

# Assessment of Infant Feeding Knowledge, Attitudes, and Practices among Medical Students, Cross-sectional Study in Medical College in North Maharashtra State of India

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## ABSTRACT

The promotion of optimal infant and young child feeding practices is crucial for ensuring the health and well-being of infants and young children. Breastfeeding, in particular, has been shown to provide numerous health benefits to infants, including reduced risk of morbidity and mortality from common childhood illnesses, as well as supporting healthy growth and development. However, rates of exclusive breastfeeding remain low in many parts of the world, indicating a need for increased education and support for mothers and families.

This study aimed to assess the knowledge, attitudes, and practices of final-year MBBS students and intern MBBS students regarding infant feeding, with a focus on breastfeeding. A survey was conducted, and data were collected from 163 participants. Results revealed significant differences in knowledge, attitudes, and practices between the two groups of participants for most questions, with intern MBBS students generally demonstrating a higher level of knowledge and better anticipatory practices.

Despite both groups demonstrating knowledge of the recommended duration of exclusive breastfeeding, intern MBBS students were more knowledgeable about the immediate skin-to-skin care with the mother for all neonates who are normal at birth. They also had a better understanding of the hormones responsible for lactation and the recommended minimum duration for breastfeeding, which is two years. Furthermore, intern MBBS students were more likely to anticipate difficulties that mothers may face with breastfeeding and provided more specific advice to mothers on how to overcome these difficulties.

The findings suggest that there is a need for improved education and training for final year MBBS students and interns regarding infant feeding, particularly in the area of anticipatory guidance. By providing education and support to healthcare providers, it is possible to promote optimal infant and young child feeding practices, ultimately leading to improved health outcomes for infants and young children.

**Keywords:** Attitude and Practices, Breastfeeding, Infant feeding, Knowledge.

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## INTRODUCTION

Infant and young child feeding practices, including breastfeeding, play a vital role in ensuring the health and well-being of infants and young children. According to the World Health Organization (WHO), exclusive breastfeeding for the first six months of life can reduce the risk of infant mortality and morbidity due to common childhood illnesses, such as diarrhea and pneumonia.<sup>1</sup> Breast milk also contains important nutrients and antibodies that support healthy growth and development in infants.<sup>2</sup> Despite the well-known benefits of breastfeeding, rates of exclusive breastfeeding remain low in many parts of the world. This is due to a variety of factors, including lack of support and knowledge among mothers, cultural beliefs, and inadequate healthcare systems.<sup>3</sup> The promotion of optimal infant and young child feeding practices, including exclusive breastfeeding for the first six months of life, is therefore a key public health priority.

Numerous studies have examined the impact of breastfeeding and other infant and young child feeding practices on child health and development. For example, a systematic review and meta-analysis found that exclusive breastfeeding for the first six months of life was associated with a reduced risk of childhood overweight and obesity.<sup>4</sup>

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Another study found that breastfeeding was associated with improved cognitive development in children.<sup>5</sup>

Infant feeding practices are critical to the growth and development of infants, and healthcare providers play a vital role in supporting and promoting optimal infant feeding practices. As future healthcare providers, medical students and interns are in a unique position to impact the feeding practices of their patients and families.

There are similar studies conducted internationally that highlight the importance of the approach of medical students and interns towards the importance of infant feeding.<sup>6,7</sup> Assessing the knowledge, attitudes, and practices of medical students and interns regarding infant feeding is important for identifying gaps in their training and understanding,

and for informing the development of effective educational interventions.

## METHODOLOGY

Between December 2021 and January 2021, a survey was conducted at a private medical college targeting final year MBBS students and interns. Before the distribution of the questionnaire, the study received approval from the Institutional Review Board. The sample size of 163 was calculated using Epi Info software with a 95% confidence level, 5% margin of error, and an expected frequency of 75%.<sup>8</sup> The survey was designed with the help of an expert in infant nutrition at the hospital and underwent a peer review process within the department. It contained 37 items that assessed knowledge, attitude, and anticipatory practices regarding breastfeeding and infant nutrition. Participants completed the survey on Google Forms under supervision in the pediatric department seminar room within one hour. The survey included 15 open-ended questions to evaluate knowledge, 12 items on a 5-point Likert scale to assess attitude, and 10 open-ended questions to evaluate anticipatory practices. Qualitative data was presented as frequencies and percentages, while quantitative data was presented as means and standard deviations. The data entry and analysis were done using Microsoft Excel Office 365 with Data Analysis Tool Kit. Qualitative data was presented as frequencies and percentages. Mean, and standard deviations were used to present Quantitative data. The t-test was used to measure differences between continuous variables and the chi-square test for categorical variables. Pearson Correlation was used to assess the correlation between knowledge, attitude, and practice variables.  $p$ -value  $< 0.05$  was considered as significant.

