

Influence of media (internet and smartphone applications) on infant and young child feeding practices among mothers of children under 5 years availing health care in a rural hospital in Ramanagara district, Karnataka

J Vinshula Joeberate¹, R Johnson Avita², R Menezes Anna³, C Srilekha³, S Priya³, Jennifer Jessi³, Joseph Merlyn⁴

From ¹Post Graduate, ²Associate Professor, ³Intern, ⁴Tutor, Department of Community Health, St. John's Medical College, Bengaluru, Karnataka, India

ABSTRACT

Background: Appropriate infant and young child feeding (IYCF) practices are a key strategy to reduce under-5 mortality. Increasing mobile technology penetration in rural areas can influence IYCF practices. **Aims:** This study aims to assess IYCF practices among mothers of children under 5, in a rural maternity hospital in Ramanagara district and its association with the use of various mass media including internet and smartphones. **Methods:** A hospital-based cross-sectional study was conducted among 89 mothers and a pre-tested face-validated semi-structured interview schedule was administered to collect information regarding sociodemographic details, IYCF practices, and use of media. **Results:** The mean age of the study population was 23.84±3.5 years. About 44.9% of them had their last child in the age group of 6–24 months. About 87.6% of them were breastfed within the 1st h of birth. The mean age of starting complementary feeding was 7±2.6 months. About 98.9% had access to a smartphone, however, only 19.1% used WhatsApp videos and messages and 12.3% internet to search for information regarding IYCF practices. Almost all respondents reported health-care providers as their primary source of information regarding IYCF practices. **Conclusion:** IYCF practices of the study population were better than national average. These findings highlight the importance of the role of grassroot level workers and primary care physicians in imparting knowledge among mothers in IYCF practices. The scope of using media to bring about behavior change communication in this context can be explored.

Key words: Infant and young child feeding practices, Media, Rural mothers


India accounts for the largest proportion of under-5 mortality in the world with sub-national variations [1]. Optimal infant and young child feeding practices (IYCF) can prevent almost one-fifth of deaths in children under 5 years of age. As per the recommendations of the World Health Organization (WHO), mothers are advised to breastfeed their infants for a period of 6 months to attain optimal growth, development, and health [2,3]. Yet, according to the National Family Health Survey-4 (NFHS-4), 35.8% of under-5 are underweight, 38.4% are stunted, and 21% have wasting. NFHS data show that inadequate feeding practices start at birth, with only 41.6% of infant's breastfed within 1 h of birth. Only 55% of infants under the age of 6 months are exclusively breastfed and 42.7% of infants aged 6–8 months receive complementary feeds in addition to breast milk. These indicators are even lower in rural areas [4]. Factors such as poverty, inadequate breastfeeding

knowledge, lack of sanitation and health facilities, mother's education, and nutritional advice by health workers are linked to IYCF practices [5]. Although mass media such as newspapers, magazines, radio, television, and the internet has immense potential to modify knowledge and attitudes of populations through social marketing of behavior change, it is a double-edged sword. The current digital era and social media have also negatively impacted breastfeeding practices [6-8]. While this may be true for urban India, widespread mobile phone coverage and increased access to smartphones in the rural areas also have the capacity to erode traditional IYCF, especially in the last couple of years with the emergence of mobile phone applications like WhatsApp. There is a scarcity of literature on how rural mothers in India with access to mass media, social media, and the internet are currently feeding their infants.

This study was, therefore, conducted with the aim of assessing IYCF practices among rural mothers of children under the age of 5 years and its association with the use of various media including internet and smartphone applications.

Correspondence to: Dr. Merlyn Joseph, Department of Community Health, St. John's National Academy of Health Sciences, Bengaluru, Karnataka, India. E-mail: dr.merlyn.joseph@gmail.com

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Access this article online	
Received - 21 April 2022 Initial Review - 05 May 2022 Accepted - 06 May 2022	Quick Response code 
DOI: 10.32677/ijch.v9i5.3427	

METHODS

A cross-sectional study was conducted at a rural maternity hospital in a village of Ramanagara district, South Karnataka, around 50 km from Bengaluru city, during the period of February–April 2020. Study population: Mothers of children under the age of 5 years, availing health services (outpatient and inpatient) at the hospital. The sample size was estimated based on the NFHS-4 proportion of infants below 6 months who were exclusively breastfed (55%). With a relative precision of 20% and 95% confidence level, the estimated sample size was 79. Consecutive sampling technique was employed. However, as data were collected simultaneously by the researchers, the final sample size slightly exceeded the estimated sample size. Seriously ill mother or child was excluded from the study. Approval was obtained from the Institutional Ethics Committee and written informed consent was taken from all the study subjects before enrolment. A pre-tested, face-validated, semi-structured interview schedule was administered which comprised three parts: (i) Sociodemographic and obstetric details, (ii) IYCF practices followed by the mother including initiation of breastfeeding, exclusive breastfeeding, time of introduction, and type of complementary feeds, and (iii) usage patterns of mass media, internet, smartphone applications, and social media. IYCF practices are a set of recommendations devised by the WHO to achieve appropriate feeding of children below 2 years of age to achieve optimal nutrition outcomes in the population. According to which early initiation of breastfeeding is defined as children put to breast within 1 h of birth. Exclusive breastfeeding is defined as no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the infant to receive ORS, drops, and syrups (vitamins, minerals, and medicines). Complementary feeding is defined as the process of introducing other liquids and foods apart from breastfeeding to family foods around the age of 6–9 months. Media use: For the study purpose was defined as using mobile phone applications such as WhatsApp groups, Google search, YouTube videos and talks, mass media like television, radio, newspapers, billboards, and magazines to search or look for information regarding IYCF.

