

## **Mothers' Awareness regarding Risk Factors about Iron Deficiency Anemia during Infancy period**

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### **Abstract:**

**Background:** The anemic condition is commonly experienced in infancy globally. Lack of essential iron in children contributes to anemia that has been recognized to great challenges. **The aim of the study:** This study aimed to assess mothers' awareness regarding risk factors about iron deficiency anemia during infancy period. **Research design:** A descriptive research design was utilized. **Setting:** Maternal and Child Health Center in Benha City. **Study subjects:** Simple random sample was used, including 382 mothers. **Tools of data collection:** Two tools were used; **Tool (I):** Structured interviewing: it comprised of four parts: **I:** Socio-demographic characteristics, medical history of studied mothers, and personal characteristics of studied children, **II:** Risk factors for iron deficiency anemia during infancy period, **III:** Knowledge of the studied mothers regarding iron deficiency anemia and **IV:** Reported practice of mothers regarding prevention of iron deficiency anemia. **Tool (II):** Mindful Attention Awareness Scale (MAAS) to assess mothers' attitude regarding iron deficiency anemia. **Results:** The results of the current study showed that 50.8% of the studied infants had total risk factors related to their mothers, and 48% related to infant weaning. 61% of the studied mothers had poor total knowledge level. Also, 65% of them had unsatisfactory total reported practices regarding prevention of iron deficiency anemia during infancy period. Moreover, 56% of them had negative total attitude toward iron deficiency **Conclusion:** There were highly statistically significant positive correlations between mothers' total knowledge, total reported practices, and their total attitude ( $P=0.000$ ). **Recommendations:** Periodic educational programs should be designed for mothers' regarding prevention of iron deficiency anemia during infancy period.

**Keywords:** Infancy period, Iron deficiency anemia, Mothers' Awareness, Risk Factors

### **Introduction:**

Infancy is the period from birth through the completion of the 12<sup>th</sup> month of life. Infancy and childhood are critical periods of rapid physical growth, cognitive and emotional development. Infants are considered a vulnerable group because they have relatively high nutrient requirements per unit body weight. Recent research has declared infancy as a critical period in life, setting the foundation of long-term health and reduced risk for chronic diseases. Breastfeeding is the preferred and

recommended form of nutrition for healthy infants during the first 6 months of life providing all necessary nutrients. After the sixth month, when complementary feeding is introduced, it is important to ensure adequate nutrient intakes in line with infants' nutritional requirements because infants are considered a vulnerable group and high risk for nutritional deficiency especially iron deficiency anemia (Cabral et al., 2023).

Iron Deficiency Anemia is a decrease in the total hemoglobin levels caused by a lack of sufficient iron. It is the most common

nutritional deficiency worldwide and an important pediatric health problem especially in developing countries (Suega, et al., 2019 & Abd El Reheem, et al., 2020).

Iron Deficiency Anemia among children is health problem especially in developing countries. It is the most nutritional deficiency in children during weaning. Approximately, 3% of children younger than 2years of age are affected by IDA caused by lack of sufficient iron for the synthesis of hemoglobin, insufficient intake of iron together with rapid growth, gastrointestinal losses related to excessive intake of cow's milk, which is very low in iron content. It can be also caused by acute or chronic blood loss and intestinal malabsorption of iron (Mantadakis et al., 2020 & Kumar et al., 2022).

Community health nurses (CHNs) play an important role regarding prevention of IDA during infancy period through educating mothers about some precautions and practices that should be taken to control the disease and prevent occurrence of complications. Also CHNs educate mothers how to protect their children from iron deficiency anemia during infancy period through increasing mothers awareness regarding nature of IDA, risk factors and warning signs and symptoms that indicate the problem, helping mothers to assume positive attitude toward prevention and teaching them protective skills, educate mothers how to appropriately respond when child had iron deficiency anemia and link mothers with different resources to ask for help when needed (Al-Suhimat et al., 2020).

#### **Significance of the study:**

Iron deficiency anemia in children results in high rates of mortality and morbidity. In Egypt, the children mortality rates due to iron deficiency was estimated 35,42% where the most commonly of anemia affecting children were iron deficiency. The mother's awareness as a care provider is

important to decrease the incidence of rated mortality and morbidity of iron deficiency anemia (Jang et al., 2019).

#### **Aim of the study:**

This study aimed to assess mothers' awareness regarding risk factors about iron deficiency anemia during infancy period.

#### **Research questions:**

- 1- What are the risk factors for iron deficiency anemia during infancy period?
- 2- What is the mothers' knowledge about iron deficiency anemia during infancy period?
- 3- What are mothers' practices regarding prevention of iron deficiency anemia during infancy period?
- 4- Is there a relationship between socio-demographic characteristic of studied mothers and their knowledge and practices?
- 5- Is there a correlation between studied mothers' knowledge and their practices?

