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Nutritional Knowledge and Practice of Mothers Towards Under Two Years Old Children Who Attending Primary Health Care Centers in AL-Diwaniyah Governorate/Iraq

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ABSTRACT

To assess the nutritional knowledge and practice of mothers towards under two years old children who attending primary health care centers in Al-Diwaniyah Governorate. This is a cross-sectional analytical study, in order to evaluate the nutritional knowledge and practice of mothers towards under two years old children, the study population was infants under-two years with their mothers who attending vaccination sessions in six PHCC centers in Al-Diwaniyah governorate. At the end of study, we were able to include 122 cases. The study started on July the15th 2022 and ended at November the 15th 2022. Classification of participants according to type of feeding is shown that Exclusive breast feeding was reported in 24 (20 %), exclusive bottle feeding was reported in 71 (58 %) and mixed feeding was seen in 27 (22 %). Sociodemographic characteristics of women enrolled in the current study are shown that Comparison of mean age revealed no significant difference with respect to type of feeding (p = 0.829). There was significant association between type of feeding and occupation of mother (p = 0.012). There was no significant association between type of feeding and level of education, economic status, residence, number of children, birth weight, gestational age and gender of the baby (p > 0.05). In association between response of mothers to child feeding practice questions and type of feeding There was no significant association with response to “Is colostrum important” (p = 0.331). There was significant association with response to “Introduction of colostrum at first week of baby life”, “Breast milk is healthier than formula”, “Breast feeding has contraceptive benefits” Breast milk ensures proper growth and development in the first 4-6 months without adding bottle milk, water or sugar” (p <0.001). With respect to source of information about the benefits of breast feeding, there was no significant association between any source and type of feeding (p > 0.05). There was no significant association with response to “Using of vit D drops for the baby”, “Maneuver of sterilization of milk bottles”, occurrence of diarrhea or chest infection, and “Time of weaning of the baby from milk feeding” (p

> 0.05); but there was significant association with "Cause of didn't start a breast feeding or didn't continue an exclusive breast feeding", "Any admission of the baby to hospital before" and "hospital admission" (p < 0.05). There was no significant association between time of complementary feeding introduction and type of milk feeding and most of them starting complementary feeding at 4-6 months (p = 0.773). There was also no significant association between type of feeding and the response to all questions pertaining to the response to complementary feeding practice questions (p > 0.05). There was no significant association between baby weight, baby height, signs of anemia or growth chart (p > 0.05). There was significant association between signs of iron deficiency anemia and "No" minimum acceptable diet (p < 0.001). There was also significant association between signs of iron deficiency anemia and time of meat introduction (p = 0.028), in such a way that no meat introduction is associated with more incidence of IDA.

1. Introduction

The time between the birth of a child and two years of life is the most critical period of life for optimal growth and development. After the first two years of life it is difficult to reverse early growth faltering. Although the factors associated with the problem of malnutrition vary from place to place in the country. The complex sets include inappropriate dietary intake, infectious diseases, socioeconomic factors, lack of knowledge of mothers and inadequate or inattentive care of young children on nutritional needs, and also Early childhood feeding practices can have a negative impact on baby and young child growth and contribute to health-related issues such as delayed motor and cognitive development, nutrient deficiencies [1].

WHO and United Nations Children's Fund (UNICEF) recommend breast feeding to be started immediately following delivery for the baby to get colostrum, The infant should thereafter be exclusively breastfed for 6 months on child's demand with no other fluids including water, and should continue together with complementary feeding up to and beyond second year of life, Various studies have shown that exclusive breastfeeding for six months decreases the risk of later overweight and obesity, sudden infant death syndrome, respiratory illness, diarrhea, and the risk of developing NCDs [2]. Moreover, studies also revealed a higher IQ and academic achievement among children and adolescents who were exclusively breastfed for six months [2], [3]. In addition to exclusive breastfeeding, the WHO recommends the initiation of complementary feeding at six months of age as breastmilk alone will no longer meet the nutritional needs for the rapid growth of the child and provide sufficient amounts of certain nutrients such as protein, zinc, iron and fat-soluble vitamins [4], Also Infants are born with a store of iron in their liver that is sufficient for the first 6 months of life but after that the amount of iron in breast milk will not satisfy infants' nutritional requirements for iron.

