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Association of Breastfeeding Practices and Infant Feeding Attitude of the Mothers on the Nutritional Status of Children Aged 1 To 3 Years

Research Article

Kamakshi R[1]*, Kundhala Ravi B[2], Hemamalini AJ[3]

[1]*Department of Clinical Nutrition, Sri Ramachandra Institute of Higher Education and Research, India*

[2]*Department of Clinical Nutrition, Sri Ramachandra Institute of Higher Education and Research, India*

[3]*Department of Clinical Nutrition, Sri Ramachandra Institute of Higher Education and Research, India*

***Corresponding author:** Kamakshi R, M.Sc, Clinical Nutrition, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India, Tel: 9442687684, 9789682256; Email: kamakshirajasabai@gmail.com

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Abstract

Objectives: To associate the infant feeding attitude of the mothers on the nutritional status of the children based on breastfeeding practices.

Methods: Primi mothers (120) with children aged one to three years were recruited in the cross sectional study and were divided into two groups based on their breastfeeding practices as Group I Exclusive Breast Feeding and Group II Non- Exclusive breastfeeding. Iowa Infant Feeding Attitude Scale was used to access the feeding attitude of the mothers and the nutritional status of children was assessed by finding height for age, weight for age and weight for height.

Results: Nutritional status of children belonging to mothers who had breastfed exclusively for six months were found to be optimum for weight for height. Majority of stunting (53%), underweight (45%) and wasting (48%) were observed in group II in comparison to group I. There was a statistical association between breastfeeding practices of mothers and nutritional status whereas, infant feeding attitude of mothers had no impact on the nutritional status of the children.

Conclusion: Delayed initiation of breastfeeding, deprivation of colostrum, giving prelacteals, not exclusively breastfeeding for six months and improper weaning practices were few risk factors for inadequate nutritional status. The present study concludes that the nutritional status of children is influenced by breastfeeding practices. Thus, there is a need to educate mothers about breastfeeding practices which will also help to achieve Sustainable Development Goals, thereby increasing healthy children in our population.

Keywords: Maternal breastfeeding attitude; Anthropometric measurements; IIFAS; Nutritional status, Stunting, Wasted

Abbreviations

EBF: Exclusive Breast Feeding; **NEBF:** Non- Exclusive breastfeeding; **IIFAS:** Iowa Infant Feeding Attitude Scale; **WHO:** World Health Organisation; **UNICEF:** United Nations International Children's Emergency Fund; **SDG:** Sustainable Development Goals; **MDG:** Millennium Development Goals; **H/A:** Height for age; **W/A:** Weight for age; W/H: Weight for height; **S.D:** Standard deviation; **Cm:** Centimeters; Kg: Kilograms; g: Grams.

Introduction

Nutrition and nurturing during the first year of life are important for maintaining life-long health and well-being. Breastfeeding is one of the most effective ways to ensure sound health of the child and to decrease the morbidity and mortality rates [1]. WHO and UNICEF recommends, "initiation of breastfeeding within the first hour after the birth; exclusive breastfeeding for the first six months; and continued breastfeeding for two years or more, together with safe, nutritionally adequate, age appropriate, responsive complementary feeding starting in the sixth months". However, many infants and children do not receive optimal feeding. Malnutrition is the major cause for about one third of deaths occurring among children under five years. Due to the inappropriate feeding practices that are followed, above two thirds of children die during the first year

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of life [1].Maternal infant feeding attitude has been reported to be a strong independent predictor of initiation of breastfeeding, inspite of various other influences like social, cultural, and religious beliefs that are in existence in the society [2]. The purpose of the study is to understand the association of the infant feeding attitude of the mother and breast feeding practices and its impact on the nutritional status of the children.

