Original Research Article

A Comparative Assessment on Dietary Habits of Pregnant Women in Urban and Rural Areas

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Abstract

Background: Prenatal nutrition that is nutrient-rich is linked to better fetal health, more suitable birth weights, and higher rates of maternal and baby survival. Good dietary habits during pregnancy play a significant role in determining the long-term nutritional status of both the mother and the foetus. To determine the likelihood of nutritional deficiency and to provide pregnant women in both urban and rural locations with suitable dietary advice, poor dietary intakes during pregnancy can result in inadequate nutritional status and have an additional impact on the health of the mother and the unborn child.

Methods: The study was conducted in the Department of Obstetrics and Gynaecology unit in Chennai. The investigation comprised 100 pregnant women in both urban and rural areas. The patients were assessed using anthropometric and dietary methods, including a Food Frequency Questionnaire and 24-hour recall.

Conclusion: The dietary habits of pregnant women in urban areas show higher nutrient intakes than their rural counterparts. The dietary pattern of pregnant women in urban areas is better than that of rural areas due to their healthier food choices. A balanced diet can help a pregnant woman improve maternal health and enjoy a safe pregnancy for both herself and her foetus.

Keywords: Pregnancy, dietary pattern, prenatal nutrition, nutritional status, anthropometric, maternal and child health.

Introduction

Poor dietary intakes can lead to insufficient nutrition status during pregnancy and have additional effects on the mother's and the unborn child's health. Inadequate nutritional status of pregnant women has been reported to be associated with adverse birth outcomes, impaired physical and cognitive development in childhood, and nutrition-related metabolic disorders. Low intake of folate during the periconceptional period is found to

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increase the risk of congenital abnormalities such as neural tube defects and congenital heart defects.[3] There is a rise in haemoglobin, red blood cells, overall plasma volume, but haemoglobin levels start to fall from 13 to 11 gram/100ML.[1] Haemodilution is very much common during pregnancy mainly because of the increased plasma volume. Anaemia leads to: Increase in mother's morbidity and death. Intra-uterine growth retardation (IUGR) When haemoglobin concentration drops down to 8 g/decilitre, it leads to low-birth-weight babies, probably due to raise in premature births. Maternal malnutrition during pregnancy increase the risk of gestational anaemia, obstructed labour, postpartum haemorrhage, preeclampsia, miscarriages, and foetal deaths during pregnancy, preterm delivery, and maternal mortality.[8] Maintaining good nutrition and a healthy diet during pregnancy is essential for the health of both the mother and her child. An appropriately fed woman has various nutrient reserves so she can meet the rising foetal requirements without endangering her own wellbeing. The well-nourished infants in the womb have excellent chance of have a better mental and bodily health status.

Review of Literature:

Healthy Pregnant Women dietary interventions: Tools to Promote a Healthy Antenatal Dietary Intake. Yvette H. Beulen, et.al., (2016)

The development and long-term health of the kids depend on the diet of the mother. Prenatal care offers special chances for nutrition communication, and resources or tools for health promotion (such as rules, instruments, or packages) may be able to help people get beyond numerous concomitant hurdles. In order to establish what makes these tools practical and useful for these women and their healthcare providers, they did a comprehensive literature review to map the tools that are now available for the promotion of a healthy dietary intake in pregnant women in Western countries who are in good health. There were 17 studies that evaluated tools with different delivery methods, content, and providers. Nearly all research (n = 14) adjusted the information to varied degrees based on the unique characteristics and lifestyle behaviours of the participants, and nine studies used several, complimentary delivery methods.[15]

Evaluation of dietary habits during pregnancy

Nihan Şenol Eren, et.al., (2015)

A specific time when a woman's nutritional needs are elevated and mindful nutritional care is necessary during pregnancy. During this stage of life, inadequate and unbalanced nutrition leads to significant conditions that damage the mother and child. The purpose of this study was to assess how nutrition and eating behaviours change during pregnancy. In this descriptive study, pregnant patients at the Obstetrics and Gynaecology Department's Pregnancy Outpatient Clinic at Ankara Training and Research Hospital completed a voluntary questionnaire. Pregnant women were questioned about general information, pregnancy-related information, opinions and knowledge regarding nursing, dietary habits, and meal frequency. In the study, 314 questionnaires were evaluated. The consumption of fruits experienced the highest increase at 51%, followed closely by vegetables at 40.8%. Conversely, tea intake declined by 26.1%, and red meat consumption decreased by 21% during pregnancy.[14]

Materials and Methods

The study is a cross-sectional study conducted in Chennai over a period of six months. The participants included pregnant women who were willing and had no other co-morbidities. Exclusions comprised lactating women and pregnant women experiencing pregnancy-related complications. Informed written consent was obtained from each participant, presented in their preferred language. A total of 100 participants were enrolled from the Obstetrics and Gynaecology unit in both rural and urban primary health centres in Chennai.

The questionnaire gathered demographic data from the subjects, including age, residential area, etc., anthropometric data such as height (cm), weight (kg), pre-pregnancy body weight, and dietary information, which included a Food Frequency Questionnaire and 24-hour recall assessed in both rural and urban areas. The study design received approval from the ethical committee of DR.M.G.R Educational and Research Institute.

