

PREVALENCE, RISK FACTORS, NUTRITIONAL TREATMENT, AND DIET MODIFICATION OF PROTEIN CALORIE MALNUTRITION IN PAKISTANI PREGNANT WOMEN

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ABSTRACT

Background:

Fundamentally, Protein Calorie Malnutrition is the word that is related to the nutrients and refers to a range of disorders of starvation and undernutrition that demands insufficiency of other nutrients such as vitamins and minerals in addition to protein and calories providing carbohydrates. Maternal morbidity and mortality are significant causes of malnutrition. In inclusion, adverse birth outcomes are a major risk factor for malnutrition among women. To address the community issue of malnutrition, current research aims to find a relationship between awareness of malnutrition and its impact on pregnant females in Pakistan.

Methods:

The design of the research was a critical review of 15 articles. In this review, descriptive cross-sectional studies and case-control studies were done in different articles. The articles were searched using Google Scholar, PubMed, Nutritional Generals, Medical Health Science Generals, Elsevier, Science direct and science hub websites, and World Health Organization. Articles were searched through keywords used for searching the literature. Several studies support the deficiency of protein-calorie malnutrition among pregnant women and its nutritional therapy and diet modification.

Results:

We found significant results to treat deficiency of protein-calorie malnutrition among pregnant women with diet modification, nutritional therapy, and physical activity. Consumption of healthy nutrition for lactating mothers is a way to care ideal health for themselves and their infants. This is much more effective for Pakistani women.

Conclusion

During pregnancy suggested dietary pattern plays a significant role in improving parental and child health for maintaining a healthy body. Sociodemographic, dietary routine, and pregnancy-associated issues are significantly related undernourishment of pregnant women. Supplementation of iron expressively reduces the risk of malnutrition among pregnant women during pregnancy.

Keywords

PEM (Protein energy malnutrition), Deficiency of PEM in pregnant woman's, prevalence, risk factors, nutritional therapy, diet modifications, malnutrition, undernutrition.

INTRODUCTION

Malnutrition is a serious disorder in which a person does not consume the right amount of nutrients or in large amounts, inadequately, or in an anxious way. It means poor nutrition. Two types of malnutrition are undernutrition and over nutrition. Maintaining growth and development of the body is necessary for over nutrition, whereas undernutrition is the deficiency of calories and protein¹. Undernutrition refers to not getting sufficient nutrients, whereas overnutrition rises to get more nutrients. Becoming obese can have related consequences to overeating. If undernutrition occurs, it causes long-term physical and intellectual difficulties during pregnancy. Experience functional and psychological changes occur when a person's nutritional reserves are nearly exhausted through malnutrition around 60% of people reach middle age². Malnutrition that poses a life-threatening risk, also known as a shortage of food, can manifest as short stature, a thin physique, low energy, and inflammation in the legs and abdomen. People are typically formal, and infections are fairly frequent. This is commonly

associated with poverty and high food expenses³. Protein-Calorie Malnutrition refers to a dietary position in which reduced accessibility of nutrients leads to variations in body composition and function⁴. Pregnancy is one of the most nutritionally disturbing ranges in a woman's life. Most essential dietary consumption throughout pregnancy is life-threatening to supply the nutritional status of every mother and fetus^{5,6}. This also reduces adverse pregnancy and birth outcomes, such as hypertensive disorders of pregnancy, preterm birth, and low birth weight^{7,8}. Protein-energy starvation and insufficiencies of micronutrients, such as iron, folate, calcium, vitamin D, and vitamin are estimated to be high and the main nutritional difficulties that obstructed pregnant women⁹. During pregnancy, the food of the mother is more essential. Because the health of the mother and as well as the health of the child likewise rely upon the meal that a mother intake. In place of a healthy pregnancy, more nutrients are necessary for the mother and the developing child¹⁰. In addition, underfeeding among women is a core risk factor for adverse birth outcomes. Its level and values are highly dominant in developing countries^{11,12}. Universal, one-third of

the total population is bare to malnourishment¹³. The dietary status of reproductive-age women in Pakistan is poor, with 14 % existence underweight (BMI < 18.5) and 42 % facing Fe deficiency anemia¹³.

