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A Baseline Study on Complementary Feeding Knowledge Among Mothers in the Maldives

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Background: Mother's and carer's knowledge of infant feeding is important for them to practice in line with the recommendations laid out by the World Health Organisation. Lack of practice according to the recommendations had led the infants and children to be severely malnourished. Worldwide malnutrition has been reported as a global problem. Objectives: The main aim of this study was to evaluate the complementary feeding knowledge among mothers and its relationship with demographic characteristics. Methods: The study took place in Noonu and Kaafu Atolls of Maldives. The respondents recruited to the study were 179 mothers with a child aged between 0-2 years. Mothers were provided with information on how the study would be undertaken and consent was obtained from them. Mothers were guaranteed complete confidentiality and they were given the choice to withdraw from the study at any point in time. Ethical approval was obtained from relevant authorities. Data was tested for normalcy and descriptive and inferential statistics were used to analyse the data. Results: Most of the mothers (49.7%) had a medium score on complementary feeding knowledge, 48.1% had a low score and only 2.2% had a high score. Majority of the respondents (83.80%) had knowledge on the correct time to start complementary feeding. There was a significant relationship between the mother's age ($P< 0.04$), employment sector ($p<0.03$), and the income of the household ($p<0.05$) with that of complementary feeding knowledge, but no significant relationship with the mother's education ($p=0.24$). Conclusion: The prevalence of mothers with high knowledge of complementary feeding was low. Intervention programs for the mothers need to be conducted which will increase their nutritional knowledge and have a positive impact on their feeding practices.

Keywords: Complementary Feeding Knowledge, Sociodemographic Characteristics, Children aged 0-2 years, Maldives.

1. Introduction

Complementary feeding is the cornerstone for a healthy robust child. A child's development lies heavily on how the child is fed during the first two years of their life. Studies have shown that worldwide malnutrition is a huge problem. World Health Organisation (WHO) reports that forty-five million children less than five years of age are wasted, 149 million are stunted, and 37 million are overweight or obese (Global Nutrition Report, 2022). In low- and middle-income countries, about 50% of the deaths of children under 5 years were related to malnutrition (Global Nutrition Report, 2022). It was also reported that 45% of under-five old children's deaths were from undernutrition (World Health Organisation, 2022).

Studies also report that malnutrition is largely related to the complementary feeding practice adopted by the mothers. The practice will largely depend on how informed and knowledgeable the mothers are on the good practices of infant feeding. In the Maldives, of those children under five years old, 15% were stunted, 15% underweight, 9% wasted, and 5% overweight (Ministry of Health, 2018).

During the development period of infants, in addition to breastmilk, it is necessary to initiate complementary feeding at the age of 6 months. Breastmilk alone is not enough for a child's growth at this age. It is during this time that child develops dietary habits, so it is important for the child to eat a well-balanced diet that is diverse (World Health Organisation, 2022). The consequences of malnutrition could lead to impaired growth, delay in motor and cognitive development, socio-emotional development, and the risk of developing non-communicable diseases (Ali et al., 2021; Muslihah et al., 2022). A study in Maldives reported that nutrient intake was significantly related to malnutrition (Haq et al., 2020).

In Maldives, there are few studies conducted to evaluate the complementary feeding knowledge among mothers of children under two years old, or studies carried out to assess the influence of nutrition education on the complementary feeding knowledge of mothers. This study therefore looks at the baseline of the knowledge of mothers of children 0-2 years old in Kaafu and Noonu Atolls of Maldives before a nutritional educational intervention was carried out.

The objectives of the study were to assess the knowledge of mothers on complementary feeding and to see if there were any relationships between demographic characteristics and complementary feeding knowledge of mothers.

Methods:

The study was carried out in Kaafu and Noonu atoll of Maldives. The study was conducted using multistage sampling with simple random sampling. The total respondents of the study were 179 mothers. They were local mothers who had a child who was 0-2 years old and who were residing in the islands. The exclusion criteria for the study were mothers who were expatriates or those whose index child was preterm. For those mothers who had more than one child 0-2 years old, the selected child for whom the information was obtained was the older child as the index child.

The Atolls were selected randomly from the North Central and Central region where the malnutrition was the highest (Ministry of Health, 2018). From each Atoll, 4 islands were randomly selected. The sampling frame was obtained from the island Health Centres as it would be the most accurate list. A validated questionnaire was used to collect the data by trained health workers. This study is published elsewhere (Ismail, 2024). Informed consent was obtained from the mothers, and they were given the assurance of complete confidentiality and were assured that they could withdraw from the study at any point in time. Complementary feeding knowledge scores were calculated by giving 1 mark to each correct answer. Total knowledge score was categorized as Low (0-14), Medium (15- 28), and High (29-43). Descriptive and inferential statistics using SPSS software were used to analyse the data.

Ethical Clearance:

Ethical clearance was obtained from The Maldives National Health Research Council (NHRC/2021/01) and Management and Science University, Malaysia.

