

## Knowledge on Health Aspect of Children Less Than Two Years among Mothers in Al – Ramadi City, Iraq

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### ABSTRACT

The responsibility of mothers is mostly childcare, so their education is vital for children's illness and the influence on children's care. This study aims to assess the mothers' knowledge of children's health aspect less than two years. A descriptive cross-sectional study was conducted at the Maternity and Childhood Teaching Hospital in Al-Anbar governorate during January 2020. Two hundred and fifty married mothers who had children less than two years of age, at age (15 – 49) of mothers enrolled in the study. They were selected by non-probability convenience sampling technique. Data were analyzed using SPSS version 16. The mean age of the study sample was 29 ( $\pm 6.07$ ). The illiterate and high educated were 16 (6.4%) and (38.8%), respectively. Their knowledge regarding breastfeeding (few hours after delivery starting breastfeeding) was (88.8%). About (56.8%) knew the benefit of breastfeeding for child and mother's health, while only (3.2%) knew the benefit of its benefits for mothers only. Most mothers (92.0%) were known for vaccination programs for children under two years. About (86.0%) knew the benefit of vaccination of children under two years for prophylactic from disease, while only (1.6%) do not know the benefit of vaccination. The result also shows a significant association between (education of mothers, starting breastfeeding in few hours after delivery, benefit of breast feeding, social and psychological importance of breastfeeding) of mothers and age, education stage, and knowledge level. Knowledge regarding breastfeeding and vaccination and its importance among mothers was good. However, more strategies are needed to increase the health aspect of children less than two years among mothers in our community.

**Keywords** : Health; Breastfeeding; Vaccination; Children; Knowledge; Mothers; Iraq

### Introduction

Childcare is primarily the responsibility of mothers. Therefore, the mother's knowledge about childcare influences the nature and quality of care given to the child. Several studies have revealed that the mother's level of education has a positive impact on her knowledge and how she deals with child health care issues<sup>1</sup>. The promotion and support of breastfeeding are a global priority. Vast scientific literature demonstrated substantial health, social and economic benefits associated with appropriate breastfeeding, including lower infant morbidity and mortality from diarrhea and infectious diseases<sup>2</sup>. Unlike breastfeeding, formula-fed babies are more susceptible to higher infections, such as the aerobic bacteria in the intestine. The first months of life are some of the most important for child health because vital processes related to growth and development occur during this period. Therefore, a child's health will depend on careful monitoring to prevent or mitigate possible impairments to his or her health<sup>3</sup>. The early initiation of breastfeeding – putting newborns to the breast within the first hour of life—is critical to newborn survival and to establishing breastfeeding over the long term. When breastfeeding is delayed after birth, the consequences can be life-threatening – and the longer newborns are left waiting, the greater the risk. Therefore, WHO and UNICEF recommend initiation of breastfeeding within the first hour

of life and exclusive breastfeeding up to six months<sup>4</sup>.

### Literature Review

Various studies have been carried out to assess the mothers' knowledge and their practices regarding breastfeeding. Commonly reported malpractices to include delayed initiation of breastfeeding, colostrum deprivation, breastfeeding, colostrum deprivation, feeding pre-lacteal foods, formula milk supplementation, and early introduction of complementary feeding<sup>5</sup>. Vaccination is the administration of a vaccine to help the body produce immunity against a disease<sup>6</sup>. Studies have shown that 2.5 million lives worldwide are saved by vaccination against tuberculosis, poliomyelitis, diphtheria, tetanus, and measles every year<sup>7</sup>. Despite the statistics mentioned above, vaccination for tetanus, diphtheria, meningitis is low and amounts to 75.0%<sup>8</sup>. Measles is yet to be eliminated, which remains one of the main reasons for early childhood mortality. The role of media, the internet, and social media is essential for immunization<sup>9</sup>. Mothers consider the internet as the second most reliable source after medical workers<sup>10</sup>. The research shows the necessity of enhancing technical capabilities and interpersonal communication skills of healthcare workers involved in the immunization system and health of children under five years of age because they are the most reliable source of information for most mothers<sup>11,12</sup>. This study aimed to assess the Knowledge on health aspect of children aged less than two years among a sample of mothers in Al – Ramadi city, Iraq.

