Maternal Nutritional Status and Preterm Birth

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Abstract

An optimal diet before and during pregnancy cannot *guarantee* a successful outcome of pregnancy; it can improve the chance of a healthy newborn baby, a healthy mom, and a healthy future for both. A woman who is well nourished and within her healthy weight range prior to conception provides an environment conducive to normal fetal growth and development during the critical first trimester of pregnancy. Study design and population. This study used data from the mothers and child care unit in health centers, a prospective cohort study in central Al.Hillah designed to investigate the maternal dietary patterns during the second trimester and risk factors for preterm birth. second trimester of pregnant women were recruited at 24–29 wk of gestation from prenatal clinics at the MCH Services Department.

Stratified and randomly selected out-patient clinics between Jan 2016 and April 2017. All participants gave written informed consent at the time of recruitment. Data were collected via interviews and self-administered questionnaires, including an MNA to collect dietary information. Socio-demographic information and health behaviors were collected via interviews. during the first 6 mo of pregnancy was collected from self-administered questionnaires. pregnancy BMI was based on height measured at the first prenatal clinic visit and self-reported pregnancy weight. Missing pregnancy weight was imputed on the basis of the first prenatal care visit (19). Total of (50) pregnant women were enrolled into the PIN study. Only pregnancies with complete dietary information were included in this study (n = 50).

Data analyses the related data by using SPSS 23.0 software program. A level of $P < 0.05$ was considered statistically significant. Characteristics of the intervention group and comparison group were compared using t-tests for continuous variables and $\chi 2$-tests for categorical variables. Most of the sample (44.9%) had (21-26) years aged,(36.7%) with (56-66 kg) body weight and (42.9%) had 140-150 cm) body height

Key words: *nutritional status, preterm birth, status*

Introduction

An optimal diet before and during pregnancy cannot *guarantee* a successful outcome of pregnancy; it can improve the chance of a healthy newborn baby, a healthy mom, and a healthy future for both [1] . A woman who is well nourished and within her healthy weight range prior to conception provides an environment conducive to normal fetal growth and development during the critical first trimester of pregnancy. Recent studies suggest that nutritional deficiencies during this period increase the risk of certain chronic diseases later in the infant's life [1] . During pregnancy, the fetus cannot meet its genetic potential for development if the supply of energy and nutrients is inadequate. For the mother, adequate but not excessive weight gain reduces the risk of complications during pregnancy and delivery and lowers the risk of postpartum weight retention. An optimal diet provides enough, but not too many, calories and nutrients to optimize maternal and fetal health [1] . The maternal diet during pregnancy must provide sufficient energy to ensure the delivery of a full-term, healthy infant of adequate size and appropriate body composition. Ideally, a woman should enter pregnancy with a healthy weight and good nutritional status. The total protein requirement during pregnancy has been estimated to be approximately 925 g for a woman gaining 12.5 kg and delivering an infant of 3.3 kg. Protein is not gained at a constant rate, the rate at which

protein is deposited increases as pregnancy progresses. Estimates for the first, second, third and fourth quarters are 0.64, 1.84, 4.76 and 6.10 g of protein per day. The DRV panel did not give any specific values for additional fat requirements during pregnancy However, pregnant women and those planning a pregnancy need an adequate dietary intake of essential fatty acids and their longer-chain derivatives, DHA and AA which are necessary for the development of the brain and nervous system of the fetus, particularly in late pregnancy [2] . The best dietary source of long-chain n-3 fatty acids (EPA and DHA) is oil-rich fish. Carbohydrate Requirements for starch, sugar and non-starch polysaccharides (dietary fiber) during pregnancy are not increased. However, constipation, which may be party attributed to reduced motility of the gastrointestinal tract, is common at all stages of pregnancy. Women with low intakes of non-starch polysaccharides may benefit from increased intakes, to within a range of 12–24 g per day, along with increased fluid intakes to encourage regular bowel movement. The DRV panel established DRVs for nine vitamins, with increments during pregnancy for vitamins A, C and D, thiamin, riboflavin and folate. The DRV panel established DRVs for 10 minerals however; no increments were established for pregnancy as requirements are not considered to increase [2] . This is mainly because of the more efficient absorption and utilization of nutrients that occurs during pregnancy such as Calcium, The RNI for calcium for all adults is 700 mg per day and the DRV panel did not consider that any increment was necessary during pregnancy and Iron requirements are increased during pregnancy to supply the growing fetus and placenta and for the production of increased numbers of maternal red blood cells [2]. Preterm birth is one of the leading causes of neonatal morbidity accounting for nearly 35% of all neonatal deaths in the United States . Despite decades of research, the incidence of preterm birth remains close to 11% and the etiology is largely unknown. With regard to diet, maternal nutrition during pregnancy has an important role in providing the necessary nutrients for fetal growth; however, the relation between maternal dietand preterm birth is not well established. The failure to identify individually strong, modifiable causes of preterm birth is not due to insufficient research given numerous studies focused on psychosocial stress and health behaviors, particularly tobacco, alcohol, and illicit drugs . A number of suggestive associations have been reported for maternal pregnancy weight, gestational weight gain, diet, stress,depression, cocaine use, and physical activity, but because of the challenge in accurately assessing such factors, most studies collect detailed data or analyze only one realm at a time [4]. Recent global estimates suggest that more than 1 in 10 or an estimated 15 million babies born in 2010 were pre-term, of which more than 1 million died as a result of preterm birth and related complications . Although neonatal mortality rates have fallen globally between1990 and 2009 , the absolute numbers and rates of preterm birth have increased during this period. Pre-term birth complications account for 35% of the estimated 3.1 million global neonatal deaths,and are thesecond leading cause of death in children under 5 yearsof age [5].

