 (13.0)	34 (49.3)
I am overweight during my pregnancy because I do not have physical activity.	12 (17.4)	8 (11.6)	49 (71.0)
Being overweight during my pregnancy has caused problems such as bloating.	18 (26.9)	6 (9.0)	43 (64.1)
I believe that eating hot food causes my child to have jaundice.	35 (51.5)	20 (29.4)	13 (19.1)
During my pregnancy I can find answers to my questions about nutrition	40 (58.8)	15 (22.1)	13 (19.1)
I doubt what I eat during pregnancy is influenced by either superstitions or science.	27 (39.2)	23 (33.3)	19 (27.5)
I believe in superstitions about nutrition during pregnancy	10 (14.5)	12 (17.4)	47 (68.1)
My family has outdated or superstitious beliefs about nutrition during pregnancy.	14 (20.6)	18 (26.5)	36 (52.9)
I believe that the food I eat has a great effect on the health of the fetus	60 (43.5)	7 (5.1)	71 (51.4)
I care a lot about my nutrition during pregnancy	49 (36.0)	18 (13.2)	69 (50.8)
I can devote enough time to making healthy food during my pregnancy, even if I am busy	40 (29.4)	17 (12.5)	79 (58.1)
My diet is different than my family's diet during my pregnancy.	12 (17.9)	13 (19.4)	42 (62.7)
During my pregnancy, I eat raisins to increase my baby's memory.	26 (39.4)	16 (24.2)	24 (36.4)
During my pregnancy, I use "Quince and apple" to beautify my child	35 (51.5)	20 (29.4)	13 (19.1)
During my pregnancy, I eat dates to make my child pious.	32 (23.9)	27 (20.1)	75 (56.0)
I recite the verses of the Qur'an to calm my child.	52 (37.7)	13 (9.4)	73 (52.9)
I perform ablution to calm my child during my pregnancy.	32 (46.4)	24 (34.8)	13 (18.8)
To increase my child's memory, I read Ayatul Kursi (verses of the Qur'an)	37 (54.4)	16 (23.5)	15 (22.1)
During my pregnancy, my my mother, my mother-in-law, and my husband prepare different and special food for me.	16 (23.2)	20 (29.0)	33 (47.8)
My mother, my mother-in-law, and my husband prepare healthy and practical food for me.	40 (58.0)	21 (30.4)	8 (11.4)
I eat food like carrots, rose water, barberry, and vegetables to make my delivery easier.	26 (38.2)	17 (25.0)	25 (36.8)
During my pregnancy I use herbal medicine if my family (my mother, my mother-in-law, and my husband) recommend it.	16 (24.2)	27 (41.0)	23 (34.8)

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Table 2. Frequency distribution of answering attitude questions in participants.

Variables	Agree	No comments	Disagree
Since you have been pregnant, how often do you use the following food?	Always	Sometimes	Never
Sausages	8 (5.8)	34 (24.6)	96 (69.6)
Sauces	18 (26.5)	36 (52.9)	14 (20.6)
Fast food	18 (13.3)	37 (27.4)	80 (59.3)
Sweets	11 (15.9)	26 (37.7)	32 (46.4)
Food leftovers that have been reheated several times	4 (6.0)	8 (11.9)	55 (82.1)
Low nutritional value snacks (chips and puffs)	3 (4.4)	12 (17.6)	53 (78.0)
Soft drinks	19 (27.9)	23 (33.8)	26 (38.3)

Discussion

The results of the study showed that the mean score of nutritional attitudes among pregnant women was moderate to high. These results indicate that almost half of the women who participated had correct and scientific attitudes about the nutritional value of food. Considering that nutritional patterns and behaviors of pregnant women are highly dependent on culture, cultural beliefs and values can determine the type of food consumed, prohibitions, and superstitions during pregnancy. Health professionals should be aware of these beliefs in order to address them in society, and those beliefs that are beneficial to pregnant women and their infants should be encouraged with scientific explanations, and vice versa. In this study, 69.5% of the participants believed that the number of their meals increased compared to the pre-pregnancy period due to the need of fetus to maternal nutrition, which indicates the different dietary needs of women during pregnancy and before. This finding is consistent with the study of EA Ugwa *et al.* conducted in 2016 (Ugwa, 2016), but it is not in line with the study conducted by Ojofeitimi *et al.* in 1982 (Ojofeitimi *et al.*, 1982).

