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TERTIARY CARE HOSPITAL CHILDREN'S MATERNAL NUTRITIONAL KNOWLEDGE AND IRON DEFICIENCY ANEMIA, AGES 6 MONTHS TO 2 YEARS

Dr. Aashish [1], Dr. Mahender [2]
Assistant Professor[1,2]
GS Medical College, Pilkhuwa, UttarPradesh 245304

ABSTRACT

The purpose of this research was to identify potential causes of nutritional anemia in children and to highlight the critical role that mothers play in preventing this condition.Requirements and procedures: For one year, researchers from GS Medical College's Department of Pediatrics in Pilkhuwa, Uttar Pradesh, tracked participants. All children hospitalized to the hospital between the ages of 6 months and 2 years old were considered for the research. The Hospital's Scientific and Ethics Committee gave its stamp of approval to the research plan. Each mother gave her written, informed agreement before her kid was studied. Through one-on-one interviews, 200 parents were administered the questionnaire.End result: The majority of moms (78%) knew that anemia might impact their child's neurological development. The majority of mothers (85%) incorrectly believed that cow's milk promotes iron absorption, whereas a minority (15%) were ignorant that cow's milk might cause anemia. Anemia was thought by many mothers to be exclusive to vegetarian children. Approximately 72% of moms were aware that jaggery and green leaves were sources of iron. Fruits rich in vitamin C were recognized by 78% of respondents, although many were unaware of the crucial function that vitamin C plays in enhancing iron absorption. It was widely believed that meat is just a source of fat and has no iron. These findings highlight the significance of mothers' iron and nutrition understanding. Compared to moms whose children had one or no siblings, those whose children had several siblings were more likely to have "poor" knowledge. With a p-value of just 0.012, this suggests that even those with "poor" understanding failed to recognize the significance of birth spacing. In summary: In order to avoid iron deficiency anemia (IDA), it is crucial to identify the causes that cause it. Along with promoting exclusive breastfeeding, it is important to avoid consuming too much cow's milk. It becomes crucial to intervene with age-appropriate meals at the proper time. Infant anemia is positively correlated with maternal illiteracy. The first step toward a country free of anemia is for doctors to raise their maternal awareness.

Keywords: Iron deficiency anemia, maternal awareness, iron deficiency, weaning, child nutrition, hemoglobin level Nutritional Knowledge, Maternal Education.

1. INTRODUCTION

Anemia is a major public health concern since it is the most prevalent nutritional deficiency illness in the world. It affects 25% of the population, particularly children and women of childbearing age.First, it's a global problem; 25% of people are affected.2 There are several causes of anemia, but iron deficiency anemia (IDA) accounts for 42% of cases.3. Because the symptoms of affected youngsters are not precise, a larger number of them go untreated until something goes wrong with their health.2,4 The World Health Organization defines anemia in pregnancy as hemoglobin levels below 11 gm/dl.75% of instances of anemia during pregnancy are caused by iron deficiency anemia, which is the

most prevalent nutritional condition in the world today. It accounts for around 50% of cases globally.7 Additionally, it negatively impacts neonatal outcomes such as low birth weight (LBW), stillbirth, and fetal anemia.9,10 A mother's nutritional status during pregnancy impacts her unborn child's weight because it impacts the fetus's growth.11 Since certain negative birth outcomes, such as low birth weight (LBW), are associated with maternal malnutrition, the fetus is very reliant on the mother's dietary intake. Pregnant women and their unborn children are vulnerable to the negative consequences of nutritional deficiencies, which may result from either low dietary intake or poor storage of these nutrients.12-14 Iron supplementation, frequent de-worming, controlling and preventing parasitic infections during pregnancy (e.g., by consistently using insecticide-treated bed nets), eating iron-rich foods, receiving nutritional counseling (e.g., to avoid consuming coffee, tea, or milk with meals), having access to clean water, and treating the underlying causes and complications are all strategies for anemia prevention.

In a typical pregnancy, the body needs twice as much iron and ten to twenty times as much folate.16–18 To address the iron needs of pregnancy, the CDC recommends that all pregnant women undergo screening for anemia and that everyone take an iron supplement.19 In addition, the World Health Organization recommends that all pregnant women take a tablet containing 400 micrograms of folic acid in addition to an iron supplement of 60 milligrams each day.20

In order to prevent and cure anemia, it is crucial for pregnant women to adhere to anemia preventive techniques. This is because their iron need rises owing to physiological demands.16 To reduce the prevalence of anemia, it is crucial to have information about the condition and to properly implement strategies for preventing anemia.21

As a result, we set out to investigate what causes nutritional anemia in young children and how moms might play an essential role in preventing it.