Results:

Complementary Feeding Knowledge:

According to Figure 1, the majority (83.80%) of the mothers identified the correct age to start on complementary foods, which is 6 months.

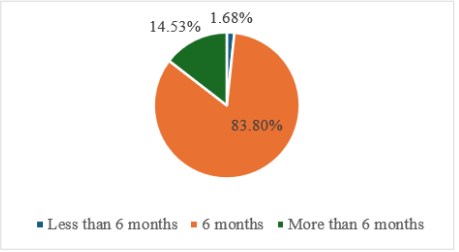

Figure I: Knowledge of the Age Complementary Feeding Should Start

According to Figure II, the findings from the study reported that most (49.73%) of the mothers had medium scores, 48.04% had low scores and only 2.23% had high scores.

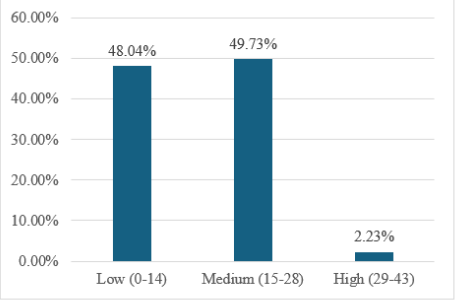

Figure II: Complementary Feeding Knowledge Score

Complementary Feeding Knowledge and its Association with Sociodemographic characteristics

Table 1 reports on the relationship between Sociodemographic characteristics (mother's age, household income, mother's occupation, and mother's education) and complementary feeding knowledge.

There was a statistical difference at the $p < 0.05$ in the complementary feeding knowledge score between the age groups ($p < 0.04$). The effect size was 0.06 which is large according to (Cohen, 2013). Mothers in the 36 years and above age group had higher knowledge compared to the rest. Likewise, there was a significant relationship in the complementary feeding knowledge among mothers from high household incomes which was above MRF 10001.00 per month ($p<0.05$). The effect size was 0.03 which was small. It was also reported that mothers who were employed in the health sector had higher knowledge ($p<0.03$). The effect size was 0.06 which was large. Table 1 also reported that there was no statistically significant relationship in the complementary feeding knowledge and mother's education level ($p=0.24$).

Table 1: Complementary Feeding Knowledge and Demographic Characteristics

Demographic Characteristic		N	Mean	SD	95% CI		F	P -value	η^2
					Lower	Upper			
Mother's age	18-25	34	13.91	5.82	11.88	15.94	5	0.04*	0.06
	26-30	69	16.06	5.65	14.70	17.42			
	31-35	52	15.15	5.07	13.74	16.57			
	36 and above	24	18.00	5.53	15.66	20.34			
Household income per month (MRF)	≤ 6000	25	14.68	4.94	12.64	16.72	3.14	0.05*	0.03
	6001-10,000	67	14.63	5.48	13.29	15.96			
	≥ 10001	87	16.71	5.72	15.49	17.93			
Mother's Employment Sector	Education Sector	18	16.11	5.80	13.23	19.00	2.75	0.03*	0.06
	Health Sector	17	18.82	6.28	15.60	22.05			
	Other Govt job	16	17.00	5.24	14.21	19.79			
	Other Private	11	12.55	4.55	9.49	15.60			
	Housewife	117	15.22	5.43	14.23	16.22			
Mother's Education	Primary	17	15.24	5.90	12.0	18.27	1.45	0.24	0.02
	Secondary	121	15.26	5.45	14.28	16.24			
	Higher Secondary and above	41	16.95	5.84	15.11	18.79			

Bold * significant at $p < 0.05$

Discussion:

From our study it can be observed that high score for complementary feeding was low among the mothers (2.23%) and a large percent had a low score (48.04%). Findings from a similar study conducted, in Kenya, also reported that complementary feeding knowledge was low among the respondents (Maingi et al., 2020). However, in Saudi Arabia, 67.6% of mothers

and 69% from Sri Lanka had moderate knowledge of complementary feeding (Alreshidi et al., 2023; Seram & Punchihewa, 2017). Likewise, a study from Uganda reported that the knowledge of meal frequency, diet diversity, and food safety was low among the mothers at baseline (Kajjura et al., 2019). Likewise, a study conducted by Kittisakmontri et al (2019) reported that 83.6% said that protein from animals are different from that of plant-based protein. However, a study carried out in China revealed that 43.2% knew when to start complementary feeding (Wu et al., 2021). A study from Bangladesh reported that 19% of mothers knew the recommended age for starting complementary feeding (Owais et al., 2019). Similarly, in Ghana, it was reported that 56.5% of mothers knew how to ensure a diverse diet (Bimpong et al., 2020). Likewise, from Indonesia, it was reported that only 32.8% knew the age to introduce complementary food and only 17.9% knew the sources of protein (Pambudi Karuniawaty et al., 2020). Similarly, a study conducted in Tanzania revealed that 73.9% had poor knowledge on iron rich food, and 69.4% of mothers' knowledge of diet diversity was poor (Sichalwe et al., 2023). However, a study from Ethiopia reported that 90% of mothers had high knowledge of complementary feeding (Mihretie, 2018). Similarly, the findings from a study conducted in Nepal revealed that 73.4% of mothers had adequate knowledge (Bhujel et al., 2021). Likewise, Muleka et al (2022) reported that 67% of the caregivers had good infant and young child feeding knowledge. It is important to address this issue and conduct nutrition education interventions in the community. Such nutrition education to the mothers/carers will provide them the skills and knowledge to feed their children according to the recommended practice (Kittisakmontri et al., 2019). In Ethiopia it was found that insufficient knowledge among mothers were the reason for starting complementary feeding earlier than the recommended time (Muluye et al., 2020).

