

INFANT AND YOUNG CHILD FEEDING PRACTICES IN THE RURAL FIELD PRACTICE AREA OF A GOVERNMENT MEDICAL COLLEGE IN ANDHRA PRADESH

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Abstract

Background: Infant and young child feeding (IYCF) practices have a direct impact on the health, development, and nutritional well-being of children under two years old, ultimately influencing their survival. **Materials and Methods:** An observational study was conducted in the rural field practice area of Guntur Medical College among 240 children under the age of two. Questionnaire developed by the UNICEF and WHO Technical Expert Advisory Group on Nutrition Monitoring (TEAM) to assess infant and young child feeding practices among children under 2 years of age for use in household surveys was used. **Results:** Merely 62.5% of infants were initiated to breastfeeding within one hour of birth. A fraction, comprising 16.7% of children under six months, were introduced to formula or animal milk alongside breastfeeding. Solid, semi-solid, or soft foods found their way into the diets of 63% of infants between the ages of 6 to 8 months. In terms of dietary diversity, 69.4% of children met the minimum requirements, while 91.7% adhered to the minimum meal frequency. However, minimum acceptable diet was followed for only 59.1% children. 28.7% children were fed from a bottle with a nipple. **Conclusion:** There exists a significant issue concerning timely initiation of breastfeeding, the introduction of complementary foods, appropriate frequency of milk and solid food intake, and the type of food provided to children.

INTRODUCTION

According to the "Convention on the Rights of the Child," every child is entitled to adequate nutrition. The World Health Organization estimates that globally, 45% of child deaths are linked to undernutrition each year.^[1] The under-five population in India amounts to 113 million.^[2] Despite notable advancements in health, education, agriculture, and significant economic growth, India still falls short of meeting the Millennium Development Goals.^[3] In India, 36% of children under five years old are stunted, indicating chronic undernutrition. Additionally, 19% suffer from wasting, a sign of acute undernutrition, while 32% are underweight.^[4] India's under-five mortality rate contributes to nearly one-sixth of the global total and approximately one-fourth of neonatal deaths worldwide.^[5] Adequate nutrition is crucial for the optimal health and development of every child. In the under-five age group, approximately 50 million wasted children face the risks of malnutrition-related

consequences without timely intervention.^[6] The most significant health benefits arise from nutritional interventions during the critical period known as the first 1000 days, spanning from pregnancy to the child's second birthday. Establishing optimal feeding practices during the first two years sets the stage for a child's survival, growth, and development, reducing morbidity and mortality. Ideally, infants should be breastfed within the first hour of birth, exclusively breastfed for the initial six months, and continue breastfeeding for up to two years or more. From six months onwards, breastfeeding should be complemented with safe, age-appropriate intake of nutritious solid, semi-solid, and soft foods.^[7] However, globally, only around 44% of infants aged 0–6 months are exclusively breastfed, and in many countries, less than one-fourth of infants aged 6–23 months receive the recommended dietary diversity and feeding frequency suitable for their age.^[1] The National Family Health Survey 5 (2019-2021) reveals that in India, 64% of children under the age of 6 months were exclusively breastfed, while only

11% of children aged 6-23 months received the minimum acceptable diet.^[4] Infant and Young Child Feeding practices vary globally among different communities and are influenced by various factors such as culture, maternal educational status, and accessibility to maternal and child health care services, among others. For instance, caesarean section deliveries, when medically warranted, can be a life-saving intervention for both mother and child.^[8] However, when not strictly necessary, they can lead to several short-term and long-term adverse health outcomes for both women and neonates.^[9] Women who undergo caesarean section deliveries after a prior caesarean delivery are more likely to discontinue breastfeeding compared to those who deliver vaginally.^[10]

Despite numerous efforts to enhance feeding practices for infants and young children, the situation remains suboptimal worldwide, particularly in developing nations. However, there is a growing global emphasis on implementing healthy nutrition policies, driven by heightened awareness among various national and international organizations that good nutrition is pivotal in achieving the 17 Sustainable Development Goals (SDGs) adopted by the international community in 2015.^[6] With this background the present study was conducted to assess infant and young child feeding practices in the rural field practice area of Guntur Medical College in Andhra Pradesh.

