Indian Journal of
Nutrition

Open Science Publications

Volume 12, Issue 2 - 2025

www.opensciencepublications.com

Socio-Demographic Determinants of the Combined Iron-Folate Deficient intake among Mothers and Children's Dietary Diversity: A Cross-Sectional Study

Research Article

Sultana A*[1], Betsy A[2], Rastogi P[1], Choudhary S[1] and Sharma S[1]

[1]*Department of Maternal, Newborn and Child Health and Nutrition, MAMTA Health Institute for Mother and Child, New Delhi.*

[2]*Nutrition Sciences, ITC Foods Business Division, ITC Limited, Bengaluru*

***Corresponding author:** Ms. Afreen Sultana, Department of Maternal, Newborn and Child Health and Nutrition, MAMTA Health Institute for Mother and Child, B-5, Greater Kailash Enclave II, Delhi-110048. E-mail Id: afreen@mamtahimc.in

Article Information: Submission: 17/09/2025; Accepted: 10/10/2025; Published: 14/10/2025

Abstract

Background: Micronutrient-related malnutrition is a common public health problem in India, with most pregnant mothers consuming less than 50% of the recommended daily allowances of nutrients. Under-5 dietary diversity is equally poor, with 90% of them consuming less than 4 food groups a day. However, there is a lack of research on the determinants of dual iron and folate deficiencies and under-5 dietary diversity among socially vulnerable populations. The study aimed to assess the prevalence of iron and folic acid deficiencies among pregnant, lactating, and non-pregnant, non-lactating (NPNL) women, the dietary diversity score of children, and identify socio-demographic and anthropometric predictors associated with them.

Methods: It had a cross-sectional quantitative research study design. The study was conducted in the Valsad block of the Valsad district, Gujarat, India. We adopted a multi-stage random sampling to collect data using a semi-structured pre-validated questionnaire. We employed the logistic and Poisson regression techniques to find associations between predictors and the categorical outcome. The strength and the significance of the association were expressed as adjusted Odds Ratio (aOR) or Incident Rate Ratio (IRR) and 95% Confidence Interval (CI), and a p-value.

Results: A total of 1097 women were surveyed. The median (Interquartile Range, IQR) age of the women was 27 (25-30) years. The median (IQR) age of the child was 17 (32-45) months. Compared to the NPNL women, pregnant and lactating mothers had 1.29 higher odds of both iron and folate deficient intake (OR (95%CI); p-value: 1.289 (1.007, 1.570); <0.001). One kg increase in the weight of the child was associated with 2% increase in the dietary diversity score (IRR (95%CI); p-value: 1.003 (1.0007, 1.006); 0.01).

Conclusions: Women are deficient in most micronutrients, and pregnant women and lactating mothers are at a higher risk of dual iron-folate deficiencies.

Keywords: Food quality; diet; nutrients; anemia; diet diversity

Introduction

Micronutrient-related malnutrition [1] is an alarming public health challenge globally, with India bearing a high burden, disproportionately. As per the National Family Health Survey-5 (NFHS-5) report, more than 50% of both pregnant and non-pregnant women were found to be anemic [2], and the status of anaemia among pregnant women who consumed iron folic acid tablets for 100 days and 180 days or more was 44% and 26%, respectively. There are variations within the states and districts related to the prevalence of anemia. For example, while the prevalence of anemia was between 62-65% among women in Gujarat, it was more than 70% in the Valsad district of Gujarat, across all age groups, including pregnant women and children under 5 years of age [3].

The first 1,000 days of life, which is a period from conception till over 2 years of life, are considered extremely crucial for development [4]. Malnutrition of any form in this stage can cause irreversible brain damage and delay physical growth and cognitive development [5]. Iron deficiency is the biggest contributor to anaemia in pregnancy, which, when left untreated, causes long-term damage to maternal and new-born health. Daily oral supplementation of a combination of iron and folic acid (IFA) is the most cost-effective intervention to reduce iron deficiency anaemia in pregnancy [6].

