# Minimum Dietary Diversity And Its Determinants Among Children Aged 6–60 Months Using The 24-Hour Dietary Recall Method - A Cross-Sectional Observational Study

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**ABSTRACT**

**Background:** Optimal dietary diversity during early childhood is critical for adequate micronutrient intake, linear growth, and cognitive development. Despite being a simple, non-invasive proxy for nutritional adequacy, dietary diversity remains suboptimal among under-five children in India. This study was planned to estimate the Minimum Dietary Diversity (MDD) and its determinants among children aged 6–60 months attending a tertiary-care teaching hospital and its field practice area.

**Methods:** A cross-sectional, community- and facility-based observational study was conducted over a period of 12 months in the Pediatric Outpatient Department and community field practice area of Chettinad Hospital and Research Institute (CHRI). A sample of 95 children aged 6–60 months was calculated .Dietary intake was assessed using the WHO-recommended 24-hour dietary recall with a repeat recall at two weeks. Anthropometry was measured and Z-scores were computed as per the WHO Child Growth Standards (2006).

**Results:** Of the 95 children studied, 53 (55.79%) achieved MDD (≥ 5 of 8 WHO food groups). Minimum Acceptable Diet (MAD) was achieved by 29 (30.53%). The commonly consumed food groups were grains/roots/tubers (96.8%) and dairy (87.4%); flesh foods (35.8%) and breast milk (27.4%, limited to younger children) were the least consumed. Children aged 24–60 months (adjusted OR [aOR] 22.62; 95% CI 5.63–90.91; $p < 0.001$) and those born to mothers > 30 years (aOR 6.69; 95% CI 1.94–23.00; $p = 0.003$) were significantly more likely to achieve MDD. Underweight and severely underweight children (aOR 0.08; 95% CI 0.02–0.32; $p < 0.001$) were significantly less likely to achieve MDD. Sex, birth order, and socioeconomic status showed no statistically significant association with MDD.

**Conclusion:** Slightly more than half of the children aged 6–60 months in the study setting achieved minimum dietary diversity. Younger age (6–23 months), younger maternal age, and underweight status emerged as key determinants of inadequate dietary diversity. Targeted complementary-feeding counselling for mothers of infants and young children, and focused nutrition-rehabilitation of underweight children, are required to bridge the diversity gap.

**Keywords:** Minimum dietary diversity; Complementary feeding; 24-hour recall; Under-five children; Underweight; WHO food groups.

## INTRODUCTION

Optimal nutrition during the first five years of life is a fundamental determinant of growth, immune competence, and neuro-cognitive development [1,2]. The complementary feeding period, which spans 6 to 24 months, is a critical window during which inadequate dietary quality translates into lifelong deficits in stature and cognition [3]. Dietary diversity—defined as the consumption of foods from multiple food groups—is a validated proxy indicator for the micronutrient adequacy of a child's diet [4,5]. The World Health Organization (WHO) has operationalised this construct through the indicator Minimum Dietary Diversity (MDD): the proportion of children who consume foods from at least five of eight designated food groups in the previous 24 hours [6].

Despite India's economic growth and successive national nutrition programmes, the country continues to carry a disproportionate share of the global burden of child undernutrition [7]. The latest National Family Health Survey (NFHS-5, 2019–21) demonstrated that only 11.3% of Indian children aged 6–23 months received an adequate diet, and dietary diversity remained conspicuously low across all states [8]. Large-scale Indian analyses have further shown that the diets of most under-five children remain heavily skewed towards cereals and dairy, with limited intake of protein- and micronutrient-rich groups [17,18]. Studies from other low- and middle-income countries have repeatedly shown that poor dietary diversity is associated with stunting, wasting, anaemia, and repeated infections [9,10,11], and recent Indian evidence confirms that improvements in dietary diversity translate into measurable gains in linear growth and weight [20].

The determinants of inadequate dietary diversity are multifactorial. Maternal education, maternal age and occupation, household income and food security, family structure, birth order, and the age of the child are all reported to influence feeding practices [12,13,14]. However, the relative contribution of each determinant varies by setting, and data from Tamil Nadu—particularly from peri-urban populations served by tertiary-care teaching hospitals—are limited.
Understanding the local pattern of dietary diversity and its modifiable determinants is essential to design context-specific nutrition interventions and to strengthen the Information, Education and Communication (IEC) activities conducted in the field-practice area. Against this background, the present study was undertaken with the aim of assessing Minimum Dietary Diversity and identifying its determinants among children aged 6–60 months attending a tertiary-care teaching hospital and its community field-practice area, using the WHO-recommended 24-hour dietary recall method.

