



Pilot Study On Assessing Breastfeeding And Complementary Feeding Knowledge And Practice Among Mothers Of Children Under 2 Years Old

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Citation: Aishath Shaheen Ismail et al (2024), Pilot Study On Assessing Breastfeeding And Complementary Feeding Knowledge And Practice Among Mothers Of Children Under 2 Years Old, *Educational Administration: Theory and Practice*, 30(5), 7742-7750
Doi: 10.53555/kuey.v30i5.4231

ARTICLE INFO

ABSTRACT

Background: Child nutrition in the first two years lays the foundation for a healthy lifespan of children. Mothers' knowledge of breast feeding, and complementary feeding is essential to ensure their babies get the required nutrition, and develop good eating habits. One of the main factors which is associated with child malnutrition is lack of parental knowledge and improper feeding patterns, especially during these critical first two years.

Objectives: The purpose of this study was to assess the validity and reliability of a questionnaire developed to assess Maldivian mothers' knowledge and practices on breastfeeding and complementary feeding of children under two years of age in the Maldives.

Methods: The survey was done among 54 mothers with children under 2 years of age. A validated questionnaire from a previous study was adapted. The questionnaire had sections, on demography, knowledge, practice and perception on breastfeeding and complementary feeding. EFA and Cronbach Alpha were calculated. Descriptive analysis was used to determine the knowledge and practice scores of breastfeeding and complementary feeding.

Results: The item validity was highly relevant. All the experts rated the items as relevant or highly relevant. The value for Cronbach Alpha was 0.62. EFA revealed 5 broad dimensions of feeding. Complementary feeding knowledge and practice was low compared with breastfeeding knowledge and practice.

Conclusion: It was concluded that the questionnaire which was piloted was reliable and valid which can be used to collect data on breastfeeding and complementary feeding knowledge and practice among Maldivian mothers.

Keywords: breastfeeding, complementary feeding, pilot study, reliability, Maldives.

Background:

Several studies done in under developed, developing, and developed countries show that child malnutrition is a massive problem across the globe (Global Nutrition Report, 2022; UNICEF et al., 2019; World Health Organisation, 2022b). Poor nutritional status of infants and young children can be attributed to several factors. It was associated with child feeding practices such as not initiating breastfeeding as recommended, not exclusively breastfeeding and not continuing to breastfeed until the child is 2 years old (Cohen et al., 2018). Lack of timely initiation of complementary feeding, limited diversity of food, inadequate nutrition counselling by health service providers and poor knowledge of mothers and caretakers about healthy nutrition practices

are aggravated by the increasing commercialization and availability of breast milk substitutes and processed baby food (Berhanu et al., 2019).

In Maldives, few studies were undertaken in the area of child nutrition. Among the few studies conducted it was reported that 53% initiated breastfeeding within an hour of birth and 36% started breastfeeding within a few hours. Although the breastfeeding percent was high (93%) during the hospital stay and at 1 month, it dropped to 41% at 4 months with no child being exclusively breastfed at the age of 6 months (Abdulraheem and Binns, 2007). It can be seen that breastfeeding rates had dropped tremendously by the time the baby was 4 months old. In the Maldives Demographic Survey conducted in 2009 it was reported that only 64% of the children were fed breastmilk in the first hour of birth and 92% within the first day (Ministry of Health, 2009). This report also noted that 48% of children under 6 months were exclusively breastfed and rates of breastfeeding dropped from 69.8% at the age of 0-1 month to 59.8% at the age of 2-3 months and to 25% at the age of 4-5 months (Ministry of Health, 2009). It should be noted that the exclusive breastfeeding at 6 months had tremendously dropped from 2004 to 2009.