Materials and Methods

A cross-sectional study design in which 120 primi mothers with children aged one to three years who visited Paediatric Out Patient Department were selected with simple random sampling technique. Primi mothers with children of both genders were recruited. Mothers who had delivered preterm infants and children with any congenital diseases/birth defects were excluded from the study. Mothers who have exclusively breastfed for six months were considered as Group I (EBF n=60) and mothers who have not breastfed their children exclusively for six months were considered as Group II (NEBF n=60). Informed consent was obtained from every mother and the purpose of the study was clearly explained to them. Tools used for the study were perfoma - to obtain demographic details, breastfeeding practices, introduction of weaning and a questionnaire(IIFAS) to assess the feeding attitude of mothers towards children. Anthropometric measurements such as height and weight of the children were measured using appropriate tools at the time of recruitment. Statistical analysis was performed using the IBM-SPSS (Statistical Package for Social Sciences). Percentage, mean and standard deviation were used to interpret the demographic data such as gender, age and anthropometric data. Chi-square test was used to see the significance of the relationship between breastfeeding practices, infant feeding attitude and the nutritional status. Statistical significance was considered as p value less than or equal to 0.05. The study was conducted after obtaining the approval from the Institutional Ethics Committee of Sri Ramachandra Institute of Higher Education and Research.

Results

Out of the 120 mothers who participated in the study, majority of them belonged to the age group of 18-24 years. Exclusive breastfeeding is majorly practiced in mothers from urban area and non-exclusive breastfeeding is mainly practiced in mothers from rural area in this study. Participated mothers were married and were living together. Majority of mothers (63%) belonging to EBF group were from extended families whereas In NEBF group, 77% of mothers were living in nuclear families. With respect to type of delivery, most of the mothers in EBF had normal delivery but in NEBF group, mothers at maximum had undergone caesarean section. Maximum number of mothers in EBF was found to be graduates, whereas in NEBF group, maximum had their secondary education. In EBF and NEBF group, majority were found to be homemakers, however working mothers either as blue collars or white collars or self-employed were higher in NEBF group in comparsion with EBF group. According to Kuppusamy's classification of income level, most of the mothers were from upper class and upper lower class in EBF and NEBF group respectively.

The best practice in infant feeding is to put the infant at the breast as soon as after delivery. Majority of mothers (75%) belonging to EBF group were able to start breastfeeding <1 hour after delivery and 32% of mothers belonging to NEBF group started <1 hour after delivery. Though mothers started to breastfed early, they were not able to breastfed exclusively for 6 months as per WHO norms. Majority of mothers in NEBF group were able to start within 1-8 hours. Reported reasons for not initiating breastmilk immediately were shifting to the wards, child in Neonatal ICU, bathing and weighing the infant, late relief from epidural anesthesia, postpartum headache and delay in breastmilk production (Table 1). Prelacteals were not used by majority of the mothers. Very few mothers belonging to NEBF group gave prelacteal feeds such as sugar water, honey and plain water. The reason for giving prelacteals was mainly traditional beliefs and practices. Colostrum which is the first immunisation to an infant was not provided by 58% of mothers belonging to NEBF group, whereas in EBF group 12% have not fed colostrum. The reported reasons by mothers for not feeding the infants with colostrum were lack of information on colostrum feeding, late initiation of breastfeeding and a perception that colostrum causes abdominal discomfort to the baby because of its high fat content.

In EBF group, 42% of mothers have given breastfeeding up to six months and 58% have given breastfeeding beyond six months. In NEBF group, majority (37%) of the mothers have continued breastfeeding up to 3-4 months. According to WHO and UNICEF recommendations, breastfeeding was not continued for two years and beyond by the subjects who participated in the study. Thus, awareness about duration of breastfeeding to primi mothers is important. Weaning was initiated by 80% of mothers during the 7th