In addition to timely introduction, the WHO also emphasizes diet diversity, meaning that a variety of the basic food groups should be included as part of the complementary feeding to ensure a heterogeneous nutrient intake that satisfies all nutrient needs in the growing infant [5].

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The introduction of complementary food is a critical transition phase that requires special attention to the provision of age-appropriate and nutritionally adequate food for optimal child growth and development [6]. infant feeding and weaning practices have cultural, social and economical roots making malnutrition more than a medical problem. It has been indicated in many studies all over the world that these practices are the subjects strongly influenced by customs, beliefs, superstitions, religion, cultural pattern, mother's education and socioeconomic status of the family. Despite the fact breastfeeding is known to be the best way to feed infant by providing the psychological and health benefit to both the mother and child, globally there has been a general decline in the practice of breastfeeding both in terms of prevalence and duration in the past few decades. The possible reasons for declining breastfeeding includes lack of confidence that the child is getting enough, increased urban women work load demand that makes them to be separated from their babies for longer hours, decline in social support, discomfort on breastfeeding in public, problem which is affect infant feeding such as refusal to eat, colic, and vomiting and intense promotion of commercial milk formulae [7].

2. Patients and methods

This is a cross-sectional analytical study, in order to evaluate the nutritional knowledge and practice of mothers towards under two years old children, the study population was infants under-two years with their mothers who attending vaccination sessions in six PHCC centers in Al-Diwaniyah governorate, PHCC included were (Al-Taliaa', Al-Jazaer, Hay Rifaat, in urban area and Kamas, Al-Shamiya, Al badeer, in rural area). At the end of study, we were able to include 122 cases. The study started on first of July 2022 and ended at Octoer the 30th 2022. The sample was accessed through visiting the centers on vaccination days (Sunday and Wednesday). Participants were interviewed in a face-to-face manner using a structured questionnaire, which was prepared by researcher depending on questionnaires of similar studies with modifications and confirmed by 3 specialists. The questionnaire was mainly of the closed type except for few open type questions which were designed to allow the mother express their ideas on certain issues. The questionnaire consists of three parts: socio-demographic characteristics of households, child feeding practices and complementary feeding practices.

The inclusion criteria were mothers with their children under two years old who attending PHCC on vaccination days at time of study. Exclusion criteria were: Children above two years old excluded from the study, Children with acute or chronic illness, Children with known congenital anomalies, Children with physical malformation that may affect the normal eating pattern and body composition, Mothers who refused to participate in the study were also excluded from the study. The following variables were included in the questionnaire form: Demographic characteristics: age, residency, occupation, economic status of the family, educational level, number of children the mother have, gender, weight, gestational age of the baby. The study was approved by the institutional ethical approval committee and formal agreement was obtained from the directorate of Health in Al-Diwaniyah province, the formal representative of Iraqi Ministry of health. Verbal consent was obtained from each participant after full illustration of the aim and procedures related to the current study. The data were collected and transformed into a spread sheet of Microsoft Office Excel 2010 and then into an SPSS (statistical package for social sciences) version 23. Numeric quantitative data were expressed as mean, range and standard deviation (SD), whereas, qualitative data were expressed as number and percentage. A Comparison of mean between any two groups was done according to independent sample t-test, while chi-square test was used to evaluate association between any two categorical variables. The level of significance was considered at $P \leq 0.05$.

3. Results

Classification of participants according to type of feeding is shown that Exclusive breast feeding was

reported in 24 (20 %), exclusive bottle feeding was reported in 71 (58 %) and mixed feeding was seen in 27 (22 %).

