



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

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A Study to Assess the Knowledge and Attitude on Complementary Feeding Practices Among Mothers and Primary Caregivers of Children Aged 6 Months To 2 Years Attending the Paediatrics Outpatient Department in A Tertiary Hospital

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Volume 6, Issue 15, Sep 2024

Received: 22 June 2024

Accepted: 12 July 2024

Published: 03 Sep 2024

doi: [10.48047/AFJBS.6.15.2024.504-511](https://doi.org/10.48047/AFJBS.6.15.2024.504-511)

ABSTRACT

Background: Complementary feeding is a critical aspect of child nutrition, influencing growth and development during early childhood. Understanding the knowledge and attitude of mothers and primary caregivers toward complementary feeding practices is essential for promoting optimal child health.

Aim: To assess the knowledge and attitude on complementary feeding practices among mothers and primary caregivers of children aged 6 months to 2 years attending the Paediatrics outpatient department at Shri Sathya Sai Medical College and Research Institute, Ammapettai, Chengalpattu.

Methods: The study was conducted as a cross-sectional analysis at the Paediatrics Outpatient Department, Shri Sathya Sai Medical College and Research Institute, Ammapettai, Chengalpattu, over 18 months from October 2022 to March 2024. It involved structured interviews with mothers and primary caregivers of children aged 6 months to 2 years. Data were collected on socio-demographic factors, feeding practices (including pre-lacteal feeds, initiation and frequency of complementary feeding), breastfeeding practices, hygiene, and the introduction of bottle feeds or cow's milk, using the Modified Kuppaswamy Socio-economic scale of 2022. The child's birth history and relevant details were also documented.

Results: A majority of mothers were aware of complementary feeding and exclusive breastfeeding with Health workers being primary source of feeding knowledge. A majority of mothers followed appropriate hygiene practices. Yet a considerable portion gave prelacteal feeds and bottle feeds. And around 43% of mothers cited economical reasons for delay in complementary feed initiation while 30% cited lack of awareness.

Conclusion: The literacy level, economic status, intellectual abilities along with cultural illusions and taboos strongly impact information on complementary feeding. Therefore, to avoid malnutrition it is crucial to provide mothers and other caregivers with the necessary information and training regarding complementary feeding practices.

Keywords: Complementary feeding, child nutrition, mothers, primary caregivers, knowledge, attitude, pediatric outpatient department.

INTRODUCTION

Complementary feeding, defined as the period during which solid or semi-solid foods are introduced to an infant's diet while continuing breastfeeding, is a critical phase in a child's development. The World Health Organization (WHO) recommends the initiation of complementary feeding at six months of age to meet the growing nutritional needs of the child, while breastfeeding should continue up to two years or beyond [1]. Proper complementary feeding practices are essential for ensuring optimal growth, development, and overall health during this vulnerable period [2].

Inappropriate complementary feeding practices, such as early or late introduction of solid foods, low dietary diversity, and insufficient feeding frequency, have been associated with adverse health outcomes, including malnutrition, stunting, and micronutrient deficiencies [3]. Malnutrition remains a significant public health challenge globally, particularly in low- and middle-income countries like India, where inadequate complementary feeding practices contribute to high rates of undernutrition among children under five years of age [4].

Several studies have highlighted that mothers and primary caregivers play a pivotal role in determining the quality and timing of complementary feeding. Their knowledge and attitudes toward feeding practices significantly influence the dietary patterns and nutritional status of their children [5]. However, gaps in knowledge and misconceptions about the appropriate timing, types of foods, and

feeding practices are widespread, especially among caregivers with limited access to health information and education [6].

In India, the diversity and adequacy of complementary feeding remain suboptimal across many regions. According to the National Family Health Survey (NFHS-5), only 42.7% of children aged 6-8 months receive solid or semi-solid food alongside breast milk [5]. Additionally, the prevalence of inappropriate feeding practices is higher among caregivers from lower socio-economic backgrounds, where factors such as maternal education, income level, and access to healthcare services are closely linked to feeding practices [7].

Research has shown that improving maternal knowledge and attitudes toward complementary feeding through targeted educational interventions can lead to better feeding practices and improved child health outcomes [8]. For example, caregivers with higher levels of education and awareness are more likely to introduce a diverse range of nutrient-rich foods at the appropriate age and adhere to recommended feeding practices [9]. Conversely, a lack of knowledge and negative attitudes toward certain foods or feeding methods can result in inadequate dietary intake and poor growth outcomes in children [10].

Given the critical importance of complementary feeding in early childhood, it is essential to assess the knowledge and attitudes of mothers and primary caregivers toward these practices. This understanding is crucial for designing effective public health interventions aimed at promoting optimal feeding practices and reducing the burden of malnutrition in children.

