



Knowledge, attitude, and practice related multivitamin supplements among pregnant women in Makkah, Saudi Arabia

Saeed Hamid Rami^{1*}

¹Department of Emergency Medical Services, College of Health Sciences in Al-Qunfudhah, Umm Al-Qura University, Makkah Al-Mukaramah, Saudi Arabia

***Corresponding author:** Saeed Hamid Rami, Department of Emergency Medical Services, College of Health Sciences in Al-Qunfudhah, Umm Al-Qura University, Makkah Al-Mukaramah, Saudi Arabia, Email: shrami@uqu.edu.sa

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ABSTRACT

This study aimed to monitor the prevalence of pregnant women using multivitamin supplements in the city of Makkah Al-Mukaramah, and the effect of some factors (educational level, age, household income, number of pregnancies) on women's intake of these nutritional supplements. A cross section study was conducted among 170 women in Makkah Al-Mukaramah region, and the results were analyzed statistically using SPSS statistics (v. 26). The results suggested that there was a significant relation between the prevalence of multivitamin supplements use by pregnant women and both age and number of pregnancies. There was no significant relation between the prevalence of multivitamin supplements use by pregnant women and the educational level or household income. Future studies need to expand the scope in a larger sample size and to include health professional recommendations in relation to nutritional supplements use.

Keywords: *Pregnancy, tonics, multivitamins, dietary supplements, infants, fetus*

INTRODUCTION

Women in pregnancy need an integrated diet. Evidence from previous studies demonstrated that an integrated diet is very important for the safety of the mother and the foetus. However, the diet of pregnant women does not contain the essential elements and vitamins sufficiently, which may affect the health and safety of the fetus and the mother (Brown & Wright, 2020; WHO, 2013). The World Health Organization stressed the need for pregnant women to take 30-60 mg of nutritional supplements that contain iron, in order to prevent anemia, complications of premature birth, low birth weight, and postpartum sepsis.

This is consistent with the recommendations of the Centers for Disease Control and Prevention, where there was an emphasized that pregnant women should take 30 mg per day of iron.

Studies have confirmed that Saudi women have sufficient awareness about nutritional supplements that are beneficial to them during pregnancy, especially folic acid (FA), as they have proven their good knowledge of its benefits for pregnant women. Given the role of nutritional supplements during pregnancy, making national efforts to raise awareness in hospitals and health centers of the benefits of nutritional supplements for pregnant women is essential.

The results of (Alduraibi, Al-Mutawa, 2020) showed that about 96% of women were aware of the importance of folic acid for pregnant women, and 5.9% of the studied sample found that they had abnormal children and had a previous history due to not taking folic acid during pregnancy. Almost 89% of women also took folic acid in their previous pregnancies.

In a review published by Brown & Wright (2020), 78% to 98% of pregnant women in the United States, Australia and Canada consumed a multivitamin (excluding folic acid alone) during their pregnancy. Women should be advised to focus on their diet and to clarify food sources rich in vitamins to protect the mother and fetus from some diseases such as preeclampsia. Nutritional supplements are a safe way to compensate for the deficiency caused by malnutrition, but nutritional supplements must be taken with caution and recommendations from a nutritionist (Brown & Wright, 2020).

In another study conducted in the United States among pregnant women showed that 77% of pregnant women and 70% of lactating women took one or more dietary supplements. These supplements include vitamin A, vitamin C, zinc and iron. Women between the ages of 20 and 34, or in a low-income family, were taking nutritional supplements to a lesser extent than others. The recommendations of the Preventive Services Task Force emphasized the importance for women who are about to become pregnant to take dietary supplements containing 400-800 micrograms of folic acid on a daily basis, especially in the third trimester of pregnancy. The American Thyroid Association's recommendation for pregnant and lactating women to consume 150 mcg of iodine daily and use of supplements has also been confirmed in the National Health and Nutrition Examination Survey (NHANES) since 2007 (Jun et al., 2020).

