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Mothers' Knowledge and Practices Regarding Their Children Suffering from Iron Deficiency Anemia during Weaning: An Assessment Study

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Abstract: **Iron Deficiency Anemia (IDA) presents a significant burden in infancy and childhood, that effect on growth and development. Aim of this study: was to assess mothers' knowledge and practices regarding their children suffering from iron deficiency anemia during weaning .Design: A descriptive design was utilized to conduct this study. Setting: the study was conducted at maternal and child health center in Bab Elsherea, and pediatric outpatient clinic at Sayed Galal hospital. Sample: A purposive sample of 160 mothers of children who suffering from iron deficiency anemia during weaning. Tools: Two tools were used to collect the data: Tool(1):A structured interviewing questionnaire to assess mothers' knowledge about iron deficiency anemia and weaning process, Tool (2): Observational checklist to assess mothers' reported practices about prevention of iron deficiency anemia among infant during weaning .Result: Most of studied mothers (55%) had poor knowledge about iron deficiency anemia and weaning process .while majority of them (62.5%)had inadequate practices about iron deficiency anemia and weaning process. Conclusion: It can be concluded that mothers had poor knowledge about iron deficiency anemia and weaning process and there was no statistical significant relation between mothers' knowledge about iron deficiency anemia, weaning process and mothers' characteristics, while there was statistical significant relation between level of mothers' practice about weaning for their infants with iron deficiency anemia and their age and level of education. Recommendation: Develop instructional guideline for mothers about breast feeding, ideal weaning schedule and care of infants with iron deficiency anemia based on the evolvement of the international evidence based criteria in maternal and child health centers.**

Keywords: **Iron deficiency anemia, Weaning, and Children.**

1. INTRODUCTION

Iron Deficiency Anemia (IDA) 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.**(Abd El Reheem,etal., 2020)**

The main causative factor for iron deficiency is the early introduction of cow's milk for infants during the weaning period which has very low iron content, and breastfed infants who are not given complementary foods containing iron after the age of six months. So The **American Academy of Pediatrics (AAP)** recommends introducing complementary foods at about six months of age. Complementary foods are an important component of the infant diet as they influence overall nutrient adequacy, but the reality is different. Mothers of infants begin weaning earlier than the recommended four to six months, with foods low in iron**. (Johnson, S. L.2020)**

Iron deficiency has an adverse effect on cognitive development and physical growth of infants. Iron is important for neurologic metabolic process, including neurotransmitter synthesis, myelin formation and brain growth. The first two years of infants life are very important to the infants brain because most complex neural changes take place during this period ,the brain is sensitive to iron deficiency during infancy, Thus, iron deficiency during neurologic development could affect long term cognitive and behavioral function. . **(Ray, C. 2022).**

Weaning is the transitional phase in infant's diet when mother gradually begins to introduce foods other than breast milk or formula. The process varies from culture to culture and is often regulated by the child's individual needs. healthy infants of weaning age are growing and developing very fast, so great care has to be taken to infants with iron deficiency anemia during weaning to improve their health. **(Gottrand, 2021)**.

Nurses have a vital role in preventing and treating iron deficiency anemia in infants during weaning such as mothers health education regarding the nature of the condition. The elements of a good diet, with advices on foods containing iron. The dose, route, duration and side effects of ferrous sulphate. Details of further investigations, date and times. The nurse also has a role in the formulation and implementation as they are considered part of the Nutrition Action Plan and the Iron Deficiency Prevention Program, based on a combination of diet improvement and fortification and iron food. (**Jones, 2018)**

Significance of the study:

It is generally estimated that 50% of anemia are caused by iron deficiency anemia. It is the most common in the developing world. It is considered to be the main cause of anemia which has a negative impact of human health and productivity **(Ahmed et al., 2015)**

Unfortunately iron in breast milk is poorly absorbed. The infant has to depend much on its iron stores which last only six months and thereafter, supplement from diet. Poor weaning practices and inadequate feeding during childhood contribute to the development of iron deficiency **(Murye, 2014).** In Egypt, the prevalence of iron deficiency anemia from mild to severe is the percentage of children aged 6-24 months. According to the **UNICEF (2015),** the rates were as follows: in children aged 6-8 months (41.6%), 9-11 months (49.2%), 12-17 months (41.4%) and from 18-24 months (34.5%).