## RESULTS

A total of 163 participants took part in this survey. 62% of them were final-year MBBS students and 38% were Interns who had completed Neonatology rotation. All the final-year students have completed pediatric theory and clinical sessions. The average age of participants was 22 years. Table 1 shows the demographic characteristics of participants.

**Table 1:** Demographic characteristics of participants.

Participant characteristics	n = 163
Age in years, mean (SD)	22 (1.2)
Final Year MBBS participants	100
Male final Year MBBS participants	64 [64%]
Female final Year MBBS participants	36 [36%]
Male intern MBBS participants	27 [43%]
Female final Year MBBS participants	36 [57%]

**Table 2:** Average scores of participants.

Scores	Final MBBS (n = 86)	Interns (n =51)	p-value
Overall score (%), mean (SD)	74.16	73.08	0.485
Knowledge level (%), mean (SD)	70.8	64.18	0.026
Attitude level (%), mean (SD)	82.5	86.67	0.098
Practices level (%), mean (SD)	69.2	68.4	0.854

\*t-test.  $p$ -value significant at  $< 0.05$

Based on these results, we can conclude that there is a significant difference between the knowledge levels of final year MBBS students and interns, but no significant differences in the overall score, attitude level, and practice level.

## KNOWLEDGE

The responses to knowledge items, along with correct answers in brackets, are presented in Table 3. According to the study, final-year MBBS students and intern MBBS students exhibited significant differences in their knowledge, attitude, and practice for most questions. Specifically, questions 1, 3, 4, 5, 8, 13, and 14 showed statistically significant differences ( $p < 0.05$ ), whereas questions 2, 6, 7, 9, 10, 11, and 12 did not reveal any significant differences ( $p > 0.05$ ). For instance, although both groups had knowledge about the recommended duration of exclusive breastfeeding, intern MBBS students demonstrated a significantly higher proportion of correct responses regarding immediate skin-to-skin care with the mother for all neonates who are normal at birth. Similarly, although both groups were aware of the hormones responsible for lactation, a significantly higher percentage of intern MBBS students answered correctly regarding the recommended minimum duration for breastfeeding, which is two years.

## ATTITUDE

Table 4 revealed that final-year MBBS students had a superior comprehension of infant feeding practices when compared to intern MBBS students. For some questions, such as Questions 1, 2, 7, 9, 11, and 12, there was no significant difference in responses between the two groups, indicating that they held similar attitudes. However, for other questions, including 3, 5, 8, and 10, there were significant differences in responses.

## PRACTICES

Table 5 indicates that final year MBBS students had a higher percentage of correct responses for all questions when

**Table 3:** Response to knowledge items (correct responses are given in parenthesis).

Question	Final year MBBS	Intern MBBS	p-value
	Correct response %	Correct response %	
1. For how many months is exclusive breastfeeding recommended?	99.00	92.06	0.005
2. Within how many hours after birth should breastfeeding be initiated? (Write number)	30.00	22.22	0.422
3. All neonates who are normal at birth (cry at birth) should be given immediate skin-to-skin care with the mother. True or False?	58.00	88.89	0.002
4. Name the 2 hormones that is/are responsible for lactation	65.00	98.41	<0.001
5. In the first few weeks after birth, a normal breastfed infant will usually feed times in 24 hours.	99.00	47.00	<0.001
6. Hindmilk is rich in which macronutrient?	69.00	53.97	0.121
7. Which sugar is predominant in breast milk?	92.00	88.89	0.533
8. The nutritional content of breast milk remains the same throughout lactation. True or False?	82.00	66.67	0.038
9. Refrigerated human milk at 4 degrees Celsius has a shelf life of hours.	49.00	55.56	0.526
10. The signs of good attachment are the following except.	75.00	71.43	0.693
11. Which ingredient in breast milk is necessary for brain development and high IQ?	67.00	58.73	0.277
12. Frozen human milk can be heated in a microwave for defrosting. True / False	66.00	60.32	0.436
13. 100 mL of human milk contains _____ K Calorie	71.00	46.03	<0.001
14. Breastfeeding should be continued for a minimum of ---years.	71.00	42.86	0.011
15. Mothers with HIV and on Anti-retroviral therapy should not feed their infants. True or false?	77.00	63.49	0.090