Both quantity and quality of dietary intake are crucial to address for reducing malnutrition. Dietary diversity is an established qualitative measure reflecting household access to a variety of foods. Being short and easy to obtain, it acts as a proxy tool to measure the micronutrient adequacy [7]. Higher dietary diversity leads to improved nutritional outcomes of children. Children in the rural areas and high-focus regions are at a higher risk of dietary diversity failure [8]. Furthermore, dietary diversity failure is associated with low fruit, vegetable, and protein-rich food consumption [9].

Children's dietary diversity is quite low in India, especially in rural areas [10]. Nearly 90% of under-5 children consume less than 4 food groups a day. The inadequate dietary diversity significantly increases the risk of stunting, wasting, and underweight among under-5 children [11]. There is empirical evidence that a high dietary diversity is associated with micronutrient adequacy in infants and children under 5 years old [12]. Likewise, most pregnant mothers have less than 50% of the recommended dietary intakes of iron (98%) and folate (89%) [13].

There are multiple efforts taken by the government to address micronutrient deficiencies, such as POSHAN Abhiyaan, Integrated Child Development Services (ICDS), Mid-Day Meal (MDM) scheme, Food fortification (+F), etc. [14]. However, to tackle the issue of anemia holistically, there is still a need to understand the specific gaps in the dietary practices of women of reproductive age to assess the predictors of IFA and other micronutrient deficiencies. Dietary diversity is a validated proxy indicator of micronutrient adequacy among different age groups, including infants, children, and women [15].

Identifying the need to address these gaps, a cross-sectional exploratory study was conducted in the Valsad district of Gujarat across 51 villages. The study aimed to assess the prevalence of IFA deficiencies among pregnant, lactating, and non-pregnant, non-lactating (NPNL) women, the dietary diversity score of children, and identify socio-demographic and anthropometric predictors associated with these deficiencies and dietary diversity scores, respectively. The project aimed at assessing the predictors of combined iron-folate-deficient intake, with the predictors of deficient intake of either or none.

Methods

Study design

A cross-sectional design was adopted, and quantitative research was conducted.

Study settings

The study was conducted in the Valsad block of the Valsad district, Gujarat. There are 85 villages in the Valsad block of the Valsad district of Gujarat. The mean population of the villages is 2620. We conducted the survey in 41 villages of the Valsad block.

Study population

It included under-5 children and their mothers and pregnant women (irrespective of gender, caste, color, and religion).

Inclusion criteria

- Under-5 children (6-59 months) residing in the areas for at least the past 6 months and planning to reside in the same area for 6 months
- Mothers of under-5 children residing in the areas for at least the past 6 months and planning to reside in the same area for 6 months (their in-laws' side)
- Pregnant women residing in the areas for at least the past 6 months and planning to reside in the same area for 6 months or 1 year

Exclusion criteria

All those who did not provide consent or assent (for adolescent mothers), had suffered a major illness in the past 6-12 months, or had any physical deformity or genetic abnormality.

Sample size

The sample size was 768 (~800) under-5 children and 300 pregnant women.

Sampling

We adopted a multi-stage random sampling. We recruited children from 1000 eligible households spread across 51 villages. Fifty-one villages having more than 250 households were selected randomly from the Valsad block, and approximately 50 households were selected per village, for a total of approximately 250 households. We started from the center of the village, and after having selected the first house, we went in the clockwise direction (right side), and each qualifying household was interviewed till the desired sample size was achieved, i.e., 50 children under-5 and their mothers. One of the youngest under-5 children and his/her mother were selected per household. In the case of a boy and a girl of the same age, the girl was selected due to the evidence of their increased susceptibility to malnutrition. In the case of twins, we randomly selected one. If we could not meet our number, we moved to the adjacent village.

Study tools

- The semi-structured pre-validated questionnaire [16] consisted of questions on the socio-demographic profile of the study participants, i.e., age, sex, educational status, size of the family, type of the family, monthly family income, and occupational status. We also asked about the presence of ration cards in the households, such as the below the poverty line (BPL) card, *Antayodya Anna Yojna* (AAY) card, etc. [17].
- The questionnaire for children included an assessment of the nutritional status of children: weight (measured to the nearest 100g on the weighing scale), height (measured to the nearest 1mm), mid-upper arm circumference (by a tape to the nearest 0.1cm), and 24-hour dietary recall.