In a research conducted in Mali among pregnant women, revealed that 73% of pregnant women develop anemia, as a result of iron deficiency during pregnancy, and 70% of pregnant women were recommended by a medical review to take multiple nutritional supplements on a daily basis or nutritional supplements rich in iron or folic acid (Aguayo et al., 2005). A study conducted

among Iranian women, showed that dietary supplements consumed by 69%, which is relatively high. The most used supplement was folic acid with a percentage of 66%, then vitamins with a percentage of 52%, and then iron with a percentage of 48.6% (Talank et al., 2019). Another study conducted in Riyadh among pregnant women to determine the prevalence of nutritional supplements and its associations between demographics revealed that higher percentage approximately 71.5% was significantly associated with level of education, family income and number of children. Folic acid was also found to be the most common type of dietary supplement used (Alfawaz, Khan, Al-Oteabi, Hussain, & Al-Daghri, 2017).

Importance of the research

During pregnancy, a healthy lifestyle and food are necessary to secure improvement of fetal development and growth. Inconvenient nutrition and sluggish perinatal growth are related with increased hazard of atopy, respiratory disease, osteoporosis, and adiposity, in later life. Women's excellent awareness of dietary guidelines during pregnancy may help them in making proper food options and in achieving an equal diet for themselves and their babies (Moran-Lev et al., 2019). The importance of the study is that it demonstrates the prevalence of women's use of nutritional supplements and its relationship to some demographic and medical indicators.

Aim of the research

This study aims to assess the prevalence of multivitamin supplements (tonics) use among pregnant women in Makkah region.

Hypotheses of the research

H01: There is a correlation between a woman's age and choosing tonics.

H02: There is a relationship between the educational level and awareness of the need for pregnant women to consume multivitamin supplements.

H03: There is a relationship between the number of pregnancies and the need to choose tonics.

H04: There is a relationship between the household income of the family and the consumption of multivitamin supplements during pregnancy.

Background review

Types of nutritional supplements for pregnant women

Doctors recommend various nutritional supplements that women should take during pregnancy, and many researches have studied the importance of these supplements and the proportions required to maintain the safety of pregnant women, without excess or deficiency. Moran-Lev et al., (2019) confirmed the health benefits of vitamin D, calcium and omega-3 during pregnancy. Calcium reduces the complications of pre-eclampsia and helps control blood pressure during pregnancy. Omega-3 is a group of fatty acids that are beneficial to humans in general and to pregnant women in particular, including docosahexaenoic acid, which has been shown to reduce risks to fetuses. Vitamin D is an important factor in reducing the risk of low birth weight, in addition to its positive effect on strengthening the mother's immune system. In a study conducted by (Amitai et al., 2008), it was

confirmed that vitamin D is considered sufficient to ensure the health of women during pregnancy, and for this reason some European countries recommend health awareness campaigns about the need for women to take vitamin D during pregnancy.

According to Middleton et al. (2018) Omega-3 intake reduces the risk of premature birth (<37 weeks) and complications of low birth weight. In a study conducted by Ojo et al. (2019), it was stated that vitamin D helps to lower the results of blood sugar tests, FBG, HbA1c in pregnant women, and thus lower the concentration of insulin in the blood. Chen et al. (2020) states that probiotics are a nutritional supplement that helps reduce FBG levels and reduce inflammation, and helps reduce hyperbilirubinemia in premature infants. The study of Crawford et al. (2015) and Zhang et al. (2019) showed that taking myoinositol contributed to reducing the risk of gestational diabetes (GDM), as well as reducing the complications of premature delivery. Another study conducted by Mantaring et al. (2018) also recommends that nutritional supplements should be in a specific proportion or quantities, for example, the amount of essential minerals, vitamins and essential acids in nutritional supplements should be as contained in Table (1).

TABLE 1: The amount of nutritional supplements for pregnant women.

