ORIGINAL ARTICLE

Influence of feeding practices on Childhood illness

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ABSTRACT

Background: The phase between a child's birth and the age of two years is crucial for ensuring the child's growth and development through optimal feeding habits. Breastfeeding is considered one of the most effective methods for ensuring the health and survival of children. **Aim & Objective:** This study aims to access the influence of feeding practices on childhood illness. **Methodology**: A cross-sectional study was done among 280 mothers having children less than 2 years of age attending primary health centres adopted by the Department of Community Medicine JSS medical college, Mysuru. Data regarding feeding practices and childhood illnesses were collected using a pre-tested questionnaire prepared based in Infant and Young Child Feeding guidelines by interviewing the mothers. **Result**: Among the study population, 75.4% of children in urban and 75.7% of children in rural suffered from childhood illness. It was observed that childhood illness was more common among children with poor feeding practices (75.7% in rural and 93.5% in urban) and the association was found to be statistically significant. **Conclusion**: The study sheds light on the importance of appropriate feeding practices, which have a higher influence on a child's health.

KEYWORDS

Breastfeeding, Infant Feeding Practices, Childhood Illness, Growth & Development

INTRODUCTION

According to the "Convention on the Rights of the Child", every infant and child has the right to good nutrition. (1) Nutrition is essential for children's survival, growth, and development into healthy adults who lead fulfilling lives and make valuable contributions to their communities. (2) An estimated 2.7 million child deaths per year, or 45% of all child deaths, are attributed to undernutrition. Breast milk, a vital source of energy and nutrients, reduces the mortality rates of malnourished children. (1)

During infancy, early childhood and the first two years of life breastmilk nutrition offers a crucial window of opportunity for preventing growth faltering and undernutrition through optimal feeding. World Health Organization and the United Nations Children's Fund set a global strategy for optimal infant and young child feeding (IYCF). (2)

Even with continuous improvement and decades of work in healthcare facilities, NFHS-5 highlighted that India's IMR and Under-Five Mortality Rate are 35.2 per cent and 41.9 per cent, respectively.(3)

Apart from sociocultural, economic, and demographic factors, infant feeding practices constitute a major component of childcare practices. Despite playing a crucial part in children's growth patterns, these practices are the most neglected determinants of undernutrition in young children. (5)

Aim and Objectives

- To determine the frequency of childhood illness among children under two years of age attending primary health centres in rural and urban areas of Mysuru
- To find out association between feeding practices and childhood illnesses among study subjects

MATERIAL & METHODS

Study design and setting: A cross-sectional study was conducted among mothers with children less than two years attending the primary health centre in urban and rural field practice areas of the department of community medicine, JSS Medical College, Mysuru for a period of 6 months.

Sampling size and sampling technique: Based on the prevalence of exclusive breastfeeding among children less than 2 years as per NFHS-5 to be 79.1 percent with 5% absolute allowable error, Alfa level of 5 percent, and 95% confidence level, the sample size calculated is 254. Considering a 10% non-response rate, the study sample size would be 279 which was rounded off to 280.

There are two urban and three rural primary health centres and 280 consecutive Children less than two years of age and their mothers attending these Primary Health Centre (140 in rural and urban areas each) were included in the study.

Ethical Consideration: The study protocol was approved by the institutional ethical committee **(JSS/MC/IEC/Acad094/2020-21)** and consent was obtained from the participants after explaining the purpose and procedure of the study.

Data collection: Pretested structured questionnaire was used to collect the data regarding socio-demographic characteristics like age of the child, gender, age of the mother, education status of the mother, occupation of mother and father, socio-economic status, BPL card, type of family, family size, birth order, birth weight of the baby, type of delivery, place of delivery etc.

Details regarding Feeding practices of children as per IYCF guidelines issued by Government of India like prelacteal feeds, initiation of breastfeeding, colostrum feeding, exclusive breastfeeding, duration of feeding, demand feeding, weaning practices, and complementary feeding practices were collected by interviewing the mothers of children.