### Methods

#### Study Design

A cross-sectional study was carried out in the Maternity and Childhood Teaching Hospital and Al – Ramadi Teaching hospital from 1st December 2019 to the end of February 2020. All married mothers bearing children under the age of 24 months who had attended the hospital for maternal and child healthcare and were willing to participate in the research are included in the study. However, unmarried women and those who have no children yet or not willing to participate were excluded from the study. The study protocol was approved by the Ethics committee of the Faculty of Medicine, University of Anbar. Moreover, permission was obtained from the related hospital authority.

#### Sample size

The sample size was calculated by assuming the prevalence rate of knowledge among Iraqi mothers in Al-Ramadi city is 50.0% with a confidence level of 95%, and an acceptable margin of 5% using the following formula:  $N = [Za^2 \times P \times Q / (M.E.)^2]$ . So,  $n = (1.96)^2 \times (0.50) \times (0.50) / (0.06)^2 = 267$ . Due to exclusion criteria, 250 mothers have been included in this study (Table 1).

#### Data Collection

A semi-structured questionnaire with closed-ended questions was recruited to collect the data via a face-face interview. The questionnaire was divided into two parts:

**Part one:** was made to elicit the sociodemographic data of the surveyed women such as the age of mothers, age at marriage, education, and occupation of mothers and their husbands, number of life childbirths, history of abortions, and child deaths.

**Part two:** included data related to the mother's knowledge about breastfeeding and vaccination.

#### Data Analysis

The statistical analysis was conducted in the form of percentages, mean, standard deviation. Chi-

square analysis was used for rate comparison. A P-value of  $\leq 0.05$  was considered statistically significant. The statistical analysis was carried out by using SPSS 16.

## Results

### Socio-Demographic characteristics

Two hundred and fifty women (response rate = 86.8%) were included in the final analysis. Table 1 shows the characteristic distribution of the study sample. The mean age of respondents was 29 ( $\pm 6.07$ ) years (range of 16-49 years). The highest proportion (37.6%) was 25-29 years old, while the lowest frequency (2.4%) was at the age group less than 20 years. The mean age of marriage was 20.9 ( $\pm 3.75$ ) (range of 14-40 years) years. The highest proportion (48.0%) was among the age group of 20-24 years old, while the lowest percentage (0.4%) was at the age group 35 years old and above. More than one-third (38.8%) of women were highly educated (University level), compared to 59.2% of the husband's group. Most women were housewives (71.1%), compared to 53.6% and 41.2 of husbands employed in public and private sectors, respectively. Regarding parity, the highest frequency (29.2%) was two births, while the lowest frequency (1.2%) was primigravida that representatives. About 20.4% of women had an abortion at least once, 5.6% had two abortions, and 0.8% had more than two abortions, while 73.2% stillbirth and other deaths, as shown in Table 1.

**Table 1:** Distribution of socio-demographic characteristics of the study sample (n=250)

<b>Variables</b>	<b>Categories</b>	<b>No.</b>	<b>%</b>
<b><i>Age ( years )</i></b>	Mean $\pm$ SD	29 $\pm$ 6.07	
	<20	6	2.4
	20 – 24	48	19.2
	25 – 29	94	37.6
	30 – 34	57	22.8
	35 – 39	23	9.2
	40+	22	8.8
<b><i>Age of marriage</i></b>	Mean $\pm$ SD	20.9 $\pm$ 3.75	
	<20	79	31.6
	20 – 24	120	48
	25 – 29	45	18
	30 – 34	5	2
	>35	1	0.4
<b><i>Education of mother</i></b>	Illiterate	16	6.4
	Read & write	20	8
	Primary	37	14.8
	Intermediate	37	14.8
	Secondary	43	17.2
	University	97	38.8
<b><i>Education of husband</i></b>	Illiterate	5	2
	Read and write	8	3.2
	Primary	18	7.2
	Intermediate	26	10.4
	Secondary	45	18

	University	148	59.2
<b>Occupation of mother</b>	Housewife	178	71.2
	Employed	72	28.8
<b>Occupation of husband</b>	Employed	134	53.6
	Free business	103	41.2
	unemployed	11	4.4
	retired	0	0
	dead	2	0.8
<b>Number of life birth</b>	0	3	1.2
	1	62	24.8
	2	73	29.2
	3	56	22.4
	4	31	12.4
	5+	25	10
<b>Abortion</b>	0	183	73.2
	1	51	20.4
	2	14	5.6
	+3	2	0.8
<b>Child deaths</b>		39	15.6