# METHODS AND METHODOLOGY

The primary objective of this study was to assess the Minimum Dietary Diversity among children aged 6–60 months attending the Pediatric Outpatient Department (OPD) and residing in the community field-practice area of Chettinad Hospital and Research Institute (CHRI), Kelambakkam, Tamil Nadu, using the WHO-recommended 24-hour dietary recall method. The secondary objectives were: (i) to identify sociodemographic, maternal and household factors influencing dietary diversity; (ii) to determine the association between dietary diversity and nutritional status as measured by anthropometry; and (iii) to assess the proportion of children achieving the Minimum Acceptable Diet (MAD) as per WHO criteria.
A cross-sectional, community- and facility-based observational study was conducted over 12 months at the Pediatric OPD and community field-practice area of CHRI. All children aged 6–60 completed months were eligible; those with chronic systemic illness, congenital anomalies affecting feeding, acute severe illness, or caregiver refusal were excluded. The sample size was calculated using $N = Z^2p(1–p)/d^2$ with an expected MDD prevalence of 55.24%, Z = 1.96 and d = 10%, yielding a minimum of 95 children. Data were collected using a pre-tested, semi-structured questionnaire capturing sociodemographic characteristics, IYCF practices, a 24-hour dietary recall (repeated at two weeks) and anthropometry. SES was classified using the Modified B. G. Prasad scale. Foods were classified into eight WHO food groups [6]; MDD was defined as consumption of ≥ 5 groups. MMF and MAD followed WHO 2021 definitions [6]. Weight, length/height and MUAC were measured using standard equipment, and Z-scores (WAZ, HAZ, WHZ) computed per WHO Child Growth Standards 2006 [15].
Data were analysed using SPSS version 26. Chi-square and Fisher's exact tests were used for bivariate associations; binary logistic regression (entry criterion $p < 0.20$) identified independent determinants. Crude and adjusted odds ratios with 95% CIs were computed; $p < 0.05$ was considered significant. Ethics approval was obtained from the CHRI Institutional Ethics Committee, informed consent was taken, and nutritional counselling [16] was provided to every caregiver post-assessment.

# RESULTS

**Characteristics of the Study Population**
A total of 95 eligible children aged 6–60 months were enrolled over the study period. The mean age of the study participants was 29.8 ± 15.0 months, ranging from 6 to 60 months. The majority of children (57, 60.0%) belonged to the 24–60 months age bracket, while 28 (29.5%) were aged 12–23 months and 10 (10.5%) were aged 6–11 months. Boys slightly outnumbered girls (52 [54.7%] versus 43 [45.3%]). Regarding birth order, 39 (41.1%) were first-born, 40 (42.1%) were second-born, and 16 (16.8%) were third-born or higher.
The mean maternal age was 29.8 ± 5.1 years; 53 (55.8%) mothers were 30 years or younger. Nearly half of the mothers (46, 48.4%) had completed secondary education, and the largest proportion of families belonged to socioeconomic class III of the Modified B. G. Prasad classification (44, 46.3%). Nuclear families predominated (61, 64.2%), and the majority of families (71, 74.7%) reported that they had never experienced food running out due to lack of money in the past 30 days. The complete sociodemographic profile is presented in Table 1.

**Table 1. Sociodemographic characteristics of the study population (N = 95)**

| Variable | Category | n | % |
|---|---|---|---|
| Age group | 6–11 months | 10 | 10.5 |
| | 12–23 months | 28 | 29.5 |
| | 24–60 months | 57 | 60.0 |
| Sex | Male | 52 | 54.7 |
| | Female | 43 | 45.3 |
| Birth order | 1st | 39 | 41.1 |
| | 2nd | 40 | 42.1 |
| | ≥ 3rd | 16 | 16.8 |
| Mother's age | ≤ 30 years | 53 | 55.8 |
| | > 30 years | 42 | 44.2 |
| Mother's education | Illiterate | 6 | 6.3 |
| | Primary | 10 | 10.5 |
| | Secondary | 46 | 48.4 |
| | Higher secondary | 22 | 23.2 |
| | Graduate & above | 11 | 11.6 |
| SES (Modified B.G. Prasad) | Class I | 9 | 9.5 |
| | Class II | 17 | 17.9 |
| | Class III | 44 | 46.3 |
| | Class IV | 14 | 14.7 |
| | Class V | 11 | 11.6 |
| Family type | Nuclear | 61 | 64.2 |
| | Joint | 21 | 22.1 |
| | Three-generation | 13 | 13.7 |

**Prevalence of Minimum Dietary Diversity**

Of the 95 children studied, 53 (55.79%; 95% CI 45.2–65.9) met the MDD criterion, defined as consumption of foods from at least five of the eight WHO food groups in the previous 24 hours, while 42 (44.21%) did not meet this criterion (Figure 1). The mean number of WHO food groups consumed per child was 4.7 (SD 1.5; range 1–8). When stratified by age, the 24–60 months group showed a considerably higher proportion of MDD achievement (43/57, 75.4%) compared with the 6–23 months group (10/38, 26.3%), indicating that dietary diversity improves substantially as children grow older and transition to family-based diets.