Compared to an earlier National micronutrient survey conducted in 2007-2009, there appears to be a slight deterioration in breastfeeding within the first day (94.5%) and a more pronounced decline in the initiation of breastfeeding within first hour of birth (80.5%) (Ministry of Health, 2007). It should be noted that in 2007 only 5.2% of infants received prelacteal feeding, while this percentage increased to 12% in 2009 (Ministry of Health, 2009). Breastfeeding initiation soon after birth is important as the colostrum in the breastmilk is prime source of antibodies which provides immunity to the baby. As the immune system of children takes time to develop it is important for the children to be exclusively breastfed until they are 6 months of age. It was reported that prelacteal feeding was more common among children whose mothers were assisted by a health professional during delivery and those born in a health facility (12%) as compared with births assisted by a traditional birth attendant (4.7%) (Ministry of Health, 2007). The MDHS survey conducted from 2016-2017 revealed that only 64% of children were exclusively breastfed, 78% of children were breastfed until 1 years and only 63% continued to breastfeed until they were 2 years old (Ministry of Health, 2018). It was also reported that 5% of the children were given complementary food before the age of 6 months (Ministry of Health, 2018). A study conducted in Lhaviyani atoll in 2020 reported that only 65.3% children aged 9-11 months were breastfeeding (Haq et al., 2020). It was reported that feeding practices are associated with the child nutritional status. The National micronutrient survey reports that there was an association with the feeding practices and malnutrition (Ministry of Health, 2007). Likewise, Haq et al reported that there was a significant association on Infant and child feeding index with that of child nutrition status (Haq et al., 2020). With the current malnutrition status in the Maldives, it is important to identify if the status is due to lack of good feeding practice. Lack of feeding practice could be due to lack of nutrition knowledge among mothers, due to financial status, poor accessibility of food etc. It was reported that malnutrition among children under five years of age was associated with poor feeding practice (Talukder, 2017).

In Maldives, the assessment conducted by Health Protection Agency revealed that there was limited knowledge among women on the benefits of the recommended breastfeeding practices, as well limited skills in feeding and lack of support in counselling. The women also had the traditional belief of prelacteal feeding being good for the baby (Health Protection Agency, 2019). Timely initiation of complementary food is most important as the nutrients from breastfeeding alone is not sufficient when a baby turns 6 months. Similarly, introducing solid foods before the baby is 6 months is not recommended as exclusive breastfeeding protects the child from infection and breastfeeding alone can provide the nourishment a baby need. So, it is always recommended to start complementary feeding when a child is 6 months old (World Health Organisation, 2022a). A qualitative study conducted in rural India in the district of Wardha reported that the women were unaware of good practice on complementary feeding, especially the benefits of timely initiation. It was reported that they do not practice exclusive breastfeeding due to barriers and it was also reported that complementary feeding was initiated as early as the baby was 4 months of age. Lack of knowledge and less of child care facilities were barriers reported for not having good practice (Zahiruddin et al., 2016).

In an assessment conducted by Health Protection Agency of Maldives in partnership with UNICEF reported that there was limited knowledge among mothers on complementary feeding and it was also reported that complementary feeding practice was poor (Health Protection Agency, 2019).

Based on the findings on malnutrition and lack of good feeding practices among the infants and young children, it was felt that studies should be undertaken to determine the knowledge and practice of breastfeeding and complementary feeding. The purpose of this paper is to explain the process and the results obtained by a pilot study conducted to assess the reliability and validity of the questionnaire on breastfeeding and complementary feeding knowledge and practice among mothers with children less than 2 years in the Maldives. The questionnaire also looked at the perception of mothers on breastfeeding and complementary feeding. Once validated the questionnaire will be used to assess the knowledge and feeding practices of mothers pre and post intervention.

Methods:

Subject respondent: The participants of the study were 54 mothers who had a child who was under 2 years of age and a Maldivian. The sample selected was a convenient purposive sample from atolls other than Noonu

and Kaafu Atoll. Noonu and Kaafu Atoll were excluded as the actual study is to take place in these two atolls. The pilot sample was taken by contacting the Health care workers from the Health Centres in the outer atolls. Data was collected by research assistants who were trained.