3.1 Sociodemographic characteristics of women enrolled in the current study

Sociodemographic characteristics of women enrolled in the current study are shown that Comparison of mean age revealed no significant difference with respect to type of feeding (p = 0.829). There was significant association between type of feeding and occupation of mother (p = 0.012). There was no significant association between type of feeding and level of education, economic status, residence, number of children, birth weight, gestational age and gender of the baby ($p > 0.05$).

3.2 The association between response of mothers to child feeding practice questions and type of feeding

The association between response of mothers to child feeding practice questions and type of feeding is shown in tables 1, and 2. There was no significant association with response to "Is colostrum important" (p = 0.331). There was significant association with response to "Introduction of colostrum at first week of baby life", "Breast milk is healthier than formula", "Breast feeding has contraceptive benefits" Breast milk ensures proper growth and development in the first 4-6 months without adding bottle milk, water or sugar" (p <0.001).

*With respect to source of information about the benefits of breast feeding, there was no significant association between any source and type of feeding ($p > 0.05$).

Table 1: Response of mothers to child feeding practice questions

Characteristic	Exclusive breast feeding n = 24	Mixed feeding n = 27	Exclusive bottle feeding n = 71	*P*
Is colostrum important				
No	0 (0.0 %)	0 (0.0 %)	3 (4.2 %)	0.331 C NS
Yes	24 (100.0 %)	27 (100.0 %)	68 (95.8 %)	
Introduction of colostrum at first week of baby life				
No	0 (0.0 %)	0 (0.0 %)	19 (26.8 %)	< 0.001 C ***
Yes	24 (100.0 %)	27 (100.0 %)	52 (73.2 %)	
Breast milk is healthier than formula				
No	0 (0.0 %)	2 (7.4 %)	25 (35.2 %)	< 0.001 C ***
Yes	24 (100.0 %)	25 (92.6 %)	46 (64.8 %)	
Breast feeding has contraceptive benefits				
No	5 (20.8 %)	22 (81.5 %)	70 (98.6 %)	< 0.001 C ***
Yes	19 (79.2 %)	5 (18.5 %)	1 (1.4 %)	
Breast milk ensures proper growth and development in the first 4-6 months without adding bottle milk, water or sugar				
No	6 (25.0 %)	23 (85.2 %)	63 (88.7 %)	< 0.001 C ***
Yes	18 (75.0 %)	4 (14.8 %)	8 (11.3 %)	

n: number of cases; SD: standard deviation; C: chi-square test; NS: not significant; ***: significant at $p \leq 0.001$

There was no significant association with response to "Using of vit D drops for the baby", "Maneuver of sterilization of milk bottles", occurrence of diarrhea or chest infection, and "Time of weaning of the baby from milk feeding" ($p > 0.05$); but there was significant association with "Cause of didn't start a breast feeding or didn't continue an exclusive breast feeding", "Any admission of the baby to hospital before" and

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"hospital admission" ($p < 0.05$), table 2.

Table 2: Other questions related to response of mothers to child feeding practice