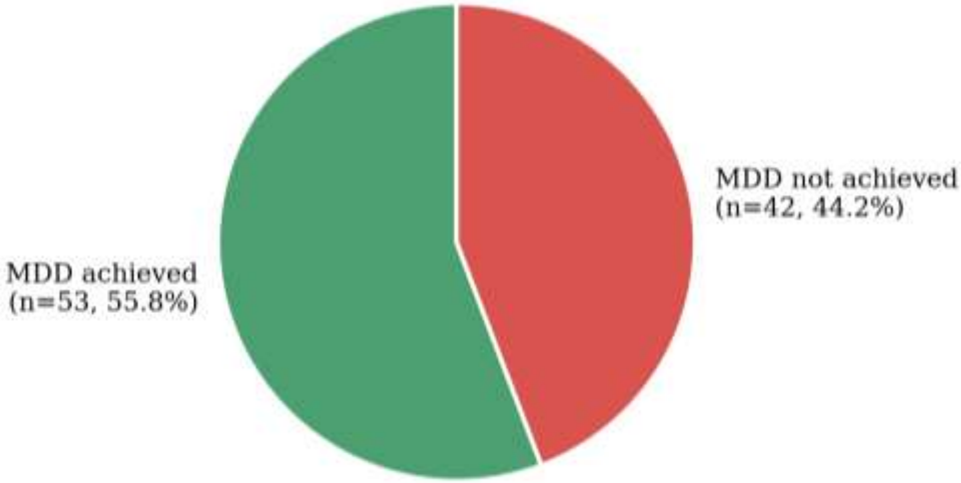

**Figure 1. Prevalence of minimum dietary diversity (MDD) among children aged 6–60 months (N = 95)**

**Consumption of Individual WHO Food Groups**

Grains, roots and tubers were the most universally consumed food group, reported by 92 (96.8%) children, reflecting the rice- and cereal-based dietary pattern characteristic of South Indian households. Dairy products were the second most consumed group (83, 87.4%), consistent with the cultural prominence of milk and curd in the regional diet. Legumes, nuts and seeds were consumed by 60 (63.2%) children, while eggs were consumed by 57 (60.0%). Vitamin A–rich fruits and vegetables, which include orange-fleshed vegetables such as carrot and pumpkin and dark green leafy vegetables such as spinach and drumstick leaves, were consumed by 52 (54.7%) children. Other fruits and vegetables were consumed by 53 (55.8%).

Flesh foods — including chicken, fish, mutton and organ meats — were consumed by only 34 (35.8%) children, making this the least consumed non-breast-milk group. Breast milk consumption was reported by 26 (27.4%) children, and this was almost entirely confined to the younger 6–23 months subgroup; only a handful of children older than 24 months were still receiving breast milk. The pattern reveals a clear hierarchy: virtually all children receive cereals and dairy, about two-thirds receive legumes and eggs, about half receive fruits and vegetables, and only about one-third receive the most micronutrient-dense animal-source foods (Figure 2).