Details of childhood illnesses like diarrheal, acute respiratory infections, fever with and without rashes, and any other illness in the last one year were collected using the operational definitions as per Integrated Management of Neonatal and Childhood illnesses.

Data Analysis

The data collected was entered and coded in Microsoft Excel 2019 spreadsheet and analysed using SPSS version 26 (Statistical Package for Social Sciences, Licensed to JSSAHER). Descriptive statistics methods like Percentage, Mean, and Standard deviation were used. The chi-square test/fisher exact test was used to find out the association between feeding practices and childhood illness. A score of one was assigned for proper and zero for incorrect practices. After determining the total score, respondents who scored below the median were deemed to have poor practices, 50-75% average and more than 75% considered good practices respectively.

RESULTS

Socio-demographic characteristics of study subjects: Out of 280 mothers interviewed,140 each were from rural and urban areas. The mean age of study participants was 25$\pm$3 years. Among 280 children included in the study, majority were female 142 (50.71%) and 13 8(49.29%) are males. Among them 82 (29.29%) were in the age group of 19-24 months followed by 71 (25.36%) in 1-6 months. (Table 1)

Table :1 Socio-demographic profile of the study participants

Characteristics	Variables	Rural[N(%)	Urban[N(%)]	Total[N(%)]
Mother's age	<20	4(2.86)	5(3.57)	9 (3.21)
	20-25	79(56.4)	67(47.9)	146(52.4)
	26-30	49(35)	56(40)	105(37.50)
	31-35	6(4.29)	8(5.71)	14(5)
	>35	2(1.43)	4(2.86)	6(2.14)
Education	illiterate	5(3.57)	7(5)	12(4.29)
	Primary education	6(4.29)	1(0.7)	7(2.5)
	High school	55(39)	49(35)	104(37.14)
	Higher Secondary	30(21.43)	28(20)	58(20.71)
	Graduate &above	44(31.42)	55(39.3)	99(35.36)
Religion	Hindu	133(95)	97(69)	230(82.14)
	Muslim	6(4.29)	43(30.7)	49(17.50)
	Christian	1(0.7)	0(0)	1(0.36)
Working status	Working	6(4.3)	11(7.86)	17(6.07)
	Not working	134(95.7)	129(92.4)	263(93.93)
BPL Card	Present	115(82.14)	109(77.86)	224(80)
	absent	25(17.86)	31(22.14)	56(20)
Child's age	1-6 months	37(26.42)	34(24.29)	71(25.36)
	7-12 months	30(0.714)	37(26.43)	67(23.93)
	13-18 months	38(27.14)	22(15.71)	60(21.43)
	19-24 months	35(25)	47(33.58)	82(29.29)
Gender of child	Female	71(50.71)	67(47.86)	138(49.29)
	Male	69(49.29)	73(52.14)	142(50.71))
Birth order of children	First	87(62.14)	77(55)	164(58.57)
	Second	49(35)	49(35)	98(35)
	Third	4(2.86)	12(8.58)	16(5.71)
	fourth	0(0)	2(1.42)	2(0.71)
Father's education	Illiterate	9(6.43)	17(12.14)	26(9.29)
	Primary school	11(7.9)	6(4.3)	17(6.07)
	High school	67(47.86)	49(35)	116(41.43)
	Higher Secondary	24(17.14)	23(16.42)	47(16.79)
	Graduate and above	29(20.7)	45(32.14)	74(26.43)

