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SOCIOECONOMIC CONDITIONS AND CHILD MALNUTRITION IN KARNATAKA: A COMPARATIVE STUDY OF SELECTED DISTRICTS

Economy

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ABSTRACT

Child malnutrition reflects unequal socioeconomic development. Despite Karnataka's economic success, significant regional gaps still exist in education, livelihoods, income, migration, sanitation, housing, and child nutrition. The study aimed to investigate and compare the relationship between socioeconomic factors and child nutritional status in high- and low-malnutrition districts. Methodologically, a comparative cross-sectional study included 800 children aged 0-6 years, 400 from Vijayapura and Yadgir and 400 from Dakshina Kannada and Udupi. The study graded nutritional status as normal, moderate, or severe. We used cross-tabulations, Pearson's chi-square test, and Cramer's V to assess associations. The study's findings revealed that normal nutritional status was significantly lower in high-malnutrition districts than in low-malnutrition districts (27.0% versus 66.5%), while severe malnutrition was significantly higher (35.5% versus 9.5%). All socioeconomic indicators were statistically significant in both cases. In high-malnutrition districts, the strongest relationships were father's work (V =.238), father's education (V =.237), and mother's education (V =.230). In low-malnutrition districts, household income ranked first (V =.384), followed by toilet access (V =.279) and migration (V =.246). Child malnutrition in Karnataka exhibits a strong but context-specific socioeconomic gradient. Effective policy must include parental capability, livelihood stability, and basic infrastructure, as well as district-specific targeting of economically and socially vulnerable households.

KEYWORDS

child malnutrition; Socioeconomic conditions

INTRODUCTION

Child malnutrition is both a public-health issue and an indicator of unequal life opportunities. Parental education has an impact on health awareness and service use; employment and income determine food security and access to care; migration can disrupt caregiving and entitlements; and poor sanitation and housing increase the risk of infection. Nutritional status thus reflects how household resources interact with the larger social and institutional environment (United Nations Children's Fund [UNICEF], 2020; Smith and Haddad, 2015).

India's economic progress has not resulted in a similarly rapid or uniform dietary transformation. National evidence continues to show significant socioeconomic and spatial inequalities in childhood undernutrition, while state-level growth has not resulted in proportional improvement (India State-Level Disease Burden Initiative Malnutrition Collaborators, 2019; International Institute for Population Sciences [IIPS] & ICF, 2021a; Subramanyam et al., 2011). Karnataka exemplifies this disparity: the coastal districts of Dakshina Kannada and Udupi have higher social indicators than Vijayapura and Yadgir in northern Karnataka, but district averages may mask vulnerable households (IIPS and ICF, 2021b). Using primary data from these disparate settings, this study investigates whether parental and household resources have different associations with child nutritional health across geographic contexts.

2. Review of Literature

Child undernutrition is consistently associated with socioeconomic disadvantage, according to research. Parental education promotes knowledge, healthcare utilisation, feeding decisions, and agency, whereas steady employment and income increase dietary access and resilience to health shocks (Aguayo et al., 2016; Kim et al., 2019). Poverty and unequal access to resources, on the other hand, concentrate malnutrition in low-income households. Indian evidence also suggests that economic growth is insufficient when its advantages are unevenly distributed or lack effective public services (Deaton & Drèze, 2009; Subramanyam et al., 2011).

Environmental and geographical factors influence these household-level interactions. Unsafe sanitation, rural isolation, and inadequate housing increase infection and nutritional risk; open defecation and district-level impoverishment are strongly linked to poor child development (Menon et al., 2018; Spears et al., 2013). Although NFHS-5 identifies significant inequities across Karnataka (IIPS & ICF, 2021b), little primary research analyses the relative strength of education, occupation, income, migration, residency, sanitation, and housing among districts with varying malnutrition rates.

3. Research Gap

Existing research in India and Karnataka rely heavily on secondary data to report national or state-level average socioeconomic correlates. Few main research compare numerous socioeconomic factors in districts with different malnutrition burdens. As a result, it is unknown whether the hierarchies and strength of these relationships vary by geography. This study fills that gap with comparable data from 800 children in four Karnataka districts.

4. OBJECTIVES

For the purpose of the study have been set the following objectives:

1. To examine the association between selected socioeconomic conditions and child nutritional status in higher- and lower-malnutrition districts of Karnataka.
2. To compare and rank the strength of these associations across the two district groups and identify context-specific sources of nutritional vulnerability.