Table 1: Demographic details of the subjects

PARAMETERS		EBF(n=60)		NEBF(n=60)	
		n	%	n	%
Age group of mothers(years)	18-24	37	62	33	55
	25-31	22	37	24	40
	32-38	01	1	03	5
Place	Urban	38	63	23	38
	Rural	22	37	37	62
Marital status	Married	60	100	60	100
Type of family	Extended	38	63	14	23
	Nuclear	22	37	46	77
Delivery type	Caesarian section	28	47	32	53
	Normal delivery	32	53	28	47
Education level	No schooling	01	2	01	2
	Primary education	05	8	15	25
	Secondary education	11	18	19	32
	HSC	14	23	10	17
	Diploma	06	11	05	8
	Graduated	23	38	10	16
Occupation	Blue collars	04	7	11	18
	White collars	09	15	06	10
	House wife	41	68	38	62
	Self employed	06	10	06	10
Income level	<811	01	2	06	10
	812-1569	11	18	22	37
	1570-2651	15	25	12	20
	2652-5356	16	27	14	23
	5357 and above	17	28	06	10

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month in EBF group. Early initiation (32%) of <6th month as well as delayed initiation (50%) of >7th month was observed in NEBF group. Thus, early as well as late initiation of weaning foods was not able to improve the nutritional status of children rather deteriorate them.

Milk insufficiency, resuming work, mother's desire, medical complications and baby unwilling to suckle were certain factors which initiated the mothers to shift from breastfeeding to an infant milk substitute. Efficacious breast milk substitutes that are formulated on a rationale basis, have become more available for mothers to feed normal or sick child.

Nutritional Status of Children and breastfeeding Practices

The comparison of height for age, weight for age and weight for height with breastfeeding practices is shown (Table 2). In EBF group, majority(85%)of the children had normal height for age whereas in NEBF group, majority(53%)of the children were found to be stunted. Thus, children who had exclusive breastfeeding were able to achieve their maximum growth potential. Thus, height for age is statistically significant and associated with breastfeeding practices.

It was observed that 75% of children were observed to have normal weight for age in EBF group, however in NEBF group, majority of children (45%) were found to be underweight. Children were also observed to be overweight (28%) in NEBF group. Weight for age with breastfeeding practices was statistically significant.

It was also shown that 74% of children had normal weight for height. But in NEBF group, majority (48%) of children were noted to be wasted. These results were found to statistically significant and associated.

Association of Infant Feeding Attitude and Nutritional Status of Children

Association of infant feeding attitude and height for age between 2 groups: The study observed that majority of the children belonging to mothers who had positive attitude towards breastfeeding in EBF group (90%) observed to have normal height for age compared to that of NEBF group(46%). In NEBF group, though the mothers had a positive approach towards breastfeeding, most of the children were found to be stunted because of the non-exclusive breastfeeding that was practiced. Stunted growth was majorly observed in children whose mother had positive attitude towards formula feeding. There was a statistical association between infant feeding attitude and height for age in EBF group. However, statistically there was no association between infant feeding attitude and height for age in NEBF group (Table 3).

Association of infant feeding attitude and weight for age between 2 groups: The association of infant feeding attitude and weight for age between 2 groups is tabulated (Table 4). For mothers who had positive attitude towards breastfeeding, 79% of children were observed to have normal weight for age in EBF group. Prevalence of underweight was majorly noted in mothers who had positive attitude towards formula feeding. Thus, from the data it is understood that mothers feeding attitude plays a role in the nutritional status of children. But, statistically there was no association between infant feeding attitude and weight for age in both the groups.

Association of infant feeding attitude and weight for height between 2 groups: The study shows that majority of the children belonging to mothers who had positive attitude towards breastfeeding in EBF group (77%) observed to have normal weight for height compared to that of NEBF group(28%).In EBF group, though the mothers practiced exclusive breastfeeding and had positive attitude towards breastfeeding, 15% of children were found to be wasted (Table 5). Providing the children with safe, nutritious and energy dense weaning foods; getting the child immunised by combating infectious disease; healthy and hygienic sanitary practices are few practices to be followed for preventing prevalence of wasting in EBF group. These results were not statistically significant and therefore, no association was found between infant feeding attitude and weight for age in both the groups. Thus, infant feeding attitude of the mothers had no influence on the nutritional status of children.