Improper nutrition of mothers can have a negative effect during pregnancy and childbirth. In the present study, the issue of food superstitions during pregnancy has also been considered. Food superstitions are found in almost all human societies around the world. Zepro states that in many local communities, pregnant women have food superstitions that lead to the loss of many vital nutrients (Zepro, 2015). In the study by Catherin *et al.*, due to some misconceptions among women in that community, a large number of healthy food as well as some valuable local food were banned for pregnant women, which in turn could harm both the mother and baby. Health education and the increasing community knowledge about incorrect dietary beliefs are required in order to improve the health of mother and baby (Catherin *et al.*, 2015). In this regard, the results of Murray-Davis *et al.* showed that a lack of guidance and information about healthy eating habits in the pregnancy and postpartum period was highlighted (Murray-Davis *et al.*, 2019). The reason for pregnant women believing in false and baseless superstitions is their lack of education. Illiteracy is also an influential factor. To achieve proper nutrition during pregnancy, proper nutritional cultural values and approaches must be included in women's health programs and services (Lennox *et al.*, 2017). Some pregnant mothers refuse to eat eggs, which are a rich source of protein, vitamins, and minerals, due to wrong nutritional attitudes (they believe that eating eggs during pregnancy causes a baby to be born without hair (Williamson, 2006). The findings of the present study were consistent with some studies conducted in this regard, such as the study of Mohebi (Mohebi *et al.*, 2012), Karimi (Karimi and Mirglobayat, 2017), Najafi (Najafi Ghezeljeh *et al.*, 2015), Borg (Borg *et al.*, 2009), and Alp (Alp *et al.*, 2011). However, it was not consistent with the results of the study of Hashemian (Hashemian *et al.*, 2013), Khadivzadeh (Khadivzadeh and Irani, 2018), Kadivar (Kadivar *et al.*, 2012), and

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Chukmaitov (Chukmaitov *et al.*, 2008). The differences might be due to the questionnaire used, or the subjects of the research. In the present study, the support from men in the form of encouraging their wives to follow a healthy diet during pregnancy was emphasized by research units. Thus, about 91.5% of women had the support of their husbands, which was more than others. Their husbands provided food for their wives, although they were expensive. This finding was in line with the study of Ugwa (Ugwa, 2016) Also, 61.4% of women were forbidden to consume fast food and soft drinks by their husbands during pregnancy, which was beneficial for both themselves and their babies. Grenier declared that support from partner could facilitate healthy eating behaviors during pregnancy (Grenier *et al.*, 2021).

In the study by Ugwa, about 55.3% of the women in the study consumed fast food and ready meals during the week, and 31% of women always consumed carbonated beverages or soft drinks while eating which is not consistent with the results of the present study (Ugwa, 2016). About 84.7% of the women who participated in the study took supplements (iron and folic acid pills) during their pregnancy, which indicates their high attention to health and proper nutrition. Iron and folic acid pills are very important supplements that women should take during pregnancy under the supervision of a doctor. The fact that a high percentage of women were aware of the need to take these supplements could also indicate that nutrition education was provided by health professionals during pregnancy. However, in the study by Folta there was no relationship between the level of awareness and nutritional pattern of pregnant women and they did not pay attention to taking supplements, such as iron , folic acid, folate and vitamin B6 pills, which is consistent with the results of the present study (Folta *et al.*, 2008). However, 85.7% of the women believed that food consumption is very effective on fetal health. It indicates that the attitude of women towards food consumption and fetal health is at a high level and they have received the necessary training in this field. However, in studies, pregnant women had poor and moderate knowledge about diets and their attitude was at a low level which is not consistent with the results of the present study (Johnson, 2000, Karimi and Mirglobayat, 2017, Ugwa, 2016).

About 70% of women in the study said they cared about nutrition during pregnancy. The results of the studies showed that pregnant women have a better nutritional pattern and pay more attention to nutrition during pregnancy, which is consistent with the results of the present study (Avazeh *et al.*, 2010, Moynihan *et al.*, 2007, Ugwa, 2016).

It should be noted that 74.3% of women said that they recited Quran verses to calm their children during pregnancy. Intense emotions, thoughts, sadness, anxiety, and fear will have an adverse effect on the health of the fetus; however, reading the Holy Quran calms the fetus. Therefore, in the present study, a large number of women felt that reading Quran verses had a great impact. In Moussavi study, it was concluded that listening to the Holy Quran reduces the severity of labor pains more than music and leads to peace of mind during pregnancy, which is consistent with the results of the present study (Moussavi, 2002). Each social group has its own unique traditional beliefs that influence and guide their way of life. The basis of some of these traditional and cultural beliefs is the teaching of parents and relatives and other members of society (Ogbeide, 1974). The results of the study by Ekwere showed that 50.8% and 28% of pregnant women, respectively, stated that religious traditions and beliefs could have a major impact on their dietary restrictions (Ekwere *et al.*, 2015) . Evaluation of attitude of healthy nutrition of the study group was based on self-declaration which could be one of the limitations in this study.

Conclusion

The designed questionnaire in this study could present a clear picture about attitudes to healthy nutrition of pregnant women based on their culture. In general, the results of the study showed that pregnant women are very careful about their food choices and diet. They try to eat healthy food for the growth of the fetus and thus observe food

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prohibitions, so that they have a safe pregnancy and childbirth. If they continue this diet after childbirth, they can maintain their lifelong health. Nutritional approaches are a concept that should be considered and taught by health professionals during regular visits to pregnant women. Designing healthy eating guidelines during pregnancy is recommended by health professionals to be available to pregnant women.

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Conflict of interest

The authors declare that there is no conflict of interest.

Authors' Contribution

Sadeghi S designed the research, gathered and analyzed data. Khodayarian M conceptualized the study, collected and analyzed the data. Mazloomy mahmoodabad S.S supervised the final report. Nadjarzadeh A supervised the final report. Fallahzadeh H conducted the experimental research and conducted statistical analysis. All authors read and approved the final manuscript.

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