### **knowledge of mothers about breastfeeding, vaccination, the proper behavior in the child's illness, and source of knowledge**

Out of 250 mothers interviewed, 222(88.8%) knew that breastfeeding should be launched few hours after delivery; however, 16(6.4%) of them delayed the launch of breastfeeding for few days after delivery, and 12(4.8%) had no information (Table 2). More than half (56.8%) knew the benefit of breastfeeding for mothers and children health; and (36.0%) knew breastfeeding for growth child only, while (4.0%) of mothers did not know. The social and psychological benefit of breastfeeding about four-quarter (72.4%) of mothers knew to improve the relationship between mother and her child, only (16.4%) of mother knew psychological support for a child, while (11.2%) did not know. About (36.4%) of mothers do not know anything about the disease that prevent by breastfeeding; however (29.2%) knew breastfeeding prevents diarrhea, while (8.8%) knew breastfeeding prevents other diseases. Table two also shows that more than half (52.4%) knew the duration of breastfeeding is two years, and 24.0% knew the duration of breastfeeding is one year, while 2.0% did not know (Table 2).

**Table 2:** Distribution of knowledge about and vaccination of the study sample (n=250)

<b>Variables</b>	<b>Categories</b>	<b>N (%)</b>
<b>Initiation of breastfeeding after delivery</b>	Few hours after delivery	222 (88.8)
	Days after delivery	16(6.4)
	Do not know	12(4.8)
<b>Benefits of breastfeeding</b>	Health and development of the child	90(36.0)
	Mother's health	8(3.2)
	Mother and child health	142(56.8)
	Do not know	10(4.0)

<b><i>Social and psychological benefits of breastfeeding</i></b>	Improving the relationship between mother and child	181(72.4)
	Psychological support for a child	41(16.4)
	Do not know	28(11.2)
<b><i>Breastfeeding prevents diseases</i></b>	Diarrhea	73(29.2)
	Respiratory disease	40(16.0)
	Allergy	24(9.6)
	Others	22(8.8)
	Do not know	91(36.4)
<b><i>An appropriate period for the duration of breastfeeding</i></b>	One year	60(24.0)
	Two years	131(52.4)
	More than two years	39(15.6)
	Do not know	20(8.0)

Table 3 shows that most mothers (92.8%) knew vaccination programs for children less than two years of age, while (7.2%) did not know. About (86.0%) of the women know that immunization prevents disease, while (1.6%) did not know. Most women (93.6%) knew the necessary follow-up vaccination schedule, while (6.4%) did not know. Less than half (43.6%) did not know that no scar appears on the shoulder after two months from the first vaccine in the vaccination program; the vaccine is repeated, while more than half (56.4%) knew. Among those who have not to give the first vaccine in the vaccination schedule after completing the first year if the child did not receive a previous dose, (56.0%) knew that not given the first vaccine after completing the first year if the child did not receive a previous dose, while (44.0%) did not know. Almost 45.6% of mothers did not know how often the child should be vaccinated for the first year, while (17.6%) knew five-time. About (31.6%) of mothers knew that the child whom feverish was required to delay the vaccine; (16.8%) knew jaundice required to delay the vaccine, while (34.8%) did not know. Only (48.8%) did not know vaccination compassion replace the vaccination program, while (51.2%) knew.

**Table 3:** Distribution of knowledge about vaccination of the study sample (n=250)

<b>Variables</b>	<b>Categories</b>	<b>N (%)</b>
<b><i>Vaccination program for children less than two years of age</i></b>	Yes	232(92.8)
	No	18(7.2)
<b><i>Benefits of vaccination to children</i></b>	Prevent disease	215(86.0)
	Growth of children	24(9.6)
	Others	7(2.8)
	Do not know	4(1.6)
<b><i>Necessary to follow up on the schedule of vaccination</i></b>	Yes	234(93.6)
	No	16(6.4)
<b><i>A vaccine that is given in the first week of age</i></b>	Yes	208(83.2)
	No	42(16.8)
<b><i>After two months from the 1<sup>st</sup> vaccine in the vaccination program and no scar appeared on the shoulder, the vaccine is repeated?</i></b>	Yes	141(56.4)

