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ROLE OF NUTRITION IN MATERNAL HEALTH

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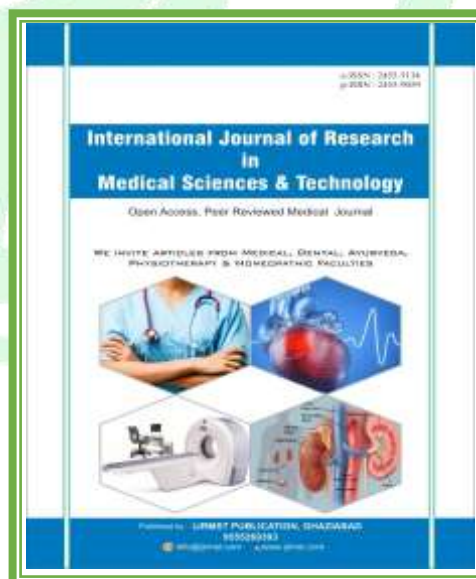Department of OBG, Himalayan University, Arunachal Pradesh, India

ABSTRACT

More than a third of all families in India (34 percent) had just one or fewer meals the day before, according to a report from the Global Standing Committee on Nutrition. For this reason, the researchers conducted this study in an effort to learn more about how the dietary habits of pregnant women and their babies, as well as the health consequences associated with childbirth, are affected by the socioeconomic and cultural environments in which they live. The University of Medical Sciences Ethics Committee has accepted the research plan. Informed consent forms and waivers of responsibility were signed by each participant. There were 453 pregnant women remaining, of whom 425 had their BMI recorded in their medical records. Together, the data demonstrate that the wealth index of families has no impact on children's nutritional health unless the mothers have received formal education and are knowledgeable of how to utilise the available resources to give appropriate and diversified meals to all children.

Keywords: *Nutrition, Maternal, health, pregnancy-related health*

INTRODUCTION

Over the years, efforts have been made to reduce maternal under-nutrition and its negative impact on the health of children. Women of reproductive age (WRA) are still being affected by the illness, even though it is gaining more attention than ever before In women between the ages of 20 and 49, underweight reduced somewhat from around 15% to 13%, while overweight grew from about 23.3% to 34.3%. Poor nations have a greater rate of underweight people than rich ones, which is 5 to 10 percentage points. There are an estimated 12 million pregnant and nursing women who are underweight in India. Many women and small children had to trek as far as 15 kilometres in search of water and food, and in India, 34 percent of all families had one or fewer meals the previous day. Maternal nutrition has been linked to better birth outcomes in animal studies, but human studies have been more difficult to interpret because of a variety of confounding variables, such as study population, genetics, socioeconomic status (SES), timing, and assessment methods that can't be compared across studies.

LITERATURE REVIEW

PROBIR KUMAR GHOSH ET.AL (2021) To understand how poverty in the home impacts children's nutrition, we looked at the characteristics of the mothers themselves. More over half of the 7173 children under the age of five (48.2%) were undernourished. Poorer households (adjusted prevalence ratio [aPR] = 1.37),

women who had a history of antenatal care (ANC) visits, better education moms (aPR = 1.54), and mothers who were underweight were less likely to have a child who was undernourished than those who were healthy (aPR = 1.13). Risk of undernutrition (37.1%) was linked to family wealth, with 55 percent of this being due to variables related to the mother's health, including 20 percent due to schooling, 21 percent due to ANC visits, and 14 percent due to maternal nutritional status. The results of our research show that the influence of family income on children's nutrition is moderated by greater levels of maternal education, at least four ANC visits, and excellent nutritional health in mothers.

SADIQ BHANBHRO ET.AL (2020) It was decided to carry out this research in order to learn more about how the lifestyles of pregnant women, their partners, and the health care professionals in this unique community influence their nutritional needs and the health outcomes they experience throughout their pregnancies. Researchers from the University of Andalas collaborated with Padang researchers to conduct this study in a suburban section of the city. With the help of a team of researchers and a total of 19 interviews (n = 19), we gathered qualitative, semi-structured data from participants. All relevant data were collected and transcribed before being translated into English before being analysed in the local language with informed consent. 'Matrilineality and women's responsibilities in Minangkabau society'; 'culture and supportive attitudes towards pregnant women'; 'dietary habits, attitude, food availability, and limited access to nutritional information' were some of the major subjects that came from this data. The individuals' diets were found to be healthy, with frequent intake of fruits and vegetables. However, the moms and families who took part in the research continued to face significant obstacles due to concerns such as food insecurity, cultural taboos, and a lack of access to proper nutrition knowledge. Minangkabau matrilineal culture seems to support women's self-determination and reproductive health, according to this study's findings. As a result, it's easier to work together on generating culturally appropriate, long-term solutions that draw on the expertise of local experts while also leveraging the support of friends, family, and the broader community.