Statistical analysis using the chi-squared test method was employed to determine significant differences in residential area, meal timing, meal pattern, employment status, and educational status. Dietary intake was assessed using a food frequency questionnaire and 24-hour recall. The food frequency questionnaire revealed information on portion sizes, a list of foods consumed, and the frequency of consumption to identify healthy food choices among rural and urban areas. Analysis of the 24-hour recall revealed the total calorie, protein, fat, and carbohydrate intake among the participants.

Results and Discussion

According to Panwar and Punia's research in 1998, there is a concerning issue of under consumption of fruits, vegetables, and dried fruits, which are excellent sources of essential vitamins and minerals. This deficiency is also reflected in low mean intakes of iron and folic acid, as indicated by Vaus et al. in 2006 and the WHO Collaborative Study in 1995. The Micronutrient deficiencies such as iron, folic acid and Vitamin C that play an important role in the pathophysiology of nutritional anaemia during pregnancy have various adverse effects on both expectant mothers and their foetuses[19]. The study questionnaire reveals a disparity in dietary habits between urban and rural pregnant women. Urban women tend to consume higher amounts of dried fruits and nuts compared to their rural counterparts. Similarly, their daily intake of green leafy vegetables, fruits, dried fruits, and nuts is substantially higher than that of rural women. However, it is concerning to note that a significant portion of pregnant women in the study relied heavily on highly processed foods, which had detrimental effects on the health of their unborn children. Therefore, emphasizing moderation in salt, sugar, and fat consumption and promoting home-cooked meals should be the cornerstone of health education for expectant mothers in terms of healthy eating [18].

Additionally, the study indicates that daily intake of fast foods, meat and poultry, cakes, and pastries is higher among rural pregnant women compared to those residing in urban areas. A notable finding is that rural pregnant women tend to consume more caffeinated beverages, which is discouraged during pregnancy due to its potential to lead to elevated glucose levels and the harmful ingredients present in some drinks. The Polish Association identifies saccharin as the most hazardous sweet chemical because of its potential impact on the developing foetus[18]. In contrast, urban pregnant women prefer fresh juices over caffeinated beverages. Regardless of the location, there is a concerning trend of fat consumption exceeding recommended upper limits. Both urban and rural areas exhibit noticeable deficiencies in the dietary intake of most micronutrients, with rural regions showing a more pronounced deficiency. It is worth noting that the 2002 NNHS of pregnant women does not comprehensively reflect the trend of higher intakes among urban mothers.

The study's findings further reveal that protein intake is deficient in rural areas, with a significant statistical difference (P-value=0.000<0.005), while urbanites consume a substantial amount of protein, also with a significant statistical difference (P-value=0.000<0.005). Moreover, fat intake is considerably higher in urban areas compared to rural areas, again with a significant statistical difference (P-value=0.000<0.005). However, when considering the overall dietary pattern, pregnant women in urban areas make healthier food choices, indicating a more balanced and nutritious diet compared to their rural counterparts.

Conclusion

In conclusion, it is imperative to maintain a proper diet throughout the entire pregnancy to ensure a healthy pregnancy and, ultimately, the birth of a healthy child. The dietary habits of the pregnant women in the study fell short of the ideal, with urban women demonstrating a more nutrient-rich intake compared to their rural counterparts. It is crucial to recognize that the nutrition a woman consumes before and during pregnancy has a profound impact not only on the growth and development of her unborn child but also on the risk of congenital deformities and mental impairments. Pregnancy-related conditions, such as gestational diabetes mellitus (GDM), preterm delivery, obesity-related complications, and, in some cultural contexts, preeclampsia and gestational hypertension, are

linked to a decreased risk when maintaining a healthy diet before and during pregnancy. While pregnant women in urban areas displayed healthier nutrient intakes than those in rural areas, they still exhibited deficiencies in various micronutrients. To achieve a balanced diet, it is advisable to prioritize non-fried foods over fried options, replace high-fat meats with lean alternatives, increase seafood consumption, incorporate organ meats, particularly liver, into the diet, ensure an adequate intake of eggs, whole grains, colorful fruits and vegetables, and low-fat dairy products. A well-rounded diet is achieved when it encompasses an ample supply of pulses, certain seeds, or nuts.

In summary dietary diversity should be promoted as a primary intervention to enhance the consumption of macro- and micronutrients among pregnant women. Women are encouraged to reduce their consumption of cooking oil, a significant source of dietary fat, while increasing their intake of nutrient-dense foods. The diverse range of culturally acceptable food options available provides a significant advantage in designing a diet that best meets the nutritional needs of pregnant women. Ideally, the focus should be on improving nutrition even before conception. Bridging the nutrient gap can be substantially achieved by adopting some of the suggested dietary changes, with a particular emphasis on nutrition education, especially for pregnant women residing in rural areas. To address the increased requirements for both micronutrients and macronutrients and to promote the overall health of both mothers and children, it is essential to maintain healthy eating patterns throughout pregnancy and lactation. Health education on proper nutrition for expectant mothers and those planning pregnancies must be conducted, with a specific focus on women from rural areas.