	No	109(43.6)
<i>The first vaccine in the vaccination program is not given to the child after completing the first year of life if he did not receive a previous dose.</i>	Yes	140(56.0)
	No	110(44.0)
<i>Times of vaccines received during the first year of age</i>	Three times	45(18.0)
	Four times	47(19.8)
	Five times	44(17.6)
	Do not know	114(45.6)
<i>Cases that require delaying taken the vaccine</i>	Jaundice	42(16.8)
	Fever	79(31.6)
	Diarrhea	17(6.8)
	Others	25(10.0)
	Do not know	87(34.8)
<i>Vaccination campaigns replace vaccination programs.</i>	Yes	128(51.2)
	No	122(48.8)

Table 4 also shows the knowledge on the proper mother's behavior in a child's illness. More than three-quarters of mothers (76.4%) knew weight and height programs in health centers, while (23.6%) did not know. When the child has diarrhea and vomiting, about 50.8% of mothers give oral fluid and visit the doctor; and 33.6% immediately go to the doctor, while 15.6% give the child oral fluid only. More than half (59.6%) of mothers knew the proper behavior to decrease the temperature when the child feverish, while 40.4% immediately went to the doctor.

**Table 4:** Distribution of knowledge about Proper mother's behavior in a child's illness (n=250)

<b>Variables</b>	<b>Categories</b>	<b>N (%)</b>
<i>Program for measuring the weight and height of the child during his visit to the health center</i>	Yes	191(76.4)
	No	59(23.6)
<i>A child has diarrhea or vomiting</i>	Give oral fluid only	39(15.6)
	Give fluid and visit the doctor	127(50.8)
	Go to the doctor immediately	84(33.6)
<i>Child has fever</i>	Decrease of temperature	149(59.6)
	Go to the doctor immediately	101(40.4)

### Sources of knowledge

Table 5 shows family and friends were the significant sources of knowledge among 31.6% of respondents; the second-highest frequency (29.2%) were the doctors, while the lowest source of knowledge included school curriculum (8.0%) and books and (3.2%), respectively.

**Table 5:** Distribution of source of knowledge for the study sample (n=250)

<b>Source of knowledge</b>	<b>N</b>	<b>%</b>
<i>Family and friends</i>	79	31.6
<i>TV</i>	26	10.4
<i>School curriculum</i>	20	8.0

<i>Doctors</i>	73	29.2
<i>Social media</i>	44	17.6
<i>Books</i>	8	3.2

**Distribution of the study group and association between level of knowledge and some women's characteristics**

Table 6 shows a significant relationship between mothers' knowledge in terms of the date of starting breastfeeding (P=0.009), the social and psychological importance of breastfeeding (p=0.009), the appropriate period for breastfeeding (P=0.05), and the age groups age of respondents.

**Table 6:** The association between mother's knowledge about breastfeeding and the age groups of respondents (n=250)

<b>Mothers' knowledge about breastfeeding</b>	<b>&lt; 20 N(%)</b>	<b>20 – 29 N(%)</b>	<b>30+ N(%)</b>	<b>P- value*</b>
<i>Total observation</i>	6(2.4)	142(56.8)	102(40.8)	
<i>Starting breastfeeding after delivery</i>				
<i>Few hours after delivery</i>	6(100)	125(88)	91(89.2)	0.009
<i>Few days after delivery</i>	0(-)	9(63)	7 (6.9)	
<i>Do not know</i>	0(-)	8(5.6)	4 (3.9)	
<i>Health benefit of breastfeeding</i>				
<i>For the health and development of the child</i>	3(50)	56(39.4)	31(30.4)	0.423
<i>For mother's health only</i>	0 (-)	5(3.5)	3(2.9)	
<i>For the health of mother and child</i>	2(33.3)	79(55.6)	61(59.8)	
<i>Do not know</i>	1(16.7)	2(1.4)	7(6.9)	
<i>Social and psychologically crucial for breastfeeding</i>				
<i>Strength the relation between mother and child</i>	2(33.3)	114(80.2)	65(63.7)	0.009
<i>Support psychological state for child</i>	1(16.7)	15(10.6)	25(24.5)	
<i>Do not know</i>	3(50.0)	13(9.2)	12(11.8)	
<i>Breastfeeding prevents certain diseases.</i>				
<i>diarrhea</i>	1(16.7)	37(26.0)	35(34.3)	0.124
<i>Respiratory disease</i>	0(-)	15(10.6)	25(24.5)	
<i>Allergy</i>	0(-)	22(15.5)	2(1.9)	
<i>Others</i>	1(16.7)	14(9.9)	7(6.9)	
<i>Do not know</i>	4(66.6)	54(38.0)	33(32.4)	
<i>An appropriate period for breastfeeding</i>				
<i>One year</i>	0()	40(28.2)	20(19.6)	0.05
<i>Two years</i>	3()	73(51.4)	54(52.9)	
<i>Others</i>	3()	15(10.5)	21(20.6)	
<i>Do not know</i>	0()	14(9.9)	7(6.9)	

