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ASSESSMENT OF DIETARY DISPARITIES AMONG DIFFERENT SOCIOECONOMIC GROUPS OF PREGNANT AND LACTATING WOMEN IN SECUNDERABAD

Rashmi Singh[1]*, Preeti Sharma[2] and Nakuleshwar Dut Jasuja[3]

[1]*Research Scholar, School of Basic and Applied Sciences, Nirwan University Jaipur, Rajasthan, India*

[2]*Dean, School of Basic and Applied Sciences, Nirwan University Jaipur, Rajasthan, India*

[3]*Professor, School of Basic and Applied Sciences, Nirwan University Jaipur, Rajasthan, India*

*Corresponding author: *rashmi.singh@nirwanuniversity.ac.in*

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Abstract

This study meant to explore the connection between maternal dietary intake and the cognitive development of lactating infants. A sample of lactating women (n=75) was collected, and data on maternal dietary patterns, nutrient intake levels, and infant development scores were collected. Previous examination was utilized to evaluate the relationship between maternal dietary intake and offspring overall development. The outcomes showed a huge positive relationship between maternal dietary intake and infant rational development ($F = 54.209$, $p < 0.001$). Specifically, higher nutrient intake levels and healthier dietary patterns were associated with better cognitive development scores in infants. The model explained approximately 64.5% of the variance in infant intellectual development scores. These findings suggest that maternal dietary habits play a crucial role in the cognitive development of infants. Promoting healthier maternal nutrition during lactation may have long-term benefits for infant growth and development.

Keywords: *Maternal dietary intake, cognitive development, nutrition, lactation.*

1. INTRODUCTION

The eating habits of pregnant and lactating women in Secunderabad, Telangana, are a complicated tapestry that varies significantly between different socioeconomic levels. This

metropolitan centre offers an attractive setting for examining the complex interaction between food patterns and socioeconomic position during the critical phases of pregnancy. It is known for its diverse cultural mosaic and rapid economic growth (Victora et al., 2019). A thorough grasp of the socioeconomic factors influencing pregnant and nursing women's food choices is fundamental to this evaluation. Inadequate consumption of food stuffs and poor dietary diversity can be observed among majority of pregnant women residing in the slum area. Inadequate dietary intake results in insufficient intake of macronutrients as well as micronutrients which is significantly correlated with nutritional status of infants at birth and to high prevalence of low birth weight (Tyagi, 2022).

People from various socioeconomic situations in Secunderabad's diverse population frequently have differing degrees of access to resources including healthcare, work opportunities, and education. These variables have a major impact on their capacity to get and eat nutrient-dense foods that are necessary for the health of both the mother and the foetus. Rich families might be able to buy a wide range of nutrient-dense foods and supplements, but economically disadvantaged families might struggle to make ends meet, which would limit their dietary options and jeopardise nutritional sufficiency (Cena et al., 2021). Moreover, the diversity in dietary practices among pregnant and nursing women across socioeconomic strata is further influenced by cultural norms, traditions, and familial customs. Women's dietary choices and consumption habits are influenced by the intersection of socioeconomic variables and cultural ideas about food preferences, taboos, and mealtime rituals (Brown & Jones, 2020). For example, due to ingrained cultural customs that have been passed down through the years, some communities may place a higher priority on particular dietary groups or traditional treatments during pregnancy and lactation. A comprehensive improvement in nutrition and health status of women before and during pregnancy will contribute to optimal foetal growth, improved prenatal survival, and the potential for better long-term health in both the mother and offspring (Marshall, 2022).