MATERIALS AND METHODS

A community-based cross-sectional observational study was carried out in the rural field practice area of Guntur Medical College, focusing on children under 2 years old, during October and November 2023. According to the National Family Health Survey (NFHS - 5) 2019-2021 report, 11.2% of children aged between 6 – 23 months received an adequate diet in Guntur district, Andhra Pradesh. With a 95% confidence interval and a 4% absolute error, the sample size was determined to be 240, utilizing the formula: $n = Z^2pq/L^2$. Here, 'p' represents the prevalence of inadequate diet intake among children aged 6 – 23 months in the Guntur district, which is 88.8% based on the NFHS 5 report.^[11]

Four out of eight sub-centres within the rural field practice area of the medical college were selected by simple random sampling. Within each sub-centre, a list of all children under 2 years old was compiled with the assistance of sub-centre Auxiliary Nurse Midwives (ANMs). Subsequently, 60 children were chosen from each sub-centre through systematic random sampling. Exclusions from the study encompassed children whose mothers declined consent, households that remained inaccessible after two visits, children or mothers facing serious illness, as well as those with cleft lip or cleft palate. Before the commencement of the study, approval from the

Institutional Ethical Committee was secured. Data collection commenced following informed consent obtained from the mothers or caregivers of the participating children.

Data collection involved visiting households and administering a pretested predesigned semi-structured questionnaire to the mothers of the children. In cases where the mother was unavailable, the primary caregiver of the child was interviewed instead. The questionnaire comprised two parts. The first part gathered general characteristics of the study population, including the child's age, gender, parental education and occupation, socio-economic status, birth order, place of birth, gestational age, and more. The second part consisted of a questionnaire developed by the UNICEF and WHO Technical Expert Advisory Group on Nutrition Monitoring (TEAM),^[12] to evaluate infant and young child feeding (IYCF) practices among children under 2 years old, specifically designed for household surveys. This questionnaire encompassed a total of 17 IYCF indicators: 6 related to breastfeeding, 9 concerning complementary feeding, and 2 additional indicators. To minimize recall bias, the survey employed a previous day recall period (24 hours) for assessing dietary intake related to IYCF practices. IYCF indicators were computed following WHO guidelines.¹² Data entry was performed using Microsoft Excel, and analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistics such as frequencies, percentages, mean, standard deviation, etc., were utilized to present the data.

RESULTS

The current investigation evaluated infant and young child feeding practices among 240 children under the age of two in the rural field practice area served by Guntur Medical College. The age of the children varied from 11 days to 23 months, with an average age of 9.55 ± 6.89 . Forty per cent (96) of the children were aged 5 months or younger, while 31.3% (75) fell between 6 and 12 months. Among the participants, 55.8% (134) were male, resulting in a sex ratio of 791. The majority of mothers were between 20 and 29 years old, with an average age of 23.81 ± 3.63 . [Table 1] provides the background characteristics of the study participants. [Table 2] presents breastfeeding indicators. Every child (100%) in the study had been breastfed at some point. 62.5% (150) were breastfed within the first hour after birth. Additionally, 77.1% of children in the study were exclusively breastfed for the initial two days after birth. Regarding infants aged 0–5 months, 83.3% were exclusively breastfed the previous day, while 16.7% received formula and/or animal milk alongside breast milk. Furthermore, 57.5% of children aged 12–23 months had breast milk in the previous day's feeding.

[Table 3] presents indicators related to complementary feeding. Sixty-three per cent of infants aged 6–8 months ingested solid, semi-solid, or soft foods on the previous day. Furthermore, 69.4% of children aged 6–23 months consumed foods and beverages from at least five out of eight designated food groups on the previous day, adhering to the minimum dietary diversity. These food groups include breast milk; grains, roots, tubers, and plantains; pulses (beans, peas, lentils), nuts, and seeds; dairy products (milk, infant formula, yoghurt, cheese); flesh foods (meat, fish, poultry, organ meats); eggs; vitamin-A rich fruits and vegetables; and other fruits and vegetables. 91.7% of children aged 6–23 months consumed solid, semi-solid, or soft foods (including milk feeds for non-breastfed children) the minimum required number of times or more during the previous day, following the minimum meal frequency guidelines. For breastfed infants aged 6–8 months, this entails two feedings of solid, semi-solid, or soft foods; for breastfed children aged 9–23 months, it's three feedings; and for non-breastfed children aged 6–23 months, it's four feedings of solid, semi-solid, or soft foods or milk feeds, whereby at least one of the four feeds must be a solid, semi-solid or soft feed. Thirty-nine per cent of non-breastfed children aged 6–23 months consumed at least two milk feeds during the previous day.