Characteristic	Exclusive breast feeding $n = 24$	Mixed feeding $n = 27$	Exclusive bottle feeding n = 71	p
Using of vit D drops for the baby				
No	12 (50.0 %)	13 (48.1 %)	33 (46.5 %)	0.954 C NS
Yes	12 (50.0 %)	14 (51.9 %)	38 (53.5 %)	
Cause of didn't start a breast feeding or didn't continue an exclusive breast feeding				
No milk	0 (0.0 %)	1 (3.7 %)	27 (38.0 %)	0.001 C ***
Work	0 (0.0 %)	4 (14.8 %)	2 (2.8 %)	
Discomfort	0 (0.0 %)	1 (3.7 %)	9 (12.7 %)	
Disease	0 (0.0 %)	1 (3.7 %)	9 (12.7 %)	
Not enough alone	1 (4.2 %)	17 (63.0 %)	14 (19.7 %)	
Not taken by the baby	0 (0.0 %)	2 (7.4 %)	10 (14.1 %)	
Fungal infection	0 (0.0 %)	1 (3.7 %)	0 (0.0 %)	
Type of Water used for preparation of milk formula				
Sterilized		27 (100.0 %)	71 (100.0 %)	
Maneuver of sterilization of milk bottles				
Good		14 (51.9 %)	24 (33.8 %)	0.238 C NS
Bad		13 (48.1 %)	47 (66.2 %)	
Diarrhea				
Single	6 (25.0 %)	12 (44.4 %)	28 (39.4 %)	0.166 C NS
Twice	0 (0.0 %)	4 (14.8 %)	16 (22.5 %)	
Chest infection				
Single	10 (41.7 %)	11 (40.7 %)	22 (31.0 %)	0.052 C NS
Twice	0 (0.0 %)	0 (0.0 %)	7 (9.9 %)	
Any admission of the baby to hospital before				
No	22 (91.7 %)	18 (66.7 %)	40 (56.3 %)	0.007 C **
Yes	2 (8.3 %)	9 (33.3 %)	31 (43.7 %)	
Time of weaning of the baby from milk feeding				
No	21 (87.5 %)	24 (88.9 %)	69 (97.2 %)	0.141 C NS
Yes	3 (12.5 %)	3 (11.1 %)	2 (2.8 %)	
Range (years)	1.17-1.42	0.50 -1.67	1.50 -1.58	

n: number of cases; C: chi-square test; NS: not significant; *: significant at $p \leq 0.05$; **: significant at $p \leq 0.01$; ***: significant at $p \leq 0.001$

3.3 Response of mothers to Complementary feeding practice questions

There was no significant association between time of complementary feeding introduction and type of milk feeding and most of them starting complementary feeding at 4-6 months (p = 0.773), table 3.

Table 3: Association between time of complementary feeding introduction and type of milk feeding

Characteristic	Exclusive breast feeding $n = 18$	Mixed feeding $n = 14$	Exclusive bottle feeding $n = 45$	p
Complementary				

Before 4 months	0 (0.0 %)	0 (0.0 %)	2 (4.4 %)	0.773 C NS
4-6 months	13 (72.2 %)	9 (64.3 %)	28 (62.2 %)	
After 6 months	5 (27.8 %)	5 (35.7 %)	15 (33.3 %)	

C: chi-square test; NS: not significant

There was also no significant association between type of feeding and the response to all questions pertaining to the response to complementary feeding practice questions ($p > 0.05$), with the exception of significant association with response to "Vitamin A rich fruits and vegetables" ($p = 0.021$), table 4.