This study aims to assess the knowledge and attitude of mothers and primary caregivers of children aged 6 months to 2 years attending the Paediatrics outpatient department at Shri Sathya Sai Medical College and Research Institute, Ammapettai, Chengalpattu. By identifying the gaps in knowledge and attitudes, this study seeks to provide evidence-based recommendations for improving complementary feeding practices and, ultimately, child health outcomes.

MATERIALS AND METHODS

Study Design: Cross-Sectional Study

Study Area: Paediatrics Outpatient Department, Department Of Paediatrics, Shri Sathya Sai Medical College and Research Institute, Ammapettai, Chengalpattu

Study Population: Mothers / Primary Care Givers of children aged 6 months to 2 years

Duration: October 2022 to March 2024 (18 Months)

Sample Size: Prevalence of complementary feeding practice is 32.2 % (3)

$$N = 4pq / L \times L$$

P is 32.2%, q is 100 – 32.2 = 67.8, L is precision error of 8%

$$N = 4 \times 32.2 \times 67.8 / 8 \times 8 = 136.45 \text{ (+10\% non response error)}$$

$$N = 136.45 + 13.64 = 150.05$$

$$n = 150$$

Study Tools: Modified Kuppuswamy Socio-economic scale of 2022

Study Variables: Socio Demographic Profile, Prelacteal Feeds, Time Of Initiation of feeds, Reasons for any Delay, Prior knowledge of exclusive breast feeding and complementary feeding, Types of complementary feeds, Frequency of feeds, Details of breastfeeding, Hygiene practices, Any introduction of bottle feeds/cow's milk.

Inclusion Criteria:

- All mothers / primary caregivers with children 6 months to 2 years attending the OPD
- Mothers / primary caregivers of children born at term
- Mothers / primary caregivers willing to share the information

Exclusion Criteria:

- Children with co-morbid illness
- Mothers / primary caregivers of preterm and high-risk children

Methodology:

The mothers / primary caregivers will be interviewed with a structured set of questions. The questions will include information on the mother's socio-demographic profile and factors assisting or hindering optimal complementary feeding practices. The child's basic information will also be collected including birth history. Information regarding pre lacteal feeds, time of initiation of feeds and reasons for delay if any, prior knowledge on exclusive breastfeeding and complementary feeding, types of complementary feeds, frequency, details of breastfeeding, hygiene practices, and any introduction of bottle feeds/cow's milk.

Data Analysis:

Data will be compiled in an Excel worksheet and Statistical Package for Social Sciences (SPSS) version 16.0 will be used to analyze the data. Descriptive statistics will be reported as mean (standard deviation) for continuous variables, Frequencies (Percentage) for categorical variables. Relevant statistical tests will be applied. Chi square test, P Value less than 0.05 will be considered statistically significant.

RESULTS

The table 1 presents the age and gender distribution of 150 children involved in the study.

Table 1: Age and Gender Distribution of Children

Age Group	Number of Children	Percentage (%)	Gender	Number	Percentage (%)
6-8 Months	33	22	Male	86	57.33
9-11 Months	17	11.33	Female	64	42.67
12-18 Months	67	44.67	Total	150	100
19-24 Months	33	22			
Total	150	100			

The largest group, 44.67%, comprises children aged 12-18 months, while the smallest group, 11.33%, includes those aged 9-11 months. Regarding gender, 57.33% of the children are male, and 42.67% are female, reflecting a slightly higher proportion of males in the study.

The table 2 provides a comprehensive overview of the demographic and socioeconomic characteristics of the 150 mothers in the study.

Table 2: Demographic and Socioeconomic Characteristics of Mothers

Characteristic	Category	Number	Percentage (%)
Age of Mother	<20 Years	6	4
	21-25 Years	35	23.33
	26-30 Years	74	49.33
	31-35 Years	26	17.33
	>35 Years	9	6
Mother's Educational Status	Illiterate	10	6.67
	Primary	28	18.67
	Secondary	54	36
	Graduation	58	38.67
Mother's Occupation	Homemakers	93	62
	Business	23	15.33
	Govt job	34	22.67
Type of Family	Nuclear	99	66
	Joint	51	34
Number of Children	1	46	30.67
	2	74	49.33
	3	22	14.67
	4	8	5.33
Residence	Rural	74	49.33
	Urban	55	36.67
	Semi-urban	21	14
Socio-Economic Status	Upper	8	5.33

	Upper Middle	25	16.67
	Lower Middle	45	30
	Upper Lower	23	15.33
	Lower	49	32.67

The majority of mothers (49.33%) are aged 26-30 years, with a significant proportion having secondary (36.00%) or graduate-level education (38.67%). Most mothers are homemakers (62.00%), live in nuclear families (66.00%), and have two children (49.33%). Regarding residence, nearly half are from rural areas (49.33%), while socio-economic status is predominantly lower middle (30.00%) or lower class (32.67%). This demographic profile highlights the diverse background of the mothers involved in the study, providing context for understanding their complementary feeding practices.