\*Significant using Chi-square test at 0.05 level

Table 7 shows a significant relationship between mothers' knowledge in terms of the date of starting breastfeeding (P=0.012), the health benefit of breastfeeding (p=0.001), the social and psychological importance of breastfeeding (p=0.025), and the level of women's education.

**Table 7:** The association between mother's knowledge about breastfeeding and the educational level of respondents (n=250)

<b>Mothers' knowledge about breastfeeding</b>	<b>Low N(%)</b>	<b>Middle N(%)</b>	<b>Higher N(%)</b>	<b>P- value*</b>
<i>Total observation</i>	73(29.2)	80(32.0)	97(38.8)	
<i>Starting breastfeeding after delivery</i>				
<i>Few hours after delivery</i>	59(80.8)	73(91.3)	90(92.8)	0.012
<i>Few days after delivery</i>	7(9.6)	4(5.0)	5(5.1)	
<i>Do not know</i>	7(9.6)	3(3.7)	2(2.1)	
<i>Health benefit of breastfeeding</i>				
<i>For the health and development of the child</i>	28(38.4)	36(45.0)	31(32.0)	0.001
<i>For mother's health only</i>	2(2.7)	5(6.3)	1(1.0)	
<i>For the health of mother and child</i>	35(47.9)	38(47.5)	64(66.0)	
<i>Do not know</i>	8(11.0)	1(1.2)	1(1.0)	
<i>Social and psychologically crucial for breastfeeding</i>				
<i>Strength the relation between mother and child</i>	45(61.6)	58(72.5)	78(80.4)	0.025
<i>Support psychological state for child</i>	14(19.2)	12(15)	15(15.5)	
<i>Do not know</i>	14(19.2)	10(12.5)	4(4.1)	
<i>Breastfeeding prevents certain diseases.</i>				
<i>diarrhea</i>	19(26)	22(27.5)	32(33)	0.409
<i>Respiratory disease</i>	10(13.7)	13(16.3)	17(17.5)	
<i>Allergy</i>	4(5.5)	7(8.8)	13(13.4)	
<i>Others</i>	6(8.2)	8(10)	8(8.2)	
<i>Do not know</i>	34(46.6)	30(37.5)	27(27.8)	
<i>An appropriate period for breastfeeding</i>				
<i>One year</i>	7(9.6)	21(26.3)	32(33.0)	0.000
<i>Two years</i>	37(50.7)	44(55)	49(50.5)	
<i>Others</i>	19(26.0)	6(7.5)	14(14.4)	
<i>Do not know</i>	10(13.7)	9(11.2)	2(2.1)	

\*Significant using Chi-square test at 0.05 level

Table 8 shows a significant relationship between mothers' knowledge about the vaccination program for children aged < 2 years (P=0.009), the first vaccine should not be given after one year of age if it has not to be given previously(P=0.004), the vaccination campaigns compensate for routine vaccination program (P=0.000), and Program for measuring the child's weight and height during visiting the vaccination health center (P=0.025) and the educational level of mothers.