Therefore, it was found that the assessment of iron deficiency anemia among infants during weaning is necessary to identify malpractices towards feeding and weaning of infants which in turn will reflect the causes of iron deficiency anemia and malnutrition among infants.

AIM OF THE STUDY

This study aimed to: Assess mothers' knowledge and practices regarding their children suffering from iron deficiency anemia during weaning.

2. SUBJECTS AND METHODS

Design: A descriptive design was utilized for conducting this study**.**

Subjects: A purposive sample of 160 mothers and their infants with iron deficiency anemia.

Setting: This study was conducted at Maternal and Child Health Center (MCH) in Bab el-Sherea, and outpatient clinic at Sayed Galal Hospital**.**

Tools of Data Collection:

Data were collected using of the following tools:

Tool (I) Interviewing Questionnaire Sheet: It was designed by the researcher in simple Arabic language after reviewing of relevant national and inters literature in the light of content relevant and researcher to assess mothers' knowledge about iron deficiency anemia and weaning process it was consists of four parts as the following:

Part (1): Characteristics of mothers of infants with iron deficiency anemia during weaning period as (age, educational level, job, and residence).

Part (2): Characteristics of the studied infants with iron deficiency anemia as (age, gender, and child birth order) good knowledge for mothers who scored 75% and more, average knowledge for mothers who scored 50% to less 75% and poor knowledge for mothers scored less than 50% of total scores.

Part (3): Mothers' knowledge about iron deficiency anemia this included (definition, causes, symptoms, type of food, complications of iron deficiency anemia, diagnostic measures, treatment, and the preventive measures) good knowledge for mothers who scored 75% and more, average knowledge for mothers who scored 50% to less 75% and poor knowledge for mothers scored less than 50% of total scores.

Part (4): Mothers' knowledge about weaning process, this included (definition, principles, food rich in iron, health problem during weaning, and type of food) good knowledge for mothers who scored 75% and more, average knowledge for mothers who scored 50% to less 75% and poor knowledge for mothers scored less than 50% of total scores.

Tool (II) Observational checklist:

It was developed by **(**Doherty**, C & Netshandama, and V. O. 2019)** to assess mothers' reported practices about prevention of iron deficiency anemia among infants during weaning, it includes breast feeding, weaning steps and administration oral iron medication, adequate when mothers' practices scored 75% and more and inadequate when mothers' practices less than 75% of total scores.

Field Work will include the following:

- The actual **Field Work** for the process of data collection of this study was started and completed within six months from April up to the end of October 2020
- First the investigator introduced herself to the previous mentioned maternal child health centers' director and the nurse supervisors and the other health team workers that help in data collection.
- The researcher explained the aim of the study to all of them and then distributed the questionnaire sheet after clear explaining the way to fill it out.
- The interviewing tools took about maximum 30 minutes for every mother.
- The observation check list took about 15 minutes.
- The researcher interviews 2 or 3 mothers of children who suffer from iron deficiency anemia during weaning daily.

Administrative Design:

An official permission obtained from the Dean of Nursing Faculty Helwan University, and director of Medical affairs in Syed Gala hospital, director of Maternal and child health center to conduct the study after clear explanation about the aim of the study and its benefits**.**

Ethical Considerations:

All ethical considerations were considered for ensuring the mothers' privacy and confidentiality of the collected data during the study. Firstly the study protocol take agreement of scientific nursing Ethical Committee affiliated to Faculty of Nursing Helwan University. Secondly the purpose and nature of the study were explained for the participants and oral consent was taken to gain their participation after explain the purpose of the study and being informed that each study subject is free to withdrawal at any time through the study. Finally all selected study sample agreed to participate in the study and they were assured that the study would posed no risks or hazards on their social, psychological or physical health

Statistical analyses :

The collected data were organized, revised, coded, tabulated and analyzed using the number and percentage distribution. Data entry were done using Microsoft Excel 2010 computer software package, while statistical analysis were done using SPSS 16.0 software package. Data was present using percentage for qualitative variables, means and standard deviations for quantitative variable p value were used to estimate the statistical significance difference between the study variables (p-value < 0.005 will be accepted as significance).

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3. RESALTS

Table (1): show less half of mothers' age(46.3%) from 20-<30 years with mean ± SD 27.01±7.29 year, and also more than half of mothers (53.8%) had Basic/Secondary education. in relation to mothers' job it observed that more than half of them (61.5%)were house wife from urban area respectively .