#### **Subjects and Method:**

**Research design:** A descriptive research design was used in this study.

#### **Setting:**

The study was conducted at Maternal and Child Health Center (MCH) in Benha City.

#### **Research subjects:**

Simple random sample of the mothers attended the previously mentioned setting.

#### **Sample size:**

Sample size was calculated using the following equation:

$$n = \frac{N}{1 + N(e)^2}$$

Where 'n' is sample size, 'N' is total Number of all mothers attended to previously mentioned setting in the last year (2023).

N=8240 'e' is Coefficient factor = 0.05

**Sample size** is = 382

**Tools of data collection:**

**Tool I: A structured interviewing questionnaire.** It was developed by the researcher based on reviewing related literatures, and it was written in simple clear Arabic language, it comprised of four parts:-

**The first part:**

**A-** It was concerned with socio-demographic characteristics of the studied mothers which consisted of 8 questions about; age, marital status, educational level, occupation, residence, number of children, family type and monthly income.

**B-** It was concerned with personal characteristics of children which consisted of 6 questions about; age, gender, child birth order, child height, child weight and child BMI.

**C-** It was concerned with medical history of the studied mothers. It consisted of 1 closed ended questions about Health problems during pregnancy as (anemia, vaginal infection, vaginal bleeding, vomiting, gastroenteritis), and obstetric history which consisted of 4 closed ended questions as (pregnant with twins, number of gravida, number of para, and type of labor).

**The second part:** It was concerned with risk factors for iron deficiency anemia during infancy period which consisted of 33 closed ended questions divided as the following :-

**a-** Factors related to child birth which composed of 15 closed ended questions.

**b-** Factors related to weaning the child consisting of 12 closed ended questions.

**C-** Factors related to the mother consisting of 6 closed ended questions.

**The third part:** It was concerned with knowledge of the studied mothers regarding iron deficiency anemia which consisted of 10 closed ended questions (multiple choice).

**Scoring system of Mothers' knowledge:**

It was calculated as follows: (2) score for correct and complete answer, while (1) score

for correct and incomplete answer and (0) score for don't know. These scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a present score. Total scores of knowledge=20 points which were classified as the following:

- **Good** when the total score was  $\geq 75\%$  ( $\geq 15$  points).
- **Average** when the total score was 50% to  $< 75\%$  ( $10 < 15$  points).
- **Poor** when the total score was  $< 50\%$  ( $< 10$  points).

**The fourth part:** It was concerned with reported practices of the studied mothers regarding prevention of iron deficiency anemia during infancy period. It adopted from **Abd-Elfatah, (2022)**, and modified by the researcher. It was divided into 4 items:

**a- Child feeding practices:** It included 12 items.

**b- Weaning practices:** It included 3 items.

**c- Monitoring the child health status:** It included 5 items.

**d- Child's personal hygiene:** It included 4 items.

**Scoring system of practices:**

A scoring system for each of practical items as reported by mother, done was scored (1) and each item not done was scored (0). All items of practices were summed and changed into percentage. The total practices score =24. The total practices scores were considered satisfactory if the score of the total practices  $\geq 60\%$  ( $\geq 14$  points) and considered unsatisfactory if it is  $< 60\%$  ( $< 14$  points).

**Tool II: Mindful Attention Awareness Scale (MAAS):** It was Adapted from (**Brown & Rayan, 2003**) and was used to assess mothers' attitude regarding iron deficiency anemia. It is Likert rating scale and consisted of 16 items. It is divided into always=2,

usually=1, never=0. Sum scores were calculated to obtain the total attitude score.

- Total mothers' attitude score =32, and it was divided into :
- **Positive attitude:** if the score was more than 75% (> 24 points).
- **Neutral attitude:** if score was from 50% to 75% (16 – 24 points).
- **Negative attitude:** if score was less than 50% (< 16 points).

#### **Administrative design:**

Official letters was obtained from Dean of the Faculty of Nursing directed to the manager of the Maternal and Child Health Center (MCH) in Benha City. The title, objectives, tools and the study technique was illustrated to gain their cooperation which was needed to allow the researcher to meet mothers at the chosen Maternal and Child Health Center.

#### **Content validity of the tools:**

Content validity of the tools was done by five of Faculty's Staff Nursing Experts from the Community Health Nursing specialty who reviewed the tools for clarity, relevance, comprehensiveness, applicability and give their opinion.

#### **Reliability of the tools:**

The reliability of the tool was applied by the researchers for testing the internal consistency of the tool by administration of the same tools to the same subjects under similar condition on one or more occasion. The reliability was done by Cronbachs Alpha Coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of the knowledge was 0.85, while the practices were 0.720, and awareness was 0.755.