5. Hypotheses

H_0: Socioeconomic conditions have no significant association with child nutritional status in the selected districts of Karnataka.

H_1: Socioeconomic conditions have a significant association with child nutritional status in the selected districts of Karnataka.

6. METHODOLOGY

The study used a comparative cross-sectional design and collected primary data from 800 children aged 0-6 years, with 200 from each district. Vijayapura and Yadgir had the highest rates of malnutrition (N = 400), whereas Dakshina Kannada and Udupi had the lowest rates. The kid was the unit of analysis, with the mother or primary carer serving as the respondent. We defined nutritional status as normal, moderate, or severe, and then compared it to mother education and occupation, household income, migration status, site of residence, toilet access, and dwelling type. The distributions were described using frequency and row percentages. Pearson's chi-square test was used to evaluate associations at $\alpha = .05$, and Cramér's V was used to calculate relative strength: $V = \sqrt{[\chi^2 / \{N \times \min(r-1, c-1)\}]}$. The results are shown individually as $\chi^2(df, N = 400)$, p, and V. Because the study is bivariate, it focuses on connections rather than independent or causative effects.

7. RESULTS

7.1 Socioeconomic Conditions in the Higher-Malnutrition Districts

Merely 27.0% of children in the districts with elevated malnutrition levels exhibited normal nutritional status; 37.5% were classified as moderately malnourished, while 35.5% were deemed severely malnourished. Table 1 illustrates the allocation of nutritional status

among the seven socioeconomic variables.

Table-1: Socioeconomic Conditions and Child Nutritional Status in the Higher-Malnutrition Districts

Factor	Category	Normal	Moderate	Severe	Total	Pearson's χ^2 test
Mother's education	No formal education	16 (15.5)	36 (35.0)	51 (49.5)	103(100.0)	χ^2 = 42.277; df = 8; p < .001
	Primary school	24 (20.5)	44 (37.6)	49 (41.9)	117(100.0)	
	Middle school	25 (27.8)	38 (42.2)	27 (30.0)	90 (100.0)	
	High school	25 (41.7)	23 (38.3)	12 (20.0)	60 (100.0)	
	College/ university	18 (60.0)	9 (30.0)	3 (10.0)	30 (100.0)	
Mother's occupation	Homemaker	11 (14.1)	32 (41.0)	35 (44.9)	78 (100.0)	χ^2 = 28.113; df = 10; p = .002
	Agriculture	22 (28.9)	23 (30.3)	31 (40.8)	76 (100.0)	
	Labourer	43 (32.1)	46 (34.3)	45 (33.6)	134(100.0)	
	Self-employed	12 (21.8)	22 (40.0)	21 (38.2)	55 (100.0)	
	Private employee	11 (26.2)	24 (57.1)	7 (16.7)	42 (100.0)	
	Government employee	9 (60.0)	3 (20.0)	3 (20.0)	15 (100.0)	
Household income	High	26 (63.4)	10 (24.4)	5 (12.2)	41 (100.0)	χ^2 = 34.456; df = 4; p < .001
	Middle	38 (24.1)	54 (34.2)	66 (41.8)	158(100.0)	
	Low	44 (21.9)	86 (42.8)	71 (35.3)	201(100.0)	
Migration status	Migrant	32 (24.0)	41 (30.8)	60 (45.1)	133(100.0)	χ^2 = 8.190; df = 2; p = .017
	Non-migrant	76 (28.4)	109(40.8)	82 (30.7)	267 (100.0)	
Place of residence	Rural	47 (19.8)	88 (37.1)	102(43.0)	237 (100.0)	χ^2 = 23.228; df = 4; p < .001
	Semi-urban	32 (33.3)	41 (42.7)	23 (24.0)	96 (100.0)	
	Urban	29 (43.3)	21 (31.3)	17 (25.4)	67 (100.0)	
Toilet access	Available	47 (34.8)	52 (38.5)	36 (26.7)	135 (100.0)	χ^2 = 9.144; df = 2; p = .010
	Not available	61 (23.0)	98 (37.0)	106 (40.0)	265 (100.0)	
Housing type	Kachha	21 (14.3)	56 (38.1)	70 (47.6)	147 (100.0)	χ^2 = 34.838; df = 4; p < .001
	Pucca	50 (28.4)	68 (38.6)	58 (33.0)	176 (100.0)	
	RCC	37 (48.1)	26 (33.8)	14 (18.2)	77 (100.0)	
Total		108 (27.0)	150 (37.5)	142 (35.5)	400 (100.0)	