Ethics: Ethics and scientific clearance were obtained from National Health Research Council of Maldives (NHRC/2021/01). Participants were given information on the objectives of the study and informed consent was obtained. The participants were assured of the confidentiality of the information shared and they were told that they could withdraw from the study at any point in time. The collected data was stored in the author's computer which is only accessible to the author only. If any related authority needs to access the data it can be provided on condition that all personal information of the participants are not disclosed.

Questionnaire development: The instrument used was an adapted questionnaire which was used in a similar study conducted in Bangladesh (Mashrekly et al., 2015). The purpose of adapting this questionnaire was that it was very much related to the study which will be carried, it is a highly validated questionnaire which was designed by content experts in the field. The questionnaire mainly had four sections. Sections on breastfeeding knowledge and practice, complementary feeding and practice, Hygiene and Attitude on breastfeeding and complementary feeding. The adaptation was mainly brought to include the local foods used in the Maldives. The adapted questionnaire was given to expert professionals who were dieticians, nutritionist and a public health expert to check for item validity. In addition to the expert feedback, the questionnaire was translated and checked by 2 language experts. One who checked for the translation of English one to dhivehi (the local language) and the other expert back translated the questionnaire from Dhivehi to English.

Validity and reliability test: All the experts evaluated that all the questions related to content was relevant. Experts were given a likert scale of 4 where 1 was not 'relevant' 2 was 'somewhat relevant', 3 was relevant and 4 was 'mostly relevant'. Exploratory Factor analysis and Cronbach Alpha was performed to test the internal consistency and reliability.

Statistical analysis

The responses were then analysed using SPSS. The Reliability of the questionnaire were measured using Cronbach alpha. Data was also checked for normalcy.

Results:

Participants characteristic

The demographic characteristics of the participants are given in Table 1. Majority of the participants of the pilot study had tertiary education (70.4%), followed by secondary education (24.1%). The lowest was those with a primary education (5.5%). The highest percent of mothers were in the age range 31-35 years (44.4%), followed by the age group 26-30 (31.5%). The lowest number of mothers were in the age group 18-25 (11.1%). Looking at the occupation, the highest number of the participants were in the others category (38.9%). The others category was mainly from private sector, own business or self-employed. The second highest was in the education sector (27.8%). The highest income range was 22000, with 29.6% falling in this range. Second highest was in the range 10001-14000 with 22.2%, with the third highest in the range of 6001-10000 with 18.5%. The percent with the lowest household income (<6000) was 9.3%. The lowest number of household income was in the range 14001-18000 (7.4%). 55.6% were mothers with male children. 24.1% of the index children were in the under 6 months age group with 75.9% being in the age group 6-24 months.

Validity: All the experts who evaluated the content of the questionnaire stated that the questions were either relevant or mostly relevant. One of the experts identified two close ended questions to have a 'don't know' option.

Reliability

An EFA was utilised to explore the dimensions of feeding. The EFA revealed five broad feeding dimensions (Table 2 gives the rotated component matrix, where 5 factors were identified). Table 3 gives the 5 factors which are : Assurance in breastfeeding, knowledge in breastfeeding, confidence in breastfeeding, Assurance in complementary feeding and Confidence in complementary feeding. When conducting the factor refining process, the value of the KMO Test of Sampling Adequacy and the Bartlett's Test of Sphericity were carefully checked for the criteria until the acceptable factor model was reached. In the final analysis, Bartlett's test was significant ($p < .000$) and the KMO test was 0.670 (perception on BF) and 0.797 (perception on CF). When the desired five-factor model was reached with no cross-loadings, four items were deleted as they were either cross loading or was loaded to a single factor. Each factor had a loading of at least 3 items.

Overall, the total variance explained by the factor model was 72.23 for perception on BF and 74.8% for perception on CF%. From Table 3, it can be seen that Cronbach Alpha by factor is greater than 0.7 for all factors.