Table (2): reveled that more than half of infant with iron deficiency anemia (51.9) were in age group 18-<24 months with the mean±SD 11.29±3.05 months. Regarding to gender of infants it was found that more than half of infants (63.1%) were male

Figure (1): appear from this figure that more than half of studied mothers (55%) had poor knowledge related to total knowledge of iron deficiency anemia. Meanwhile, about one third of them (32.5%) scored average knowledge of total knowledge about iron deficiency anemia.

Figure (2): clear from this figure that about 31.2% of studied mothers had good knowledge related to total knowledge about weaning process. Meanwhile, less than half of them (49.4%) scored poor knowledge and 19.4% of studied mothers had average knowledge.

Figure (3): clarified that, 55% of studied mothers had poor knowledge regarding to total studied mothers' level of knowledge about iron deficiency anemia and weaning process.

Figure (4): shown from this figure, about two third of studied mothers (62.5%) had inadequate practices related to total mothers' practices about prevention of iron deficiency anemia during weaning process

Table (3): Revealed that, there is high statistically significant difference between mothers' total level of knowledge about iron deficiency anemia, and weaning process and mothers' characteristics.

Table (4): This table clarified that, there was a highly statistically significant difference between total level of studied mothers' practice regard prevention of iron deficiency anemia during weaning process and their age and level of studied mothers' education at (p-value <0.001). While, there was no significant difference with employment and residence at (P>0.05)

Table (1): Number and percentage distribution of the studied mothers according to their characteristics (N=160).

Mother's characteristics	No.	%
Age in year		
20-<30 years	**74**	**46.3**
30-<40 years	39	24.4
≥40 years	11	6.9
Mean±SD	**27.01±7.29**	
Level of Education		
Illiterate	30	18.8
Basic/Secondary	**86**	**53.8**
University	44	27.5
Employment		
Worked mothers	52	32.5
House wife	**108**	**67.5**
Residence		
Urban	**85**	**53.1**
Rural	75	46.9

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Table (2): Number and percentage distribution of infants with iron deficiency anemia during weaning (N=160)

Infants' characteristics	No.	%
Gender		
Female	59	36.9
Male	**101**	**63.1**
Age month		
6<12 months	28	17.5
12<18 months	49	30.6
18-<24 months	**83**	**51.9**
Mean ± SD	**11.29±3.05**	

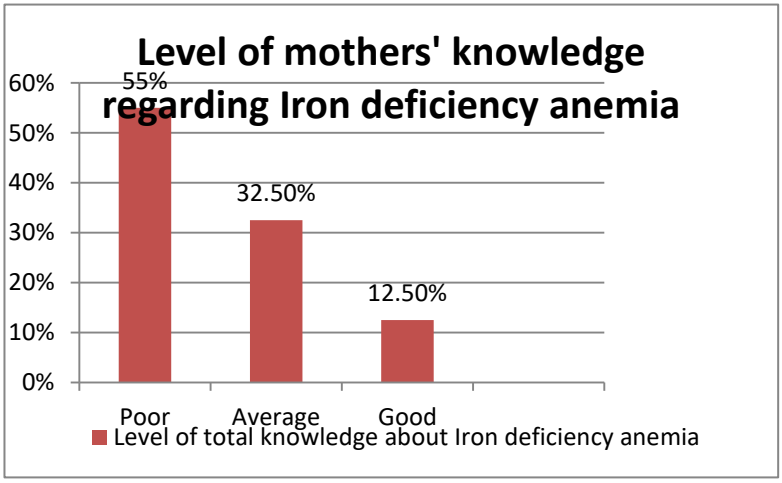

Figure (1): Percentage distribution of studied mothers in relation to total mothers' knowledge score regarding iron deficiency (N=160).

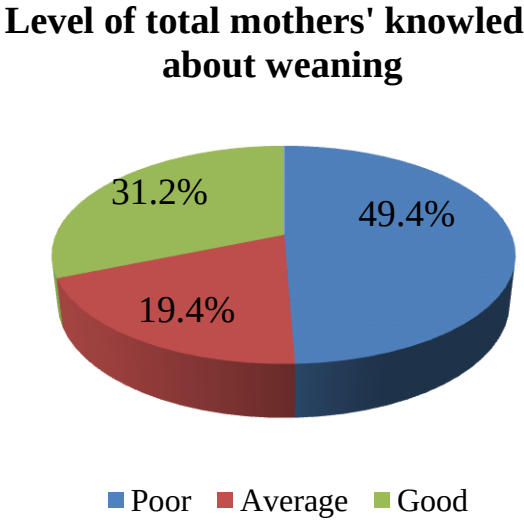

Figure (2): Percentage distribution of total studied mothers' knowledge score of weaning process. (N=160).