Citation: Sultana A, Betsy A, Rastogi P, Choudhary S, Sharma S. Socio-Demographic Determinants of the Combined Iron-Folate Deficient intake among Mothers and Children's Dietary Diversity: A Cross-Sectional Study. Indian J Nutri. 2025;12(2): 327.

- The questionnaire for mothers included questions on anthropometric measurements (weight, height, Mid-Upper Arm Circumference (MUAC), and dietary practices, and the last 24-hour recall. Training of the field team was conducted on the developed questionnaire.
- The dietary diversity score was assessed using the following 8 food groups, including 1) grains, white roots and tubers, and plantains, 2) pulses (beans, peas, and lentils), nuts and seeds, 3) dairy, 4) meat, poultry, and fish, 5) eggs, 6) dark green leafy vegetables, 7) other vitamin A-rich fruits and vegetables, and 8) other vegetables, and other fruits. The score ranges from 0 to 8, expressed as an average score for the population, with a higher score indicating inclusion of more food groups in the diet.
- We assessed the dietary intake of ten micronutrients among mothers, including iron, calcium, vitamin D (Ergocalciferol), vitamin C, vitamin A, vitamin E, zinc, and folic acid. A 24-hour dietary recall was performed to generate the dietary diversity score, which included the assessment of 8 food groups and intake of micronutrients, including IFA. The dietary intake of micronutrients less than the recommended dietary allowance (RDA) was categorised as insufficient intake according to the ICMR 2024 criteria [18]. Additionally, the dietary diversity scores among children aged 6–59 months were also examined to explore their relationship with anthropometry indicators and socio-demographic factors.

Ethical considerations

The ethical approval was obtained from SIGMA-Institutional Ethical Review Board (10095/IRB/22-23).

Statistics

The categorical data were described as frequencies and percentages, and the numerical data were described as mean (Standard Deviation) or median (Interquartile Range, IQR). We created two new variables by combining iron and folate deficiencies. Thereby, one variable had two categories, including 'either or none' iron and folate deficiencies and 'both' iron and folate deficiencies. Likewise, the other variable included three categories: 'either, none, or both' iron and folate deficiencies.

We employed the logistic regression technique to find associations between predictors and the categorical outcomes. The strength and the significance of the association were expressed as adjusted Odds Ratio (aOR) and 95% Confidence Interval (CI), and a p-value. We used the Poisson regression technique to explore associations between predictors of the infant dietary diversity. The strength of the relationship was expressed as Incident Rate Ratio (IRR) and 95% CI. We did not use the occupation of the mother in the dietary diversity model of children, as there was not much variation in the dataset, since 92% of mothers were housewives. All the analyses were performed in STATA version 14.0. A p-value <0.05 was considered a statistically significant value.

Results

The data were collected in the Valsad block of the Valsad district of Gujarat. We collected data from 51 villages. A total of 1097 women were surveyed. Out of 1097, 586 were pregnant and lactating women, and 511 were non-pregnant and non-lactating women. The median (IQR) age of the women was 27 (25-30) years. Out of 1097 women, 276 had no children, 765 had one child between 6 and 59 months, and 56 had two children between 6 and 59 months. Out of 821 children, 405 were boys and 416 were girls.

The median (IQR) age of the child was 17 (32-45) months. The median age of the eldest child was 37 (47-54) months. Out of 56 eldest children, 25 were boys and 31 were girls. The median (IQR) weight and height of the children were 11 (9-13) kg and 87 (75-95) cm, respectively. Similarly, the median (IQR) MUAC of the children was 14.5 (13.5-15) cm. The median (IQR) dietary diversity score among children was 5 (4-8). Nearly 21% of children had less than 50% of the maximum dietary diversity (<4 food groups per day out of 8).

Out of 1097 mothers, 133 were either illiterate or educated between 1st and 8th standard, 799 were educated between 9th and 12th standard, and the remaining 165 were educated up to graduation or above. Out of 1097, 1008 were housewives and 89 were working mothers. Out of 1097, 174 were living in a nuclear family, while 923 were living in a joint or extended family. The median (IQR) weight and height of the mothers were 52.7 (45.1, 60.8) kg and 152 (149, 154.5) cm, respectively. Out of 1097, 610 were above the poverty line, 459 had BPL or AAY cards, and the remaining 28 had no cards. The median (IQR) size of the family was 5 (4-6). The median (IQR) monthly family income was 15k (10k-25k).