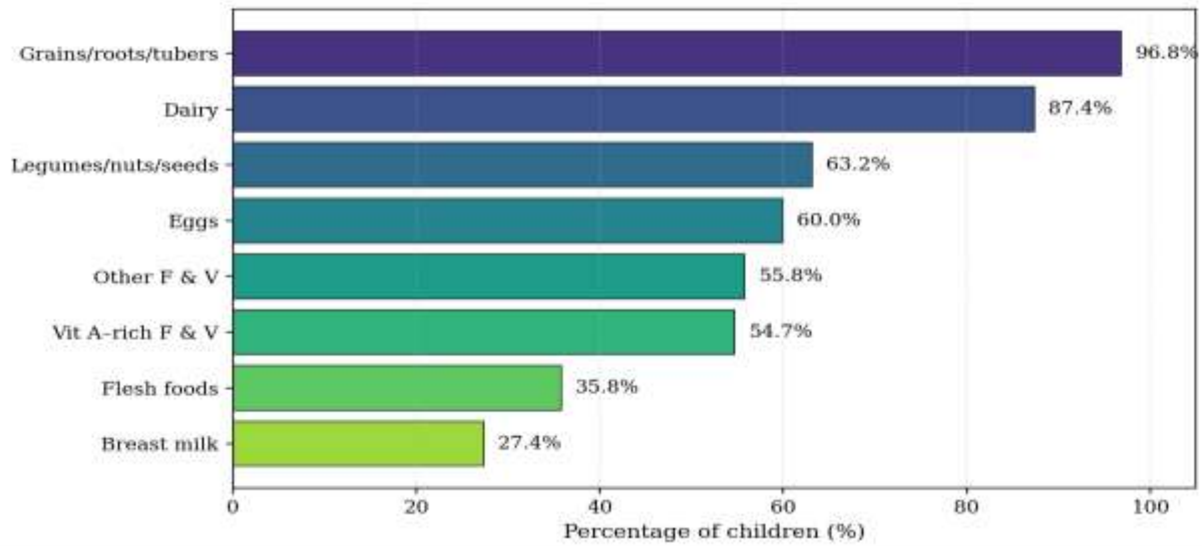


**Figure 2. Consumption of individual WHO food groups in the previous 24 hours (N = 95)**

**Secondary Outcomes and Nutritional Status**

Minimum Meal Frequency (MMF) was met by 68 (71.6%) children, indicating that most families in the study population fed their children an adequate number of times per day as recommended for the child's age and breastfeeding status. However, the Minimum Acceptable Diet (MAD), which requires both MDD and MMF to be met simultaneously (plus at least two milk feeds for non-breastfed children), was achieved by only 29 (30.53%) children. This substantial gap between MMF and MAD indicates that while meal frequency is generally adequate, the quality and diversity of foods offered at those meals remains the primary bottleneck.

Anthropometric assessment revealed that 33 (34.7%) children were underweight (WAZ < −2 SD), of whom 22 (23.2%) were classified as underweight and 11 (11.6%) as severely underweight (WAZ < −3 SD). Stunting (HAZ < −2 SD) was present in 32 (33.7%) children, comprising 21 (22.1%) stunted and 11 (11.6%) severely stunted. Wasting (WHZ < −2 SD) was comparatively uncommon, affecting only 3 (3.2%) children, with none in the severely wasted category. The mean WAZ was −0.82 ± 1.35, mean HAZ was −0.65 ± 1.45 and mean WHZ was −0.34 ± 0.92. These data indicate that chronic undernutrition (underweight and stunting) is considerably more prevalent than acute wasting in this population. The detailed secondary outcomes and nutritional classifications are presented in Table 2.

**Table 2. Secondary outcomes and nutritional status (N = 95)**

| Indicator | Category | n | % |
|---|---|---|---|
| Minimum Meal Frequency | Achieved | 68 | 71.6 |
| | Not achieved | 27 | 28.4 |
| Minimum Acceptable Diet | Achieved | 29 | 30.5 |
| | Not achieved | 66 | 69.5 |
| Underweight (WAZ) | Normal | 62 | 65.3 |
| | Underweight (−2 to −3 SD) | 22 | 23.2 |
| | Severely underweight (< −3 SD) | 11 | 11.6 |
| Stunting (HAZ) | Normal | 63 | 66.3 |
| | Stunted (−2 to −3 SD) | 21 | 22.1 |
| | Severely stunted (< −3 SD) | 11 | 11.6 |
| Wasting (WHZ) | Normal | 92 | 96.8 |
| | Wasted (−2 to −3 SD) | 3 | 3.2 |
| | Severely wasted (< −3 SD) | 0 | 0.0 |

**Bivariate Analysis of Determinants of MDD**

To identify factors associated with MDD achievement, bivariate analysis was performed between MDD status and a range of sociodemographic, maternal, household and nutritional variables as shown in table 3. Four variables showed statistically significant associations ($p < 0.05$). Age category was the strongest correlate: only 10 of 38 (26.3%) children aged 6–23 months achieved MDD, compared with 43 of 57 (75.4%) in the 24–60 months group ($p < 0.001$). Maternal age was also significant: 31 of 42 (73.8%) children of mothers > 30 years achieved MDD, versus 22 of 53 (41.5%) children of younger mothers ($p = 0.003$). Among underweight children, only 9 of 22 (40.9%) achieved MDD, and among severely underweight children only 1 of 11 (9.1%) did so, compared with 43 of 62 (69.4%) among normally nourished children ($p < 0.001$). A similarly significant pattern was observed for stunting ($p < 0.001$).

**Table 3. Bivariate analysis of determinants of minimum dietary diversity (N = 95)**

| Determinant | Category | MDD achieved n (%) | MDD not achieved n (%) | p-value* |
|---|---|---|---|---|
| Age category | 6–23 months | 10 (26.3) | 28 (73.7) | < 0.001 |
| | 24–60 months | 43 (75.4) | 14 (24.6) | |
| Sex | Male | 26 (50.0) | 26 (50.0) | 0.297 |
| | Female | 27 (62.8) | 16 (37.2) | |
| Birth order | 1st | 22 (56.4) | 17 (43.6) | 0.873 |
| | 2nd | 23 (57.5) | 17 (42.5) | |
| | ≥ 3rd | 8 (50.0) | 8 (50.0) | |
| Mother's age | ≤ 30 y | 22 (41.5) | 31 (58.5) | 0.003 |
| | > 30 y | 31 (73.8) | 11 (26.2) | |
| Mother's education | Illiterate + Primary | 9 (56.3) | 7 (43.7) | 0.808 |
| | Secondary | 23 (50.0) | 23 (50.0) | |
| | Higher Sec +Grad | 21 (63.6) | 12 (36.4) | |