#### **Ethical considerations:**

The research approval to carry out this study was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Benha University. Approval and an informed oral consent from all study participants were obtained after explaining the purpose of the study to gain their trust and cooperation. Each mother had a choice to continue or withdraw from the study. Privacy and confidentiality were assured. Ethics, values, culture, and beliefs were respected. The data collected were kept in confidential manner.

#### **Fieldwork:**

The data was collected from mothers who attended in the previously selected MCH through the interview with them. The actual fieldwork for data collection consumed six months started on March 2024 up to the end of August 2024, four days/weekly nearly about 3 hours/daily from 9 A.M. to 12 P.M. (Saturdays, Tuesdays, Wednesdays and Thursday) in order to collect the total sample. The researcher explained the aim of the study to all of them and then distributed the questionnaire after clear explaining the way to fill it out. The average number of interviewed mothers was between 3-5 mothers/day depending on their responses to their interviews. Each interviewed mother took about 20 minutes to fill the sheet depending upon their understanding and response.

#### **Preparatory phase**

A review of the related literature covering various aspects of iron deficiency anemia using available books, periodical articles, and magazines to get acquainted with the research problem to develop the study tools. This took time for preparing the tools about two months.

#### **Pilot study:**

Pilot study was carried out on 10% (38 mothers) from the total sample. No

modifications were done so the sample was included in the total number of study sample. The aim of pilot study was to test the applicability and clarity of the tools and estimate the time needed for tool data collection.

**Statistical analysis:**

All data were organized, tabulated and analyzed by using the Statistical Package for Social Science (SPSS), version (20). Descriptive statistics were first applied (frequency, percentage) then other statistical test such as, Chi-Square and using mean and stander deviation." r" test for correlation.

**Statistical significance was considered at:**

\*\* Highly significant result when p-value < 0.001.

\*Significant result when p-value< 0.05

Non -significant when p-value> 0.05

**Results:**

**Table (1):** Shows that, 43.5% of the studied mothers were aged between 30 to less than 40 years with mean age  $31.82 \pm 7.59$  years, 83.2% of them were married, and 34.0% had secondary education. Concerning occupation, 57.9% of them were house wives, and 63.9 % were living in rural areas. Regarding type of family, 60.5% of them had nuclear family, 51.6% of them had less than three children, and 49.5 % of them had enough monthly income.

**Table (2):** Describes that, 50.8% of the studied children had total risk factors related to their mothers, while 48.0% of them had total risk factors related to weaning of them, and 41.7% of them had total risk factors related to medical history of them, while 41% of them had total risk factors related to child birth of them.

**Figure (1):** Displays that, 61% of the studied mothers had poor total knowledge level regarding iron deficiency anemia, and 29 % of them had average total knowledge

level, while 10% had good total knowledge level regarding iron deficiency anemia.

**Figure (2):** Illustrates that, 65% of the studied mothers had unsatisfactory total reported practices regarding prevention of iron deficiency anemia during infancy period, 35 % of them had satisfactory total reported practices regarding prevention of iron deficiency anemia during infancy.

**Figure (3):** Demonstrates that, 56% of the studied mothers had negative total attitude toward iron deficiency anemia, while, 32 % of them had neutral total attitude, and 12 % had positive total attitude regarding iron deficiency anemia.

**Table (3):** Shows that there was a highly statistically significant relation between total mothers' knowledge and their marital status, educational level and monthly income, and there were a statistically significant relation between total mothers' knowledge and their age, residence and number of children. While there was no statistically significant relation between mothers' total knowledge and their occupation and family type.

**Table (4):** Shows that; there was a highly statistically significant relation between mothers' total reported practices and their marital status, educational level and monthly income. There was statistically significant relation between mothers' total reported practices and their age. While, there was no statistically significant relation between mothers' total reported practices and their residence, occupation, family type and number of children.

**Table (5):** Displays that there was a statistically significant correlation between total mothers' total knowledge level and their total reported practices regarding prevention of iron deficiency anemia during infancy period.