All women had insufficient vitamin D and E intake (**Table 1**). Around 67% of NPNL and 88% of the pregnant and lactating women had deficient iron intake **(Figure 1).** Likewise, 71% of the NPNL women and 92% of pregnant and lactating women had deficient folate intake **(Figure 2)**. The pregnancy has emerged as a major predictor of insufficient intake (**Table 2**). Compared to the NPNL women, pregnant and lactating mothers had 1.29 higher odds of 'both iron and folate' deficient intake (OR (95%CI); p-value: 1.289 (1.007, 1.570); <0.001). Similarly, taller and educated women had a higher probability of 'either or none' iron-folate deficient intake than their counterparts.

A positive association between weight and height of the child was noted with their dietary diversity scores (**Table 3**). One kg increase in

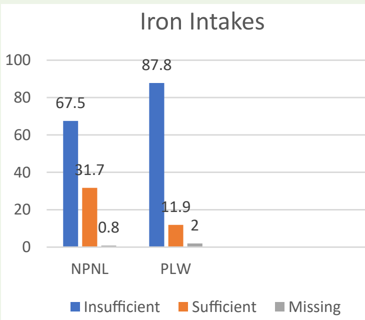

Figure 1: Prevalence of iron deficient intake among NPNL and PLW women.
*All numbers are in percentage formats

Citation: Sultana A, Betsy A, Rastogi P, Choudhary S, Sharma S. Socio-Demographic Determinants of the Combined Iron-Folate Deficient intake among Mothers and Children's Dietary Diversity: A Cross-Sectional Study. Indian J Nutri. 2025;12(2): 327.

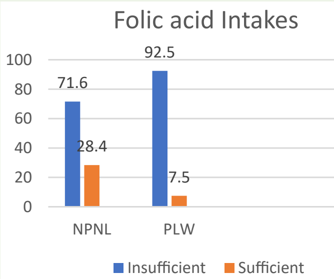

Figure 2: Prevalence of folic acid deficient intake among NPNL and PLW women. *All numbers are in percentage formats

Table 1: Prevalence of micronutrient deficient intake among NPNL and PLW women

Micronutrients intake	Non-Pregnant and Non-Lactating women (n=511); N(%)	Pregnant and Lactating Women (n=586); N(%)
Vitamin D intake		
Insufficient	483 (94.5)	552 (94.2)
Missing	28 (5.5)	34 (5.8)
Calcium intake		
Insufficient	503 (98.4)	573 (97.8)
Sufficient	8 (1.6)	13 (2.2)
Zinc intake		
Insufficient	492 (96.3)	559 (95.4)
Sufficient	15 (2.9)	25 (4.3)
Missing	4 (0.8)	2 (0.3)
Vitamin A intake		
Insufficient	500 (97.8)	578 (98.6)
Sufficient	7 (1.4)	5 (0.8)
Missing	4 (0.8)	3 (0.4)
Vitamin C intake		
Insufficient	410 (80.2)	485 (82.7)
Sufficient	38 (7.5)	32 (5.4)
Missing	63 (12.3)	69 (11.9)
Vitamin E intake		
Insufficient	486 (95.1)	559 (95.4)
Missing	25 (4.9)	27 (4.6)

Abbreviations: NPNL: Non-Pregnant and Non-lactating, PLW: Pregnant and Lactating Women

the weight of the child was associated with 2% increase in the dietary diversity score (IRR (95%CI); p-value: 1.003 (1.0007, 1.006); 0.01).

Discussion

The present study revealed a high prevalence of micronutrient deficiencies among women in the Valsad district of Gujarat, which is consistent with the national-level data highlighting widespread iron deficiency anemia and micronutrient inadequacies among women of reproductive age in India. Notably, 87.8% of pregnant and lactating women were iron-deficient, and 92.5% had insufficient folic acid intake, compared to 67.5% and 71.6% among NPNL women, respectively. Non-compliance in IFA intake among pregnant women was indicated in a study by Choudhuri, *et al.* 2022, where, nearly half of the pregnant women had non-compliant intake of IFA, and major reasons included forgetfulness and fear of side effects [19]. These findings emphasize the persistent gap between increased nutritional requirements during pregnancy and actual intake.