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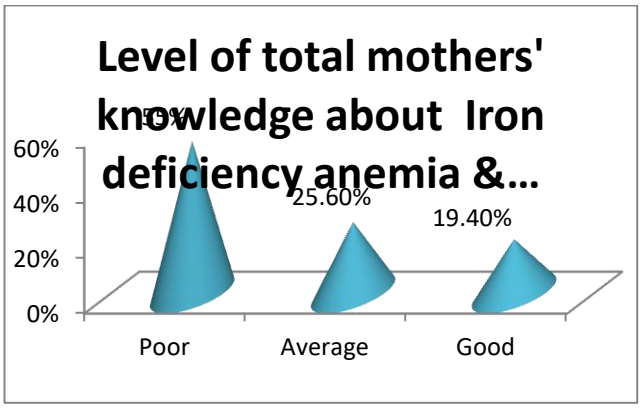

Figure (3): Percentage distribution of total studied mothers' level knowledge about iron deficiency anemia and weaning process (N=160).

Table (3): Relationship between characteristics of studied mothers and their total level of knowledge about Iron deficiency anemia and weaning process (N=160).

mother's characteristics	Level of total knowledge about Iron deficiency anemia & weaning process						Chi-square test	
	Poor (n=83)		Average (n=27)		Good (n=50)		x2	p-value
Age (years)								
20-<30 years	34	41.0	13	48.1	**27**	**54.0**	29.232	<0.001**
30-<40 years	16	19.3	3	11.1	20	40.0		
≥40 years	08	9.6	0	0.0	3	6.0		
Level of Education								
Illiterate	16	19.3	14	51.9	0	0.0	89.612	<0.001**
Basic/Secondary	**60**	**72.3**	12	44.4	14	28.0		
University	7	8.4	1	3.7	36	72.0		
Worked mothers	15	18.1	1	3.7	36	72.0	53.643	<0.001**
House wife	68	81.9	**26**	**96.3**	14	28.0		

*Chi-square test; **p-value <0.001 HS*

Table (4): Relationship between mothers' total level of reported practices regarding prevention of iron deficiency anemia during weaning process and mothers' characteristics. (N=160).

mother's characteristics	Practices about weaning for their infant with iron deficiency anemia				Chi-square test	
	Adequate (n=60)		Inadequate (n=100)		x2	p-value
Age (years)						
20-<30 years	26	43.4	**59**	**59.0**	17.746	<0.001**
30-<40 years	14	23.4	23	23.0		
≥40 years	10	16.6	2	2.0		
Level of Education						
Illiterate	10	16.6	14	14.0	14.287	<0.001**
Basic/Secondary	38	63.4	**51**	**51.0**		
University	12	20.0	35	35.0		
Employment						
Worked mothers	12	20.0	27	27.0	2.491	0.114
House wife	48	80.0	**73**	**73.0**		
Residence						
Urban	34	56.7	**51**	**51.0**	0.414	0.520
Rural	26	43.3	49	49.0		