On the previous day, 59.1% of children aged 6–23 months met the criteria for a minimum acceptable diet. This diet requires meeting both the minimum dietary diversity and minimum meal frequency for their age for breastfed children. For non-breastfed children, it includes meeting the minimum dietary diversity and minimum meal frequency for their age as well as having at least two milk feeds. Additionally, 39.6% of children aged 6–23 months consumed egg and/or flesh food on the previous day, while 16% consumed a sweet beverage. Half of the children in the same age range, consumed selected sentinel unhealthy foods. These include candies, chocolates, and other sugar confections; frozen treats like ice cream; cakes, pastries, sweet biscuits and other baked or fried confections; as well as chips, crisps, and similar items high in fat and carbohydrates. Furthermore, 7.6% of children aged 6–23 months did not consume any vegetables or fruits during the previous day.

During the previous day, 28.7% of children were fed using bottles with nipples, which could potentially affect their feeding experiences. Among infants aged 0–5 months, 83.3% were exclusively breastfed, while 2.1% were fed solely with breast milk and water. Another 2.1% received breast milk along with non-milk liquids, and 12.5% were fed with a combination of breast milk and animal milk/formula.

Table 1: Background characteristics of the study population (n=240)

Background characteristics	Frequency (%)
Age in months	
5 months or less	96 (40%)
6 to 12 months	75 (31.3%)
13 to 23 months	69 (28.7%)
Gender	
Female	106 (44.2%)
Male	134 (55.8%)
Religion	
Christian	63 (26.2%)
Hindu	160 (66.7%)
Muslim	17 (7.1%)
Caste	
BC	109 (45.4%)
OC	49 (20.4%)
SC	60 (25%)
ST	22 (9.2%)
Socio-economic class*	
I (Upper)	64 (26.7%)
II (Upper middle)	87 (36.2%)
III (Middle)	57 (23.7%)
IV (Lower middle)	22 (9.2%)
V (Lower)	10 (4.2%)
Type of family	
Three generation	89 (37.1%)
Joint	42 (17.5%)
Nuclear	109 (45.4%)
No. of family members	
4 or less	124 (51.7%)
More than 4	116 (48.3%)
Mother's age	
Less than 20	12 (5%)
20 to 29	206 (85.8%)
30 or more	22 (9.2%)
Mother's schooling	
10 and above	196 (81.7%)
5 to 9	26 (10.8%)
Less than 5 years or no schooling	18 (7.5%)

Mother's occupation Home maker Working	184 (76.7%) 56 (23.3%)
Gestational age Preterm Term	26 (10.8%) 214 (89.2%)
Mode of delivery Caesarean Normal	116 (48.3%) 124 (51.7%)
Place of delivery Govt. hospital Private hospital	102 (42.5%) 138 (57.5%)
Birth weight of the child Less than 2500 2500 to 3999 4000 or more	31 (12.9%) 205 (85.4%) 4 (1.7%)
Birth order of the child One Two Three or more	151 (62.9%) 85 (35.4%) 4 (1.7%)

Table 2: Breast feeding indicators

Breast feeding indicators	Frequency	Percent
Ever breastfed (n=240)	240	100%
Early initiation of breastfeeding (n=240)	150	62.5%
Exclusively breastfed for the first two days after birth (n=240)	185	77.1%
Exclusive breastfeeding under six months (n=96)	80	83.3%
Mixed milk feeding under six months (n=96)	16	16.7%
Continued breastfeeding 12–23 months (n=87)	50	57.5%

Table 3: Complementary feeding indicators

Complementary feeding indicators	Frequency	Percent
Introduction of solid, semisolid or soft foods 6–8 months (n=27)	17	63%
Minimum dietary diversity (MDD) 6–23 months (n=144)	100	69.4%
Minimum meal frequency (MMF) 6–23 months (n=144)	132	91.7%
Minimum milk feeding frequency (MMFF) for non-breastfed children 6–23 months (n=41)	16	39%
Minimum acceptable diet (MAD) 6–23 months (n=144)	85	59.1%
Egg and/or flesh food consumption 6–23 months (n=144)	57	39.6%
Sweet beverage consumption 6–23 months (n=144)	23	16%
Unhealthy food consumption 6–23 months (n=144)	72	50%
Zero vegetable or fruit consumption 6–23 months (n=144)	11	7.6%

DISCUSSION

In the current study conducted in the rural field practice area of Guntur Medical College, nearly half of the children (48.3%) were delivered via caesarean section. This rate significantly exceeds the ideal acceptable caesarean section rate, which typically falls between 10% and 15% according to the WHO.^[13] Such high rates may potentially influence breastfeeding practices. Additionally, the prevalence of low birth weight in the current study was observed to be 12.9%, which is notably lower than the national average reported in the NFHS 5 survey. According to the NFHS 5 report,⁴ among infants with a documented birth weight, 18% had a low birth weight of less than 2.5 kg.