KOLETZKO B. ET.AL (2019) Even in the last decade of life, early nutrition and lifestyle may have long-term repercussions on health and sickness (developmental or metabolic programming). Pregnancy,

infancy, and early childhood nutrition experts from the European Union (EU) pooled scientific knowledge and existing standards to establish consensus recommendations on nutrition and lifestyle. Reviewers examined published dietary guidelines, standards, and recommendations for long-term health effects. Additionally, the effects of pregnancy and the early years of childhood on obesity, overweight, and body composition were examined. More than 30 more stakeholders' experiences were gathered by a committee of specialists to develop consensus suggestions. However, despite the overwhelming evidence showing that early life lifestyle, food, and growth patterns have important effects on later health and disease risk, most current guidelines for pregnant women and young children ignore long-term health effects of early nutrition. This is especially true for obese women and children. Pregnancy, nursing, infancy, and toddlerhood are all critical periods in the development of a child's health, so we've updated our recommendations for optimum diet. In order to prevent obesity and other non-communicable diseases, these recommendations are geared at European mothers and children who can afford them.

ELIZABETH A. SYMINGTON ET.AL (2018) To have a good pregnancy,

pregnant women need to eat a nutritious diet. For pregnant women in urban South Africa, little is known about their dietary habits and nutritional status. Because of this, the NuPED study was launched in metropolitan South Africa to investigate the early nutrition-related exposures that are predictive of early childhood development. Consequently This research's intended cohort study has the following objectives: Pregnant women's nutritional and dietary intake is being studied to see whether it affects their babies' health and well-being, as well as the health of their mothers. A total of 250 pregnant women (less than 18 weeks' gestation) from basic healthcare clinics in Johannesburg are being recruited for the study. Intake and nutritional status (with an emphasis on micronutrients and fatty acids) are measured in the pregnant participants at approximately weeks 18, 22 and 36. Additionally, a woman's anthropometrics and blood pressure will be checked throughout her pregnancy, as will her prenatal depression and immune system as well as her risk of developing complications such as gestational diabetes and allergies.

KATHARINA DA SILVA LOPES ET.AL (2017) Birth weight less than 2500 g (LBW) has been linked to infant mortality and early illness in children.

LBW may be caused by a variety of circumstances, including a mother's poor nutritional state. Nutrition-specific and nutrition-sensitive interventions to reduce the risk of low birth weight (LBW) and its components: preterm birth (PTB) and small-forgestational age (SFA) were evaluated in a thorough review of the data (SGA). MEDLINE, EMBASE, CINAHL, and the Cochrane Database of Systematic Reviews were the sources we turned to find pertinent publications (September 2015). Dietary interventions to reduce LBW and its components were included in the overview review, which comprised systematic reviews of randomised controlled trials. Overall, we looked at 23, with 34 comparisons per review. Among the seventeen studies, only one had a methodological flaw, while the other six were of high quality. Supplementation with vitamin A, low-dose calcium supplementation, zinc supplementation, nutritional education, and the use of prophylactic antimalarials were all associated with a decreased risk of low birth weight. High protein supplementation increased the risk of SGA, but MMN and a protein/energy balance lowered it. The prevalence of pulmonary tuberculosis was lowered by calcium, zinc, or long-chain omega-3 supplementation, as well as nutritional instruction (PTB). LBW

incidence must be reduced by 30% globally by 2025, according to the WHO's aim, which will need further study into the evidence for nutrition-specific and nutrition-sensitive interventions.

METHODOLOGY

They used data from the DHS (Demographic and Health Survey). Each child's household and mother characteristics are included in the data collection, which covers 2.5 million children in India. A total of 1340 variables were examined, with 219 being deemed significant to the research. Predictive mean matching substitutes missing values based on the distribution of each data point in the collection. This method is used to incorporate missing values. Data from children ages 2 to 5 years old comprised 1,40,471 of the final 1,40,471 data points.

Indicators of nutritional adequacy status are provided by the DDS. Consumption of diverse foods or food categories is considered to be an indicator of dietary diversity. A person's DDS was tallied by adding up how many times they'd eaten each of a certain food type in the previous 24 hours.

This cross-sectional study used convening sampling. Only 500 of the 560 pregnant women in India who were contacted by the

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study's five participating healthcare facilities agreed to take part. The sample size was calculated to have an 80 percent power using a 0.05 level of significance. Between May 2018 and December 2019, there was a recruiting period. Medical Sciences' ethics committee approved the study. A written informed consent form was signed by all participants. The present study included 453 pregnant women, of whom 425 had their BMI documented in their medical records.