**Table 8:** Association between mother's knowledge about vaccination program and the educational level (n=250)

<b>Mothers' knowledge about vaccination</b>	<b>Mild N(%)</b>	<b>Middle N(%)</b>	<b>Higher N(%)</b>	<b>P- value</b>
<b>Total observation</b>	73(29.2)	80(32.0)	97(38.8)	
<b>Vaccination program for children &lt; 2 years</b>				
<i>Yes</i>	66(90.4)	70(87.5)	96(99.0)	0.009
<i>No</i>	7(9.6)	10(12.5)	1(1.0)	
<b>The benefit of vaccination for children</b>				
<i>Prevent disease</i>	64(87.7)	65(81.2)	80(82.5)	0.270
<i>For children development</i>	6(8.2)	11(13.8)	7(7.2)	
<i>Others</i>	1(1.4)	0(-)	3(3.1)	
<i>Do not know</i>	2(2.7)	4(5.0)	7(7.2)	
<b>Necessary to follow the vaccination schedule</b>				
<i>Yes</i>	68(93.2)	75(93.8)	91(93.8)	0.983
<i>No</i>	5(6.8)	5(6.2)	6(6.2)	
<b>The vaccine is given in the first week of age.</b>				
<i>Yes</i>	61(83.6)	62(77.6)	85(87.6)	0.199
<i>No</i>	12(16.4)	18(22.5)	12(12.4)	
<b>Two months after the first vaccine in the vaccination program and no scar appeared on the shoulder, the vaccine is repeated.</b>				
<i>Yes</i>	44(60.3)	37(46.2)	60(61.9)	0.083
<i>No</i>	29(39.7)	43(53.8)	37(38.1)	
<b>The first vaccine should not be given after one year of age if it has not to be given previously.</b>				
<i>Yes</i>	40(54.8)	33(41.2)	64(66.0)	0.004
<i>No</i>	33(45.2)	47(58.8)	33(34.0)	
<b>The child was vaccinated during the first year of life.</b>				
<i>Three times</i>	8(10.9)	18(22.5)	19(19.6)	0.087
<i>Four times</i>	12(16.4)	18(22.5)	18(18.6)	
<i>Five times</i>	17(23.3)	7(8.8)	21(21.6)	
<i>Do not know</i>	36(49.3)	37(46.2)	39(40.2)	
<b>The cases that require delaying the vaccine</b>				
<i>Jaundice</i>	9(12.3)	13(16.2)	20(20.6)	0.294
<i>Fever</i>	19(26.0)	27(33.8)	33(34.0)	
<i>Diarrhea</i>	7(9.6)	4(5.0)	6(6.2)	
<i>Others</i>	11(15.1)	4(5.0)	10(10.3)	
<i>Do not know</i>	27(37.0)	32(40.0)	28(28.9)	
<b>The vaccination campaigns compensate for the routine vaccination program.</b>				
<i>Yes</i>	25(34.2)	53(66.3)	50(51.5)	0.000
<i>No</i>	48(65.8)	27(33.7)	47(48.5)	

<b><i>Program for measuring the child's weight and height during the visit to the vaccination health center</i></b>				
<b><i>Yes</i></b>	54()	54()	85()	0.005
<b><i>No</i></b>	19()	26()	12()	

## Discussion

### Socio-demographic characteristic of the study sample

The study's finding revealed the highest proportion (37.6%) of women in the age group 25-29 years, a finding that is lower than other studies conducted in Baghdad (Iraq)<sup>13</sup>, and Nigeria<sup>14</sup>, but similar to study conducted in United Arab Emirates<sup>15</sup>. The mean age of respondents was 29(±6.07), which is lower than the study conducted in Nigeria<sup>16</sup>. In our study, the majority (48.0%) of women were in the married age group of 20-24 years, and the mother education of the majority was university level which is higher than reported in a study conducted in Saudi Arabia<sup>17</sup>. In this study, the rate of housewife women (71.2%) exceeds that reported in Saudi Arabia<sup>18</sup>, which may be related to the low employment rate in Iraq. Although most Iraqi families have seven members and above<sup>19</sup>, the rate of Iraqi mothers in this study who have two children was 29.2%, which is different from that mentioned in other studies conducted in Italy<sup>20</sup>.

### Knowledge of women about breastfeeding and vaccination

The awareness of initiation breastfeeding in this study among mothers was 88.8% in few hours after delivery and 6.4% in few days after delivery. Our findings are higher than other studies conducted in Riyadh (77.5%), Saudi Arabia<sup>21</sup>, and Egypt (83.7%)<sup>22</sup>. Knowledge of mothers about the benefit of breastfeeding for mother and child health was 56.8% which is higher than that reported in Saudi Arabia<sup>21</sup>, but lower than earlier studies conducted in Iraq<sup>23</sup>. The study finding showed that among mothers who knew the social and psychological benefit of breastfeeding, 72.4% reported improving the relationship between mother and child. However, the result is lower than 76.3%, reported by Coscone et al. (2019) in Italy<sup>20</sup>, and 77.0% reported by Mohammed et al. (2014) in Egypt<sup>22</sup>. Mothers who know breastfeeding prevents diarrhea in this study were 29.2%, reflecting poor education about breastfeeding in our community, which is much lower than 43.8% reported by other studies conducted in Nigeria<sup>16</sup>.