2. MATERIAL & METHODS

For one year, researchers from GS Medical College's Department of Pediatrics in Pilkhuwa, Uttar Pradesh, tracked participants. All children hospitalized to the hospital between the ages of 6 months and 2 years old were considered for the research. The Hospital's Scientific and Ethics Committee gave its stamp of approval to the research plan. Each mother gave her written, informed agreement before her kid was studied.Criteria for exclusionAs a side effect of our efforts to eradicate chronic disease-related anemia, we did not include any children who were suffering from hemoglobinopathies, hemolytic anemia, or who were using immunosuppressants such steroids or biologics.

METHODOLOGY

To document the pertinent details, a pre-made pro forma was used. Six sets of questions would be included in the two-page pro forma. Mothers were the only ones permitted to fill out the survey. Demographics, personal information, socioeconomic position, and family history make up the bulk of the first section. Included in the second portion was information about the mother's and child's important history. The third section of the pro forma evaluated the child's dietary history in detail. The fifth section detailed the inquiry, whereas the fourth section documented the clinical presentation. Part four of the survey assessed moms' familiarity with anemia and their understanding of its causes, symptoms, and the significance of IDA treatment. The digital weighing equipment was calibrated to the closest 0.001 kg for weight and an infantometer to the nearest 0.1 cm for consistent

length measurement. We used World Health Organization (WHO) standards to assess malnutrition, and we didn't include kids who were chronically sick with malnutrition. 22 The Modified Kuppuswamy scale was used to categorize the children according to their socioeconomic status. 23 A "nuclear" family consisted of two or more generations living under the same roof. A "joint" family was defined as anything beyond that. Utilizing the Coulter LH 780 Hematology analyzer, a comprehensive blood count was computed, which included red blood cell indices. In order to distinguish between IDA and thalassemia, the Mentzer index was computed. Followed the World Health Organization's recommendations for grading anemia.24 A pediatrician, healthcare workers, and academic specialists formed an expert panel to assess the questionnaire's design and ensure simple comprehensibility. One hundred moms participated in the pilot trial. Experts' interpretations led to adjustments to the original questionnaire and technique.

Through one-on-one interviews, 200 parents were administered the questionnaire. Twenty minutes was the average time it took to finish the survey. The parents were able to have their questions answered and any concerns addressed face-to-face.

Data Analysis by Statistic

Quantitative data were analyzed descriptively using means and standard deviations, whereas categorical variables were analyzed using frequencies and proportions. In order to determine if there was a correlation between anemia-related characteristics and quantitative outcomes, we compared the means. To determine the statistical significance, an independent sample t-test was used. For statistical significance testing, a chi-square test was used. A statistically significant result was defined as $p<0.05$. To conduct the statistical study, IBM SPSS version 22 was used.

3. RESULTS

Table 1: Tabular column showing the percentage of answers by the mothers

Correct answer	No. of correct answers (%)	No. of incorrect answers (%)
Anemia is a deficiency of hemoglobin	150 (75)	50 (25)
Iron is important for carrying oxygen in the blood to various organs	52 (26)	148 (74)
Infants at weaning age are at high risk for anemia	36 (18)	164 (82)
Low birth weight is a risk factor for anemia in newborns	48 (24)	152 (76)
Anemia affects both vegetarians and non-vegetarians equally	32 (16)	168 (84)
Large quantities of cow’s milk decreases iron absorption	30 (15)	170 (85)
Complementary feeds should be started at 6 months	32 (16)	168 (84)
Jaggery contains more iron	140 (70)	60 (36)
Green leaves are rich in iron	144 (72)	56 (28)

Meat is rich in iron	36 (18)	164 (82)
Orange is rich in vitamin C	160 (80)	40 (20)
If mother takes iron supplements, breastfed infant doesn't get more iron	160 (80)	40 (20)
Vitamin C is necessary for absorption of iron	156 (78)	44 (22)
Anemia is often asymptomatic	156 (78)	44 (22)
Anemia can cause neurodevelopmental delay in infants	156 (78)	44 (22)
Government provides free iron supplements	20 (10)	180 (90)
Anemia can be prevented	150 (75)	50 (25)
Iron causes constipation but should not be avoided.	6 (3)	194 (97)
Blood transfusion is not necessary for all children with anemia	20 (10)	180 (90)

The majority of moms (78%) knew that anemia might impact their child's neurological development. The majority of mothers (85%) incorrectly believed that cow's milk promotes iron absorption, whereas a minority (15%) were ignorant that cow's milk might cause anemia. Anemia was thought by many mothers to be exclusive to vegetarian children. Approximately 72% of moms were aware that jaggery and green leaves were sources of iron. Fruits rich in vitamin C were recognized by 78% of respondents, although many were unaware of the crucial function that vitamin C plays in enhancing iron absorption. It was widely believed that meat is just a source of fat and has no iron. These findings highlight the significance of mothers' iron and nutrition understanding.