The table 3 summarizes the mothers' knowledge and practices related to children's feeding.

Table 3: Mother's Knowledge on Children's Feeding

Knowledge Aspect	Response	Number	Percentage (%)
1. Awareness of complementary feeding before delivery	YES	88	58.67
	NO	62	41.33
2. Source of knowledge	Health workers	51	34
	Media	44	29.33
	Family/Friends	55	36.67
3. Awareness of exclusive breastfeeding	YES	99	66
	NO	51	34
4. Direct Breastfeeding established immediately after birth	YES	85	56.67
	NO	65	43.33
5. Awareness of prelacteal feeds	YES	82	54.67
	NO	68	45.33
6. Did you give prelacteal feeds	YES	64	42.67
	NO	86	57.33
7. Age of initiating complementary feeding	<6 months	24	16
	6 months to 1 year	74	49.33
	>1 year	52	34.67
8. During the Exclusive Breastfeeding period, did you use formula feeds or breastmilk?	Breastmilk	95	63.33
	Formula Feeds	55	36.67
9. During the Exclusive Breastfeeding period, did you use feeding bottles?	YES	61	40.67
	NO	89	59.33
10. Type of feeds that were started	Natural	85	56.67
	Commercial preparations	65	43.33
	Gradual Weaning	83	55.33
11. How has the frequency of breastfeeding changed after initiation of complementary feeds?	Completely stopped	35	23.33
	No change in frequency	32	21.33
12. Did you change to bottle feeds after initiation of complementary feeds?	YES	123	82
	NO	27	18
13. What age did you stop breastfeeding?	<6 months	18	12
	6 months to 1 year	55	36.67
	1-2 years	77	51.33
14. Did you switch to cow's milk after initiation of complementary feeds?	YES	94	62.67
	NO	56	37.33
15. Was the child able to tolerate Cow's milk?	YES	90	60
	NO	60	40
16. How often do you give complementary feeds in a day?	Twice a day	52	34.67
	Thrice a day	98	65.33
17. How often did you introduce new foods in a week between 6 and 12 months of age?	Once every 2 weeks	15	10
	Once a week	62	41.33
	Twice a week	73	48.67

18. When did you introduce non-vegetarian foods?	6 months-1 year	62	41.33
	1-2 years	88	58.67
19. Did any adverse reactions happen during introduction of new foods?	YES	40	26.67
	NO	90	60
20. Do you wash your hands before feeding your child?	Sometimes	65	43.33
	Always	68	45.33
	Never	17	11.33
21. Do you wash and sterilize feeding utensils before using them?	Sometimes	27	18
	Always	45	30
	Never	78	52
22. Did child's appetite change after initiation?	YES	86	57.33
	NO	64	42.67
23. Have you noticed increased growth and development in your child including weight gain?	YES	82	54.67
	NO	68	45.33
24. What was the weight gained by the child after 1 month of initiation?	<1Kg	55	36.67
	>1Kg	95	63.33
25. If child does not eat properly, what do you do?	Feed slowly and patiently	25	16.67
	Give favourite foods	45	30
	Feed the child forcefully	80	53.33
26. Does child only eat properly with the use of multimedia?	YES	105	70
	NO	45	30
27. Have you noticed any change in stool consistency after initiation?	YES	62	41.33
	NO	88	58.67
28. If complementary feeds have not been initiated yet or there was a delay, why?	Lack of awareness	45	30
	Family advise	25	16.67
	Economical reasons	65	43.33
	Aware but hesitant on food selection	15	10

The data shows that 58.67% of mothers were aware of complementary feeding before delivery, with the majority obtaining information from family/friends (36.67%) and health workers (34.00%). Awareness of exclusive breastfeeding was high (66.00%), and most mothers (56.67%) established direct breastfeeding immediately after birth. A significant portion of mothers (42.67%) gave prelacteal feeds, despite 54.67% being aware of them.

Complementary feeding was mostly started between 6 months and 1 year (49.33%), and most mothers used breastmilk during exclusive breastfeeding (63.33%). After initiating complementary feeding, 82.00% of mothers switched to bottle feeds, and 62.67% introduced cow's milk. The frequency of complementary feeds was thrice a day for 65.33% of mothers. New foods were introduced twice a week by 48.67%.

Hygiene practices varied, with 45.33% of mothers always washing hands before feeding and 30.00% always sterilizing utensils. Changes in appetite and growth were observed by 57.33% and 54.67% of mothers, respectively. Most mothers (70.00%) noted that multimedia was necessary for their child to eat properly. Economic reasons (43.33%) were the most common reason for delays in initiating complementary feeds. This information highlights the need for improved education and support on feeding practices.