Table 3: Associations between dietary diversity score of children with anthropometric indicators and socio-demographic predictors

Variables	Dietary Diversity Score total IRR (95% CI)
Age (in months)	**1.003 (1.0007, 1.006); 0.01**
Weight (kg)	**1.02 (1.005, 1.05); 0.01**
Height (cm)	**1.004 (1.0007, 1.008); 0.02**
Mid-upper arm circumference (cm)	**0.96 (0.94, 0.98); 0.01**
Education of the mother	
9th-12th standard	0.98 (0.92, 1.05); 0.67
Graduation and above	0.94 (0.86, 1.04); 0.25
Until 8th standard	*Reference*
Cards	
BPL and AAY cards	1.004 (0.95, 1.05); 0.87
No cards	1.028 (0.85, 1.24); 0.77
APL cards	*Reference*

Abbreviations: *BPL: Below the Poverty Line; AAY: Antayodya Yojna Cards; APL: Above the Poverty Line; IRR: Incident Rate Ratio; CI: Confidence Interval All the statistically significant associations were highlighted in bold.*

Table 2: Associations of dual iron-folic acid deficiency with socio-demographic characteristics

Variables	Model I	Model II	
	'Either or None' Iron and Folate deficiency* aOR (95% CI)	Either iron or folate deficiency* aOR (95% CI)	None iron and folate deficiency* aOR (95% CI)
Weight (kg)	-0.003 (-0.016, 0.009); 0.620	-0.003 (-0.017, 0.011); 0.689	-0.004 (-0.025, 0.016); 0.687
Height (cm)	**0.03 (0.001, 0.058); 0.038**	**0.034 (0.003, 0.066); 0.032**	0.018 (-0.028, 0.064); 0.451
Type of beneficiary			
NPNL women	**1.289 (1.007, 1.570); <0.001**	**0.852 (0.542, 1.163); <0.001**	**2.701 (2.044, 3.358); <0.001**
PLW women	*Reference*	*Reference*	*Reference*
Education			
9th-12th standard	**0.494 (0.038, 0.950); 0.033**	0.483 (0.041, 1.008); 0.071	0.543 (-0.184, 1.269); 0.143
Graduation & above	0.509 (-0.054, 1.07); 0.077	0.445 (-0.195, 1.086); 0.173	0.682 (-0.224, 1.590); 0.140
Until 8th standard	*Reference*	*Reference*	*Reference*
Occupation			
Housewife	0.045 (-0.466, 0.558); 0.861	-0.016 (-0.584, 0.551); 0.954	0.188 (-0.667, 1.044); 0.665
Working	*Reference*	*Reference*	*Reference*
Cards			
BPL and AAY cards	-0.048 (-0.333, 0.237); 0.741	-0.062 (-0.382, 0.256); 0.700	-0.013 (-0.472, 0.446); 0.955
No cards	-0.025 (-0.979, 0.928); 0.959	-0.495 (-1.735, 0.744); 0.433	1.026 (-0.364, 2.416); 0.148
APL cards	*Reference*	*Reference*	*Reference*

*Reference category is 'both iron and folic acid deficiencies'

Abbreviations: NPNL: Non-Pregnant and Non-lactating; BPL: Below the Poverty Line; AAY: Antayodya Yojna Cards; APL: Above the Poverty Line; aOR: adjusted Odds Ratio; CI: Confidence Interval. Associations with p-value <0.05 were highlighted in bold.

Citation: Sultana A, Betsy A, Rastogi P, Choudhary S, Sharma S. Socio-Demographic Determinants of the Combined Iron-Folate Deficient intake among Mothers and Children's Dietary Diversity: A Cross-Sectional Study. Indian J Nutri. 2025;12(2): 327.