The study reports that both breastfeeding knowledge and breastfeeding practice is 79.6% which is high (Table 4). The highest score for knowledge on complementary feeding was obtained by only 5.6% of the mothers. The highest score for complementary feeding practice was reported by only 16.7% of the mothers (Table 4) It was reported that of children between the age of 0-6 months, exclusive breastfeeding is practiced by 64% and breastfeeding is continued by 79.6% of mothers (Table 5).

Table 1: Demographic characteristics

		Frequency	%
Mother's education	Primary	3	5.5
	Secondary	13	24.1
	Tertiary	38	70.4
Mothers Age	18-25	6	11.1
	26-30	17	31.5
	31-35	24	44.4
	36-45	7	13.0
Mother's occupation	Health sector	5	9.3
	Education sector	15	27.8
	Housewife	13	24.1
	other	21	38.9
Household income	< 6000	5	9.3
	6001- 10000	10	18.5
	10001-14000	12	22.2
	14001-18000	4	7.4
	18001-22000	7	13
Child's gender	>22000	16	29.6
	Male	30	55.6
Child's age	Female	24	44.4
	< 6 months	13	24.1
	6-24 months	41	75.9

Table 2: Rotated Component Matrix (Perception in Breastfeeding and Complementary Feeding)

Item	Component				
	1	2	3	4	5
How confident are you to face your family members and relatives if they create problems if you want to feed your baby only breastmilk up to 6 months of age?	.866				
If someone tries to feed your child sugar water, honey, dates, tinned milk, other milk or anything but breastmilk before 6 months, how confident are you in stopping them?	.852				
How much do you agree that you can increase the supply of breastmilk when you feel the child needs more milk to satisfy his/her hunger/thirst?	.716				
How much do you agree that in your islands, infants below 6 months are fed tinned milk, biscuits, juice, and other things.		.840			
How much do you agree that there are facilities where you work which enables you to breastfeed your child?		.823			
How much do you agree that you can supply enough milk even when you are feeling tired, sick or have not eaten enough yourself?		.801			
Do you agree that your colostrum provides enough nourishment to your infant in the first two or three days after birth or until mature milk comes in?			.843		
How confident are you to make the decision about what you will feed your child when the child is less than 6 months of age?			.809		
If you have a lot of household work how confident are you that someone from your household will help you with the work so that you can feed your child properly?			.610		
How sure are you that your family or relatives will not create problems in feeding the quantity of food you want (e.g. 3 main meals and snacks)?				.879	
If someone tries to feed your child shop food (chips, cake, juice, biscuits, chocolate) after the child is 6 months how confident are you that you will be able to stop them?				.843	
How confident are you able to make the decision about what you will feed your child when he/she is 6-24 months of age?				.841	
How sure are you that you will not face problems with family members and relatives if you want to feed your baby any of the following family foods (rice daal, roshi, vegetables, fruits, egg, meat or fish) at 7-8 months of age?				.807	
How much do you agree that you can take as much time as you need to feed your child family food and breastfeed enough so that the child is eating the recommended quantities of family foods?					.876
In some communities, mothers of infants from 7 months of age and above are fed mashed family food containing animal food such as fish, eggs, meat, chicken. How much do you agree that this is common in your island?					.813
How confident do you feel that you can motivate a child under 2 to eat enough family food even when the child does not want to eat?					.700

Table 3: Cronbach's Alpha Reliability Coefficients by Factor

Factor	No. of items	Cronbach Alpha	KMO and Bartlett's Test	Total Variance Explained (%)
Perception on Breastfeeding (BF)			0.670	72.23
Assurance in Breastfeeding	3	0.708		
Knowledge in Breastfeeding	3	0.767		
Confidence in Breastfeeding	3	0.861		
Overall (Breastfeeding)	9	0.749		
Perception on Complementary feeding (CF)			0.797	74.8
Assurance in Complementary feeding	3	0.736		
Confidence in Complementary feeding	4	0.891		
Overall (Complementary feeding)	7	0.855		