The deficiency of protein calories has an analytical effect on pregnancy for in this condition body demands more nutrients. Improvement and growth of fetus depend upon energy-rich healthier food. When mothers take this food that has a reduced amount of healthy nutrients, then malnutrition happens. Malnutrition is the lack of nutrients and energy in our bodies so they suffer from that difficulty. It causes many opposite effects on the fitness of mothers¹⁴. It results in a decrease in the volume of mother milk. The pregnant woman suffers tiredness and dizziness, so she never continues her routine. Malnutrition not only causes infants low birth weight, but it may also result in the premature birth of the fetus, miscarriage, or abortion it also causes birth defects. The fetus may suffer from intellectual incapacities, some respiratory complications, and circulation complications¹⁵.

It is an unavoidable problem that women lack access to proper nutrition everywhere in the world. Whatever the situation, each country has a different consultant and character. In Pakistan, male family members rule women's lives in every way, deny them access to financial resources, and treat them as second-class citizens¹⁶. Pakistani women lead to health problems. The majority of them suffer from malnutrition as a result of their illiteracy, inability of understanding the value of nutrition in their life, early marriage, substandard housing, high maternal mortality, and severe anaemia¹⁷. Around 28,000 women die

in Pakistan, Every year. Facing problems during pregnancy and labor is conceivable. Due to Pakistan's high fertility rate, half of the women have less than three children. They are unable to pay for it. It is conceivable to avoid becoming pregnant after the age of 35¹⁸.

According to research conducted in Pakistan, pregnant women's knowledge, attitudes, and practices on dietary factors and micronutrient intake have been mostly estimated using a quantitative methodology. These multiple studies would include information about the factors like maternal age, income, location, parental status, education level, women's decision-making, drug abuse, source of water, restroom ownership, family size and food choices, the quantity of food, nutrition counseling, family planning, pregnancy intention, gestational age, and any diseases. Even though contradictory results were found, iron supplementation is possibly a contributing cause of malnutrition during pregnancy¹⁹. Consequently, the protein-energy deficiency was done to estimate the pooled burden of prevalence and risk factors of malnutrition among pregnant women in Pakistan and the purpose of the study is to find the requirement to provide updated data on the prevalence, awareness, treatment, and control of protein-energy deficiency in pregnant women in Pakistan.

Diet and nutrition have been largely investigated as risk factors for major protein deficiency diseases in Pakistan like gestational anaemia, hypertensive disorder, low blood pressure, slow heart rate, increased risk of bone fractures, diabetes, Gestational diabetes mellitus, obesity, fetal death during pregnancy or delivery. It also

affects the growth of an immune system of the baby^{20,21}.

i. Nutritional Therapy

For the treatment of Protein calorie deficiency in Pakistan, we need to done nutritional therapy for the patients. Nutritional therapy can support patients to get control on the deficiency of protein calories. Nutritional therapy give education and support to help patients to adopt a healthy and hygienic eating pattern, which plays important role in maintaining and managing or controlling deficiencies of protein calories and its complications²⁰.

ii. Diet Modification

Diet modifications are the key to maintaining the body and being safe from every disease. The role of diet modification in determining a deficiency of protein calories in pregnant women is settled down or come in the normal range. A diet with a balanced consumption of all the macronutrients provides the best opportunity for a healthy pregnancy and the desired maternal outcomes. This diet is recommended or modified for protein-calorie deficiency in pregnancy²². For all women of reproductive age, supplementing a balanced diet with multivitamin and mineral supplements containing optimal quantities of folic acid and other macronutrients is recommended. With diet modification, there is a need to change our lifestyle also in Pakistan which can cause our body to become healthy. Daily routine changes require for lifestyle changes by using a proper diet, reducing or completely stopping alcohol and

smoking, avoiding tobacco, doing exercise regularly, and proper sleep²³.