Note: *Values are n (row %),* ***Source:*** *Primary survey.*

Maternal education exhibited a distinct protective gradient: the incidence of severe malnutrition decreased from 49.5% in children of mothers lacking formal education to 10.0% in those with mothers possessing college or university degrees, $\chi^2(8, N = 400) = 42.277$, $p < .001$. Affluent households exhibited the highest percentage of standard malnutrition (63.4%). Acute malnutrition was predominantly observed in migrant children (45.1%), rural families (43.0%), households lacking toilet facilities (40.0%), and children residing in kachha dwellings (47.6%). All seven correlations exhibited statistical significance.

7.2 Socioeconomic Conditions in the Lower-Malnutrition Districts

The areas with lower malnutrition rates had significantly improved overall results: 66.5% of children were classified as normal, 24.0% as moderately malnourished, and 9.5% as severely malnourished. Nonetheless, significant socioeconomic disparities persisted within these areas.

Table-2: Socioeconomic Conditions and Child Nutritional Status in the Lower-Malnutrition Districts

Factor	Category	Normal	Moderate	Severe	Total	Pearson's χ^2 test
Mother's education	No formal education	10 (32.3)	13 (41.9)	8 (25.8)	31(100.0)	χ^2 = 46.743; df = 8; p < .001
	Primary school	25 (49.0)	16 (31.4)	10 (19.6)	51 (100.0)	
	Middle school	45 (57.7)	25 (32.1)	8 (10.3)	78 (100.0)	
	High school	94 (72.9)	27 (20.9)	8 (6.2)	129(100.0)	
	College/ university	92 (82.9)	15 (13.5)	4 (3.6)	111(100.0)	
Mother's occupation	Homemaker	54 (62.1)	24 (27.6)	9 (10.3)	87 (100.0)	χ^2 = 28.455; df = 10; p = .002
	Agriculture	44 (66.7)	14 (21.2)	8 (12.1)	66 (100.0)	
	Labourer	27 (43.5)	23 (37.1)	12 (19.4)	62 (100.0)	
	Self-employed	57 (74.0)	15 (19.5)	5 (6.5)	77 (100.0)	
	Private employee	62 (74.7)	18 (21.7)	3 (3.6)	83 (100.0)	
	Government employee	22 (88.0)	2 (8.0)	1 (4.0)	25 (100.0)	
Household income	High	132(81.5)	24 (14.8)	6 (3.7)	162(100.0)	χ^2 = 117.704; df = 4; p < .001
	Middle	121 (77.1)	24 (15.3)	12 (7.6)	157(100.0)	
	Low	13 (16.0)	48 (59.3)	20 (24.7)	81 (100.0)	
Migration status	Migrant	52 (50.4)	30 (29.1)	21 (20.4)	103(100.0)	χ^2 = 24.181; df = 2; p < .001
	Non-migrant	214 (72.1)	66 (22.2)	17 (5.7)	297(100.0)	
Place of residence	Rural	105 (57.4)	57 (31.1)	21 (11.5)	183(100.0)	χ^2 = 17.017; df = 4; p = .002
	Semi-urban	59 (66.3)	21 (23.6)	9 (10.1)	89 (100.0)	
	Urban	102 (79.7)	18 (14.1)	8 (6.3)	128(100.0)	
Toilet access	Available	221 (72.9)	65 (21.5)	17 (5.6)	303(100.0)	χ^2 = 31.062; df = 2; p < .001
	Not available	45 (46.4)	31 (32.0)	21 (21.6)	97 (100.0)	
Housing type	Kachha	38 (48.1)	23 (29.1)	18 (22.8)	79 (100.0)	χ^2 = 25.367; df = 4; p < .001
	Pucca	160 (72.7)	48 (21.8)	12 (5.5)	220(100.0)	
	RCC	68 (67.3)	25 (24.8)	8 (7.9)	101(100.0)	
Total		266 (66.5)	96 (24.0)	38 (9.5)	400(100.0)	

Note: *Values are n (row %), Percentages for housing type have been calculated from the reported counts.* ***Source:*** *Primary survey.*

The prevalence of normal nutritional status rose from 32.3% in children of mothers without formal education to 82.9% in children of mothers with college or university degrees, $\chi^2(8, N = 400) = 46.743$, $p < .001$. Household income exhibited the most pronounced disparity: severe malnutrition rates were 24.7% in low-income households compared to 3.7% in high-income households. Households that are migrant, rural, without sanitation, and residing in makeshift dwellings exhibited inferior results. All seven correlations exhibited statistical significance.