| | | | | |
|---|---|---|---|---|
| SES (Prasad) | Class I–II | 18 (69.2) | 8 (30.8) | 0.302 |
| | Class III | 22 (50.0) | 22 (50.0) | |
| | Class IV–V | 13 (52.0) | 12 (48.0) | |
| Underweight | Normal | 43 (69.4) | 19 (30.6) | < 0.001 |
| | Underweight | 9 (40.9) | 13 (59.1) | |
| | Severe UW | 1 (9.1) | 10 (90.9) | |
| Stunting | Normal | 43 (68.3) | 20 (31.7) | < 0.001 |
| | Stunted | 9 (42.9) | 12 (57.1) | |
| | Severe stunting | 1 (9.1) | 10 (90.9) | |
| Family type | Nuclear | 36 (59.0) | 25 (41.0) | 0.655 |
| | Joint | 11 (52.4) | 10 (47.6) | |
| | Three-gen | 6 (46.2) | 7 (53.8) | |
| Food security | Never ran out | 41 (57.7) | 30 (42.3) | 0.804 |
| | Sometimes | 10 (50.0) | 10 (50.0) | |
| | Often / Always | 2 (50.0) | 2 (50.0) | |

*p < 0.05=significant

**Age-related differences in minimum dietary diversity**

The age-related disparity in MDD achievement is visually depicted in Figure 3. Among children aged 6–23 months, nearly three-quarters (73.7%) failed to achieve MDD, with most consuming only 3 to 4 food groups — typically grains, dairy and one additional group. By contrast, in the 24–60 months group, 75.4% achieved MDD, reflecting the broader repertoire of family foods to which older children are exposed. The difference was highly significant on chi-square testing (p < 0.001) and represents the single most important modifiable determinant identified in this study, as it directly maps to the complementary-feeding counselling window targeted by the WHO's IYCF strategy.

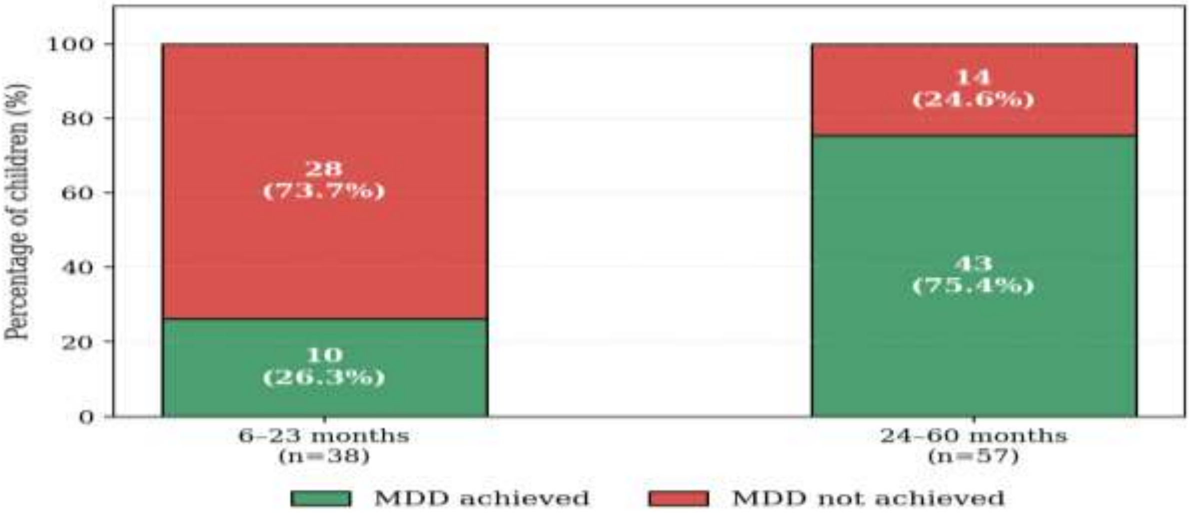


**Figure 3. Minimum dietary diversity achievement by age category**

Figure 4 illustrates the inverse gradient between MDD achievement and nutritional status using a grouped bar chart. Among normally nourished children, 43 (69.4%) achieved MDD. This proportion dropped to 9 of 22 (40.9%) among underweight children and fell to a striking 1 of 11 (9.1%) among the severely underweight. The progressive decline suggests a dose–response relationship: as the severity of underweight increases, the likelihood of a diverse diet decreases sharply. This inverse association was highly significant (chi-square, $p < 0.001$) and persisted after multivariable adjustment.