Table:2 Comparison of feeding practices between rural and urban mothers

Characteristics	Variable	Rural [N(%)]	Urban [N(%)]	Total[N(%)]	p-value
Initiation of breastfeeding	Within 30 min of birth	77(55.0)	70(50.0)	147(52.5)	
	30 min to 2 hrs	56(40.0)	63(45.0)	119(42.5)	
	More than 2 hrs	7(5.0)	7(5.0)	14(5)	0.688
Exclusive-breast feeding practices	No	37 (26.4)	40 (28.6)	77(27.5)	
	Yes	103(73.6)	100 (71.4)	203(72.5)	0.688
Frequency of breast feeding practice	On demand	27(19.3)	77(55)	104(37.1)	
	On regular timings decided by mother	113(80.7)	63(45)	176(62.9)	*0.001
Bottle feeding	No	104(74.3)	92(65.7)	196(70)	
	Yes	36(25.7)	48(34.3)	84(30)	0.118
Whether colostrum received	No	2(1.4)	5(3.6)	7(2.5)	
	Yes	138(98.6)	135(96.4)	273(97.5)	0.251
Pre lacteal feeding practices	No	132(94.3)	103(73.6)	235(83.9)	*0.001
	Yes	8(5.7)	37(26.4)	45(16.1)	
Age of initiation of complementary feeding	<6 months	35(33.4)	34(32.4)	69(33)	
	6 months & above	69(66.3)	71(67.6)	140(67)	0.785

55% of women in rural and 50% in urban areas-initiated breast feeding within 30 mins, 73.6% in rural and 71.4% in urban areas gave exclusive breast feeding for their children for the period of six months. Significantly lower women proportion (19.3%) in rural areas feeding their babies on demand compared to 55% in urban areas. Bottle feeding practice was higher in urban compared to rural areas (25.7% Vs 34.3%). Prelacteal feeding practice was found to be significantly higher among urban children (26.4%) compared to the rural ones. The time of initiation of complementary feeding was almost similar across localities. (Table-2)

72.8% and 76.4% mothers in rural and urban areas practices to give fortified food to their children. All the children in rural, 96.3% in urban areas got fed with porridge, ragi, bread, rice, or any other food made from grains. 98% of the rural and 94.4% of urban children got fed pumpkin carrots, squash, or sweet potatoes. In rural 97% and 94.4% of the urban children had any green leafy vegetables.67.6% and 60.7% of the rural and urban children had eggs. There was a statistically significant association between any fortified food given to the babies and place of residence.(Table no: 3)

Table:3: Distribution of study subjects based on weaning practices and supplementary feeding according to IYCF guidelines

Category of food	Response	Residence		Total[N(%)]	P-value
		Rural -102	Urban -107		
Any fortified food	No	0	4 (3.7)	4 (1.9)	0.049*
	Yes	102	103 (96.3)	205 (98.1)	
Porridge, ragi, bread, rice or any other food made from grains	No	0	5 (4.6)	5 (2.4)	0.027*
	Yes	102	102 (95.4)	204 (97.6)	
Pumpkin, carrots, squash, or sweet potatoes	No	2(2)	6 (5.6)	8 (3.8)	0.17
	Yes	100 (98)	101 (94.4)	201 (96.2)	
Any green leafy vegetables	No	3 (3)	6 (5.6)	9 (4.3)	0.343
	Yes	99 (97)	101 (94.4)	200 (95.7)	
Liver, kidney, heart, or any other organ meats	No	69 (67.6)	92 (86)	161 (77)	0.002*
	Yes	33 (32.4)	15 (14)	48 (23)	
Eggs	No	33 (32.4)	42 (39.3)	75 (35.9)	0.299
	Yes	69 (67.6)	65 (60.7)	134 (64.1)	
Fresh or dried fish, shellfish, or seafood	No	50 (49)	68 (63.5)	118 (56.4)	0.034*
	Yes	52 (51)	39 (36.5)	91 (43.6)	
Any foods made from beans, peas, lentils, nuts, or seeds	No	12 (11.8)	14 (13)	26 (12.4)	0.773
	Yes	90 (88.2)	93 (87)	183 (87.6)	
Cheese, yogurt, or other milk products	No	18 (17.6)	16 (15)	34 (16.3)	0.598
	Yes	84 (82.4)	91 (85)	175 (83.7)	
Any oil, fats, or butter, or foods made with any of these	No	27 (26.5)	23 (21.5)	50 (24)	0.399
	Yes	75 (73.5)	84 (78.5)	159 (76)	
Any sugary food such as chocolates, sweet, candies, pastries, cake or biscuits	No	21 (20.6)	17 (15.9)	38 (18.2)	0.379
	Yes	81 (79.4)	90 (84.1)	171 (81.8)	