Table 4: The response to complementary feeding practice questions

Characteristic	Exclusive breast feeding $n = 18$	Mixed feeding $n = 14$	Exclusive bottle feeding $n = 45$	*p*
Dietary diversity				
<4	2 (11.1 %)	2 (14.3 %)	10 (22.2 %)	0.538 C NS
≥4	16 (88.9 %)	12 (85.7 %)	35 (77.8 %)	
Number of meals introduced last day				
1	2 (11.1 %)	1 (7.1 %)	3 (6.7 %)	0.463 C NS
2	5 (27.8 %)	3 (21.4 %)	11 (24.4 %)	
3	8 (44.4 %)	6 (42.9 %)	11 (24.4 %)	
4	3 (16.7 %)	4 (28.6 %)	20 (44.4 %)	
Number of snacks introduced last day				
0	0 (0.0 %)	1 (7.1 %)	6 (13.3 %)	0.518 C NS
1	10 (55.6 %)	8 (57.1 %)	25 (55.6 %)	
2	8 (44.4 %)	5 (35.7 %)	14 (31.1 %)	
Minimum acceptable diet				
No	4 (22.2 %)	3 (21.4 %)	12 (26.7 %)	0.890 C NS
Yes	14 (77.8 %)	11 (78.6 %)	33 (73.3 %)	
Time of meat introduction				
<1 year	7 (38.9 %)	4 (28.6 %)	14 (31.1 %)	0.844 C NS
≥ 1 year	4 (22.2 %)	2 (14.3 %)	7 (15.6 %)	
Not yet	7 (38.9 %)	8 (57.1 %)	24 (53.3 %)	
Time of Honey introduction				
<1 year	3 (16.7 %)	0 (0.0 %)	5 (11.1 %)	0.532 C NS
≥ 1 year	2 (11.1 %)	3 (21.4 %)	5 (11.1 %)	
Not yet	13 (72.2 %)	11 (78.6 %)	35 (77.8 %)	
Serving salt and sugar before one year				
No	2 (11.1 %)	5 (35.7 %)	14 (31.1 %)	0.201 C NS
Yes	16 (88.9 %)	9 (64.3 %)	31 (68.9 %)	
Serving drinks like tea, coffee, sugar drinks like Pepsi, juice				
No	6 (33.3 %)	8 (57.1 %)	14 (31.1 %)	0.200 C NS
Yes	12 (66.7 %)	6 (42.9 %)	31 (68.9 %)	

n: number of cases; C: chi-square test; NS: not significant; *: significant at $p \leq 0.05$

The results of children examination are There was no significant association between baby weight, baby

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height, signs of anemia or growth chart ($p > 0.05$).

4. Discussion

4.1 Types of milk feeding practices among the enrolled mothers

The study included surveying 122 women who attended in total of six PHCC centers in Al-Qadisiyah governorate for vaccination to evaluate the nutritional knowledge and practice of mothers towards under two years old children. According to the type of feedings, results showed that there were 71(58%) on exclusive bottle feeding, 27(22%) on mixed feeding of breast and bottle feeding, and 24(20%) were exclusive on breastfeeding. Breastfeeding is essential and important for the development of babies and that should be exclusive for children under 6 months of age, as recommended by WHO [8].

Results of the current study showed that one-fifth of the enrolled mothers did provide breastfeeding for their children. In comparison, prevalence rates of breastfeeding in studies based in Iraq, Saudi Arabia, Iran, Turkey, and Jordan were presented clear disparities according to the country of the study, as 73.1%, 3.3%, 53.1%, 52.3%, 51.6%, respectively [9], [10].

In fact, it has been estimated that less than 40% of children under 6 months old receive breastfeeding globally. Lacks of exclusive breastfeeding has been significantly linked to higher risk factors of diseases and malnutrition that could potentially affect lives of those children [11]. In fact, replacing breastfeeding for exclusive bottle feeding might be related to the convenience and availability of the formula milk in markets and shops across many nations, lack of confidence that the child is getting enough, increased urban women work load demand that makes them to be separated from their babies for longer hours, decline in social support, discomfort on breastfeeding in public, problems which are affect infant feeding such as refusal to eat, colic, and vomiting.

4.2 Sociodemographic factors and milk feeding practice

Mean age of the included mothers were between 26-27 years, and no significant variance was found according to the method of feeding, (P=0.829). Age could work as a deterministic factor in the initiation of breastfeeding among young mothers. The study showed that higher proportion of housewives have selected exclusive breastfeeding and bottle feeding over the mixed feeding method, being 87.5% and 83.1%, respectively. A positive correlation has been established between being a housewife and breastfeeding by many studies [12]. In contrast, mixed feeding was found to be preferred by 55.6% of housewives, 33.3% of employed mothers, and 11.1% of the currently student mothers. This could be argued that various forms of feeding practice would emerge among mothers related to the employment status and occupational status. Education has always benefited mothers in finding the best methods available in caring for herself and for her child. Best outcomes in raising a healthy child has been seen to correlate with mother's education and knowledge [13]. Highly educated mothers can easily access to various forms of information through medias and publications [9]. However, education has found to correlate significantly with the economic status of the family and place of residence as well. It was found that breastfeeding is more common among less educated, low to moderate income families and those how proportionally shifted toward living in rural areas.