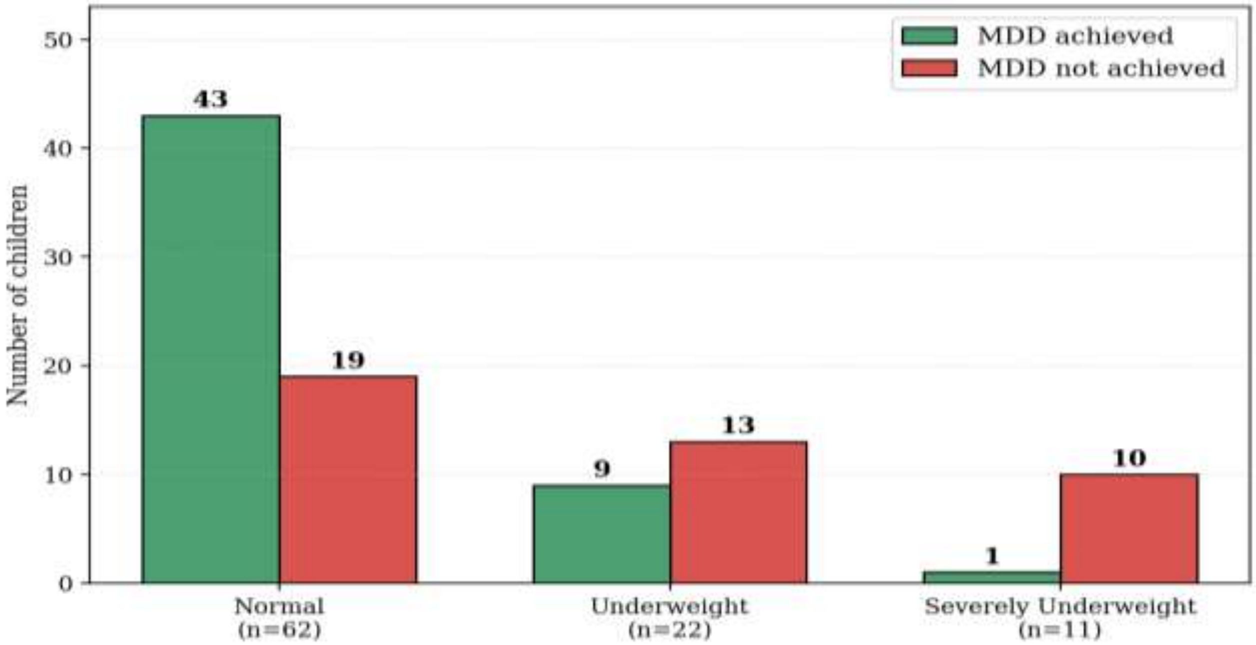


**Figure 4. Minimum dietary diversity achievement by underweight status**

**Multivariable Logistic Regression**

All variables with a p-value < 0.20 on bivariate analysis were entered simultaneously into a binary logistic regression model with MDD achievement as the dependent variable, as shown in table 4.Three variables emerged as independent, statistically significant determinants of MDD. Children aged 24–60 months had 22.62 times higher odds of achieving MDD compared with those aged 6–23 months (aOR 22.62; 95% CI 5.63–90.91; $p < 0.001$), making age the single strongest predictor in the model. Children of mothers aged > 30 years had 6.69 times higher odds than those of younger mothers (aOR 6.69; 95% CI 1.94–23.00; $p = 0.003$). Underweight and severely underweight children had a 92% reduction in the odds of achieving MDD compared with normally nourished children (aOR 0.08; 95% CI 0.02–0.32; $p < 0.001$), confirming that poor nutritional status and poor dietary diversity co-exist in a tightly linked manner even after controlling for age, maternal age, sex, SES and birth order.

**Table 4. Multivariable binary logistic regression: independent determinants of MDD achievement**

| Variable | Category (Reference) | aOR | 95% CI | p-value |
|---|---|---|---|---|
| Age category | 24–60 m (vs 6–23 m) | 22.62 | 5.63 – 90.91 | < 0.001 |
| Maternal age | > 30 y (vs ≤ 30 y) | 6.69 | 1.94 – 23.00 | 0.003 |
| Underweight | UW/Severe UW (vs Normal) | 0.08 | 0.02 – 0.32 | < 0.001 |
| Sex | Female (vs Male) | 2.44 | 0.75 – 7.92 | 0.137 |
| SES | Class I–II (vs III–V) | 2.62 | 0.63 – 10.96 | 0.186 |
| Birth order | ≥ 3rd (vs 1st) | 0.35 | 0.07 – 1.73 | 0.195 |