Although the total complementary feeding knowledge score was not high according to our study's findings, majority of the mothers knew the correct time to introduce complementary food. Similarly, a study carried out by Hien et al (2023) reported that 75.3% of the mothers knew the correct age to introduce complementary food (Hien et al., 2023). Likewise, a study conducted in South Africa reported a high percentage of mothers (82.6%) knowing the correct age to start complementary feeding (Muleka et al., 2023). A study carried out in Thailand by Kittisakmontri et al (2019) reported that 61.2% of the mothers said that complementary food should be introduced at 6 months (Kittisakmontri et al., 2019). In contrast to these studies, a study from Kenya reported that 98% of mothers knew the age to start complementary feeding. Likewise, 84% of mothers from Nigeria and 81.5% mothers from Saudi Arabia reported the same (Alreshidi et al., 2023; Maingi et al., 2020; Samuel et al., 2021). It is therefore important to build on this knowledge of the mothers and provide them with information on how to prepare the food, the times to feed, the quantity to give, and the importance of responsive feeding and feeding during illness and recovery from illness. Studies from different parts of the world have revealed that increasing the nutrition knowledge of mothers and carers on infant feeding had improved the timely initiation of complementary feeding as well as the dietary diversity and number of meals given to the children, thereby increasing the prevalence of children having an acceptable diet (Andualem et al., 2020; Muluye et al., 2020; Wu et al., 2021). A study from Madagascar reported that those with better knowledge of complementary feeding were more likely to practice better (Rakotomanana et al., 2020). Bimpong et al (2020) reported that there was a significant association between mothers' knowledge of nutrition and their practice of giving their children an adequate diet. Likewise, a systematic review

undertaken by Dagne et al (2022) reported that knowledge of complementary feeding mothers enhanced the uptake of recommended practice (Dagne et al., 2022). It has been reported that improving the complementary feeding practices had resulted in improved nutritional status of the children (Masuke et al., 2021).

This study looked at the demographic characteristics and their association with complementary feeding knowledge. Table 1 reports a significant relationship between complementary feeding knowledge and mother's age. The mothers in the age group 36 years and above had significantly higher knowledge when compared with those from the other age groups ($p<0.04$). Mothers who were employed in the health sector had significantly higher knowledge when compared with other sectors ($p<0.03$), and households who had higher income had higher complementary feeding knowledge ($p<0.05$). However, there was no significant relationship between complementary feeding knowledge and mother's education ($p=0.24$). This finding was comparable to the one conducted in Nigeria where the complementary feeding knowledge was higher among mother's type of occupation, income, and age (Olatona et al., 2017). Likewise, from Saudi Arabia, it was reported that complementary feeding knowledge of mothers was significantly related to mothers' age (Alreshidi et al., 2023). In contrast, a study undertaken in Ethiopia by Gizaw et al (2023) revealed that there was no association with the mother's age, mother's employment, or monthly income of the household.

Unlike this study, studies done in Nigeria, Sub-Saharan Africa, and Poland reported that there was a significant association between mother's knowledge and education as well (Kostecka et al., 2020; Mekonen et al., 2024; Olatona et al., 2017). Likewise, a study conducted in Southwest Ethiopia reported that there was a significant association between mothers' knowledge and mother's education (Gizaw et al., 2023). In contrast to our study, a study from Bangladesh reported that there was no significant relationship between mother's knowledge of complementary feeding and their socioeconomic status ($p=0.07$) or their age ($p=0.18$) (Owais et al., 2019). Similar to our study, Owais et al (2019) did not find any significant relationship with complementary feeding knowledge and mothers education levels ($p=0.40$).

Conclusion:

The percentage of mothers who had a high knowledge score was low. From this study it was revealed that there was a significant relationship between mother's age, mother's employment sector, and household income with complementary feeding knowledge of mothers, but no relationship with mother's education and complementary feeding knowledge of mothers. Most of the mothers knew the correct age to start complementary feeding. It is important to conduct nutrition education interventions for mothers on infant and young child feeding so that it will improve mothers' nutrition knowledge which will impact them following the recommended practice.

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