DISCUSSION

The period between six and twenty-four months is critical for preventing undernutrition and its long-term effects. The World Health Organization (WHO) recommends starting supplemental feeding at six months and continuing breastfeeding for at least two years [11]. Introducing complementary foods at the right age supports healthy physical and cognitive development. However, starting supplemental feeding too early can lead to higher risks of gastrointestinal and respiratory illnesses, excessive weight

gain, and obesity later in life. It can also increase the risk of dietary deficiencies, immune problems, and type 1 or type 2 diabetes, especially in children already at risk.

Despite this, cultural practices led to 42.67% of mothers giving prelacteal feeds [12]. Complementary feeding practices varied, with most parents introducing new foods twice a week and incorporating non-vegetarian options between one to two years of age. Hygiene practices were inconsistent, with only a portion of parents consistently cleaning hands and sterilizing feeding utensils. Delays in initiating complementary feeding were often due to economic reasons, lack of awareness, or family advice, emphasizing the need for enhanced maternal education and support to improve feeding practices and child health outcomes.

In this study, 44.67% of children were aged 12-18 months, 22% were 19-24 months or 6-8 months, and 11.33% were 9-11 months. Among 150 children, 57.33% were male and 42.67% were female. Mothers were mostly aged 26-30 years (49.33%), with 23.33% aged 21-25 years, 17.33% aged 31-35 years, 6% over 35 years, and 4% under 20 years. Education levels varied: 38.67% graduated, 36% completed secondary school, 18.67% had primary education, and 6.67% were illiterate. Occupations included 62% homemakers, 22.67% in government jobs, and 15.33% in business. Families were mostly nuclear (66%) and rural (49.33%), with 36.67% urban and 14% semi-urban. Socioeconomic statuses ranged from lower (32.67%) to upper (5.33%).

Before delivery, 58.67% of mothers were aware of complementary feeding, primarily from health workers (34%), media (29.33%), and family/friends (36.67%). Awareness of exclusive breastfeeding was 66%, and 56.67% initiated direct breastfeeding immediately. During exclusive breastfeeding, 36.67% used formula and 63.33% used breast milk. Prelacteal feeding awareness was at 54.67%, with 42.67% having given prelacteal feeds, often due to family traditions. Complementary feeding began between 6 months and 1 year for 49.33% of babies, with 34.67% starting later than 1 year and 16% earlier than 6 months.

Mohsin SS et al. report that 57.2% of mothers preferred to start supplemental feeding between 4-6 months, while 21.8% believed it should begin earlier [13]. In this study, 56.67% of parents used natural foods and 43.33% used commercial preparations for complementary feeding. Additionally, 62.67% of mothers switched to cow's milk, with 60% of babies tolerating it. Research by Divya et al. found that family pot feeding at age one year was 90% in urban areas and 56.7% in rural areas [14].

In this study, 55.33% of mothers weaned gradually, 23.33% stopped breastfeeding completely, and 21.33% had no change in frequency. Most mothers (51.33%) stopped breastfeeding at 1-2 years, 36.67% at 6 months to 1 year, and 12% before 6 months. Feeding bottles were used by 40.67% during exclusive breastfeeding, and 82% switched to bottle feeds after starting complementary feeding. Complementary feeds were given thrice a day by 65.33% of mothers and twice a day by 34.67%. New foods were introduced twice a week by 48.67% of parents, once a week by 41.33%, and once every two weeks by 10%. Non-vegetarian foods were introduced between 1-2 years for 58.67% of parents and between 6 months to 1 year for 41.33%. Adverse reactions were noted in 26.67% of children, while 60% had no adverse effects. Changes in appetite were observed in 57.33% of children, and 54.67% showed improved growth and weight gain. Of the 150 children, 63.33% gained more than 1 kg, and 36.67% gained less than 1 kg. Regarding hygiene, 45.33% of parents always cleaned their hands before feeding, 43.33% did so occasionally, and 11.3% never did. For sterilizing utensils, 30% always did so, 18% sometimes, and 52% never did. Delays in starting complementary feeds were due to a lack of awareness (30%), family advice (16.67%), economic reasons (43.33%), and hesitation about food selection (10%).

CONCLUSION

Literacy, economic status, and intellectual abilities strongly influence knowledge about complementary feeding, including the timing, consistency, and types of foods. Many mothers lack accurate information about when to start supplemental feeding, often beginning too early due to societal taboos and misconceptions. These issues can lead to premature weaning and inadequate diets, increasing the risk of malnutrition. To improve child health and prevent these outcomes, it is crucial to provide comprehensive education and training for mothers and caregivers on proper feeding practices, including the optimal timing for introducing complementary foods, meal preparation, and addressing common myths and cultural practices.

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