Table 2: Comparison of number of siblings across knowledge about nutrition and anemia

Number of siblings	**Maternal awareness on anemia and nutrition**			**p value**
	Poor knowledge	**Fair knowledge**	**Good knowledge**	
Nil (N=40)	6	30	4	0.012
One (N=150)	22	104	24	
More than one (N=10)	3	6	1	

Mothers of children with more than one sibling had a relatively greater incidence of "poor" knowledge unlike mothers of children with single or no sibling. This implies that those with "poor" knowledge were also unaware of the importance of birth spacing (p 0.012).

4. DISCUSSION

Roughly one-third of the world's population suffers from anemia, making it the most prevalent blood condition.25 Reduced red blood cell count or size, as well as hemoglobin content, define this condition, which in turn impairs the body's ability to carry oxygen.26 It is believed that about 38.2% of pregnant women have anemia.27 The majority of moms (78%) knew that

anemia might impact their child's neurological development. The majority of mothers (85%) incorrectly believed that cow's milk promotes iron absorption, whereas a minority (15%) were ignorant that cow's milk might cause anemia. Approximately 72% of moms were aware that jaggery and green leaves were sources of iron. Fruits rich in vitamin C were recognized by 78% of respondents, although many were unaware of the crucial function that vitamin C plays in enhancing iron absorption. It was widely believed that meat is just a source of fat and has no iron. These findings highlight the significance of mothers' iron and nutrition understanding. Due to a higher age limit and related health implications, our research found a greater prevalence of anemia among children born to moms who were older than earlier studies.28, 29 Our research re-established the relationship between a mother's degree of education and the prevalence of anemia in her children; specifically, we found that 85% of the children whose mothers had only completed basic school had anemia.30,31

Iron needs at 6 months are 0.9-1.3 mg/kg/day32, but cow's milk only contains 0.2-0.5 mg/L of iron, and only 10% of it is absorbed.33 Furthermore, the iron loss is accelerated because cow's milk induces asymptomatic micro-hemorrhages in the colon.34 Babies born to mothers with anaemia are 6.5% more likely to be born with low birth weight, according to another research conducted in India.35 Anaemia resulting from physiological hemodilution could be the cause of these. Inadequate food intake, inability to take the appropriate quantity of iron with folic acid supplements while pregnant, poor preconception and conception care, pregnancy-related morbidities such helminthiasis, and a poor diet quality are all potential causes of anaemia during pregnancy. The development of LBW may be attributed, in part, to all of these causes. Some moms wrongly assumed that IDA would only impact vegetarian children. Iron deficiency anemia (IDA) is more frequent among nonvegetarians than vegetarians, although neither group is immune to the nutritional issue. Vegetarians likely have a higher relative incidence of IDA because they rely on non-heme iron and because iron absorption inhibitors are present in plant meals.36 Therefore, proper feeding methods are crucial for a developing child's nutrition.

Mothers of children with more than one sibling had a relatively greater incidence of “poor” knowledge unlike mothers of children with single or no sibling. This implies that those with “poor” knowledge were also unaware of the importance of birth spacing (p 0.012). Parenting knowledge plays a key role in the biological, physical, socioeconomic, and cognitive needs of the child. It also has a direct influence on their everyday decisions about upbringing, developmental expectations which, in turn, determines their child’s health and well-being.[37] Overall most of the mothers had “fair” knowledge of anemia and its implications. Mothers with “poor” understanding of nutrition predominantly had anemic children. Furthermore, mothers with better educational status had better awareness in terms of questionnaire. Thus, maternal knowledge plays a key role in preventing anemia.

5. CONCLUSION

In order to avoid iron deficiency anemia (IDA), it is crucial to identify the causes that cause it. Along with promoting exclusive breastfeeding, it is important to avoid consuming too much cow's milk. It becomes crucial to intervene with age-appropriate meals at the proper time. Infant anemia is positively correlated with maternal illiteracy. The first step toward a country free of anemia is for doctors to raise their maternal awareness.

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