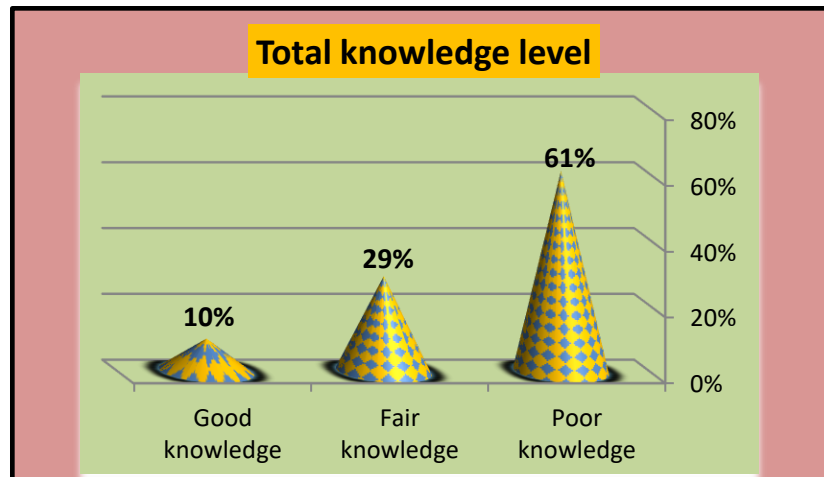
**Table (1): Frequency distribution of the studied mothers according to their socio-demographic characteristics (n=382).**

<b>Socio- demographic characteristics</b>	<b>No.</b>	<b>%</b>
<b>Age:</b>	52	13.6
>20	86	22.5
20>30	166	43.5
30>40	78	20.4
40 or more		
<b>Mean ± SD =31.82±7.5</b>		
<b>Marital status:</b>		
Married	318	83.2
Widowed	54	14.1
Divorced	10	2.6
<b>Educational level:</b>		
Can't read and write	104	27.2
Primary education	42	11.0
Secondary education	130	34.0
University education and more	106	27.7
<b>Occupation:</b>		
Employee	161	42.1
House wife	221	57.9
<b>Residence:</b>		
Rural	244	63.9
Urban	138	36.1
<b>Children number:</b>		
> 3	197	51.6
3-5	165	43.2
More than 5	20	5.2
<b>Family type:</b>		
Nuclear	231	60.5
Extended	151	39.5
<b>Monthly income:</b>		
Enough and save	68	17.8
Enough	189	49.5
Not enough	125	32.7

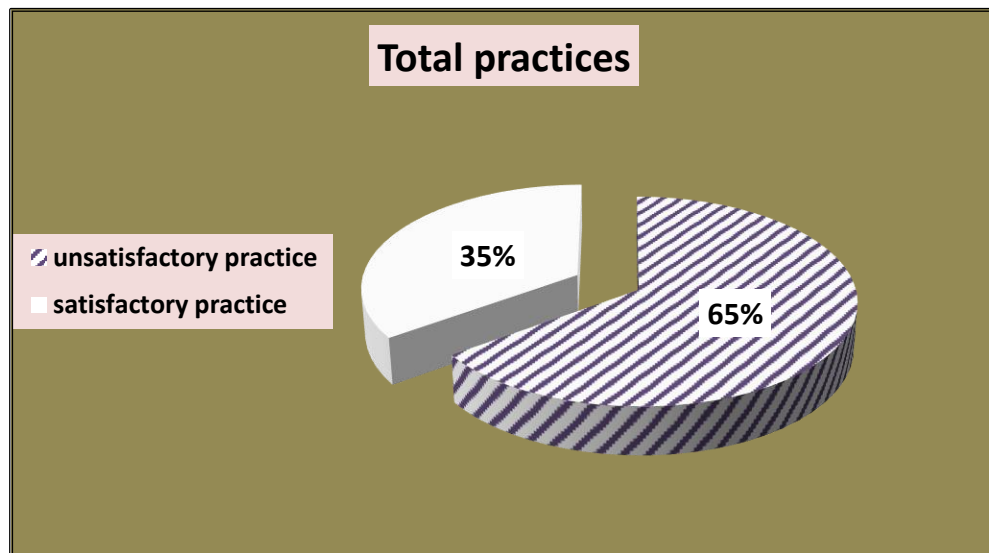
**Table (2): Frequency distribution of studied children according to total main risk factors that lead to iron deficiency anemia during infancy period (n=382)**

<b>Risk factors for iron deficiency anemia *</b>	<b>No.</b>	<b>%</b>
Factors related to child birth	157	41
Factors related to the child's medical history	158	41.7
Factors related to weaning of the child	184	48
Factors related to the mother	195	50.8