aOR = adjusted odds ratio; CI = confidence interval. p < 0.05=significance

# DISCUSSION

**Prevalence of Minimum Dietary Diversity**

In direct fulfilment of the primary objective of the study, we estimated the prevalence of minimum dietary diversity among 95 children aged 6–60 months attending the Pediatric OPD and residing in the community field-practice area of CHRI. Our observed prevalence of 55.79% (95% CI 45.2–65.9) is indicative of a population in which slightly more than half of the children are reaching the minimum threshold of dietary adequacy recommended by the World Health Organisation, while a substantial 44.21% continue to fall short. When placed in context, this figure is considerably higher than the national average of 23.3% reported for 6–23-month-old infants in NFHS-5 [8], and also higher than the 29–38% range reported from several rural Indian settings [13,14,17]. Two explanations appear plausible. First, our inclusion of older children up to 60 months — a wider age bracket than the 6–23 months window used in most national surveys — introduces substantially more children who, by virtue of age, already consume a wider variety of food groups. Second, the peri-urban catchment of CHRI, with relatively better access to markets, education, and healthcare, differs from the deep-rural settings underpinning most NFHS data.

Nonetheless, our finding is directionally consistent with the conclusion of Ganesamoorthy et al. from neighbouring rural Puducherry [11], who also observed a prevalence higher than the national average but still representing a substantial gap in dietary adequacy. Taken together, these data suggest that while South Indian under-five children may be faring better than their counterparts from other regions, nearly one in every two children continues to miss the minimum benchmark for dietary diversity — a gap that is entirely actionable through routine clinical counselling at every well-child contact.

**The Age-Driven Diversity Gap and the Role of Maternal Experience**

The most striking finding of the present study — consistent with the first secondary objective of identifying sociodemographic determinants — was the overwhelming influence of the child's age on MDD achievement. Only 26.3% of children aged 6–23 months achieved MDD, compared with 75.4% of those aged 24–60 months. After multivariable adjustment for maternal age, sex, socioeconomic status, birth order and nutritional status, children in the older bracket had nearly 23-fold higher odds (aOR 22.62, 95% CI 5.63–90.91) of meeting minimum dietary diversity. This near-universal finding across Indian and international literature [11,13,18,19] points to a persistent and clinically important complementary-feeding gap during the critical 6–23 month window, when most of the brain's growth trajectory and a substantial portion of the child's final stature are being established. During this window, families in our setting — as in most of India — continue to offer primarily staple cereals, diluted milk and occasional fruits, hesitating to introduce protein-rich foods such as eggs, pulses, fish and meat because of culturally entrenched beliefs about infant digestibility, the perception that such foods are 'too heavy', or, in vegetarian households, outright restriction. The consequence is a monotonous diet at exactly the moment when dietary diversity matters most for micronutrient adequacy and linear growth [9,20].

Layered upon this age effect is the influence of the mother's own life course. Children of mothers older than 30 years were 6.7 times more likely (aOR 6.69, 95% CI 1.94–23.00; $p = 0.003$) to achieve MDD than children of younger mothers, and this effect persisted after adjustment. Several plausible mechanisms may explain the finding. Older mothers are typically more experienced in child-rearing, having navigated feeding transitions before; they are more likely to have greater autonomy in household decision-making, better bargaining position in food allocation, and larger social networks through which child-feeding knowledge is transmitted. Older mothers in our setting are also more likely to be economically active and thereby able to diversify household food purchases. Similar associations have been observed in studies from Ethiopia [19] and across South Asia [13,14], and our finding reinforces the need to target first-time and younger mothers with intensified, structured counselling — potentially piggybacking on existing platforms such as the Home-Based Newborn Care programme and ICDS Anganwadi visits. Of note, maternal education in our cohort was not significantly associated with MDD, a finding that contrasts with the broader literature and may reflect a ceiling effect, since nearly three-quarters of our mothers had completed at least secondary schooling, leaving little room for an educational gradient to manifest.

**Dietary Diversity and Nutritional Status**

In direct response to the second secondary objective — to determine the association between dietary diversity and nutritional status — we documented a striking inverse relationship between MDD achievement and both underweight and stunting. Underweight and severely underweight children had an adjusted odds ratio of 0.08 (95% CI 0.02–0.32; p

< 0.001) for achieving MDD, meaning that their odds of meeting the minimum diversity threshold were reduced by approximately 92% compared with normally nourished children. Remarkably, only one of the eleven severely underweight children in our cohort achieved MDD. A parallel pattern was observed with stunting ($p < 0.001$), though not with wasting — consistent with the view that dietary diversity is a long-term, chronic-exposure variable that influences cumulative growth rather than acute wasting.