7.3 Comparative Ranking by Cramér's V

Cramér's V enables the evaluation of the comparative strength of statistically significant correlations within each district category. Table 3 displays the two rankings in distinct panels for enhanced clarity.

Table-3: Cramér's V Ranking of Socioeconomic Factors Associated With Child Nutritional Status

Panel A: Higher-malnutrition districts (N = 400)

Factor	χ^2 (df)	p	V	Rank	Association
Mother's education	42.277 (8)	< .001	.230	1	Moderate
Housing type	34.838 (4)	< .001	.209	2	Moderate

Household income	34.456 (4)	< .001	.208	3	Moderate
Mother's occupation	28.113 (10)	.002	.187	4	Weak
Place of residence	23.228 (4)	< .001	.170	5	Weak
Toilet access	9.144 (2)	.010	.151	6	Weak
Migration status	8.190 (2)	.017	.143	7	Weak

Panel B: Lower-malnutrition districts (N = 400)

Factor	χ^2 (df)	p	V	Rank	Association
Household income	117.704 (4)	< .001	.384	1	Moderate
Toilet access	31.062 (2)	< .001	.279	2	Moderate
Migration status	24.181 (2)	< .001	.246	3	Moderate
Mother's education	46.743 (8)	< .001	.242	4	Moderate
Mother's occupation	28.455 (10)	.002	.189	5	Weak
Housing type	25.367 (4)	< .001	.178	6	Weak
Place of residence	17.017 (4)	.002	.146	7	Weak

Note: *Rankings compare associations within each district group. Cramér's V indicates strength of association, not causal importance.*

Maternal education was the most significant factor in districts with elevated malnutrition rates, succeeded by the style of housing and income level. In districts with lower malnutrition, income was the primary factor, succeeded by access to sanitation facilities and migration. The mother's profession was feeble and analogous in both environments, however the living situation remained frail. This disparity indicates that maternal competence and housing were more significant in the high-burden environment, while income, sanitation, and migration created more pronounced inequities in the low-burden environment.

8. DISCUSSION

The results indicate a significant geographical disparity in child nutrition: merely 27.0% of children in districts with high malnutrition exhibited normal status, in contrast to 66.5% in districts with low malnutrition, with severe malnutrition rates at 35.5% and 9.5%, respectively. All seven socioeconomic variables were significant in both cohorts, however Cramér's V values were weak to moderate. This trend aligns with the UNICEF concept, which regards undernutrition as the aggregate result of interconnected household, environmental, and structural factors rather than a solitary cause (Kim et al., 2019; UNICEF, 2020).

In Vijayapura and Yadgir, maternal education was the most significant factor (V = .230), succeeded by dwelling type (V = .209) and household income (V = .208). Maternal education can enhance nutritional awareness, healthcare utilisation, feeding choices, and negotiation skills; nevertheless, the comparable significance of housing and income indicates that capability necessitates material assistance. The prevalence of weak to moderate correlations indicates that extensive impoverishment constrains the explanatory capacity of individual socioeconomic elements.

In Dakshina Kannada and Udupi, the primary determinant of household income was identified as the foremost factor (V = .384), succeeded by access to toilets (V = .279), migration (V = .246), and maternal education (V = .242). Consequently, advantageous district averages exist alongside significant hardship experienced by low-income, migratory, and sanitation-impoverished families. This substantiates the notion that economic advancement enhances nutrition solely when at-risk households can translate regional affluence into food security, healthcare, and safe living environments (Subramanyam et al., 2011; Van de Poel et al., 2008).

The more pronounced sanitation gradient aligns with studies connecting illness exposure and spatial disparity to hindered infant development (Menon et al., 2018; Spears et al., 2013).

In general, domestic resources yield varying nutritional outcomes depending on regional contexts. Maternal competence and housing were comparatively more significant in districts with higher burdens, while income, sanitation, and migration distinctly differentiated children in districts with lower burdens. These comparisons are illustrative and bivariate; they ought not to be construed as independent or causal influences.