Method

Study design and population. This study used data from the mothers and child care unit in health centers, a prospective cohort study in central Al.Hillah designed to investigate the maternal dietary patterns during the second trimester and risk factors for preterm birth, Second trimester of pregnant women were recruited at 24–29 wk of gestation from prenatal clinics at the MCH Services Department. Stratified and randomly selected from health centers between Jan 2019 and April 2019. And purposive sample of mothers from each heath center, All participants gave written informed consent at the time of recruitment. Data were collected via interviews and self-administered questionnaires, including an MNA to collect dietary information. Socio-demographicinformation and health behaviors were collected via interviews. during the first 6 mo of pregnancy was collected from self-administered questionnaires. pregnancy BMI was based on height measured at thefirst prenatal clinic visit and self-reported pregnancy weight. Missing pregnancy weight was imputed on the basis of the first prenatal care visit (19). Total of (50) pregnant women were enrolled into the PIN study. Only pregnancies with complete dietary information were included in this study (n = 50). Dataanalyses the related data by using SPSS23.0 software program. A level of $P < 0.05$ was considered statistically significant. Characteristics of the intervention group and comparison group were compared using t-tests for continuous variables and $\chi 2$-tests for categorical variables.

Results

Table (1) indicates the demographics data about the samples.

Age	**Frequency**	**Percent**
15-20 years	10	4.1
21-26 years	48	19.6
27-32 years	**123**	**50.2**
33 and more	64	26.1
Total	245	100.0
Weight	**Frequency**	**Percent**
45-55 kg	40	16.3
56-66 kg	**90**	**36.7**
67-77 kg	65	26.5
78-88 kg	50	20.5
Total	245	100.0
Height	**Frequency**	**Percent**
140-150 cm	**105**	**42.9**
151-161 cm	**105**	**42.9**
162-172 cm	35	14.2
Total	245	100.0

Half the sample had (**27-32**) years aged,(36.7%) with (56-66 kg) body weight and (42.9%) had 140-150 cm or 151-161cm) body height.

Table (2) shows the BMI of the pregnant mothers

BMI	**Frequency**	**Percent**
Under weight	30	12.2
Normal	120	49.0
Overweight	65	26.5
Obese	30	12.2
Total	245	100.0

This table showed the half of mothers(49.0%) had normal BMI.

Table (3) identify the pregnant mothers nutritional status

Nutritional status	**Frequency**	**Percent**
Under weight	80	32.7
Normal	90	36.7
Overweight	75	30.6
Total	245	100.0

This table showed the nutritional status, (36.7%)of pregnant mothers which had normal nutritional status.

Discussion

Nutritional status for pregnant women has important starring role to produce preterm birthfor that reason they need to study nutritional status in prediction preterm birth. This study contacted atthe Creative Commons Attribution License (CCAL) (2015) by Maria Lorella Giannì . This finding probably reflects the time needed for the late preterm infants to develop adequate feeding skills, as indicated by the longer hospital stay of the late preterm infants requiring nutritional support compared with that of the late preterm infants who did not received any nutritional support. Another point of view by the property of RCN Publishing Company (2014) by Englund-Ogge L eta l(2014) A team of researchers in Sweden used a study of pregnant women in Norway to analyze births among 66,000 women between 2002 and 2008. Participants had completed a questionnaire on dietary habits during the first four to five months of pregnancy. Show that Among the 66,000 pregnant women, preterm delivery occurred in 3,505 (5.3%) cases The analysis showed that high scores on the prudent dietary pattern were associated with a significantly reduced risk of preterm delivery (hazard ratio 0.88, 95% confidence interval 0.80 to 0.97), as well as a reduced risk of spontaneous and late preterm delivery. Paola Roggero and et al (2015) stated that only infants who did not develop co-morbidities, birth weight ≤2000 g, GA of 34 weeks and possibly were being born SGA were independently associated with a higher risk of having

nutritional support during hospital stay. In addition, when including in the analysis the infants who have developed co-morbidities, not only birth weight ≤2000 g, GA of 34 weeks and being born SGA, but also having developed a respiratory distress syndrome and having required a surgical intervention resulted to be independently associated with a higher risk of receiving nutritional support. Indeed, out of the infants requiring. A nutritional support in the present study, 58 % and 25 % presented co-morbidity and were born SGA, respectively. Being born SGA is actually a recognized risk factor for very preterm infants for having a prolonged transition period from the beginning of oral feeding to full oral feeding. Chantel L Martin and et al (2015)mentionedthat following a dietary pattern that promotes inflammation may increase the possibility of preterm birth by limiting the transfer of nutrients for adequate fetal growth. Furthermore, we postulate that women with greater Adherence to the DASH diet, which was associated with higher amounts of folate, fiber, and vitamin A from foods such as fruits and vegetables, reduces the risk of preterm birth by reducing inflammation and promoting fetal growth, identified some nutrients and foods that could explain a biological mechanism for preterm birth.Infant mortality (deaths/1,000 live births) - 2015 estimatesin Iraq 37.41, Afghanistan 115.08 is the highest mortality and Monaco 1.82 is the lowest. The result of this study indicate that infant mortality rate is high in Iraq but not for reason of nutritional status of female

Conclusion

The study concluded that most of new mothers in Babylon had no evidence for preterm infant because they had normal nutritional status for that reason Iraq has acceptable infant mortality rate (37.41/1000).

Recommendation

The study recommended that a nutritional educational program should be conducted in the female secondary schools to maintain healthy nutritional status. And increase the awareness of exercises and activity in the secondary schools.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Babylon Health directorate and all experiments were carried out in accordance with approved guidelines.

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