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Conflict of interest: Nil

References

1. Parrettini S, Caroli A, Torlone E. Nutrition and metabolic adaptations in physiological and complicated pregnancy: Focus on obesity and gestational diabetes. Front Endocrinology.2020;11. http://dx.doi.org/10.3389/fendo.2020.611929
2. Ak B, Bagchi K. Nutritional adaptation in pregnancy. Journal of Indian Med Association. 1962;38. https://pubmed.ncbi.nlm.nih.gov/13871548/
3. Allen LH. Anemia and iron deficiency: effects on pregnancy outcome. American Journal of Clinical Nutrition. 2000;71(5):1280S-1284S. http://dx.doi.org/10.1093/ajcn/71.5.1280s
4. Scholl TO, Reilly T. Anemia, iron and pregnancy outcome. The Journal of Nutrition. 2000; 130(2):443S-447S. https://pubmed.ncbi.nlm.nih.gov/10721924/
5. Mullie P, Clarys P, Hulens M, Vansant G. Dietary patterns and socioeconomic position. European Journal of Clinical Nutrition.2010;64(3):231–8. https://pubmed.ncbi.nlm.nih.gov/20087378/
6. Boylan S, Lallukka T, Lahelma E, Pikhart H, Malyutina S, Pajak A, et al. Socio-economic circumstances and food habits in Eastern, Central and Western European populations. Public Health Nutrition.2011;14(4):678–87. http://dx.doi.org/10.1017/s1368980010002570
7. Książek P, Kozłowiec J, Kozłowiec M. The nutritional knowledge of pregnant women. ZdrowPubliczne. 2015;124(4):191–4. http://dx.doi.org/10.1515/pjph-2015-0006
8. Committee opinion no. 462: Moderate caffeine consumption during pregnancy. Obstetrics&Gynecology.2010;116(2):467–8. http://dx.doi.org/10.1097/aog.0b013e3181eeb2a1
9. Howards PP, Hertz-Picciotto I, Bech BH, Nohr EA, Andersen A-MN, Poole C, et al. Spontaneous abortion and a diet drug containing caffeine and ephedrine: A study within the danish national birth cohort. PLoS One. 2012;7(11):e50372. http://dx.doi.org/10.1371/journal.pone.0050372
10. Signorello LB, McLaughlin JK. Caffeine and miscarriage: case closed? American Journal of Obstetrics&Gynecology.2008;199(5):e14-5. http://dx.doi.org/10.1016/j.ajog.2008.05.033
11. James JE. Maternal caffeine consumption and pregnancy outcomes: a narrative review with implications for advice to mothers and mothers-to-be. BMJ Evidence Based Medicine. 2021;26(3):114–5. https://ebm.bmj.com/content/26/3/114

12. Morgan S, Koren G, Bozzo P. Is caffeine consumption safe during pregnancy? Can Fam Physician. 2013;59(4):361–2.

13. Coriale G, Fiorentino D, Lauro D, Marchitelli F, Scalese R, Fiore B. Foetal Alcohol Spectrum Disorder (FASD): neurobehavioral profile, indications for diagnosis and treatment. Rivista di Psichiatria. 2013;

14. Şenol Eren N, Şencan İ, Aksoy H, Koç EM, Kasım İ, Kahveci R, et al. Evaluation of dietary habits during pregnancy. Turk J Obstet Gynecol. 2015;12(2):89–95. http://dx.doi.org/10.4274/tjod.79923

15. Beulen YH, Super S, de Vries JHM, Koelen MA, Feskens EJM, Wagemakers A. Dietary interventions for healthy pregnant women: A systematic review of tools to promote a healthy antenataldietaryintake. Nutrients.2020;12(7):1981.https://pubmed.ncbi.nlm.nih.gov/32635332/

16. Schieve L. Prepregnancy body mass index and pregnancy weight gain: associations with preterm delivery. Obstetrics &Gynecology. 2000;96(2):194–200. https://pubmed.ncbi.nlm.nih.gov/10908762/

17. Wojtyła A, Bojar I, Boyle P, Zatoński W, Marcinkowski JT, Biliński P. Nutritional behaviours among pregnant women from rural and urban environments in Poland. Annals of Agricultural and Environmental Medicine. 2011;18(1):169–74. https://pubmed.ncbi.nlm.nih.gov/21736282/

18. Rohatgi KW, Tinius RA, Cade WT, Steele EM, Cahill AG, Parra DC. Relationships between consumption of ultra-processed foods, gestational weight gain and neonatal outcomes in a sample of US pregnant women. PeerJ. 2017;5(e4091):e4091. https://pubmed.ncbi.nlm.nih.gov/29230355/

19. Gautam VP, Taneja DK, Sharma N, Gupta VK, Ingle GK. Dietary aspects of pregnant women in rural areas of Northern India. Matern Child Nutrition. 2008;4(2):86–94. http://dx.doi.org/10.1111/j.1740-8709.2007.00131.x