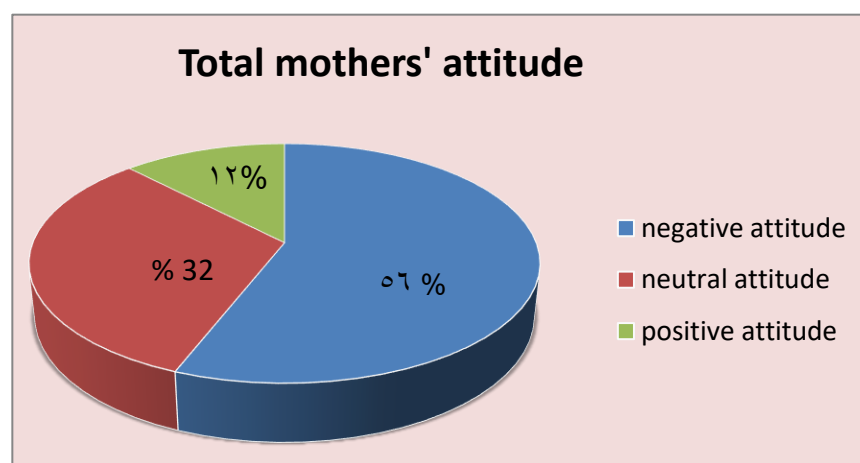
**\*Results are not mutually exclusive**



**Figure (1): Percentage distribution of studied mothers regarding their total knowledge level about iron deficiency anemia (n=382).**



**Figure (2): Percentage distribution of studied mothers' total reported practices regarding prevention of iron deficiency anemia during infancy period (n=382).**



**Figure (3): Percentage distribution of the studied mothers' total attitude regarding to iron deficiency anemia (n=382).**

**Table (3): Relation between socio-demographic characteristics of the studied mothers and their total knowledge about iron deficiency anemia (n=382).**

Socio-demographic characteristics	Total Mothers' knowledge						Chi square X <sup>2</sup>	p-value
	Good (n=40)		Average (n=111)		Poor (n=231)			
	No.	%	No.	%	No.	%		
<b>Mother's Age</b>								
> 20	7	17.5	14	12.6	31	13.4		*
20 > 30	16	40.0	29	26.1	41	17.7	13.97	0.030
30 > 40	13	32.5	43	38.7	110	47.6		
40 or more	4	10.0	25	22.5	49	21.2		
<b>Marital status</b>								
Married	38	95.0	74	66.7	206	89.2		**
Widow	2	5.0	32	28.8	20	8.7	32.26	0.000
Divorced	0	0.0	5	4.5	5	2.2		
<b>Residence</b>								
Rural	34	85.0	68	61.3	146	63.2	8.03	0.018
Urban	6	15.0	43	38.7	85	36.8		
<b>Educational level</b>								
Can't read & write	2	5.00	45	40.5	57	24.7		**
Primary education	0	0.00	6	5.4	36	15.6	36.33	0.000
Secondary education	23	57.5	31	27.9	76	32.9		
University education	15	37.5	29	26.1	62	26.8		
<b>Occupation</b>								
Employee	18	45.0	53	47.7	90	39.0		
House wives	22	55.0	58	52.3	141	61.0	2.52	0.283
<b>Family type</b>								
Nuclear	27	67.5	73	65.8	131	56.7		
Extended	13	32.5	38	34.2	100	43.3	3.49	0.174
<b>Monthly income</b>								
Enough & save	0	0.00	25	22.5	43	18.6		**
Enough	22	55.0	40	36.0	127	55.0	21.54	0.000
Not enough	18	45.0	46	41.4	61	26.4		
<b>Children number</b>								
> 3	21	52.5	60	54.1	116	50.2		*
3-5	14	35.0	51	45.9	100	43.3	11.58	0.021
More than 5	5	12.5	0	0.00	15	6.5		

\*\* Highly statistically significant

\* Statistically significant



## Mothers' Awareness regarding Risk Factors about Iron Deficiency Anemia During Infancy period

**Table (4): Relation between socio-demographic characteristics of the studied mothers and their total reported practices regarding prevention of iron deficiency anemia during infancy period (n=382).**

Socio-demographic characteristics	Total reported practices				Chi square X <sup>2</sup>	p-value
	Satisfactory practices (n=130 )		Unsatisfactory practices (n=252)			
	No.	%	No.	%		
<b>Mother's Age :</b>						
> 20	13	10.0	39	15.5		
20 > 30	33	25.4	53	21.0		*
30 > 40	46	35.4	120	47.6	13.05	0.005
40 or more	38	29.2	40	15.9		
<b>Marital status :</b>						
Married	99	76.2	219	86.9		**
Widow	22	16.9	32	12.7	16.22	0.000
Divorced	9	6.9	1	0.40		
<b>Residence :</b>						
Rural	83	63.8	165	65.5	0.100	0.821
Urban	47	36.2	87	34.5		
<b>Educational level :</b>						
Can't read & write	38	29.2	66	26.2		
Primary education	11	8.5	31	12.3		**
Secondary education	37	28.5	93	36.9	15.87	0.000
University education	44	33.8	62	24.6		
<b>Occupation :</b>						
Worker	60	46.2	101	40.1	1.29	0.152
House wife	70	53.8	151	59.9		
<b>Family type :</b>						
Nuclear	83	63.8	148	58.7	.939	0.195
Extended	47	36.2	104	41.3		
<b>Monthly income :</b>						
Enough & save	27	20.8	41	16.3		**
Enough	44	33.8	145	57.5	20.3	0.000
Not enough	59	45.4	66	26.2		
<b>Children number :</b>						
> 3	72	55.4	125	49.6		
3-5	53	40.8	112	44.4	1.55	0.461
more than 5	5	3.80	15	6.00		

