

Shaping Healthy Choices in Pregnant Women in Rural Area

Background:

A healthy and balanced diet is essential for survival, mental development, physical growth and wellbeing. The amount of nutrients each person need in life is different based on their age, gender, height, weight, physiological changes such as pregnancy, lactation or having diseases such as HIV, cancer, and burned skin. Pregnancy is such a critical phase in a woman's life since they have to provide nutrient for their metabolism, body storage and the entire nutrient their developing fetus needs for growth. It's important to have a knowledge about human anatomy, physiology, nutritional status, how nutrient break down and how metabolism can effect our body specially women's body before and during early pregnancy. Mother's health and her nutrition status can be important in early developmental of the fetus and ensuring successful pregnancy outcomes. Having a balanced and a healthy diet full of fiber, fruits, nuts, vegetables, high in vitamins and minerals and folic acid is very important for women in reproductive age when there is a chance to get pregnant. The only way fetus can receive food, nutrient and oxygen and energy is through the mother and her diet and storage of nutrients; because of this mothers have to have a complete and balanced diet to be able to provide energy and nutrient for themselves and their developing fetus. The key for this is that the mother be educated about nutrient she needs more before and during pregnancy for having a healthy pregnancy. For example pregnant women need more of nutrient such as folic acid during pregnancy to reduce birth defects.

Educating women about nutrition is an important factor in health promotion for the mother and the developing fetus during pregnancy. People who live in suburban and rural areas may not get a proper education regarding nutrition and a complete diet before or during pregnancy or simply some people may not know they are pregnant and this can affect their pregnancy outcome. Inadequate consumption of some of the nutrients especially early in the pregnancy can cause different abnormalities in organ development of a developing fetus or birth defects. For example neural tube defect (NTDs) is one of the most common birth defects that happen in the 3rd week of pregnancy. Neural tube doesn't close completely and there will be an opening in the spinal cord or brain. Women can help prevent this by simply getting educated about it and getting enough folic acid in their diet. Usually most women seek for help and nutrition information and advice when they are aware of their pregnancy but in rural part of countries or less educated women people don't pay attention about before and first weeks of pregnancy(1). Some studies shows that pregnant women and mothers who are breast feeding their child with less education in developing countries don't get their daily recommended allowance based on RDA(2). They should be informed that a diet is not a short term plan but it's a lifestyle change otherwise not having enough knowledge and wrong beliefs can have negative impact on their health and their developing fetus. For example less educated women in Iran belief that when they are pregnant they have to eat big portions of food and everything they crave for and not get any exercise or move otherwise they miscarriage their babies and this belief cause them to eat whatever they want in big portion and stay inactive and this will results in gaining a lot of weight and being unhealthy.

Some studies shows that some nutrients intakes such as vitamin B6, folate, vitamins A and D, iron, phosphorus, calcium, magnesium and zinc was not sufficient in women in Iran (3). This can be a result of not having enough nutritional knowledge. In this study we are going to research on the effects on educating pregnant women in rural part of Iran about nutrition before and during pregnancy and record data on their pregnancy outcome and health. There are some other researches on assessing the knowledge of pregnant women, similar to this in other developing countries.

Proposed methods:

The hypothesis of this study is find out whether or not increasing nutritional education among women in their reproductive age can help improve their awareness of a healthy diet, their health and their birth outcome. The method that is chosen for this study is a quasi-experimental intervention. Interviewing participants and collecting blood and urine samples (anthropometric) and survey are the methods of collecting data in this study. This study will take four years. People are randomly recruited. They should be pregnant women, between 13 to 40 years, women who are trying to get pregnant and women in 1-3 month of their pregnancy in rural part of Iran (Shahr-e Reza) who attended women's centers in 2014. 200 people are chosen randomly. A larger sample is preferred for this study in case some people drop out of the study or don't want to participate this way we will have enough participant. All women can participate in this study and no one will get excluded because of a disease. Each woman will be interviewed by an expert with a same questionnaire and they have to answer all questions. The questions are written by experts in nutrition such as RDs and MDs. Questions will include their

age, blood groups, occupation, how far in pregnancy they are, their level of understanding of nutrition and macronutrients and micronutrients. Blood sample and urine sample are collected before starting the study, during and at the end. Questions about having a history of a disease such as diabetes, CVD, HTN and cancer are collected as well as family history regarding any disease. There will also be a survey to evaluate their nutritional knowledge before the study starts and after it's done. When they are done by the questionnaire they will be evaluated for their level of education and knowledge on nutrition. When they are done by that they will receive an information booklet about foods and nutrients they should eat, not eat or eat more before and during pregnancy. There will be classrooms of maximum 6 people and RD's will explain everything to them and if they need further consultation, RDs will give one on one consultation and give each person a brief and detailed information every 3 weeks. Meanwhile since it is a long study we should keep the participant interested enough to participate till the end of study and each time they will attend the classes they will receive a goody bag filled with dippers and baby powder. Data will be put in a table (table1).