*Chi-square test; p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 HS*

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4. DISCUSSION

The study aimed to assess mothers' knowledge and practices regarding their children suffering from iron deficiency anemia during weaning. The following findings focus on discussing the results of this study in order to assure the achievement of the aim.As regards mothers' characteristics, the present study revealed that, almost half of mothers' age in the age group of 20< 30 years. With mean and stander deviation 27.01±7.29, more than half of them had secondary education, in relation to mothers' job it was observed that more than half of them unemployed (housewife), and more than two thirds of the mothers were from urban area. These results corresponded with **Dhamani et al. (2016)** who reported that, in a study on, Mothers' Knowledge, Beliefs, and Practices on Causes and Prevention of Anemia: A Case Study at Mkuranga District Hospital, Tanzania, more than two thirds of mothers were in the age group of 20 < 30 years and half of them were housewives. Also, this finding agreed with **Abd El Reheem. (2020)** who stated that, in a study on the prevalence of iron deficiency and the associated factors in children aged 6-59 months in central equatorial state, Juba-south, Sudan, more than one third of women had in secondary education.Also, these findings supported by **Ngimbudzi et al (2016)** who revealed that, in a study on Contributing Factors of Iron Deficiency Anemia among Children under Two Years Attending Family Health Centers in Alexandria, Egypt, more than two thirds of the studied subjects were from urban area.The present study illustrated that, more than half of the infants were in the age group of 18-<24 months with mean and stander deviation 11.29±3.05 are male gender. In relation to child birth order, more than half of the studied infant was represent second and third child rank. This result was similar to the result reported by **Sailaja et al. (2017)** who stated that, in their study on Iron deficiency anemia in infant. The infant age from (6 to 23 months) in relation to complementary feeding practices in rural Telangana, India, more than half of them were male gender and half of them were first child rank.As regards to mother knowledge about iron deficiency anemia, the present study mentioned that, half of mother had average knowledge about definition, while more than two third of them had poor knowledge about etiology and type of food riche with iron and clinical manifestation of iron deficiency anemia . The result of the current study was in agreement with **Ngimbudzi et al (2016)** who found that, in a study on Mothers' Knowledge, Beliefs, and Practices on Causes and Prevention of Anemia in Children Aged 6 - 59 Months: A Case Study at Mkuranga District Hospital, Tanzania, more than half of mother had average knowledge in definition and more than two third of them had poor knowledge about etiology ,and found that, the mother had poor knowledge regarding to clinical manifestation (include reduced physical activity) of iron deficiency anemia.The present study showed that the majority of mother had inadequate regarding to breast feeding for infant as mentioned by **Semenova (2015)** who stated that, in a study on Breastfeeding of infants in Uzbekistan, almost every new mother starts breastfeeding after delivery. Also, he added, Doctors usually believe that breastfeeding should continue for 1 to 1½ years, but many worry that longer breastfeeding can be harmful to the mother's health. Majority of mothers was introduced supplementary food to the infant during breastfeeding at age before 6 months. Majority of mothers had long-term breastfeeding is a tradition.Regarding mother practices about weaning the present study results pointed out that, half of mothers had inadequate practices about treatment for iron deficiency anemia This finding was in accordance with **Dhamani et al. (2016)** who reported that, more than half of mothers had inadequate practices toward treatment of iron deficiency anemia among their infant during weaning. Also, **Abd El Reheem, D. (2020)** clarified that, feeding practices contribute to anemia, generally and iron deficiency anemia, specifically. In the light of the study result, it was noticed that, the majority of mothers had unsatisfactory practice about weaning process These finding in the same line with **Semenova (2015)** who stated that, in a study weaning practices of mothers and infants in Uzbekistan, Majority of mothers was introduced supplementary food to the infant during breastfeeding at age from six months. Majority of mothers had long-term breastfeeding is a tradition, **Baş et al. (2017)** found that, in a study on weaning practices of mothers in eastern Turkey.There was a highly statistical significant relation positive correlation between mothers' knowledge and practices about iron deficiency anemia during weaning. This finding might be due to knowledge play important role for improving practices leading to high practices level and affect on mothers car of iron deficiency anemia .Also, there was statistically significant relation between mothers' practices and their characteristics as mothers' age and educational level, these findings agreed with **Abd El Reheem, (2020)** who found that, in a study on determinants of anemia among under five children in Ghana, statistically significant relations were found between mother's practices and their age and educational level, and also conducted with **Goel , (2016)** in a study on influence of feeding practices on nutritional status of under five children

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5. CONCLUSION

In the light of the present study findings, it can be concluded that more than half of studied mothers had poor knowledge and reported practices about iron deficiency anemia and weaning process. Also there was no statistical significant relation between mothers' total level of knowledge about iron deficiency anemia, weaning process and mothers' characteristics, while there was statistical significant relation between total level of mothers' reported practices their age and level of education.

6. RECOMMENDATION

In the light of the study findings, the following recommendation is suggested:

- Periodic educational programs should be designed for mothers' regarding care of their infant with iron deficiency anemia during weaning period.
- Develop instructional guideline 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.
- Integration of the instructions about weaning process in every pediatric health care setting.
- Encouragement of good breastfeeding and weaning practices. This can be done through awareness at health facilities and at the community level through different channels of communication.
- Further research studies are needed for ongoing assessment of children and their mothers including large sample for generalization of results.

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