**Table 4:** Response to attitude items (Correct response given in parenthesis).

Question	Final year MBBS	Intern MBBS	p-value
	Correct response %	Correct response %	
1. A newborn baby can be given pre-lacteal feeds (sugar water, honey) soon after birth Agree Disagree	96.00	93.65	0.126
2. Breast feeding improves infant-mother bonding	99.00	98.41	0.446
3. Nursing in Public should be encouraged for mothers.	97.00	88.89	0.013
4. Formula feeding is an optimal choice for working mothers	61.00	65.08	0.554
5. Formula feeds is an ideal alternative to breast feeds	47.00	58.73	0.037
6. Infant formula is an ideal choice for premature babies in NICU.	53.00	60.32	0.272
7. Breastfed babies have low incidence of childhood allergy and atopy compared to formula fed babies Strongly agree	96.00	96.83	0.825
8. Breastfeeding is less costly and economically viable option compared to formula feeds	99.00	62.00	<0.001
9. Nutritious snacks given during complimentary feeding include chips, biscuits and processed foods	93.00	98.41	0.076
10. Feeding bottle can be used to provide water and other liquids	61.00	76.19	0.080
11. Optimal complimentary feeding should be introduced at 6 months in the form of energy-dense home-based food	94.00	95.24	0.731
12. A newborn baby can be given pre-lacteal feeds (sugar water, honey) soon after birth Agree Disagree	70.00	79.37	0.144

**Table 5:** Response to practice items (correct response given in parenthesis).

Question	Final year MBBS	Intern MBBS	p-value
	Correct response %	Correct response %	
1. In a mother complaining of 'not enough milk' the following can be used as surrogate markers for feeding adequacy	70.00	80.95	0.166
2. Sore nipple in a breastfeeding mother can be rectified by correcting infant positioning and attachment	67.00	82.54	0.032
3. A mother with fever should never feed her baby	90.00	73.02	0.007
4. Name the technique that is used to correct an inverted/flat nipple in a mother	29.00	42.86	0.138
5. Name a drug that is used to increase breastmilk secretion	35.00	56.00	0.029
6. For an infant who is in NICU, whose mother is in the post-operative ward and unable to walk to NICU, which is the most appropriate milk will you recommend?	75.00	34.92	<0.001
7. Increasing fluid intake and improving hydration status in a mother may increase her breastmilk secretions	86.00	80.95	0.385
8. A Term Well Baby routinely needs multivitamin supplementation in the first 6 months of life	85.00	82.54	0.693
9. Name a drug that is used to treat Oral Thrush/Oral Candidiasis.	86.00	74.60	0.056
10. A mother with sore nipple should only express milk instead of directly breastfeed her baby to reduce pain	38.00	39.68	0.833

compared to intern MBBS students. However, for the question concerning the drug utilized to increase breast milk secretion, the final year MBBS students had the lowest percentage of correct answers (35%) in comparison to the intern MBBS students (56%). The question regarding whether a mother with a fever should breastfeed her baby showed a higher percentage of incorrect responses among intern MBBS students (26.98%) as compared to final year MBBS students (10%). For the technique used to correct an inverted or flat nipple in a mother, only 29% of final year MBBS students and 42.86% of interns marked correct responses. Similar findings were observed for the question about whether a mother with sore nipples should only express milk instead of directly breastfeeding her baby to alleviate pain, where 38% of final year MBBS students and 39.68% of interns provided correct responses.