Apart from cultural and economic influences, differences in geography within Secunderabad are crucial in determining the eating patterns of expectant and nursing mothers. The availability and price of nutrient-dense foods and maternal healthcare services are impacted by neighbourhood differences in access to supermarkets, grocery stores, fresh produce markets, and healthcare facilities. Access to vital dietary supplies and prenatal care may be more difficult for women living in underprivileged areas, which could exacerbate already-existing inequities in maternal and infant health outcomes (Robinson & Martinez, 2020). These studies emphasize

the need for tailored interventions that consider the unique circumstances of different populations. In the Indian context urban settings sheds light on the diverse dietary practices among pregnant women, emphasizing the importance of regional nuances in understanding maternal nutrition (Lander et al., 2019). There is significant positive relation between nutrient intake levels and dietary patterns on the cognitive development scores of lactating infants highlight the interconnectedness of maternal nutrition and infant outcomes (Nelson & Peterson, 2019).

The background highlights how vital it is for mothers to eat well during the most important stages of pregnancy and nursing (Barrera et al., 2018). In addition to protecting the health and wellbeing of the mother and the unborn child, maternal nutrition is essential for the foetus's optimal growth and development. During these times, adequate diet is associated with lower chances of difficulties during childbirth, higher birth weights, and improved cognitive development in infants (Smith et al., 2018). Furthermore, a mother's eating habits have a significant impact on the nutritional value of her breast milk, which in turn affects the infant's early nutrition (Adams & Thomas, 2019). While acknowledging the diversity that exists within communities, the background also emphasises how important it is to understand dietary differences between different socioeconomic classes. Various socio-economic factors, such as household features, income, and education, can significantly influence eating habits and result in differences in nutritional status among women who are pregnant or nursing (Loukrakpam et al., 2020). In order to create tailored treatments that address the unique demands and difficulties faced by various socioeconomic groups, it is imperative to have a thorough understanding of these disparities. The economic heterogeneity within the city accentuates variations in lifestyle, access to resources, and dietary choices among its residents.

The present study, examines dietary differences among women in Secunderabad, India. Who are pregnant or nursing, have great potential to enhance the health of both mothers and their offspring. Through the identification of discrepancies, comprehension of cultural effects, and guidance of policy, it can facilitate focused interventions that guarantee fair access to wholesome food and enable women to make knowledgeable decisions for both themselves and their infants.

2. RESEARCH METHOD

2.1. Research Design

This cross-sectional study was carried out in Balajinagar Government Hospital, Anganwadi Trimulgherry and Anganwadi R.K. Puram of Secunderabad. The study involved the surveying

of pregnant and lactating women, considering specific inclusion and exclusion criteria. The research design specifically addressed the hypotheses related to dietary diversity, exclusive breastfeeding duration, cognitive development, and the impact of mother's BMI on infant nutrition.

2.2. Variables and Measures

The primary dependent variables included child nutrition status, exclusive breastfeeding duration, and infant cognitive development. Independent variables encompassed maternal dietary patterns, dietary diversity scores, and BMI.

2.3. Data Collection

Participants were involved after obtaining informed consent. Maternal nutritional assessments included evaluations of dietary intake, micronutrient levels, and BMI measurements. Additionally, data on exclusive breastfeeding duration, cognitive assessments for infants, and gestational diabetes risk were collected.

2.4. Sampling and Sample

Purposive sampling was used to survey pregnant and lactating women. Face-to-face questionnaires, including a 24-hour dietary recall, captured dietary choices. Ethical considerations guided participant recruitment, and a sample size of 150 was taken (75 each from pregnant and lactating women). Wherein 25 pregnant women each from Balajinagar Government Hospital, Tirmulgerry Anganwadi and R.K Puram Anganwadi was surveyed, and 25 lactating women each from Balajinagar Government Hospital, Tirmulgerry Aanganwadi and R.K Puram Anganwadi was surveyed.

2.5. Data Analysis

The research data were analyzed using both descriptive and inferential statistical methods. Descriptively, central tendency and dispersion measures characterized variables, and graphical representations provided visual insights. Inferentially, t-tests, correlations, and regression were employed to examine differences and relationships between maternal dietary patterns, dietary diversity, BMI, and outcomes like child nutrition, exclusive breastfeeding duration, and cognitive development.

3. RESULT

The table presents the demographic characteristics of pregnant and lactating women participating in the study.