Due to the increased requirements of IFA, pregnant women are at a high risk of IFA deficiency [20]. This analysis provided a similar conclusion, as it identified pregnancy status as a significant predictor of combined IFA deficiency, indicating that pregnant and lactating women were more likely to suffer from dual deficiencies compared to NPNL women, underscoring the urgent need to strengthen maternal nutrition programs, including access to supplements, nutrition counselling, and food-based interventions.

Height was significantly associated with reduced odds of dual deficiency when compared to being deficient in just one, which may reflect long-term nutritional status rather than short-term intake. There was no significant association between height and being completely free from IFA deficiency. Education level showed a protective trend against deficiencies, especially among women educated up to 9th–12th standard, although associations were marginally significant. This finding suggests that even though it may not eliminate the risk, but a higher level of education reduces the chances of having dual deficiency. This result aligns with a study by Sandri *et al.* 2024, which concludes that education level is of fundamental importance for health, particularly for nutritional habits [21].

Predictors of dietary diversity scores among children aged 6-59 months were identified using Poisson regression analysis. Anthropometric factors such as age, weight, and height were positively associated with dietary diversity, suggesting that older and better-nourished children tend to consume food from more groups, indicating improved dietary quality. Similar findings have been concluded by Khura B *et al.* 2024, where Minimum Dietary Diversity (MDD) had a positive association with underweight in children aged 6 to 23 months. Their results showed that children with adequate MDD had 9% less likelihood of being underweight than those with inadequate MDD [22]. However, a negative association was observed between MUAC and dietary diversity, suggesting that some children are consuming a high-calorie diet, which is not balanced and diverse. Maternal education and household economic status, as measured by ration card ownership, were not significantly associated with child dietary diversity in this population. These findings highlight the importance of looking beyond household poverty to understand dietary quality in young children and suggest that nutrition interventions may need to focus on improving both the quantity and quality of foods offered.

Overall, the observations highlight the need for targeted nutritional interventions addressing specific vulnerabilities of pregnant and lactating women owing to higher nutritional needs and increased risks of dual deficiencies. The interventions can be strategized as a holistic approach that includes improving the quality of maternal diets through food-based approaches, education interventions on the importance of IFA supplementation, and promoting diversified complementary feeding practices for young children. Such efforts are essential to mitigate the burden of micronutrient deficiencies among vulnerable populations, such as pregnant, lactating women, and children under 5 years of age.

The results of the present study should be interpreted in view of certain limitations. The study was done in a small geographical area (Valsad block), and the findings may not be generalized to other geographies. The 24h recall had its own limitations of recall bias. Though efforts were made to minimize the error by deeply probing the intakes. We did not obtain other antenatal, postnatal, and infant indicators that could have been adjusted in the regression models due to lack of resources and time. However, the study has its strengths. We analysed the dual IFA deficient intake and assessed its predictors based on a relatively adequate sample of 1097 women. We used the standard and pre-validated tools for obtaining data from the participants. The data were collected by the local investigators who could speak the local dialect.

Conclusions

Inadequate intake of most micronutrients is widely prevalent among mothers, irrespective of their pregnancy status. However, pregnancy exaggerates the deficiencies due to the increased demand, leading to a vicious cycle of malnutrition across generations. Under-5 dietary diversity failure is common and one-fifth of the children consume less than 4 food groups per day. Within the household, mother and the child may have different nutritional intakes and statuses. Hence, family-centric approach is required while assessing the nutritional intakes of the key vulnerable populations.