From the results, it can be seen that interns had a significantly higher correct response percentage for questions 2, 3, 5, and 6 compared to final year MBBS students. Question 6 had the most significant difference in correct response percentage between the two groups, with a p-value of less than 0.001, indicating a highly significant difference.

### CORRELATION

There is a weak positive correlation between knowledge and attitude, but it is not statistically significant level ( $r=0.223$ ,  $p$ -value 0.060). The other two correlations, between

knowledge and practice, and attitude and practice, are both statistically significant with p-values less than 0.05. The correlation coefficients indicate moderate positive correlations between knowledge and practice, and attitude and practice, *i.e.*, knowledge and practices ( $r=0.347$ ,  $p$ -value < 0.002) and attitude and practice ( $r=0.238$ ,  $p$ -value < 0.045).

### DISCUSSION

The study examined the Knowledge, Attitude, and Practices (KAP) of infant feeding practices among medical students. The final year MBBS students exhibited a good level of knowledge about exclusive breastfeeding, feeding frequency, hindmilk, predominant sugar in breast milk, and the importance of breastfeeding for brain development and high IQ. However, a significant percentage of final year MBBS students had incorrect knowledge about the shelf life of refrigerated human milk and the minimum duration for breastfeeding. The intern MBBS students showed a relatively lower level of knowledge than the final year MBBS students. They had good knowledge about exclusive breastfeeding, immediate skin-to-skin contact, hormones responsible for lactation, and the importance of breastfeeding for brain development and high IQ. However, they had poor knowledge about the timing of initiation of breastfeeding, frequency of breastfeeding, and storage of breast milk. Similar studies conducted in India by Khandait DW *et al.* (2010),<sup>9</sup> and in Ethiopia by Alemayehu T *et al.*<sup>10</sup> also found good knowledge about breastfeeding

among medical students but a lack of knowledge about complementary feeding and storage of breast milk.

The majority of the final year MBBS and intern MBBS students had correct knowledge and positive attitudes towards breastfeeding. However, some misconceptions and incorrect practices were observed, such as the belief that pre-lacteal feeds and formula feeding are optimal choices for infants and the use of feeding bottles for water and other liquids. Studies conducted in Iran by Heidari *et al.* (2011),<sup>11</sup> Saudi Arabia by Alzaheb R A *et al.* (2019),<sup>12</sup> and Turkey by Yıldızdaş R D *et al.* (2014),<sup>13</sup> showed a general trend towards better knowledge and attitudes towards breastfeeding among healthcare professionals, including medical students.

However, for other questions, including 3, 5, 8, and 10, there were significant differences in responses, implying that there is a necessity to enhance the attitude and practice of medical professionals regarding infant feeding practices. Both groups demonstrated a good understanding of the benefits of breastfeeding, but there were some misunderstandings concerning complementary feeding. It is crucial to emphasize the significance of introducing nutritious foods during complementary feeding to promote healthy growth and development.

Regarding infant feeding practices, the majority of medical students have good knowledge. However, some misconceptions were observed, such as the belief that a mother with fever should not breastfeed her baby, which was incorrect. Additionally, there were gaps in knowledge regarding techniques to correct an inverted/flat nipple and drugs used to increase breast milk secretion. Studies conducted in Nigeria by Maduforo A N *et al.* (2019)<sup>14</sup> and India by Wani R *et al.*<sup>15</sup> found that medical students had good knowledge of breastfeeding but lacked knowledge of complementary feeding, infant formula preparation, and practical skills such as correct positioning and attachment.

The study had limitations, including a small number of participants and a potential bias in the self-selection of participants who responded to the questionnaire. Structured educational programs need to be put into practice to improve the knowledge level of current medical students.

In general, the results suggest that the majority of medical students possess a good understanding of infant feeding practices.

## CONCLUSION

In summary, the results of the study on KAP of infant feeding practices among medical students at our institute indicate that the majority of the students had average level of knowledge about breastfeeding practices (average scores of participants less than 75% mentioned in table 2). Therefore, it is important to incorporate comprehensive and evidence-based infant feeding practices in medical education curriculum to improve the knowledge, attitudes and practices of medical students regarding infant feeding practices.

It is crucial to educate medical students on practical skills and update their knowledge to ensure they provide accurate and evidence-based advice to their patients.

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