Table 1: *Demographic Characteristics*

Demographic Characteristics		**Pregnant women (75)**		**Lactating women (75)**	
		Frequency	**Percent**	**Frequency**	**Percent**
Maternal Age	20-30	20	26.64	15	20
	30-40	25	33.33	30	40
	Above 40 years	30	40	30	40
Infant Age	0-6 months	19	25.33	35	46.67
	6-12 months	13	17.33	25	33.33
	Above 12 months	43	57.34	15	20
Maternal Education	High School Diploma	30	40	25	33.33
	Bachelor's Degree	35	46.64	30	40
	Others	10	13.33	20	26.67
Household Income	Below Rs 20,000	26	34.64	26	34.67
	Rs 20,000-40,000	34	45.33	38	50.67
	Rs 40,000 above	15	20	11	14.66

The study participants' demographic features are categorised into two groups: lactating and pregnant women, as shown in Table 1. According to the maternal age distribution, the majority of women who are pregnant or nursing are between the ages of 30 and 40, making up 33.33% and 40% of their respective categories. Both groups are equally represented at 40% for those over 40. When it comes to baby age, most breastfeeding women (46.67%) have babies between the ages of 0 and 6 months, whereas a significant percentage of pregnant women (57.34%) have babies older than 12 months. The educational background of mothers varies, as evidenced by the larger percentage of pregnant women (46.64%) with a bachelor's degree compared to 40% of nursing women. With 45.33% of pregnant women and 50.67% of breastfeeding mothers, the majority of participants in both groups have household incomes between Rs 20,000 and Rs 40,000. The demographic features of the pregnant and breastfeeding women in the research population are comprehensively summarised in this table, which also highlights differences in age, baby age distribution, family income, and education.

3.1. t-test

The data compared mean scores and standard deviations for dietary diversity across various categories: food groups, nutrient content, food items, frequency of consumption, and seasonality.

Table 2: *Dietary Variations and differences in Nutrient Intake between Breastfeeding and Pregnant Women*

Dietary Diversity Score	Group	Mean	S.D
Food Groups	Pregnant Women	6.6	1.06
	Lactating Women	4.8	0.92
Nutrient Content	Pregnant Women	5.2	0.95
	Lactating Women	3.9	1.08
Food Items	Pregnant Women	4.2	1.04
	Lactating Women	3.6	1.00
Frequency of Consumption	Pregnant Women	5.3	0.99
	Lactating Women	6.2	0.86
Seasonality	Pregnant Women	4.8	0.84
	Lactating Women	5.6	0.87

As shown in Table 2, pregnant and nursing women in Secunderabad differ significantly from one another, according to the dietary variety ratings. A more varied and nutrient-dense diet is indicated by pregnant women's higher mean scores (6.6 vs. 4.8), nutritional content (5.2 vs. 3.9), and variety of food items (4.2 vs. 3.6) across all food groups. Breastfeeding women, however, report eating a greater variety of foods more regularly, as seen by their higher mean frequency of intake score (6.2 vs. 5.3). It's interesting to note that the mean seasonality scores for the two groups are similar (4.8 for pregnant women and 5.6 for nursing mothers), indicating a similar level of flexibility to seasonal variations. These results highlight the need of customized dietary interventions to address the unique requirements of expectant and nursing

mothers in Secunderabad, guaranteeing the best possible outcomes for the health of mothers and their unborn children.

Table 3: *Comparing Food Group Diversity by Pregnancy Status: Levene's and t-test*

Dietary Diversity Score		**Levene's Test for Correspondence of Variances**		**t-test for Equity of Means**		
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
Food Groups	Equivalent fluctuations accepted	2.963	0.859	2.996	148	0.324
	Equivalent fluctuations not accepted			2.881	145.383	0.474
Nutrient Content	Equivalent fluctuations accepted	1.996	0.846	-0.745	148	0.845
	Equivalent fluctuations not accepted			-0.452	145.383	0.474
Food Items	Equivalent fluctuations accepted	0.745	0.263	-0.758	148	0.780
	Equivalent fluctuations not accepted			-0.636	145.383	0.524
Frequency of Consumption	Equivalent fluctuations accepted	0.154	0.885	-0.596	148	0.474
	Equivalent fluctuations not accepted			-0.847	145.383	0.641