9. CONCLUSION AND POLICY IMPLICATIONS

Child malnutrition in Karnataka exhibits a distinct yet contextually relevant socioeconomic gradient. In districts with elevated malnutrition rates, maternal education, housing conditions, and income serve as the primary distinguishing factors; conversely, in districts with lower malnutrition, income, sanitation, and migration delineate households marginalised from otherwise advantageous development. Policy should consequently integrate statewide nutritional assurances with localised targeting at the district level.

- **Strengthen maternal capability in higher-burden districts:** Elevate girls' school retention, adult education, nutritional literacy, and provide practical guidance on feeding, healthcare, and hygiene.
- **Reduce material deprivation:** Connect nutritionally at-risk families to stable employment, food stability, sufficient housing, healthcare services, and social safety nets, especially within agricultural and informal labour sectors.
- **Target hidden deprivation in lower-burden districts:** Implement household-level assessments to pinpoint low-income, migrant, and sanitation-deficient families obscured by favourable district statistics.
- **Ensure portable protection for migrant families:** Preserve access to nutritional benefits, ICDS/AWC provisions, medical care, and social welfare in both origin and destination locales.
- **Integrate sanitation and district planning:** Merge restroom facilities with potable water, sanitary practices, upkeep, and infection prevention, while synchronising nutrition, education, employment, housing, sanitation, and health services for the same at-risk households.

10. REFERENCES

1. Aguayo, V. M., Nair, R., Badgaiyan, N., & Krishna, V. (2016). Determinants of stunting and poor linear growth in children under 2 years of age in India: An in-depth analysis of Maharashtra's comprehensive nutrition survey. Maternal & Child Nutrition, 12(S1), 121–140. https://doi.org/10.1111/mcn.12259
2. Deaton, A., & Drèze, J. (2009). Food and nutrition in India: Facts and interpretations. Economic and Political Weekly, 44(7), 42–65.
3. India State-Level Disease Burden Initiative Malnutrition Collaborators. (2019). The burden of child and maternal malnutrition and trends in its indicators in the states of India: The Global Burden of Disease Study 1990–2017. The Lancet Child & Adolescent Health, 3(12), 855–870. https://doi.org/10.1016/S2352-4642(19)30273-1
4. International Institute for Population Sciences (IIPS) & ICF. (2021a). National Family Health Survey (NFHS-5), 2019–21: India. International Institute for Population Sciences. https://www.dhsprogram.com/pubs/pdf/FR375/FR375.pdf
5. International Institute for Population Sciences (IIPS) & ICF. (2021b). National Family Health Survey (NFHS-5), 2019–20: Karnataka. International Institute for Population Sciences. https://www.dhsprogram.com/pubs/pdf/FR374/FR374_Karnataka.pdf
6. Kim, R., Rajpal, S., Joe, W., Corsi, D. J., Sankar, R., Kumar, A., & Subramanian, S. V. (2019). Assessing associational strength of 23 correlates of child anthropometric failure: An econometric analysis of the 2015–2016 National Family Health Survey, India. Social Science & Medicine, 238, 112374. https://doi.org/10.1016/j.socscimed.2019.112374
7. Menon, P., Headey, D., Avula, R., & Nguyen, P. H. (2018). Understanding the geographical burden of stunting in India: A regression-decomposition analysis of district-level data from 2015–16. Maternal & Child Nutrition, 14(4), e12620. https://doi.org/10.1111/mcn.12620
8. Smith, L. C., & Haddad, L. (2015). Reducing child undernutrition: Past drivers and priorities for the post-MDG era. World Development, 68, 180–204. https://doi.org/10.1016/j.worlddev.2014.11.014
9. Spears, D., Ghosh, A., & Cumming, O. (2013). Open defecation and childhood stunting in India: An ecological analysis of new data from 112 districts. PLOS ONE, 8(9), e73784. https://doi.org/10.1371/journal.pone.0073784
10. Subramanyam, M. A., Kawachi, I., Berkman, L. F., & Subramanian, S. V. (2011). Is economic growth associated with reduction in child undernutrition in India? PLOS Medicine, 8(3), e1000424. https://doi.org/10.1371/journal.pmed.1000424
11. United Nations Children's Fund. (2020). UNICEF conceptual framework on maternal and child nutrition. https://www.unicef.org/documents/conceptual-framework-nutrition
12. Van de Poel, E., Hosseinpoor, A. R., Speybroeck, N., Van Ourti, T., & Vega, J. (2008). Socioeconomic inequality in malnutrition in developing countries. Bulletin of the World Health Organisation, 86(4), 282–291. https://doi.org/10.2471/BLT.07.044800