Nutritional supplements	amount	Nutritional supplements	amount
Sodium	87 mg	Vitamin A	438 IU
Calcium	254 mg	Vitamin D	35 IU
Magnesium	32 mg	Vitamin C	19.5 IU
Zinc	2.6 mg	Vitamin B1	217 µg
Iron	7 mg	(Folic acid,) Vitamin B9	125 µg
Chloride	205 mg	(Pantothenic acid) Vitamin B5	1295 µg
Vitamin E	460 IU	(Niacin) Vitamin B3	3045 µg

Source: Mantaring et al., 2018

MATERIALS AND METHODS

A cross sectional research design used self-administered questionnaire to assess the prevalence of multivitamin supplements (tonics) among pregnant women in Makkah region.

Ethical considerations

A written consent form obtained from all participants before joining the study. All data collected was kept confidential.

Statistical Analysis

Data was collected by consecutive sampling from an online survey contained all medical information of all pregnant women (170 pregnant women), the outcome variable was the

prevalence of tonics use in pregnant women and the exposure variables were the demographic characteristics of the sample. Then, data were analyzed using IBM SPSS (v.26).

TABLE 2: The research sample's responses to demographic questions

Variable	N	%	Variable	N	%
Age group			Educational status		
18 - 20	7	4.1	Middle School	3	1.8
21 - 30	40	23.5	High school	27	15.9
31 - 40	66	38.8	Bachelor's	104	61.2
41 - 50	54	31.8	Diploma	4	2.4
Employment status			Ph.D./Masters		
Student	8	4.7	Others	23	13.5
Not employed			Marital status		
Full time employment	63	37.1	Divorced	2	1.2
Type of job			Married		
Schoolteacher	37	21.8	Place of residence		
Housewife	120	70.6	Al-Qunfudhah	135	79.4
Manager assistant	4	2.4	Jeddah	21	12.4
Doctor	9	5.3	Makkah	7	4.1
Household income			Al-Laith		
Below average	30	17.6	Al-Quoz	1	0.6
Middle income			Nationality		
Above average	21	12.4	Saudi	134	78.8
Capable	15	8.8	Non-Saudi	36	21.2

TABLE 3: The research sample's responses to questions about pregnancies

Variable	N	%	Variable	N	%
Number of pregnancies			Number of children		
More than three times	66	38.8	Five or more children	13	7.6
Three times	6	3.5	Four children	23	13.5
Twice	53	31.2	Three children	27	15.9
Once	40	23.5	Two children	58	34.1
None	5	2.9	One child	36	21.2
Number of abortion			None		
None	128	75.3	Medical follow-up during pregnancy		
Three times	7	4.1	Yes	121	71.2
Twice	8	4.7	Sometimes	32	18.8
Once	27	15.9	No	17	10.0

TABLE 4: The research sample's responses to questions about nutritional supplements(tonics)

Variable	N	%	Variable	N	%
Do you have knowledge of nutritional supplements?			Do you think that using nutritional supplements is safe?		
Yes	140	82.4	Safe	117	68.8
No	28	16.5	Not safe	7	4.1
Do you know the side effects of nutritional supplements?			I don't know		
No	66	38.8	Do you take nutritional supplements during pregnancy?		
Yes	51	30.0	Sometimes	31	18.2
Maybe	50	29.4	No	40	23.5
Does natural nutrition replace the use of supplements during pregnancy?			Yes		
No	66	38.8	Have you had any complications due to not taking nutritional supplements?		
Yes	51	30.0	No	137	80.6
What are the complications that you or the fetus encountered due to not taking the supplements?			Yes		
None	159	93.5	Did you use nutritional supplements throughout your pregnancies?		
Stress and body weakness	7	4.1	Use it infrequently	48	28.2
Premature birth	2	1.2	Every times	93	54.7
Delayed walking and weak teeth	2	1.2	Never used it	29	17.1