The bidirectional nature of this relationship deserves emphasis. On one hand, diets lacking in micronutrient-dense food groups — particularly flesh foods, eggs and vitamin A–rich produce — fail to supply the iron, zinc, vitamin A and high-quality protein needed for linear growth and weight gain [4,5,10]. On the other hand, children who are already undernourished often have reduced appetite, increased susceptibility to infections (with further anorexigenic effects), and caregivers who, seeing a smaller and sicker child, may paradoxically restrict the introduction of new foods out of anxiety about digestion. The cycle is self-perpetuating, and our data reinforce the conclusion of Sawadogo et al. [10] and Arimond et al., [4] that dietary diversity is not merely a correlate of good nutrition but likely a contributing cause. From a clinical perspective, this has an immediate implication: every under-five child identified as underweight at routine OPD or immunisation contact should prompt not only anthropometric follow-up but a focused dietary-diversity assessment and structured counselling of the caregiver. The 24-hour recall method, as operationalised in this study, is inexpensive, rapid, and deployable by a trained ANM, ASHA or medical intern — and should, we argue, become a routine component of under-five nutrition screening in primary-care settings.

**Quality Deficit in Minimum Acceptable Diet**

We evaluated the proportion of children achieving the Minimum Acceptable Diet (MAD), a composite indicator that combines dietary diversity with meal frequency. While 71.6% of our children met the MMF criterion, only 30.53% achieved MAD, and this large gap between frequency and adequacy is, in our view, the single most policy-relevant finding of the study. It demonstrates that although most Tamil families do feed their children often enough — a testament to the cultural tradition of frequent, small meals in South Indian households — the diets offered at those meals remain monotonous, heavily weighted towards grains and dairy (96.8% and 87.4% consumption respectively), with under-consumption of protein-rich groups. Only 27.4% of children were still being breastfed — a figure that naturally declines with age — and only 35.8% had consumed any flesh food in the previous 24 hours. A similar pattern of monotonous, cereal-dairy-dominated diets has been described in large-scale analyses of Indian complementary feeding practices [13,18], and reiterates that any nutrition-counselling strategy built solely around meal frequency will miss the essential target of diet quality. The practical message for the field practice area of CHRI is that IEC activities must emphasise not 'how often' but 'how varied' — with concrete, locally available examples such as boiled egg, mashed ragi with groundnut, drumstick leaves, or small fish preparations that fit local dietary idioms and price points.

Contrary to earlier Indian and international reports, sex, birth order and socioeconomic status (as classified by the Modified B. G. Prasad scale) did not emerge as statistically significant determinants of MDD in our study, either on bivariate ($p = 0.297$, 0.873 and 0.302 respectively) or on multivariable analysis. The absence of a sex-based difference is perhaps the most reassuring finding, since historical literature from South Asia has documented a systematic preferential feeding of male children. Our finding — mirrored by recent Indian data from Aurino et al. [20] and Ganesamoorthy et al. [11] — may reflect a gradual but real narrowing of intra-household gender disparities in feeding practices, at least in the peri-urban, moderately educated population served by our institution. The null association with birth order is similarly encouraging and suggests that once a family has decided to feed its children diversely, that decision tends to apply across birth-order ranks. The lack of a gradient with socioeconomic status is more nuanced. It is possible that in our population, in which the majority belonged to Class II–IV, the narrow socioeconomic range limited the statistical power to detect a gradient; it is also possible that in this setting, local food availability, cultural feeding norms and maternal feeding beliefs exert more influence on dietary diversity than does household income per se. This observation is consistent with the broader view that nutrition-specific interventions focused on caregiver behaviour — rather than nutrition-sensitive interventions aimed at household income — may offer the more direct lever for improving child dietary diversity in this kind of setting.

## Strengths & Limitations

**Strengths:**

The study used a WHO-recommended 24-hour dietary recall with a repeat recall to reduce variability, combined with standardized anthropometry (WHO 2006). Use of both bivariate and multivariable logistic regression ensured identification of independent determinants. Inclusion of both OPD and community samples improved ecological validity, and updated Modified B.G. Prasad classification ensured relevant socioeconomic assessment.

**Limitations:**

The cross-sectional design limits causal inference. A modest sample size (n=95) reduced power for subgroup analysis. Dietary data are prone to recall and social-desirability bias. Single-centre setting limits generalisability, and lack of portion-size assessment prevents accurate nutrient estimation.

## CONCLUSION

Slightly more than half of the children aged 6–60 months attending the pediatric OPD and residing in the community field-practice area of CHRI achieved minimum dietary diversity. Age below 24 months, younger maternal age and underweight status emerged as strong, independent determinants of inadequate dietary diversity. Only one in three children received a minimum acceptable diet. These findings emphasise the urgent need for targeted, age-specific complementary-feeding counselling—particularly for mothers of children under two years—and for focused nutritional rehabilitation of underweight children. Strengthening IEC activities within the community field-practice area, with an emphasis on affordable micronutrient-dense foods and diversification beyond grains and dairy, is likely to yield measurable improvements in child nutrition in this setting.

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