Data collection

Gender and age were elicited from the participants through the survey. The income of a family was calculated using nine different indexes, including the value of the family house, car, washer/dryer, television, dishwasher, side-by-side refrigerator, rug, laptop computer, and microwave. The index of nine assets possessed determined the income level. Those in the upper echelons of income had seven to nine things, while those in the middle had four to six (less than 3 items). A face-to-face interview was conducted in the third trimester of pregnancy based on a valid and reliable FFQ of 160 Iranian products in order to get nutritional intake during this time.

Statistical analysis

This research examined the association between newborn child weight, length, and head circumference and the BMI of mothers, as well as the nutrients they consumed. An initial analysis of the data was conducted using descriptive statistics.

RESULT

DSS and maternal anaemia and anthropometric measures are shown to be associated in Table 1. Gender, income index, as well as anthropometric data, are all regressed for an overall study and particular interactions between maternal health and distinct subgroups of Children.

Table 1: Regression Analysis for maternal physical health factors

DDS		Anaemia Level			Anthropometric Measurements		
		Maternal Anaemia level- 2 (Moderate) Base Variable: Severe	Maternal Anaemia level- 3 (Mild) Base Variable: Severe	Maternal Anaemia level- 4 (Not Anaemic) Base Variable: Severe	Maternal Height (cm)	Maternal Weight (kg)	Arm Circumference
Overall		0.008	-0.046	-0.039	0.001**	< 0.01***	0.017**
Gender	Male	0.029	-0.02	-0.017	0.001**	< 0.01*	0.019**
	Female	-0.013	-0.073	-0.062	0.001**	< 0.01**	0.014**
Wealth index	High	0.001	-0.084	-0.066	0.001***	< 0.01**	0.017**
	Low	0.044	-0.004	0.002	0.001**	< 0.01	0.016**
Height for age	Stunted	-0.034	-0.084	-0.057	0.001**	< 0.01**	0.023**
	Normal	0.043	-0.018	-0.023	0.001**	< 0.01	0.013**
Weight for height	Wasted	0.022	-0.056	-0.071	0.001**	0	0.019**
	Overweight	0.338**	0.156	0.18	0.001**	< 0.01	0.008
	Normal	-0.021	-0.061	-0.05	0.001**	< 0.01	0.017**
Weight for age	Underweight	-0.009	-0.069	-0.057	0.001**	0.000***	0.022**
	Overweight	0.211	0.07	0.077	0.001***	< 0.01	0.009
	Normal	0.004	-0.038	-0.034	0.001**	< 0.01	0.015**

Pregnant women were an average of 27 years old, with 60% of them expecting their second child. In terms of educational attainment, 72% received a bachelor's degree (42% obtained a certificate, and 30% completed secondary school), while only 24% went on to get a graduate or professional degree. A total of 118 low-income women, 280 medium-income women, and 55 high-income women were included in the study. A total of 425 women took part in the study, with a BMI of 36 underweight moms, 236 normal mothers, 116 overweight mothers, and 37 obese mothers documented according to WHO standards. A total of 3.19 0.49 kg of neonatal weight, 50.24 2.1 cm of height, and 34.61 1.5 cm of head circumference were measured. Twenty-two babies were born underweight (birth weight less than 2.5 kg). As can be seen in Table 2, the daily energy and nutritional consumption of pregnant women in their third trimester is on average rather high. The majority of pregnant women consumed more carbohydrate and vitamin E than the daily recommended intakes (DRIs), but protein, fibre,

vitamin A, and folate intakes were lower than those of non-pregnant women who consumed these nutrients at levels above the DRIs (Table 3).

Table 2 "Mean nutrient intake (per day) of women in the third trimester (n = 453)"

Nutrients	Mean ± standard deviation	
Protein (g)	75.93	± 31.08
Fat (g)	81.76	± 36.53
Carbohydrate (g)	245.75	± 88.70
Fiber (g)	17.32	± 9.61
Energy (kcal)	2,021.53	± 741.67
Potassium (g)	2,917.87	± 1,355.72
Folate (μg)	412.85	± 320.90
Vitamin A (μg)	656.75	± 437.62
Vitamin E (mg)	8.77	± 15.64

Table 3 Distribution of pregnant women with intake less or more than DRIs (third trimester, n = 453)