Table 1.Characteristics of women in the study

Age group	No. (%)
13-17	C%
18- 20	X%
21-25	Y%
26-35	A%
> 36	B%
Educational levels	No. (%)

Primary School	D%
Diploma	F%
University	K%
Job status	No. (%)
Employee	U%
Housewife	P%

On the second time they come we take another blood and urine sample and we evaluate their knowledge using the questionnaire. Then experts in statistic will go over the previous and recent data and will analyze them. They should look for any changes in their diet, healthy and unhealthy. Any healthy changes will get a score of 5 and any unhealthy changes will get a score of 1, and if there is no change they will get a 2. Data will be listed in a table based on their scores (table 2).

Table 2: questionnaire scores

	Before	After
< 50 no/weak knowledge		
51- 70 moderate knowledge		
70-100 good knowledge		
Mean		
SD		
P value		

- $0.01 < p \leq 0.05$: strong presumption against null hypothesis

Table 3: blood test and BMI before and after the study.

Body mass index (BMI)	No. (%) before	No. (%) after
Under weight		
Normal weight		
Over weight		
Obese		
Blood test	No. (%)	No. (%)
Fasting Blood Sugar		
Hemoglobin (HB)		
Hematocrit (HCT)		
Folic acid		
Vitamin A		
Vitamin D		
Iron		
B6		
Zinc		
magnesium		

There are few limitations to this study. This study is limited by the number of people and selecting participants in general and from urban areas. This area is a small rural area so there are not too many people to enter the study and also they mostly know each other and talk about the study together. Shah-e Reza is at the middle of desert and their agriculture and produces are very different than other part of the country. They may have no access to some

sort of foods and because of that get less of some nutrients. A randomized trial design would have been a better study to reduce selection bias and possible confounders but in a small area is harder to find enough population to assign them randomly. There can be some biased information and wrong data and self-report biased in the questionnaires. More research is needed in a larger sample and urban area where we can compare them. There are more varieties of education level, SES in urban areas. Despite these limitations, the study can show the effect of education in the intervention group in a rural area.

There are no harms on this study since we are simply educating them about nutrition and collecting blood and urine sample. We will explain the purpose of the study, our expectations and duration of the study. We will let them know that they are all receiving same information during consultations. We assure them that all the data are confidential and won't be shared with anyone outside the study. We will make sure to answer all their questions regarding the study and assure to them that there won't be any harm to their health and let them know that they have the right to participate or withdrawal from study anytime they want and at the end they will be given a telephone number of one of the researchers to be able to call anytime they have a question or concern about the study.

Conclusion:

Educating people and promoting health among community is very important. It can increase the quality of life, prevent birth defect and improve health status in the population. The purpose of this study is to show whether or not nutrition and health education can have any positive effect and improvement in health, diet and knowledge of participants. The reason of this was specifically to educate women in reproductive age or pregnant women in Shahr-e

Reza about a healthy diet for that time of their life. If the study shows improvement in the level of pregnant woman's knowledge and health who attended the classes and one on one consultation we can say that our hypothesis is true. Some studies also show that there are more birth defects and perinatal deaths were conducted in poor rural settings where most mothers had no education. (4) Another study that was on consumption of folic acid and reducing birth defects in Iran suggest that "Women in the reproductive age group should be advised about the benefits of folic acid supplementation during maternal health care visits."(5) We can expect to see in this study that nutritional knowledge of less educated women and housewife is weak in rural areas.

Educating less educated, low income, low SES women about nutrition, increasing their knowledge and improving their dietary behaviors is a way to reduce some birth defects in population. Usually people (women) in rural areas eat more organic products which is good but they also consume whole milk, animal fats instead of oil which are high in saturated fat and cholesterol; they are less educated, low income, low SES with more wrong beliefs and traditions and don't have enough knowledge of what they should eat or not to eat and because of these they are in more needs of health and nutrition educations to improve their health and possible developing fetus.

This study has national benefits and benefits to the health care. According to NIH "In the United States, about 1,500 infants are born each year with spina bifida(NTD)"(6). By considering the

fact that about 1500 infant are born with a birth defect per year, this project can provide significant health benefits by informing pregnant women about a complete nutritional status before and early pregnancy. This project will enhance existing strengths of the university in nutrition and medical department and provides a novel direction of research which leads to being frontier in preventing birth defects.

Internet references