Statistical Analysis

The data were analyzed using IBM SPSS Statistics for Windows, version 21 (IBM Corp., Armonk, N.Y., USA). Data were described using frequencies, proportions, mean and standard deviation, median, and interquartile range. Bivariate analysis using Chi-square test was done to associate various IYCF practices with independent covariates such as sociodemographic and obstetric factors and use of different media. $p < 0.05$ was considered statistically significant for all analyses.

RESULTS

We studied 89 mothers with children aged <5 years of age. The sociodemographic details of the study population are described in Table 1.

IYCF Practices

All the children were breastfed and the mean duration of exclusive breastfeeding was 6 ± 3 months. About 87.6% of them were breastfed within the 1st h of birth. None of them received any form of pre-lacteal feeds. Almost 21.3% were ever bottle fed. The mean age of starting complementary feeding was 7 ± 2.6 months. The mean age of feeding water was 6.4 ± 2.5 months. The consistency of the complementary feed was semisolid and ragi porridge was given predominantly, followed by rice, cerelac, and mashed food items. Most of them preferred to feed their children with their hand (67.2%) followed by bowl and spoon (39.6%) and bottle (18.9%). Moreover, all the mothers continued breastfeeding after initiating complementary feeding. Details of IYCF practices are mentioned in Table 2.

Media Usage

About 58.4% and 41.5% used mother and child protection card and posters displayed in hospitals, respectively, to find relevant information on IYCF practices. Only a few used social media such as WhatsApp videos and messages (19.1%) and internet (12.3%) to search for information regarding the same. Only 13.4% (12) used media to access information on how to feed, breastfeeding (7.8%), and formula feeds (5.6%); however, all felt that the social media-based information may not be reliable. Almost

Table 1: Sociodemographic details of the study population, n=89

Variables	Frequency	Percentage, n=89
Age		
≤19 years	9	10.1
20–24 years	42	47.1
25–29 years	34	38.2
≥30 years	4	4.4
Religion		
Hindu	83	93.3
Education		
Up to primary	2	2.2
Secondary	75	84.2
≥Pre-university	12	13.4
Employment		
Unemployed	88	98.9
Socioeconomic Status		
Middle	58	65.2
Type of family		
Nuclear	47	52.8
Parity		
Primi	49	55.1
Gender of the last child		
Male	47	52.8
Age of the last child		
<6 months	35	39.3
6–24 months	40	44.9
2–5 years	14	15.7

all respondents reported health-care providers in the order of doctor (100%), nurse (58.4%), Accredited Social Health Activist (ASHA) (55.5%), and Anganwadi worker (AWW) (51.6%) as their primary source of information about IYCF practices. Table 3 describes the details of media usage.

Persons Influencing IYCF Practices

The key persons to influence the mother’s decision on infant feeding were health-care providers and family members. Moreover, no one reported influence of media on their decision about feeding practices. There was no significant association between the awareness and practice of IYCF and the use of media. Tables 4 and 5 explain the association between demographic factors, media usage, and IYCF practices.

There was no significant association between sociodemographic factors and use of media.

There was no statistically significant association between use of media and IYCF practices.

DISCUSSION

According to the Census 2011 data, the mean age at marriage of the study population was younger than the state average (20.0 vs. 21.2 years) [8]. The mean years of formal education were about 15 years which are higher than the state female literacy rate [3].

Breastfeeding practices were better than the national average, which according to NFHS 4 rural Karnataka, data are 59.6%

Table 2: Infant and young child feeding practices, n=89

Variables	Numbers	Frequency (%)
Ever breastfed	89	100
Breastfed within 1 h	78	87.6
Ever bottle fed	19	21.3
No pre-lacteal feeds given	89	100
Exclusively breastfed for 6 months (n=44 children aged 6–24 months)	40	90.9
Mean duration of exclusive breastfeeding (n=44 children aged 6–24 months)	Mean±SD	6±3 months
Initiation of complementary feeding between 6 and 9 months (n=44 children aged 6–24 months)	38	86.3

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initiated breastfeeding within an hour and 91.2% were ever breastfed [3]. The probable reasons for these findings could be because of the higher female literacy rate, second, the increased awareness regarding IYCF practices created by grassroots level workers such as ASHA, Auxiliary Nurse Midwife, and AWW in our study area.