Table 4: Score on Complementary Feeding and Breastfeeding Knowledge and Practice

	Breastfeeding knowledge (%)	Complementary feeding knowledge (%)	Breastfeeding practice (%)	Complementary feeding practice (%)
Low	0	24.0	3.7	35.2
Medium	20.4	70.4	16.7	48.1
High	79.6	5.6	79.6	16.7

Table 5: Exclusive Breastfeeding and Breastfeeding Continuation

	Yes (%)	No (%)
Exclusive breastfeeding (0-6 months)	64.3	35.7
Children continuing to breastfeed	79.6	20.4

Discussion:

During the implementation the enumerators suggested rephrasing of some questionnaires to bring more clarity to a few questions. Some of the questions were changed to closed questions giving options (for e.g. giving a range so that they could tick, rather than write the responses). This made it more convenient and efficient to fill the questionnaire. With the changes it took about 45 minutes to fill the questionnaire. The content experts suggested some reorganisation of the section on hand hygiene. The 4 experts agreed that the content items were acceptable for the study. From the study participants there was 1 item which they felt might be a bit out of context, as the question was asking about a place accessible for the women to breastfeed while at work. They might feel that way, as this is a very new concept and very few workplaces have a place allocated for breastfeeding.

The value of Cronbach Alpha was 0.62. According to Ursachi et al, a value of 0.6 to 0.7 or above can be acceptable for reliability of the questionnaire, with 0.8 and above as highly reliable (Ursachi et al., 2015). Given the size of the study and the fact that it was an already validated questionnaire it can therefore accept Cronbach Alpha value of 0.62. This is in echo with Taherdoost where he suggested a value of 0.6 and above of Cronbach Alpha can be acceptable for a pilot study (Taherdoost, 2016).

The first factor explained more than 19.07% of the variance in the model. Overall, the total factor model was 68.74%. It was suggested that 50% of the variance explained by the factors is adequate (Beavers John W Lounsbury Jennifer K Richards Schuyler W Huck Gary J Skolits, 2013). Therefore, the variance explained by the factors is satisfactory. Cronbach Alpha values for the different factors were also 0.7 or more for all except 1 factor. This is acceptable in relation to internal consistency among the variables (Beavers John W Lounsbury Jennifer K Richards Schuyler W Huck Gary J Skolits, 2013). As this study is a pilot study with only 54 participants, Cronbach Alpha value of 0.6 is an acceptable value for reliability.

From this study it was shown that the breastfeeding knowledge was 79.6% for high score and practice was also 79.6% for high score. No one had low knowledge and for practice, only 3.7% was for low category. This study reported that 79.6% children were continuing to breastfeed and these findings were similar to that of Maldives Demographic and Health Survey 2017 (Ministry of Health, 2018). This increase could be due to the factor of the breastfeeding campaign on "Baby Friendly Hospitals" initiated by the government WHO and UNICEF(World Health Organisation, n.d.). Similar patterns of breastfeeding knowledge and practice were reported in a study conducted in Fiji and India (Kumar et al., 2020; Temoirokomalani et al., 2021). A similar study conducted in Nigeria too had reported high knowledge of breastfeeding but low practice in breastfeeding (Omuemu and Adamu, 2018). However, in Nepal the results were different among mothers working in a factory where only 36% mothers had adequate knowledge and 40% were having adequate practice on breastfeeding (Sharma and Khadka, 2019). It was reported that lack of breastfeeding practice could be due to beliefs such as in fear of evil eye, people thinking it might be unclean and bad odour (Mgongo et al., 2019).

These are traditional and cultural beliefs which can be corrected by increasing awareness and educating the mothers on the benefits of the recommended feeding practices.

The results from this pilot study showed that complementary feeding knowledge was 5.6% for high score, with 70.4% for medium score and 24% for low score. For complementary practice the highest score was obtained by 19.6%, medium score for 48.1% and the lowest score was obtained by 35.2%. From the results it can be seen that the score for both knowledge and practice on complementary feeding, majority got scores in the medium category. Similar kind of findings were also reported by a study conducted on Jordanian mothers on knowledge of infant's childbearing and developmental milestones, where it was seen that only 15.3% of the mothers knew the correct age to introduce the complementary food (Safadi et al., 2016). Studies have shown that educational intervention programmes had increased the rate of exclusive breastfeeding, not feeding prelacteals or continuing to breastfeeding (Guled et al., 2018). Therefore, one of the factors could be lack of knowledge about the recommended feeding could be the cause of not following the recommended child feeding practices.