References

1. World Health Organization (2024) Malnutrition fact sheet, WHO, 2024.
2. National Family Health Survey NFHS-5, 2019–2021, India fact sheet.
3. National Family Health Survey NFHS-5, 2019–2021, Valsad District fact sheet.
4. Nyarko MJ, van Rooyen D (RM), ten Ham-Baloyi W (2023) Preventing malnutrition within the first 1000 days of life in under-resourced communities: An integrative literature review. Journal of Child Health Care 28: 898-913.
5. Likhar A, Patil MS (2022) Importance of Maternal Nutrition in the First 1,000 Days of Life and Its Effects on Child Development: A Narrative Review. Cureus 14: e30083. https://doi.org/10.7759/cureus.30083
6. Billah SM, Raynes-Greenow C, Ali NB, Karim F, Lotus SU, et al. (2022) Iron and Folic Acid Supplementation in Pregnancy: Findings from the Baseline Assessment of a Maternal Nutrition Service Programme in Bangladesh. Nutrients 14: 3114.
7. Ansari G, Jain S, Bhatia N (2020) Association of Maternal dietary diversity and nutritional status with child's dietary diversity and nutritional status (2-5 years) in India. World Nutrition 11: 110-28.
8. Sawadogo PS, Martin-Prevel Y, Savy M, Kameli Y, Traissac P (2006) and Traore, A.S. 2006, 'An infant and child feeding index is associated with the nutritional status of 6-23monthold children in rural Burkina Faso', Journal of Nutrition136: 656-663.
9. Rai RK, Kumar SS, Kumar C (2022) Factors associated with minimum dietary diversity failure among Indian children. Journal of Nutritional Science 11: e4.
10. Vispute S, Mandlik R, Sanwalka N, Gondhalekar K, Khadilkar A (2023) Dietary diversity and food variety scores and their association with nutrition and health status of Indian children and adolescents: A multicenter study. Nutrition 111:112039.
11. Saha J, Chouhan P, Malik NI, Ghosh T, Das P, et al. (2022) Effects of dietary diversity on growth outcomes of children aged 6 to 23 months in India: evidence from national family and health survey. Nutrients 15:159.
12. Molani-Gol R, Kheirouri S, Alizadeh M (2023) Does the high dietary diversity score predict dietary micronutrients adequacy in children under 5 years old? A systematic review. Journal of Health, Population and Nutrition 42: 2.

Citation: Sultana A, Betsy A, Rastogi P, Choudhary S, Sharma S. Socio-Demographic Determinants of the Combined Iron-Folate Deficient intake among Mothers and Children's Dietary Diversity: A Cross-Sectional Study. Indian J Nutri. 2025;12(2): 327.

13. Tyagi S (2023) Assessment of maternal dietary intake during pregnancy and its relation with nutritional status of infants at birth. Human Nutrition & Metabolism 31: 200180.
14. Kapur K, Suri S (2020) Towards a malnutrition-free India: Best practices and innovations from POSHAN Abhiyaan. Observer Research Foundation. 103:1-30.
15. Oumer A, Abebaw B (2019) Determinants of dietary adequacy among school age children in Guraghe Zone, Southern Ethiopia. International Journal of Public Health Science (IJPHS) 8: 211.
16. More NS, Waingankar A, Ramani S, Chanani S, D'Souza V, Pantvaidya S, et al. (2018) Community-based management of acute malnutrition to reduce wasting in urban informal settlements of Mumbai, India: a mixed-methods evaluation. Global Health: Science and Practice 6: 103-127.
17. HIMANSHU (2010) Towards new poverty lines for India. Economic and Political Weekly. 2: 38-48.
18. ICMR (2024) National Institute of Nutrition. Dietary Guidelines for India.
19. Choudhuri P, Debbarma A, Debbarma S, Reang T (2022) Compliance to iron and folic acid tablets among pregnant women attending antenatal clinic in Agartala Government Medical College. Journal of Family Medicine and Primary Care, 11: 2763-2767.
20. Kebaabetswe P, Diseko M, Zash R, Mayondi G, Mabuta J, et, al. (2024) A qualitative assessment of barriers to iron and folic acid supplementation among pregnant women in Botswana. *BMC public health 24*: 3369.
21. Sandri E, Pardo J, Cantín Larumbe E, Cerdá Olmedo G, Falcó A (2024) Analysis of the influence of educational level on the nutritional status and lifestyle habits of the young Spanish population. Frontiers in public health 12: 1341420.
22. Khura B, Ahmed KY, Mohanty P, Kumar CP, Thapa S (2024) Minimum dietary diversity is associated with lower risk of childhood underweight: Evidence from the 2019/2021 National Family Health Survey of India. *Nutrition Research 130:* 11-21.

Citation: Sultana A, Betsy A, Rastogi P, Choudhary S, Sharma S. Socio-Demographic Determinants of the Combined Iron-Folate Deficient intake among Mothers and Children's Dietary Diversity: A Cross-Sectional Study. Indian J Nutri. 2025;12(2): 327.