Discussion

A study conducted in rural Ghana showed that 41% of mothers initiated breastfeeding within first hour of life, 30% from 1st hour to 24 hours, 27% from 24th hour to 72nd hour and 2% from after first 72 hours. The authors also estimated that approximately one-fifth of all neonatal deaths (22% in Ghana) could be averted if breastfeeding was initiated as early as possible of less than one hour of life for all newborns [3]."The pace of improvement in breastfeeding has been slow with less than half of children in India being breastfed in the first hour of birth, even as institutional deliveries" [4]. Prelacteal feeding is one of the cause for late initiation of breast feeding. These have been reported to delay the letdown reflex of the mother and could consequently lead to lactation failure [5]. A study by Abdel and Doaa reported the different reasons for prelacteal feeding as, cleaning of baby's bowels, maintaining mouth, throat to be moist, keeping baby

Table 2: Comparison between nutritional status of children and breastfeeding practices.

PARAMETERS		EBF(n=60) n(%)	NEBF(n=60) n(%)	x^2-value	p - value
H/A	Stunted	9(15)	32(53)	19.5	0.000***
	Normal	51(85)	28(47)		
W/A	Underweight	12(20)	27(45)	29.356	0.000***
	Normal	45(75)	16(27)		
	Overweight	3(5)	17(28)		
W/H	Wasted	11(18)	29(48)	34.552	0.000***
	Normal	44(74)	12(20)		
	Possible risk of over weight	5(8)	19(32)		

***p-value<0.001H/A-Height for age; W/A-Weight for age; W/H-Weight for height

Table 3: Association between infant feeding attitude and height for age.

PARAMETERS	EBF(n=60)				NEBF(n=60)			
	S n(%)	N n(%)	x^2-value	p-value	S n(%)	Nn (%)	x^2-value	p-value
Positive towards breastfeeding	5(10)	43(90)	3.954	0.047*	6(54)	5(46)	1.616	0.446^{NS}
Neutral	4(33)	8(67)			16(47)	18(53)		
Positive towards formula feeding	0(0)	0(0)			10(67)	5(33)		

S- Stunted; N-Normal; *p-value<0.05; NS- Not significant

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Table 4: Association between infant feeding attitude and weight for age.

PARAMETERS	EBF(n=60)					NEBF(n=60)				
	UW n(%)	N n(%)	OW n(%)	x^2 -value	p-value	UW n(%)	N n(%)	OW n(%)	x^2 -value	p-value
Positive towards breastfeeding	8 (17)	38(79)	2(4)	2.22	0.329 NS	4(36)	5(46)	2(18)	4.108	0.392 NS
Neutral	4 (33)	7(59)	1(8)			14(41)	9(27)	11(32)		
Positive towards formula feeding	0 (0)	0(0)	0(0)			9(60)	2(13)	4(27)		

UW- Underweight; N-Normal; OW-Overweight; p-value >0.05; NS- Not significant

Table 5: Association between infant feeding attitude and weight for height.

PARAMETERS	EBF(n=60)					NEBF(n=60)				
	W n(%)	N n(%)	PROW n(%)	x^2 -value	p-value	W n(%)	N n(%)	PROW n(%)	x^2 -value	p-value
Positive towards breastfeeding	7(15)	37(77)	4(8)	2.30	0.316 NS	6(54)	3(28)	2(18)	4.89	0.298 NS
Neutral	4(33)	7(59)	1(8)			13(38)	8(24)	13(38)		
Positive towards formula feeding	0(0)	0(0)	0(0)			10(67)	1(7)	4(26)		