Nutrient intake	DRIs	No (%)			
		DRIs >		DRIs <	
Carbohydrate (g)	175	108	(23.8)	345	(76.2)
Protein (g)	71	245	(54.1)	208	(45.9)
Fiber (g)	28	398	(87.9)	55	(12.1)
Folate (μg)	600	387	(85.4)	66	(14.6)
Vitamin A (μg)	770	325	(71.7)	128	(28.3)
Vitamin E (mg)	15	58	(12.8)	395	(87.2)

CONCLUSION

Pregnancy BMIs below 18.5 have been linked to lower birth weights in newborns, as have pregnancies with obese moms, according to our research. The mother's nutritional state may also have a role in the birth weight of her baby. A mother's pre-pregnancy body mass index (BMI) and maternal nutrition may have a significant impact on her child's nutritional status. This study's results demonstrate conclusively that the wealth index of families has no effect on children's nutritional condition unless the moms have formal education and understanding of how to harness the available money for appropriate and diversified food provision for children of both genders. Findings show that maternal health has a significant impact on a child's nutritional condition. As a result of these findings, it can be said that the well-being of mothers is critical in ensuring that children have access to appropriate health care and

education. As a result, there is an urgent need for policies that support women's health and education throughout the nation. As a consequence of these measures, mothers' health and well-being would be promoted, which would lead to them delivering better health care to their children, resulting in improved nutritional status for them.

REFERENCES

[1] Elizabeth A. Symington et.al "Nutrition during pregnancy and early development (NuPED) in urban South Africa: a study protocol for a prospective cohort" https://doi.org/10.1186/s12884-018-1943-6

[2] Sadiq Bhanbhro et.al "Factors affecting maternal nutrition and health: A qualitative study in a matrilineal community in Indonesia" DOI:10.1371/journal.pone.0234545

[3] Koletzko B. et.al "Nutrition During Pregnancy, Lactation and Early Childhood and its Implications for Maternal and Long-Term Child Health: The Early Nutrition Project Recommendations" https://doi.org/10.1159/000496471

[4] Katharina da Silva Lopes et.al "Effects of nutrition interventions during pregnancy on low birth weight: an overview of systematic reviews" . doi:10.1136/ bmjgh-2017-000389

[5] Probir Kumar Ghosh et.al "Maternal Characteristics Mediating the Impact of Household Poverty on the Nutritional Status of Children Under 5 Years of Age in Bangladesh" https://doi.org/10.1177/0379572121999016

[6] Noorlander AM, Geraedts JP, Melissen JB. Female gender pre-selection by maternal diet in combination with timing of sexual intercourse--a prospective study. Reprod Biomed Online. 2010;21(6):794-802. doi:10.1016/j.

[7] . Cagnacci A, Renzi A, Arangino S, Alessandrini C, Volpe A. Influences of maternal weight on the secondary sex ratio of human offspring. Hum Reprod. 2004;19(2):442-444. doi:10.1093/humrep/deh071

[8] Silvio Abati, Alessandro Villa, Irene Cetin, Oral environment, inflammation and preterm birth , Journal of Pediatric and Neonatal Individualized Medicine (JPNIM): Vol. 4 No. 2 (2015): October 2015

[9] Atul Patel, Yogavijayan Kandasamy, Outcome of premature neonates born in a tertiary neonatal intensive care unit in Nairobi, Kenya , Journal of Pediatric and Neonatal Individualized Medicine (JPNIM): Vol. 6 No. 1 (2017): April 2017

[10] Dr Deepika Attigalle, Consultant Community Physician and National Programme Officer, Child Health, Family Health Bureau, Ministry of Health, Sri Lanka; Consultant Nutritionist, UNICEF Sri Lanka

[11] Asian Development Bank (ADB). 2009. Asian Development Outlook 2009 Update: Broadening Openness for a Resilient Asia. Manila: ADB. http://www.adb.org/Documents/Books/ADO/2009/update/ado2009-update.pdf

[12] W. Jaskiewicz and K. Tulenko, "Increasing community health worker productivity and effectiveness: a review of the influence of the work environment," *Human Resources for Health*, vol. 10, no. 1, 2012.

[13] M. Majamanda, D. Maureen, T. Munkhondya, and J. Carrier, "The effectiveness of community-based nutrition education on the nutrition status of under-five children in developing countries. A systematic review," *Malawi Medical Journal*, vol. 26, no. 4, pp. 115–118, 2014.

[14] J. Haver, W. Brieger, J. Zoungrana, N. Ansari, and J. Kagoma, "Experiences engaging community health workers to provide maternal and newborn health services: implementation of four programs," *International Journal of Gynecology & Obstetrics*, vol. 130, pp. S32–S39, 2015.

[15] Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF International, *Ghana Demographic and Health Survey 2014*, GSS, GHS, and ICF International, Rockville, Maryland, USA, 2015.