4.3 Knowledge towards child feeding practices

Exploring mothers' knowledge regrading number of designed questions showed variances among mothers who follow specific state of feeding, table 1. As an overall estimation, excellent proportion of mothers on exclusive breastfeeding showed good knowledge regarding the benefit of colostrum 24(100%), introduction

of colostrum at first week 24(100%), health prospective of breastfeeding over formula 24(100%), breastfeeding as a contraceptive method 19(79.2%), and breastfeeding is better for growth and development 18(75%). Comparable findings were reported in a study from Al-Anbar, Iraq [14].

In fact, the study examined sources of information among mothers with different child feeding practices, results showed no significant association between method of feeding practice and source of information which information have been acquired, This indicates that there is no specific source of information that mothers have preferred in acquiring knowledge regarding the current feeding practice, and all the above-mentioned sources could contribute equally to mothers' decision on feeding.

It is worth mentioning that in Islamic and middle eastern countries, most mothers receive information from family and friends more than other detailed sources [15]. Currently, social media on the other hand is showing great influence on mothers' decision through providing concise and easily accessible reading materials, and videoclips which been mostly prepared by professionals. These platforms have helped mothers across the globe in shifting perception toward breastfeeding practices, specifically those who cannot access to education centers or maternity awareness groups [16]. Mothers' responses were also evaluated regarding child feeding practice, table 2. Results showed that higher proportion of mothers on exclusive bottle feeding suffered from no production of milk, being 27(38%), followed by lower proportions of them that chose exclusive bottle feeding over other feeding practice was due to breast milk was not enough alone as a source of feeding to baby 14(19.7%), and 10(14.1%) of them reported failure in receiving acceptance by the baby himself. Significant differences were observed when compare the findings to other feeding practices ($P<0.001$), mainly exclusive breastfeeding. Same observation has also been made by [17] who reported similar reasons found by this study that prevented mothers from exclusive breastfeeding in addition to other factors such as mother's sickness, employment and work, and illness of the child.

4.4 Complementary feeding practices among the enrolled mothers

Complementary food should be provided to all children above the age of 6 months to 2 years old [18]. The current study found that 18(75%) of exclusive breastfeeding, 14(51.9%) of mixed feeding, and 45(63.4%) of exclusive bottle feeding were practicing complimentary feeding for babies. No significant variance was observed between the groups, ($P=0.231$). This indicates that those mothers have good knowledge regarding introducing complimentary food at the accurate age of child, Table 3. On the other hand, high proportion of mothers stated they provided salted food for children below one year old. This is not recommended however, as high salt contents could facilitate illness condition of blood pressure and other cardiovascular diseases [19]. Moreover, higher proportion of mother on exclusive bottle feeding have reported providing sugar-based beverages to children, being 31(68.9%). This is the highest percentage reported compered to mothers on mixed feeding 6(42.9%), and exclusive breast feeding 12(66.7%) table 4. Reports recommended not to provide sugar rich drinks to children below one year old [20]. Following such guidelines could protect children from developing high sugar diet, that would essentially have deterministic effect on the rest of the lifetime [21]. At the same time, caffeine in coffee and coca cola should not be introduced to children below the age of 12 years [22].

5. CONCLUSION

Most of the enrolled mothers showed acceptable level of knowledge regarding the importance of breastfeeding, however, higher proportion of mothers who preferred mixed feeding and exclusive bottle feeding over breastfeeding were found less knowledgeable compared to others. Although adequate amount and types of complimentary food have been provided for babies have been observed by this study, still

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number of children suffering from underweight or overweight conditions.

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