\*\* Highly statistically significant

\*Statistically significant

**Table (5): Correlation between mothers’ total knowledge level and their total reported practices toward prevention of iron deficiency anemia (n=382).**

Total mothers' knowledge	Total mothers' reported practices				Total		Chi square X <sup>2</sup>	p-value
	Satisfactory practices (n=130)		Unsatisfactory practices (n=225 )					
	No.	%	No.	%	No.	%		
Poor	73	56.2	158	62.7	231	60.5		
Average	41	31.5	70	27.8	111	29.1		*
Good	16	12.3	24	9.5	40	10.5	12.66	0.036

\*Statistically significant

**Discussion:**

Regarding to socio-demographic characteristics of the studied mothers, the present study clarified that, less than half of the studied mothers aged between 30 to less than 40 years with mean age 31.82±7.59 years, the majority of them were married, and more than one third had secondary education. Concerning occupation, more than half of them were housewives, and about two thirds were living in rural areas. Regarding type of family, less than two thirds of them had nuclear family, more than half of them had more than three children, and about half had enough monthly income. These findings agreed with **Mananga et al. (2021)**, who studied “Nutrition intervention among children under 24 months suffering from iron deficiency anemia in rural Cameroon” (n=25) and revealed that more than of the mothers were housewives, less than two thirds of mothers had more than three children and more than half the mother had secondary education. Also,

These results were consistent with **Louzado-Feliciano et al. (2020)**, who studied “A qualitative assessment of mothers’ experience with pediatric anemia care in Arequipa, Peru” (n= 14) and reported that more than half of the studied mothers aged between 30 to 40 years. On the other

hand, these results were contraindicated with **Amer, (2021)** who studied “Effect of webinar educational program on mothers' knowledge and Practices regarding iron deficiency anemia among their Children at Sohag City, Egypt,” (n=350), and revealed that more than two thirds of the studied mothers were aged from 18 to 29 years with a mean age of 27.2±1.3 years.

Regarding educational level, more than one third of them had bachelor’s degree, the majority were living in urban areas and more than half of them were working. From the researcher point of view, women in this age group are often in their peak childbearing and parenting years. In many societies, this is the period when women are likely to have young children or infants, which aligns with the focus of the study on mothers with infants. Also, in traditional and conservative societies, marriage is the common social structure within which childbirth occurs. This result is expected, as married women are more likely to be primary caregivers for their children. Moreover, rural areas often have higher rates of poverty and lower access to specialized medical services, making it critical for awareness campaigns to focus on preventive health measures, such as recognizing the risk factors for iron deficiency anemia in children.

As regards to total main risk factors that lead to iron deficiency anemia during infancy period, the present study findings described that; about half of the studied children had total risk factors related to their mothers, while less than half of them had total risk factors related to weaning of them. This finding was incongruent with **Kumar et al. (2022)**, who studied “Maternal nutritional awareness and iron deficiency anemia in children aged 6 months–2 Years in a tertiary care hospital” in Pilkhuwa, Uttar Pradesh at India (n= 200), and clarified that the minority of the infants at weaning age are at high risk for anemia.

From the researcher's perspective, iron levels in infants are strongly influenced by the mother's iron levels during pregnancy and breastfeeding. If the mother had iron deficiency or poor nutrition during these periods, it increases the risk of the infant developing iron deficiency anemia. Also, many mothers may introduce weaning foods that are not iron-rich or do not meet the dietary needs of the infant. For example, feeding infants foods low in iron, such as diluted milk or starch-heavy foods, can lead to deficiencies.

The current study displayed that, about two thirds of the studied mothers had poor total knowledge level regarding iron deficiency anemia, and less than one third of them have average total knowledge level, while the minority had good total knowledge level regarding iron deficiency anemia. This finding was consistent with **Alhaija et al. (2024)**, who carried out the study “Impact of educational intervention on mothers of infants with iron-deficiency anemia in Nablus Governorate” and clarified that minority of the mothers had good level of knowledge regarding iron deficiency anemia. while, this result was in congruent with **Alabedi et al. (2020)**, who conducted study

entitled “Assessment of pregnant women knowledge and practices concerning iron deficiency anemia at Al-Amara City/Iraq” (n=280) and found that the majority of women have a moderate level of knowledge related to iron anemia. In the researcher's opinion, iron deficiency anemia may indicate a lack of effective educational resources or programs aimed at raising awareness about this condition. This suggests that maternal education on nutrition and anemia during the critical period of infancy is insufficient. Also, socioeconomic status can significantly influence health literacy. If the majority of mothers come from lower socioeconomic backgrounds, they may have less access to information and healthcare services, which could contribute to their limited understanding of iron deficiency anemia and its risk factors.