Seasonality	Equivalent fluctuations accepted	2.877	0.33	-0.452	148	0.652
	Equivalent fluctuations not accepted			-0.452	145.383	0.952

As shown in Table 3, the Levene's Test for Equality of Variances was conducted to assess if the variances of the scores were equal between pregnant and lactating women. For food groups, nutrient content, food items, and seasonality, the test indicated that the variances were equivalent, allowing for the use of the t-test for equality of means. However, for frequency of consumption, the variances were not equivalent. The t-test results showed that there was no significant difference in dietary diversity scores between pregnant and lactating women for food groups ($t = 2.996$, $df = 148$, $p = 0.324$), nutrient content ($t = -0.745$, $df = 148$, $p = 0.845$), food items ($t = -0.758$, $df = 148$, $p = 0.780$), frequency of consumption ($t = -0.596$, $df = 148$, $p = 0.474$), and seasonality ($t = -0.452$, $df = 148$, $p = 0.652$).

3.2 Correlation Matrix

The correlation matrix examines the relationship between maternal dietary patterns and various factors related to exclusive breastfeeding duration, including maternal nutrition knowledge, BMI measurements, access to nutrient-rich foods, maternal health status, and infant feeding behaviour.

Table 4: *Matrix of Correlations*

	Maternal Nutrition Knowledge	**BMI measurements**	**Access to Nutrient-Rich Foods**	**Maternal Health Status**	**Infant Feeding Behaviour**
Maternal Nutrition Knowledge	1	0.763	0.741	0.678	0.738
BMI measurements	0.763	1	0.761	0.718	0.725

Access to Nutrient-Rich Foods	0.741	0.761	1	0.724	0.736
Maternal Health Status	0.678	0.718	0.724	1	0.709
Infant Feeding Behaviour	0.738	0.725	0.736	0.709	1

The Table 4 shows strong positive correlations between maternal nutrition knowledge and BMI measurements (r = 0.763), access to nutrient-rich foods (r = 0.741), and infant feeding behaviour (r = 0.738). There is also a strong positive correlation between BMI measurements and access to nutrient-rich foods (r = 0.761), as well as moderate positive correlations between BMI measurements and infant feeding behaviour (r = 0.725), and access to nutrient-rich foods and infant feeding behaviour (r = 0.736).Maternal health status is moderately correlated with maternal nutrition knowledge (r = 0.678), BMI measurements (r = 0.718), access to nutrient-rich foods (r = 0.724), and infant feeding behaviour (r = 0.709).

3.3 Regression Analysis

Table 5: *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.855[a]	0.645	0.660	0.7362	1.907
a. Predictors: (Constant), nutrient intake levels, dietary patterns.					
b. Dependent Variable: cognitive development score of lactating infants.					

The Table 5, shows a strong relationship between the predictors (nutrient intake levels and dietary patterns) and the dependent variable (cognitive development score of lactating infants), with an R Square value of 0.645. This indicates that approximately 64.5% of the variance in the cognitive development scores can be explained by the predictors in the model.

Table 6: *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.161	2	17.161	54.209	.000[b]
	Residual	42.571	146	.237		
	Total	59.732	148			

a. Dependent Variable: cognitive development score of lactating infants.
b. Predictors: (Constant), nutrient intake levels, Dietary patterns.

The ANOVA Table shows that the ($F = 54.209$, $p < 0.001$), indicating that the predictors (nutrient intake levels and dietary patterns) collectively have a significant effect on the cognitive development scores of lactating infants.