METHODOLOGY

In different articles, they have done descriptive cross-sectional and case-control studies.

2.1) Search Strategy:

A very thorough and complete search strategy was developed by the authors. In this study design used was a critical review of 10 to 15 articles that were effectively searched by using Google Scholar, PubMed, Nutritional Generals, Medical Health Science Generals, Elsevier, science direct and science hub websites, and World Health Organization from almost 24 most appropriate references are downloaded by using the software Mendeley and the articles were searched through keywords used for searching literature malnutrition, protein-calorie malnutrition deficiency, protein deficiency, pregnant women in Pakistan and nutritional status. The endpoint included in this review is protein-calorie malnutrition deficiency among pregnant patient and their diet modification. If patients are not deficient in protein calories but the symptoms are related to protein-calorie deficient patients these persons were excluded.

2.2) Study Selection:

From the dataset to manage and remove the duplicate reference. Titles and abstracts for eligibility by using predefined selection criteria. All references were included by using Mendeley citation manager software and reference type using IEEE.

2.3) Quality Assessment:

For study quality, all included texts were critically checked. We assessed 1) study participation 2) study weaknesses 3) predictive factor measurement 4) result measurement 5) study error 6) statistical analysis and reporting. Articles with a high risk of bias or changes were excluded.

2.4) Data Extraction:

In data extraction, from each article, we extract the following characters: design of study, participant size, age, gender, treatment type, and diet modification. Studies were excluded if this information and other additional information could not be provided.

2.5) Statistical Analysis:

Data were analyzed by different methods like using STATA 14 or using SPSS version 14.0. To identify factors, the odds ratio (OR) with a 95% confidence interval (CI) was also properly considered^{5,24}. In data analysis, they must analyze the patient's age, sex, socioeconomic status, BMI, food intake, exercise routine, protein-calorie malnutrition deficiency, daily routine and habits, diet modifications after diagnosis, etc.

This review article was all done by different authors. Those authors are overall responsible for the conduct and design of the study that includes editing of papers and its final contents. In this review, a maximum of the articles which were done in rural communities of Pakistan on the nutritional condition of pregnant women and associated risk factors were included. The women's questionnaire was used to collect data from females, each question in the questionnaire measured the knowledge of awareness about malnutrition in pregnancy¹⁰.

2.6) Funding:

This review article was all done by different authors. Those authors are overall responsible for the conduct and design of the study that includes editing of papers and its final contents.

RESULT AND DISCUSSION

We include almost 10 to 15 articles for study. We read it carefully with full text and include it in our review article. All included studies were scientifically associated with protein-calorie malnutrition deficiency or protein deficiency treated with diet. The deficiency of protein-calorie can be easily controlled by Dietary modifications in daily life.

Many reviews have determined that the contrary labor consequence could be directly correlated with inadequate mother nutritional status. During pregnancy, maternal malnutrition is usually attributed to insufficient dietary or inadequate nutrients at conception¹⁷.

Our analysis has several helpful restrictions. It is challenging to generalize the findings of balanced protein energy supplements in developing countries because the studies were carried out in both advanced and growing nations. We feel it is appropriate to provide balanced protein energy supplementation for pregnant women who are undernourished and other populations who are food insecure. Pregnant women in underdeveloped countries typically consumed diets high in plant-based foods, low in micronutrients, and excessive in macronutrients. Satisfying the desires of the developing fetus pregnant women should eat a variety of foods that provide an adequate amount of each nutrient. Foods high in protein, iron, iodine,

vitamin A, folic acid, zinc, and calcium are just a few examples¹².