Table 4: Comparison of feeding practice in rural and urban area

Category	Residence		Total[N(%)]	Chi-square value	p-value
	Rural	Urban			
Poor	49 (35.0)	27 (19.3)	76 (27.1)	19.72	0.001*
Average	80 (57.1)	77 (55.0)	157 (56.1)		
Good	11 (7.9)	36 (25.7)	47 (16.8)		
Total	140	140	280		

Based on the scoring done for the feeding practices, It has been observed that, overall, 27.1% of women had poor, 56.1% average and 16.8% had good infant and early child feeding practices. Among 140 women included in rural areas, 35% had poor, 57.1% had average and 7.9% had a good infant and early child feeding practices on the other hand, in urban areas, 19.3% had poor, 55.0% had average and 25.7% had good infant and early child feeding practices. The association between the locality and feeding practices was found to be statistically significant. (Table 4)

Childhood illnesses

Almost equal number of children in both rural and urban areas had atleast one acute childhood illness in last one year (75.7% Vs 75.0%). Occurrence of fever was also almost similar across localities (72.1% in rural Vs 70.0% urban). Significantly higher number of children in urban areas (24.3%) suffered from fever with rashes compared to their rural counterparts (3.6%). Occurrence of diarrhoea and lower respiratory tract infections were slightly higher in rural areas compared to urban areas. On the other hand, upper respiratory infection was more frequent in urban compared to rural areas. However the associations were not found to be statistically significant. (Table:5)

Tab :5 Comparison of frequency of childhood illnesses among children in rural and urban areas

Category	Residence		Total [N(%)]	p-value
	Rural	Urban		
At least 1 childhood illness	106(75.7)	105(75.0)	211(75.4)	0.890
Fever	101(72.1)	98 (70.0)	199(71.1)	0.693
Fever with rashes	5(3.6)	34(24.3)	39(13.9)	0.001*
Diarrhoea	36(25.7)	31(22.1)	67(23.9)	0.484
Upper respiratory tract infection	111(79.3)	117(83.6)	228(81.4)	0.356
Lower respiratory tract infection	22(15.7)	14(10.0)	36(12.9)	0.153

Table: 6 Relationship between feeding practices and childhood illness in rural & urban areas

Residence	Feeding practices	Childhood illness		Total	p-value
		Absent	Present	[N(%)]	
Rural	Poor	3(6.5)	46(93.5)	49(35)	0.001*
	Average	26(32.5)	54(93.5)	80(57.1)	
	Good	5(45.4)	6(54.6)	11(7.9)	
Urban	Poor	3(11.1)	24(88.9)	7(19.3)	0.001*
	Average	16(20.7)	61(79.2)	77(55)	
	Good	16(44.4)	20(55.6)	36(25.7)	

**(<0.05) statistically significant*

In rural areas, 93.5% of children of mothers with poor feeding practices, 67.5% with average and 54.6% with good feeding practices had a history of childhood illness. There was a statistically significant association between the feeding practices and childhood illnesses. In urban areas, 88.9% of children of mothers with poor feeding practices, 79.2% with average and 25.7% with good feeding practices had a history of childhood illness. There was a statistically significant association between the feeding practices and childhood illnesses. (Table)

DISCUSSION

The present study provides valuable insights into infant feeding practices and their implications for child health. It aligns with the World Health Organization's (WHO) recommendation of exclusive breastfeeding for the first six months of an infant's life. (1) The commendable adherence rate of 72.5% to exclusive breastfeeding, with 73.6% of rural women and 71.4% of urban women embracing this practice, underscores the importance of promoting and sustaining exclusive breastfeeding initiatives. (1) However, the study's findings also highlight areas that

require attention and intervention, particularly in comparison with recent research by *Patel et al.* revealing a lower exclusive breastfeeding rate of 65% in rural Gujarat, India. (6)