Concerning the studied mothers' total reported practices regarding prevention of iron deficiency anemia during infancy period, the present study illustrated that, about two thirds of the studied mothers had unsatisfactory total reported practices regarding prevention of iron deficiency anemia during infancy period, while more than one third of them had satisfactory total reported practices regarding prevention of iron deficiency anemia during infancy. This result was supported by the study performed by **Hamdy et al. (2024)**, who carried out a study about “Effect of nutritional guideline on knowledge, attitude and practices of pregnant women regarding prevention of iron deficiency anemia in Egypt” (n=90), and found that less than two thirds of the mothers had unsatisfactory practices regarding prevention of iron deficiency anemia. Also, this result agreed with **Amer et al. (2021)**, who clarified that the most of the mothers had unsatisfactory total reported practices regarding prevention of iron deficiency

anemia. From the researcher's viewpoint, many mothers may not have adequate knowledge about the importance of iron in an infant's diet and the risk factors for iron deficiency anemia. This gap in knowledge can lead to insufficient practices aimed at prevention. Also, limited access to health education resources, such as nutritional counselling or community health programs, may contribute to mothers not being informed about best practices for preventing iron deficiency anemia.

Concerning total attitude of the studied mothers regarding to iron deficiency anemia, the present study demonstrates that, more than half of the studied mothers had negative total attitude toward iron deficiency anemia, while about one third of them had neutral total attitude, and the minority had positive total attitude regarding iron deficiency anemia. This result was consistent with **Syarif et al. (2023)**, who carried out the study “Awareness and practices in preventing maternal iron deficiency among pregnant women living in urban slum areas in Makassar City, Indonesia”, (n=250), and clarified that more than one third had had negative total awareness toward iron deficiency anemia.

While, this result disagreed with **Sheik, & Saidalikutty, (2022)**, who studied “Maternal nutritional awareness and iron deficiency anemia in children aged 6 months–2 years in a tertiary care hospital in Coimbatore, Tamil Nadu” (n= 410), and demonstrated that 16% mothers classified as “poor” awareness toward iron deficiency anemia. In the researcher's opinion, mothers may not be aware of the symptoms associated with iron deficiency anemia or the potential long-term impacts on their infants' health and development. Also, mothers may prioritize immediate health concerns over preventative health issues like iron

deficiency. This can result in a lack of attention to dietary practices that prevent anemia, as they may focus more on acute health problems or other pressing needs.

Regarding statistically relation between socio demographic characteristics of studied mothers and their total knowledge about iron deficiency anemia, the current study showed that there were a highly statistically significant relation between total mothers' knowledge and their marital status, educational level and monthly income, and there were a statistically significant relation between total mothers' knowledge and their age, residence and number of children, while, there were no statistically significant relation between mothers' total knowledge and their occupation and family type. This result was inconsistent with **Sheik & Saidalikutty (2022)**, who clarified that employed and less educated mothers had more anemic children ( $p<0.05$ ).

Also, this study was incompatible with **Alabedi et al. (2020)**, who clarified that there was very significant relationship between the knowledge of a pregnant woman about IDA with their demographic characteristics at ( $p$  value  $< 0.05$ ). In addition, this result was contraindicated with **Samararathna et al. (2022)**, who studied “Knowledge and practices on childhood anemia, thalassaemia and iron deficiency among mothers of children aged between 6 and 59 months in a suburban area of Sri Lanka” (n=392) and revealed that higher knowledge of symptoms of anemia was associated with maternal employment ( $p<0.01$ ).

From the researcher's opinion, married mothers may have better support systems, allowing for more discussions about health and nutrition with their partners and families. This can enhance their awareness of health issues, including iron deficiency

anemia. Also, higher education levels often correlate with better comprehension and retention of health information. Educated mothers are more likely to seek out and understand health resources, leading to greater awareness of conditions like iron deficiency anemia. Moreover, higher income levels can provide families with better access to a variety of nutritious foods, including iron-rich options. This might lead to greater awareness and concern about iron deficiency anemia as they can afford to prioritize their children's dietary needs.