We found that majority had access to smartphones but only half of them had access to internet. About 16.8% were aware that information about IYCF and breastfeeding are available on media. According to 2017 report published by Internet and Mobile Association of India, the internet usage among the women was only 33% in rural areas [9]. A similar study done among 66 Hispanic mothers with children between 6 and 36 months of age

Table 3: The media usage practices of the study population, n=89

Variable	Numbers (%)
Access to smartphone (owns+access)	88 (98.9)
Owns a smartphone	46 (51.7)
Internet access	51 (57.3)
Type of media used daily	
Television	85 (95.5)
WhatsApp	42 (47.1)
Google search and YouTube	36 (40.4)
News paper	13 (14.6)
Awareness regarding availability of breastfeeding and IYCF information on social media	15 (16.8)
Mass media usage for IYCF information	
Posters clinics/hospital	37 (41.5)
Thayi card	52 (58.4)
Social media usage for IYCF information	
WhatsApp (videos/messages)	15 (19.1)
Google search	8 (8.9)
Facebook	3 (3.3)
Talks	6 (6.7)
Information regarding IYCF searched in social media	
How to feed	12 (13.4)
Breastfeeding	7 (7.8)
Formula feeding	5 (5.6)
Dangers of bottle feeding	1 (1.1)
Credibility of the information	
Doubtful	12 (13.4)
Do not believe	3 (3.3)

Table 4: Association between sociodemographic and obstetric details with the use of media

Variables	Category	Use media	Do not use media	p-value
Age	≤24 years	6	45	0.8
	>25 years	6	32	
Education	≤Higher secondary	1	10	0.6
	Graduate	11	67	
Parity	Primiparous	5 (10)	44 (89.8)	0.31*
	Multiparous	7 (17.5)	33 (82.5)	

*Chi-square test

Table 5: Factors associated with IYCF practices and use of media, n=89

Variable	IYCF practices		p-value
	Early initiation of breastfeeding, n=89		
	Yes, 70 (78.6%)	No, 19 (21.4%)	
Use of media to access information regarding IYCF practices			
Yes	2 (18.1)	9 (81.8)	0.6
No	68 (76.4)	10 (11.2)	
Bottle feeding, n=89	Yes n (%)	No n (%)	
Yes	3 (25)	9 (75)	0.7
No	12 (16.4)	61 (83.5)	
Timely complementary feeding, n=58	Yes n (%)	No n (%)	
Yes	9 (90)	1 (10)	0.8
No	44 (91.6)	4 (8.3)	

found 95.5% had internet access and approximately half of them used social media and child-specific mobile applications to seek information regarding child health [10]. These findings could be attributed to the fact that though the modern technology has pervaded rural areas, acceptance and awareness regarding the same remains to be poor.

In our study, none of them reported media to be a primary source of information regarding IYCF practices and majority of them considered health-care providers as their primary source of information. Further family members played a key role in decisions regarding child rearing practices. A study done in rural China reported that the leading sources for infant feeding information were family members, neighbors, friends, and popular media. Only around 20% of the information came from health facilities [11]. Another study done in Ethiopia reported media (TV and radio) as a primary source of information followed by health-care providers [12]. These findings reinforce the fact that educating mothers and their family regarding IYCF practices are the responsible duty of health-care providers and grassroot level workers.

Although a small proportion of our study population sought information from media regarding bottle feeding, breastfeeding, and formula feeds, none of them felt that the information obtained is credible. A cluster randomized trial done in Bangladesh to understand the role of mass media in improving knowledge regarding IYCF practices in mothers, supported the fact that mass media and interpersonal counseling triggered a significant positive change [13]. Another study done in the United States showed that social media groups impacted both breastfeeding practices and the duration of breastfeeding [14]. A study similar to ours was also conducted in Mexico by Griaude *et al.*, using a mixed method design to establish a relationship between media exposure and IYCF practices showed that mothers significantly depend on social media for information regarding breastfeeding practices [10]. The probable reason for the findings in our study can be attributed to lack of awareness regarding the information available in media. The interpersonal communication with a health-care provider and the family member constructs

confidence in the mothers as compared to media which may lack credibility.

Even though the questionnaire was face validated and administered by well-trained doctors, there are chances of recall and social desirability bias in the participants response regarding IYCF practices. Second, while our sample represented a cross-section of mothers in a community hospital, they may not be representative of mothers in other settings of India; hence, the findings may not be extrapolated to the broader population in other settings.

CONCLUSION

The findings from the above study highlight the importance of the role played by primary care physicians and grass root level workers in imparting knowledge among mothers about IYCF practices. Media is increasingly used to deliver health messages and bring about behavior change. There is a scope to extend this in the context of IYCF practices keeping in mind the differences in the uptake of information to improve the design and implementation of mass media strategies for healthier results. Therefore, mass media and social media groups can be utilized as an effective tool in the future to influence breastfeeding related attitudes, knowledge, and behaviors.

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Funding: None; Conflicts of Interest: None Stated.

How to cite this article: Joeberate JV, Avita RJ, Anna RM, Srilekha C, Priya S, Jessi J, *et al.* Influence of media (internet and smartphone applications) on infant and young child feeding practices among mothers of children under 5 years availing health care in a rural hospital in Ramanagara district, Karnataka. *Indian J Child Health*. 2022; 9(5):77-81.