TABLE 5: The research sample's responses to questions about types of tonics

Variable	N	%	Variable	N	%
Do you use any nutritional supplements?					
Folic acid	57	33.5	Omega-3	9	5.3
Iron Calcium	55	32.4	Magnesium	6	3.5
Calcium	22	12.9	Zinc	6	3.5
Vitamin D	9	5.3	Multivitamin	6	3.5
Do you use any other nutritional supplements (vitamins)?					
No	152	89.4	Following doctor's instructions	9	5.3
Multivitamins	9	5.3	Other	9	5.3

Hypotheses Tests

TABLE 6: Hypotheses testing

Variable	Correlation factor	significance level
H01 Woman's age and taking tonics	1.36	0.05*
H02 Woman's educational level and awareness about tonics	-0.46	0.05*
H03 Number of pregnancies and the need to take tonics	0.25	0.05*
H04 Household income and tonic taking	-0.17	0.05*

H01: There is a correlation between a woman's age and taking tonics.

H02: There is no correlation between the educational level and awareness of the need for pregnant women to take tonics.

H03: There is a positive correlation between the number of pregnancies and women's need to take tonics.

H04: There is no correlation between the household income of the family and tonic taking for pregnant women.

DISCUSSION

This study aimed to monitor the prevalence of pregnant women using multivitamin supplements (tonics) in the city of Makkah Al-Mukaramah, and the effect of some factors (educational level, age, household income, number of pregnancies) on women's intake of these nutritional supplements. The current study showed that 58.2% of respondents consumed nutritional supplements regularly, and 82.4% of the women were aware of tonics, and 38.8% were aware that natural nutrition does not replace multivitamin supplements. The most common dietary supplements were folic acid, iron, calcium, vitamin D, and omega-3.

In addition, complications resulting from not taking nutritional supplements include problems such as fatigue, anemia, hair loss, weight loss, and poor delivery, and these results were consistent with the results of the study conducted by (Rasmussen, 2009). However, folic acid intake in mid- and late- trimester of pregnancy was very little and most pregnant women were unaware of the long-term benefits and conclusions of folic acid supplementation on fetal health in case of deficiency (Xiang et al., 2022). The findings also showed a positive correlation between the intake of nutritional supplements and the age stage of the expectant mother, and this can be explained by the fact that with increasing age and approaching menopause, the demand for nutrients increases and the body becomes in a state of severe consumption of food reserves of minerals and materials necessary for metabolism and construction, and therefore the natural nutrition is not enough.

The educational level of the pregnant woman does not affect her awareness or her intake of nutritional supplements, especially with the spread of health awareness and regular monitoring of pregnancy with the specialist doctor. On the other hand, the findings showed that there was a positive association between the number of pregnancies and the need to take nutritional supplements. This result explains in particular, the need to replace the nutrients that are depleted from the woman's body during pregnancy, childbirth and lactation. With the

increase in the number of pregnancies, the need to replace these substances increases, and thus the need to take nutritional supplements increases, which can become an inevitable necessity in the event that the mother suffers from diseases such as anemia or gestational diabetes and other diseases that directly affect the health of the pregnant woman.

Finally, the findings illustrated that the household income has nothing to do with the pregnant woman's intake of nutritional supplements, and this result reflects the presence of good health awareness in the research place (Makkah Al-Mukaramah) about the need to take care of the pregnant woman and maintain her health.

CONCLUSION AND RECOMMENDATIONS

Most women suffer from a significantly lower level of vitamins and nutrients during pregnancy, which leads to a wide range of complications for the health of the mother and her infant. Therefore, various nutritional supplements play an important role during pregnancy, which must be taken under the supervision of a doctor and with extreme precision. This paper is expected to help clarify the prevalence of nutritional supplements intake in an Arab city, and thus could serve as a basis for discovering gaps in maternal and child health care. The current recommendations can also help women and their physicians/dietitians choose the best prenatal supplement.

Conflict

'The Author declare that there is no conflict of interest'.

Consent

The author declare that 'written informed consent was obtained from the participants for publication of this study. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal'.

Ethical approval

The author hereby declare that the study was approved by the ethical committee, Umm Al-Qura University, Makah Alumkaramah, Saudi Arabia.

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