In the current study, all children were breastfed at some point, aligning with national statistics. According to the NFHS 5 report,⁴ 96% of children born in India in the two years before the survey were breastfed at some stage. Similar findings were reported by Saxena V et al,^[14] with 96.25% of children ever breastfed. The World Health Organization recommends early initiation of breastfeeding within one hour of birth.^[12] However,

this practice is not universally adopted. In the present study, only 62.5% of children were breastfed within the first hour of birth, although this proportion surpasses the national prevalence reported in NFHS 5. The NFHS 5 data indicates that approximately 41% of last-born children in the two years before the survey who were ever breastfed were breastfed within one hour of birth.⁴ Other studies, such as those conducted by Saxena V et al.¹⁴ (47.5%), Khan GN et al,^[15] (49%), and Marroda KR et al,^[16] (more than 50%), reported lower prevalence rates of early initiation of breastfeeding compared to our study. Conversely, Khandelwal S et al,^[17] reported a higher prevalence of 77.9%.

In this current study, 16.7% of participants were supplemented with formula and/or animal milk alongside breast milk before six months of age. According to NFHS 5 data,⁴ 16% of children in India were given pre-lacteal feeds. Conversely, Khandelwal S et al,^[17] found that only 8.5% of children received pre-lacteal feeds, a significantly lower proportion compared to our study. Additionally, Khandelwal S et al,^[17] study unveiled that 1% of mothers practised mixed feeding, while 1.4% exclusively provided formula or expressed milk. Notably, 83.3% of infants were exclusively

breastfed in the present study, contrasting with NFHS 5's report of 64% exclusive breastfeeding in India. Another study by Saxena V et al,^[14] showed that 73.88% of infants aged 0–5 months were exclusively breastfed, while Khandelwal S et al,^[17] and Khan GN et al,^[15] reported lower rates of exclusive breastfeeding at six months (47.3% and 37%, respectively). Marroda KR et al,^[16] found even lower rates with only 31% of children under six months being exclusively breastfed. Continuing breastfeeding between 12–23 months was observed in 57.5% of children in the current study. In contrast, Saxena V et al,^[14] noted a higher percentage (85.22%) of children continuing breastfeeding during this age range, while Marroda KR et al,^[16] reported a lower proportion (43%) continuing breastfeeding between 12–23 months.

Introduction of solid, semi-solid, or soft foods occurred between 6–8 months of age for 63% of infants in the current study. Saxena V et al,^[14] found that 50% of infants were introduced to such foods within the same age range, while Khandelwal S et al,^[17] reported a lower prevalence of 35.6%. Conversely, Khan GN et al,^[15] and Marroda KR et al,^[16] reported higher prevalence rates of 70% each. Regarding minimum dietary diversity (MDD), 69.4% of children followed it in the present study. Saxena V et al,^[14] reported a lower adherence rate at 33.47%, whereas Khandelwal S et al,^[17] found 57.4% of infants meeting MDD. In contrast, Khan GN et al,^[15] noted that only 10% received the recommended minimum dietary diversity, and Marroda KR et al,^[16] observed that merely 17% of children achieved MDD. For minimum meal frequency (MMF), 91.7% of children in the current study met the criteria. Saxena V et al,^[14] reported a lower percentage of 52.72% adhering to MMF, while Khandelwal S et al,^[17] found a higher rate of 94.4%. However, Khan GN et al,^[15] noted that only 38% of children aged 6–23 months received the minimum meal frequency, and Marroda KR et al,^[16] observed that 30% met MMF. In terms of minimum acceptable diet (MAD), 59.1% of children in the present study consumed it. This contrasts with Saxena V et al,^[14] finding of 33.37% adherence to MAD. Khandelwal S et al,^[17] reported that 55% of infants received MAD, while Khan GN et al,^[15] noted a lower proportion of 8% meeting the criteria. Marroda KR et al,^[16] found only 6% of children consumed MAD, significantly less than the present study. Moreover, 28.7% of children in the current study were fed from a bottle with a nipple, contrasting with Khan GN et al,^[15] study where only 12% of mothers used bottle feeding.

CONCLUSION

Despite all the children in the study having been breastfed at some point, a significant number did not commence breastfeeding early, and exclusive

breastfeeding for children under six months was not consistently observed by some. Many children faced challenges with the timely introduction of complementary foods. Moreover, issues persisted concerning the frequency and types of milk and solid food consumption among the children. It is imperative to prioritize optimal feeding practices among mothers or primary caregivers of children. This can be achieved by leveraging contact sessions with the health system during immunization clinics, village health nutrition days, and similar avenues. Increasing the frequency of interactions between healthcare providers and nursing mothers is essential to ensure sustained adherence to correct infant and young child feeding practices.

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