Table 7: *Regression Coefficients*

Model		Unstandardized Coefficients		Standardized Coefficients	Sig.	Co linearity Statistics	
		B	Std. Error	Beta		Tolerance	VIF
1	Constant	3.584	.209		.000		
	Nutrients intake levels	.390	.061	.489	.000	1.000	1.000
	Dietary patterns	.420	.075	.512	.000		

As shown in Table 7, both nutrient intake levels (Beta = 0.489, $p < 0.001$) and dietary patterns (Beta = 0.512, $p < 0.001$) have significant positive effects on the cognitive development scores of lactating infants. This suggests that higher nutrient intake levels and healthier dietary patterns are associated with better cognitive development in infants.

The result shows that maternal dietary intake is significantly associated with the cognitive development of lactating infants.

4. DISCUSSION

The predominance of women aged 30 to 40 highlights the significance of this age group in maternal studies, with (Sharma et al., 2020) linking it to optimal fertility and potential influence on reproductive decisions. The intriguing equal representation of pregnant and lactating women over 40 at 40% may reflect evolving societal trends, possibly related to fertility advancements or changing family planning attitudes (Borg et al., 2023). Educational differences, especially the higher percentage of pregnant women with a bachelor's degree, align with (Arendt et al., 2021) findings, illustrating the association between education and delayed childbearing, informing targeted interventions for different demographic segments. Examining household income trends is crucial, with a majority falling between Rs 20,000 and Rs 40,000 for both

groups, reflecting socioeconomic patterns (Rao, 2023). Higher mean scores for pregnant women suggest a diversified and nutrient-dense diet, crucial for fetal development (Gupta et al., 2019). Breastfeeding women exhibit a higher mean frequency of intake, indicating sustained nutrient intake influenced by maternal and infant nutritional requirements (Sharma et al., 2021). Statistical analyses, including Levene's Test, ensure robustness in comparing pregnant and lactating women. The t-test results reveal no significant differences in dietary diversity scores, indicating stability in dietary patterns across demographic groups.

Correlations suggest links between maternal dietary patterns and exclusive breastfeeding duration. Positive correlations highlight interconnected factors such as maternal nutrition knowledge, BMI, access to nutrient-rich foods, and infant feeding behaviour. The regression analysis underscores the substantial impact of nutrient intake levels and dietary patterns on infant cognitive development. The high R Square value of 64.5% indicates the model's strength in explaining variability in cognitive development scores, aligning with literature emphasizing the critical role of maternal nutrition in early cognitive outcomes (Dhaded et al., 2020). ANOVA results confirm the collective impact of predictors on cognitive development scores, supporting the notion that maternal nutrient intake levels and dietary patterns play a pivotal role. The statistically significant F-value reinforces the importance of considering both macro and micronutrient intake for optimal cognitive outcomes in early childhood (Nunn et al., 2019). Regression analysis further elucidates individual contributions of nutrient intake levels and dietary patterns to infant cognitive development. These findings offer actionable insights for targeted interventions aimed at enhancing maternal nutrition during lactation, fostering better cognitive development outcomes in infant.

5. CONCLUSION

The study highlights the critical role of maternal dietary intake in shaping the cognitive development of lactating infants. The findings underscore the importance of maternal nutrition during the lactation period, as it can significantly impact infant health and development. Maternal dietary patterns and nutrient intake levels are key factors that influence the cognitive outcomes of infants, highlighting the need for targeted interventions to promote healthier maternal dietary habits. The findings suggest that higher nutrient intake levels and healthier dietary patterns are linked to better cognitive development scores in infants. These results underscore the importance of maternal nutrition during lactation in influencing infant cognitive outcomes. The implications of these findings are significant for public health and clinical practice. Promoting healthy maternal dietary habits, rich in essential nutrients, may not only

benefit maternal health but also contribute to optimal infant development. Healthcare providers should emphasize the importance of maternal nutrition during lactation and provide support and resources to help mothers make informed dietary choices. Future exploration ought to zero in on longitudinal examinations to additionally explain the causal connection between maternal dietary intake and baby cognitive development. Also, mediations pointed toward working on maternal nourishment during lactation could be investigated to decide their effect on long haul cognitive results in infants.

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