### An appropriate period for the duration of breastfeeding

Knowledge of mothers about the appropriate period for the duration of breastfeeding was 52.4% for two years, and 24.0% was for one year, which is lower than reported in a study conducted in Pakistan (77.0%)<sup>24</sup>, and in an Indian study (68.0%)<sup>25</sup>. Knowledge of mothers about vaccination programs for children less than two years of age was excellent (92.8%). Similarly, in a local study conducted in Baquba City, Iraq, 98.0% of mothers correctly knew vaccination programs for children less aged less than two years of age<sup>26</sup>, and an Indian study conducted in Bangalore where 90.0% of mothers knew vaccination program<sup>27</sup>. However, it is higher than results from Pakistan<sup>28</sup> and South Kerala, India<sup>29</sup>. The study findings showed that 86.0% of respondents knew that vaccination prevents disease, which is agreed to previous Iraqi study (84.7%) conducted in Mosul<sup>30</sup>, but lower than results (96.0%) reported among mothers in Kinshasa, Democratic Republic of the Congo<sup>31</sup> and higher than the result reported among Syrian mothers<sup>32</sup>. In this study, most mothers (93.6%) consider it necessary to follow up a vaccination schedule. However,

the result was lower than reported by other studies as in North Kashmir, India, 100% of studied women, knew that necessary to follow up vaccination schedule<sup>33</sup>.

About 83.2% of women knew that the first vaccine given to children should be in the first week of the vaccination schedule; however, such finding was lower than that reported among mothers in Uganda, where 95.0% thought to complete the vaccination schedule children<sup>34</sup>. As per WHO recommendation, the first vaccine should be administered as soon as possible after birth and before one month of age for maximum protection<sup>35</sup>. The development of a scar after the first vaccine has been used as a successful vaccination indicator. More than half (56.4%) of mothers know the vaccine should be repeated two months from the first vaccine in the vaccination program when they had no scar on the shoulder. Our finding is higher than the report in Durban, South Africa, in which (1.5%)<sup>36</sup>. This study showed that the first vaccine in the vaccination program is not given to the child after completing the first year of life if he did not receive a previous dose. The WHO universal BCG vaccination at birth is recommended in countries or settings with a high TB incidence and/or high leprosy burden. A single dose of the BCG vaccine should be given to all healthy neonates at birth, ideally together with Hepatitis B birth dose<sup>37</sup>. About 45.6% of mothers did not know the schedule of vaccines received during the first year of age. However, 18.0% of them knew about the three times vaccines should be received during the first year of age. Our finding is lower than the result (26.0%) reported in North Kashmir, India<sup>33</sup>. The child presented with fever is a condition that leads to delaying the taking of vaccine, however, some mothers consider infection a social stigma which may exacerbate the infected cases<sup>38</sup>. In our study, 31.6% of women knew the necessity of delaying the scheduled vaccine when the child is feverish. However, our finding was lower than the result (61.6%) reported in India<sup>39</sup>. More than fifty percent of mothers have a positive attitude to vaccination, and they know that vaccines save thousands of lives every year, but many people remain unvaccinated because serious are wrongly attributed to vaccination. More than three-quarters of mothers studied knew that program for measuring weight and height of the child during his visit to the health center (76.4%), and the result was higher than the result reported in Iran (71.5%)<sup>40</sup>. The proper action is to give oral fluid when the child developed diarrhea or vomiting; however, in our study, few mothers (15.6%) knew the correct behavior in such condition, which is much lower than the results (62.4%, 38.8%, 69.1%) reported by three studies conducted in Nigeria<sup>41,42,43</sup>, respectively. Moreover, 33.6% of mothers visit the doctor immediately when the child complains about diarrhea or vomiting. Our results are much lower than that reported in Karachi, India (62%), in which mothers immediately visited the doctor<sup>44</sup>, but the result is higher than that reported in Khyber teaching hospital Peshawar, Pakistan (29.4%), where mothers consult a doctor as an action taken when a child has diarrhea<sup>45</sup>. Furthermore, the behavior of 50.8% of mothers was to give fluid and visit the doctor when the child has diarrhea or vomiting. However, the result was higher than reported (46.3%) in Iran<sup>46</sup>. The majority (59.0%) of mothers considered the proper behavior when a child has a fever is to decrease the temperature because fever is a serious health issue. Our finding was better than the result (40%) reported in Ethiopia in which<sup>47</sup> but lower than reported in Jordan in which 90.5% of mothers tend to decrease the temperature of their children before visit the physician<sup>48</sup>.