According to the current review, malnutrition during pregnancy was absolutely interrelated with maternal education. Pregnant women with less education had a higher risk of malnutrition than women with appropriate education. The need for healthy nutrition for both the fetus and the mother was less likely to be understood by uneducated women. They are also at risk for reduced nutritional exercise and reduced social variation. The potential description is having healthy and undesirable food are the central necessities to get all vital nutrients. Malnutrition is more prevalent in pregnant women who had fewer than three meals a day than those who had three or more. Unplanned pregnancies increased the risk of undernutrition in women more than planned pregnancies did²⁴. Women can get healthy body and also enjoy their pregnancy without major health issues through proper awareness about malnutritional consequences. With such information risk of mortality, still birth and C-sections could be avoided¹⁰.

For reproductive-age women, it is advised to supplement a balanced diet with multivitamin and mineral supplements that contain high concentrations of folic acid as well as other macronutrients including carbohydrates, fat, and protein. With diet modification, there is a need to change our lifestyle also in Pakistan which can cause our body to become healthy²³.

CONCLUSION

Keeping a healthy, prescribed diet throughout pregnancy substantially enhances the health of both the mother and the unborn child. Dietary

patterns change during pregnancy due to sociodemographic determinants, lifestyle-related factors, and pregnancy-related factors, so it is advised to promote changing eating habits and the creation of more specialized nutrition programs in order to improve the nutritional status of pregnant women.

It is important to understand country-specific dietary patterns that might be connected to the facts described above because dietary arrangements differ between countries and their cultures. However, understanding dietary habits in various populations is essential to developing effective preventative and health-improving methods. Finally, these findings should be included in educational initiatives and treatments that emphasize healthy eating advice for pregnant mothers.

RECOMMENDATIONS/SUGGESTIONS

Counseling on maintaining a healthy diet and exercising regularly, improving daily calorie and protein consumption through nutrition education in populations that are undernourished. Supplementing with a balanced diet of energy, calorie, and protein in communities that are undernourished. Reducing daily caffeine intake when pregnant. Oral iron supplements intake on daily basis. Alternating oral iron & folic acid supplementation. Supplementation with calcium, vitamin A, zinc, and many micronutrients on a daily basis. Screening for and management of medical and health conditions, including diabetes and anaemia, among others. Women who are nutritionally at-risk include those who are anaemic, malnourished, overweight, or who are aware of inappropriate weight gain. These

women need special attention, care, and support. The food groups with the highest amounts are: Whole grains, fruits, vegetables, protein, dairy, and fats.

Whole grains:

Products created from whole grains, which contain seed and fiber, are made from the entire grain. Refined grains, in comparison, only retain a portion of the grain. Foods made from whole grains provide excellent health benefits. The following benefits of whole grain eating include protection from a variety of health issues. A poor risk of heart disease, minor risk of cardiovascular disease, lesser total cancer risk, and reduced all-cause mortality.

Fruits and Vegetables:

Fruits & Vegetables are rich in vitamins, minerals and fiber. The easiest method to ensure that you're getting all the vitamins and minerals your body requires are to choose a variety of bright fruits and veggies. Weight loss programs can benefit from a diet rich in fruits and vegetables. Every fruit and vegetable has health advantages.

Protein:

Every cell in the body requires macronutrient protein, which is vital. It supports the synthesis and restoration of bodily tissues like skin, hair, muscle, and bone as well as cells. In addition, protein is essential for hormones, enzymes, immunological responses, and blood coagulation. Numerous foodstuffs high in protein are also rich in minerals including iron, magnesium, and zinc. Both plant-based and animal-based foods contain protein. Meat, fish, and eggs are all derived from animals. Those who

consume a vegan or vegetarian diet can find protein choices in beans, almonds, and soy.

Dairy:

Milk and milk products can be excellent calcium sources. A diet high in calcium promotes strong bones and teeth. The dairy food category includes:

Foods made from milk that maintain their calcium content include yogurt, cheese, calcium-fortified soymilk, and other soy beverages. Choosing low-fat or fat-free dairy products, like milk and yogurt, has benefits for heart health.

Fats:

An effective diet must have fats. The nervous system, energy, the absorption of several vitamins, and the health of the skin, hair, and joints all depend on fats.

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