Concerning statistically relation between socio-demographic characteristics of the studied mothers and their total reported practices regarding prevention of iron deficiency anemia during infancy period, the current study showed that, there were a highly statistically significant relation between mothers' total reported practices and their marital status, educational level and monthly income, and there was statistically significant relation between mothers' total reported practices and their age. While there was no statistically significant relation between mothers' total reported practices and their residence, occupation, family type and number of children. This result was congruent with **Reheem et al., (2020)**, who carried out the study "Iron deficiency anemia among children during weaning" in Shoubra El Khemia (n=500), and reported that there was statistically significant relation between mothers' practices and their socio-demographic characteristics as mothers' age and educational level. Also, this result was in disagreement with **Alabedi et al., (2020)**, who revealed that there was a high relation between the practices of women towards iron anemia and its demographic data at (p-value=0.00).

From researcher's stand point, married mothers might also have better

access to resources and information about infant health through their partners, family, or community networks, leading to more informed practices regarding iron deficiency anemia prevention. Also, education empowers mothers to make informed decisions regarding their infants' diets and health practices, which can directly influence their overall awareness and preventative practices against iron deficiency anemia.

Concerning statistically correlation between mothers' total knowledge level and their total reported practices toward prevention of iron deficiency anemia,, the current study displayed that there was a statistically significant correlation between mothers' total knowledge level and their total reported practices regarding prevention of iron deficiency anemia during infancy period. This result was similar to **Reheem et al. (2020)**, who found that there was a highly statistically significant relation between mothers' knowledge and practices about iron deficiency anemia during weaning. From the researcher's point of view, the higher levels of knowledge among mothers directly influence their behaviors and practices regarding the prevention of iron deficiency anemia. When mothers are educated about the risk factors, dietary sources of iron, and the importance of iron for infant development, they are more likely to implement practices that promote adequate iron intake in their infants.

### **Conclusion:**

Half of the studied children had total risk factors related to their mothers, while; less than half of them had total risk factors related to weaning, medical history and child birth of them. Moreover, two thirds of the studied mothers had poor total knowledge level regarding iron deficiency anemia and less than two thirds of them had unsatisfactory reported practices regarding

prevention of iron deficiency anemia during infancy period. There was a statistically significant correlation between total mothers' total knowledge level and their total reported practices regarding prevention of iron deficiency anemia during infancy period.

**Recommendations:**

1. Periodic educational programs should be designed for mothers' regarding prevention of iron deficiency anemia during infancy period.
2. Developing instructional guidelines for mothers about breast feeding, ideal weaning schedule and care of their infants with iron deficiency anemia based on the evolvement of the international evidence based criteria in maternal and child health centers.
3. Further research studies are needed for ongoing assessment of children and their mothers including large sample for generalization of results.

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## وعي الأمهات عن عوامل الخطورة المتعلقة بأنيميا نقص الحديد أثناء فترة الطفولة

هبة رفعت على - دعاء محمد صبحي السيد - وفاء عطا محمد أحمد

تعتبر حالة فقر الدم شائعة بين الأطفال على مستوى العالم. يساهم نقص الحديد الأساسي لدى الأطفال في فقر الدم الذي تم الاعتراف به على أنه يمثل تحديات كبيرة. الهدف: هدفت الدراسة إلى تقييم وعي الأمهات فيما يتعلق بعوامل الخطر المتعلقة بفقر الدم الناجم عن نقص الحديد خلال فترة الرضاعة. و تصميم بحث وصفي. وتم تنفيذ هذه الدراسة في مركز صحة الأم والطفل (MCH) بمدينة بنها. على عينة عشوائية بسيطة، شملت 382 أمًا. و أظهرت الدراسة الحالية أن حوالي ثلثي الأمهات المدروسات لديهن مستوى معرفة إجمالي ضعيف فيما يتعلق بفقر الدم الناجم عن نقص الحديد وحوالي ثلثي الأمهات المدروسات لديهن ممارسات إجمالية غير مرضية فيما يتعلق بالوقاية من فقر الدم الناجم عن نقص الحديد أثناء فترة الرضاعة. أيضًا، كان لدى أكثر من نصف الأمهات المدروسات موقف إجمالي سلبي تجاه فقر الدم الناجم عن نقص الحديد أثناء فترة الرضاعة. الاستنتاج: كان هناك ارتباط إيجابي ذو دلالة إحصائية عالية بين المعرفة الإجمالية للأمهات وإجمالي الممارسات المبلغ عنها وموقفهن الإجمالي ( $P = 0.000$ ). واوصت الدراسة بزيادة وعي الأمهات من خلال برنامج التثقيف الصحي والتدريب للوقاية من فقر الدم الناجم عن نقص الحديد أثناء فترة الرضاعة.