### **Source of information about breast cancer**

Family and friends are significant sources of knowledge about children aged less than two years among 31.6% of mothers participating in this study. Similar findings have been reported in earlier studies conducted in Iraq<sup>49,50</sup>. However, the result is higher than reported in Taif city,

Saudi Arabia (22.0%)<sup>51</sup>, but it is lower than reported in Sindh, Pakistan (57.2%)<sup>52</sup>. Moreover, 29.2% of mothers reported doctors as the second source of information; however, they had little impact in imparting knowledge. Our result is much lower than reported by other studies conducted in Saudi Arabia and Pakistan<sup>51, 52</sup> in which 42.5% and 43.3% of mothers reported the doctor as the primary source of knowledge of breastfeeding and immunization, respectively.

### **The association between knowledge and socio-demographic characteristics**

As reported earlier in table 6, there was a significant relationship between (knowledge in term of the date to start breastfeeding, health benefit of breastfeeding, social and psychological importance of breastfeeding, and the appropriate period of duration of breastfeeding of mothers) and some of the socio-demographic characteristics such as mothers' age and level of education. Unlike to earlier studies conducted in Iraq<sup>53</sup> and Vietnam<sup>54</sup>, our study found a significant relationship between mothers' age and their knowledge about the date of starting breastfeeding (P=0.009), the social and psychological importance of breastfeeding (p=0.009), the appropriate period for breastfeeding (P=0.05) and the age groups age of respondents. In this study, mothers with higher education were more likely to be aware of breastfeeding and its starting, health benefits, and the social and psychological importance of breastfeeding. Our findings align with many previous studies conducted in Iraq<sup>55</sup>, USA<sup>56</sup>, and Nepal<sup>57</sup>, Turkey<sup>58</sup>. Mothers' knowledge of breastfeeding was good, which can be attributed to the cultural and religious factors favoring breastfeeding. Our result was per previous studies from Iraq<sup>55</sup> Egypt<sup>59</sup> and Kuwait<sup>60</sup>. Several previous studies confirmed the association between the low education of women and the less knowledge about breastfeeding<sup>53,61,62,63</sup>. Two studies from Nigeria<sup>13</sup>, Nepal<sup>64</sup> support our findings of the significant association between a mother's knowledge and the appropriate period of breastfeeding. Moreover, the low level of education among mothers combined with switching to spoon feeders is more likely to increase adenovirus-related diarrhea among children<sup>65</sup>.

Additionally, the education level of mothers has significantly related to their knowledge of vaccination program for children aged less than two years; the first vaccine did not be given after one year of age, the vaccination campaigns compensate for routine vaccination program and program for measuring the child's weight and height. Similarly, other studies confirmed the same association<sup>66,67,68</sup>. Regarding the association of mother's knowledge about the first vaccine in the vaccination program, which should not be given after one year of age, the result of this study was like earlier results from Iraq reported at 95.0 % in 2018<sup>69</sup>. Unlike the Nigerian<sup>70</sup> study indicated that more mothers significantly rejected vaccination campaigns, our mothers had good knowledge about the vaccination campaigns, which compensate for the routine vaccination program. Moreover, the association between the mother's knowledge and measuring the child's weight and height during the visit to the vaccination health center is fitted with the result reported in the Indian vaccination Program<sup>71</sup>. We believe that building a health system based on universal Health insurance, with the adoption of national programs, will enhance health education in the community, and especially among mothers for better home care of sick children, vaccination programs, feeding children, and avoiding accidents<sup>72</sup>.

### **Conclusion**

In conclusion, this study revealed that the knowledge of mothers regarding the health aspect of children aged less than two years in term of the awareness to initiate breastfeeding and the knowledge of mothers about vaccination programs for children less than two years of age was very good (88.8%) and excellent (92.8%), respectively. More than half (50.8%) of mothers

behave properly to give fluid and visit the doctor when the child has diarrhea or vomiting. At the same time, most (59.0%) of mothers considered the proper behavior in a child has a fever is to decrease the body temperature because fever is a serious health issue. Further studies are needed, including follow-up studies for the health aspect of children less than two years of age. Government involvement to application breastfeeding program and coverage vaccination program. There is a need for a public health education initiative and more strategies to increase mothers' awareness in our community.

### **Acknowledgment**

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