In a study conducted in Ghana on 200 mothers found that only 52% of the mothers had good knowledge on complementary feeding (Aheto et al., 2015). A study from Burkina reported that, 89% of the mothers thought complementary feeding initiation should start after 6 months (Cresswell et al., 2019). Similar to these studies, a study from Mirpur, Dhaka, reported that 47% of the mothers initiated complementary food at the correct time, 28% of the mothers' introduced food before the child was 6 months old (Haque et al., 2016; Rakotonirainy et al., 2018). Similar findings were reported from Bangladesh 7% of mothers initiated complementary feeding earlier than recommended time and 44% introduced solids later than the recommended time (Owais et al., 2019). A cross sectional study carried out in Ethiopia on 543 mothers with children aged 6-23 months also revealed that complementary feeding initiation was not at the recommended level. Only 34.3% of the children were started with complementary feeding at the recommended age (Yohannes et al., 2018). A different study conducted in the slum area of Bahir Dar City of Ethiopia had similar findings to where it was reported that appropriate complementary feeding was practiced by only 7% of the mothers (Demilew and Alem, 2019). However, another study conducted in eastern Ethiopia on 110 mothers had contrasting findings. It was reported that mothers' knowledge was high (90%). All (100%) of the children were also introduced to complementary food at the correct age. This study also reported that mothers' knowledge on complementary feeding was not significantly related to the practice (Mihretie, 2018). Although from the same country different regions could have a difference in how they practice child feeding. A study carried out in India using the National Family Health Survey reported there were differences in complementary feeding between different regions. Introduction of solid food varied most in the South (61%) and the lowest in the Central and Northern Region (38%) (Dhami et al., 2019). It can be noted that there might be other factors in addition to knowledge which might be impacting the feeding practice. From a study conducted in Philippines it was reported that the practice of breastfeeding and complementary feeding practice was not at an acceptable level. There was especially a difference among the poor and the rich where those from less wealthy households consumed breastmilk more than those from the rich (69% to 42% respectively). Overall complementary feeding practice was poor, however those from wealthy backgrounds consumed more of protein when compared with the poor. Likewise, vegetable consumption was less among the poor when compared with the rich (17% and 31% respectively) (Jacquier et al., 2020). This study suggests that one of the factors in not practicing the recommended practice could be due how wealthy people are. Other factors which could hinder appropriate complementary feeding could be decisions being made by parents, lack of health services nearby, lack of awareness, feeding culture (Berhanu et al., 2019; Berhanu Mamo et al., 2022; Walters et al., 2019). It has to be highlighted that with intervention and nutrition education programmes, breastfeeding knowledge, practice, complementary feeding knowledge and practice increases for the better (Arikpo et al., 2018; Ho and McGrath, 2016; Pavithra et al., 2019). Studies have also reported that the diversity of diet increased and minimum acceptable were improved with educational programmes (Ickes et al., 2017; Kim et al., 2019). The current pilot study reports that breastfeeding knowledge is high when compared with knowledge on complementary feeding. There is a need to conducted intervention programmes to mothers on infant feeding. Studies have proven that intervention on imparting knowledge on recommended feeding had improved the complementary feeding practices (Arikpo et al., 2018; Waswa et al., 2015; Zhang et al., 2013).

Conclusion:

It can be concluded that the instrument which was adapted and with the suggested changes can be used for future studies to assess breastfeeding and complementary feeding knowledge and practice. The reliability and validity of the questionnaire was at an acceptable value.

The study also showed that complementary feeding knowledge and practice was low among the mothers and different educational programmes need to be conducted and their impact analysed.

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