W- Wasted; N-Normal; PROW- Possible risk of overweight; p-value >0.05; NS- Not significant

warm and calm, relieve pain, and allow stool to be passed [6]. The reasons reported by mothers for not administering colostrum were found to be similar to the results done in North Eastern Ethiopia [7]. If enough amount of nutrients are not received by an infant during the early years of life, malnutrition is started at the stage of infancy itself. Early initiation as well as exclusively breastfeeding the infant is the most efficient ways to increase the survival rates of neonates [8].A study conducted in Pakistan summarized that early weaning can interfere with breast milk production and is unnecessary since breast milk caters for both the caloric and fluids requirements apart from other micronutrients needed at that age. It also exposes the child to the risks of infection associated with top feeding. The consequences of late weaning include inadequate intake of energy, proteins and micronutrients that results in compromised nutritional status [9]. A study conducted in Ireland showed that personal attitudes a mother develops towards feeding methods, and external influences that are builded up continuously on infant feeding methods are the major reasons for the decisions of the mothers [10]. One of the strong preferences towards artificial milk feeding was found as attitude towards other women and feeding future infants [11]. A study done in Sri Lanka, reports that 32.2% of children were stunted in non-exclusive breastfeeding [12].When comparing the study done by Kissa and Joyce (88% of children were stunted in NEBF), the present study shows a less prevalence of stunting in NEBF group.

One of the concerns in the present study was that the children belonging to NEBF group were observed to be overweight. Higher fat content present in infant milk substitutes, which promotes higher postnatal growth velocity and also forming high number of adipose cells, making children obese, thereby increases the prevalence rate of childhood obesity [13]. The two main reasons for a child to be at risk of underweight is not exclusively breastfeeding for the first six months and discontinuing breast feeding [14]. In comparison of mothers who had discontinued breastfeeding with those continuing breastfeeding, prevalence of underweight was four times higher in mothers who had stopped breastfeeding [15]. Thus, both underweight and overweight are found to exist in our country causing a dual burden on public health issues. At most care and attention should be rendered towards child's nutrition by focusing on education and creating awareness to mothers regarding breastfeeding practices [16]. The results obtained by comparing weight for age and breastfeeding practices were similar to a study which showed a statistical association between breastfeeding practices and weight for height [17]. According to NFHS-3 study for India revealed that under-nutrition was less prevalent in first child than for subsequent births, and found to be increasing with birth orders. But conversely in this study, children of primi mothers were observed to be wasted. Demographic and health survey (DHS) showed that wasting is highest at age 12-23 months (24 %) [18]. A study conducted in Saudi Arabia, reported that infants health status was statistically significant and associated with mothers attitude towards breastfeeding [19]. No published articles are available reporting on mothers feeding attitude verses nutritional status, however there are evidences stating that infant feeding practices followed by mothers have an extensive role in determining the nutritional status of children rather than the feeding attitude of mothers [20]. Hence the study focused on bringing an association with breastfeeding practices and feeding attitude of mothers with nutritional status of children aged 1 to 3 years. It is mandatory that nutritional status is good right from conception and goes beyond as it progresses from breast feeding to complementary feeds, thereby making a child grow into healthy citizen. Thus, the wellbeing of the community is improved. And for this to take place, evaluation of nutritional status of children is very essential. For a child to achieve its adequate nutritional status, infant feeding attitude of the mothers and breast feeding practices are the main factors that influence the growth of the child. Bringing awareness of the feeding practices to be followed and improving the knowledge and attitude of mothers for bringing up a child with good nutritional status is the highlight of the study.

Conclusion

The study concludes that there was a significant association between breastfeeding practices and nutritional status of the children

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aged one to three years. However, there was no statistical association between infant feeding attitude of mothers and nutritional status of the children aged one to three years. Mothers who had exclusively breastfed their children had a better nutritional status than children who were not exclusively breastfed. Thus, there is a need to educate and bring awareness to mothers about the time of initiation of breastfeeding, duration of exclusive breastfeeding, and importance of colostrum, so that every mother practices breastfeeding exclusively for six months thereby bringing down the mortality and morbidity rates of children under five years. This will also ensure that Millennium Development Goals (MDG) and 2030 Agenda for Sustainable Development will be achieved to increase nutritionally healthy children in our population.

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