Examining infant and young child feeding practices more broadly, the study categorizes women into three groups based on their practices, revealing that 27.1% exhibited poor practices, 56.1% had average practices, and 16.8% demonstrated good practices. Notably, rural areas displayed higher rates of poor practices (35%) compared to urban areas (19.3%), emphasizing the need for targeted interventions in specific geographic locations. (1)

The initiation of breastfeeding within 30 minutes of delivery, reported by 52.5% of participants, is a crucial aspect of newborn care. Although no significant disparity was found between rural and urban areas in this study, recent research by *Kavle et al.* revealed a statistically significant difference, with 48% and 74% initiating breastfeeding within one hour in low- and middle-income countries. (7)

Bottle-feeding practices were reported by 25.7% in rural and 34.3% in urban areas in the present study. Similarly, a study by Rathuar et al. reported approximately 53.33% of infants received partial or full bottle feeding, while age-appropriate feeding practices were observed in 56% of infants. (8) Bottle feeding was common across all socio-economic classes, with the highest rates in upper socio-economic class I. About 25.6% had a history of Neonatal Intensive Care Unit (NICU) stay. Preterm births, twins, and congenital anomalies occurred in 14.4%, 12.3%, and 3.6%, respectively. (9)

Prelacteal feeding, reported in 5.7% of rural and 26.4% of urban babies, is an area of concern, echoing recent findings of pre-lacteal feeding rates ranging from 13% to 54% across South Asian countries. (10) Weaning practices revealed that 66.3% of rural and 67.6% of urban women initiated the process after six months in the present study. This differs from findings, where only 34%-58% adhered to timely weaning across Indian states. (2)

Transitioning to child health outcomes, 75.4% of children experienced at least one illness in the past two weeks, with no significant differences between rural and urban areas. In contrast, *Kumar et al.* reported a lower prevalence of almost 60% for symptoms of ARI in under-five children in southern India, highlighting geographical variations. (11)

Fever was prevalent in 71.1% of children in the current study, while diarrhoea affected 23.9%, aligning with recent findings. The study's exploration of the relationship between feeding practices and childhood illness revealed that 35% had a poor relationship in rural areas, while 19.3% had a poor relationship in urban areas. (12) These findings resonate *with Chandhiok et al.'s* report of suboptimal infant feeding practices associated with a higher risk of childhood morbidities in India. (13)

CONCLUSION

In both rural and urban areas of Mysuru, our findings underscore a significant correlation between poor and average feeding practices in children and an increased likelihood of childhood illnesses. Delayed initiation of breastfeeding, absence of colostrum provision, and inadequate weaning practices emerge as notable risk factors for undernutrition among children under the age of five. Our study emphasizes the imperative of concerted efforts to promote and safeguard optimal infant feeding practices, thereby enhancing the nutritional well-being of children.

RECOMMENDATIONS

More initiatives focused on educating mothers and other caregivers on the importance of breastfeeding as well as incorporating infant and early-childhood feeding guidelines into health workers' training manuals in an easy-understanding way in their regional language may help to improve feeding habits which may eventually help in decreasing childhood mortality and morbidity. Behaviour change interventions focusing on the mother in antenatal care and postnatal care period is necessary. Early detection of child illnesses through a primary health care approach should be taken under care.

Limitation of Study

In our study, the questionnaire was used to collect the data on feeding practices which is subjected to recall bias. This is considered a limitation of the study

Authors Contribution

All authors have contributed equally.

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Conflict of Interest

There are no conflicts of interest.

Declaration of generative AI and AI assisted technologies in the writing process

During the preparation of this work, the authors have not used any AI tools or services.

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