MATERNAL NUTRITIONAL KNOWLEDGE AND ITS ASSOCIATION WITH IRON DEFICIENCY ANEMIA IN CHILDREN

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ABSTRACT

This study aimed at assessing the maternal nutritional knowledge and determining the association between nutritional knowledge and Hb status of their children. A total of 143 children of 2 – 10 years was selected for this study from local community. Data was collected using questionnaire for maternal nutritional knowledge and portable hemoglobinometer for identifying hemoglobin status of children. SPSS version 22 was used for data entry and analysis. Among the mothers who had poor nutritional knowledge (7.69%) all the children were anaemic. Even among mothers with average knowledge (63.64%) a vast majority of children were anaemic (86.8%). Among mothers with high nutritional knowledge (28.67%) more than half (58.5%) children were anaemic. Relationship between maternal nutrition knowledge and hemoglobin level of children was statistically significant ($p<0.001$).

The results showed a very high rate of anaemia and a significant association between maternal knowledge and Hemoglobin status of their children, as proved by many studies.

KEYWORDS: iron deficiency anemia, nutritional knowledge, hemoglobin status.

INTRODUCTION

Anemia is the most common nutritional deficiency worldwide and is a major public health problem in many developing countries. The most momentous contributor to the outbreak of anemia is iron deficiency; therefore Iron Deficiency Anemia (IDA) and anemia are often used synonymously. It is widely assumed that 50% of the cases of anemia are due to iron deficiency.(Xin-HuaQu, et al., 2010; World Health Organization, 2001).

Anemia is a commonly used indicator to screen for iron deficiency in population based surveys (Piot P., 2008). It is estimated that globally, 60 million school-age children suffer from iron deficiency disorders whilst some 120 million suffer from iron deficiency anemia. (Gitau, et al., 2013).Young children are more prone to the development of iron deficiency anemia because of their rapid growth rate which is coupled with frequently inadequate intake of dietary iron. Mild iron deficiency is often undiagnosed as it is characterized initially, only by fatigue and weakness.

The prevalence of anemia in children of school-going age has received less attention compared with that in preschoolers and women of child-bearing age. As stated in the data provided by World Health Organization (WHO) in 2001, 30% of children aged between 0 and 4 years and 48% of the children aged between 5 and 14 years are anemic in developing countries.

According to the Pakistan National Nutrition Survey 2011–2012, which was conducted by the Aga Khan University (AKU) in collaboration with the Federal Ministry of Health in Pakistan and was funded by UNICEF, the prevalence of Anemia in Children was found to be 62.3%. (Habib, 2016).

The functional deficits which are associated with IDA include gastrointestinal disturbances and impaired cognitive function, immune function, decreased physical capacity, and body temperature regulation. In infants and children, IDA can result in psychomotor and cognitive abnormalities, which if left untreated, can lead to learning difficulties. Some evidence indicates that the effects of deficiencies early in life persist throughout adulthood. (Souganidis, 2012).

Maternal knowledge is one of the most important factors in contributing the onset of anemia in children. According to a study,

higher nutritional knowledge of mothers has shown to provide an increased quality of the diets of children. Whereas, lower knowledge was associated with an impaired cognition, decreased physical capacity, and reduced immunity as well as impaired psychomotor and cognitive development in children. (Kapur D, et al., 2003)

Keeping all these points in mind, this study was designed to determine the maternal nutritional knowledge of IDA and its prevalence in their children aged 2 – 10 years.A major limitation of this study is that, Iron Deficiency was defined solely by the Hemoglobin level, and there was no other indicator for the analysis of iron status due to the high cost of other biochemical tests required to precisely define an individual's iron status.

OBJECTIVES:

To assess the maternal nutritional knowledge.

To identify the hemoglobin level of children age 2 – 10 years.

To determine the association between nutritional knowledge and Hb status of their children.

METHODOLOGY

This research study was conducted individually. The objective of this study was to identify the hemoglobin status of children and associate it with the maternal nutritional knowledge of IDA.

The study subjects consisted of mothers and their children (aged 2-10 years). The criteria opt was solely based on the ages of children.Sample size of 143 children was conveniently obtained through personal contacts in July 2017

The tools for data collection were questionnaire, to evaluate maternal knowledge; and hemoglobinometer, which was used to check the Hemoglobin status of the child.Mothers were asked to fill the questionnaire, which consisted of following components:

Demographic information, such as, gender and age of children, income level, maternal education level and number of family members.

Nutritional knowledge, such as, definition of Anemia, most general sign, causes and effects of Anemia, about iron content of vegetable etc.

Signs and symptoms were reported by mothers, which they think their children encounters.

The hemoglobin level was checked by researcher by using HemoCue 201 (hemoglobin meter). Children's Hb level was evaluated by collecting a drop of blood samples in microcuvette.

Pretesting of the questionnaire was carried out to anticipate the response of the respondents and to evaluate the time required for data collection.

The data collection was conducted from 10th July 2017 to 15th July 2017. For the collection of maternal knowledge, questionnaire, which consisted of demographic data and 14 questions regarding nutritional knowledge, was explained to mothers and then they were asked to fill it according to what they consider the best possible answer among them.

For the evaluation of prevalence, Hemoglobin (hb) test was used. Children's Hb level was analyzed by pricking their pointer finger and collecting their blood samples in microcuvette, which contain dry Vanzetti's reagent (azidemethemoglobin reagent). The test was conducted instantly by placing microcuvette in the device, which displayed result within 20-30 seconds. Hemoglobin was measured by using HemoCue 201 which was sponsored by a company named S. Ejazuddin.

The data was entered using SPSS (Statistical Project of Social Science) version 22.

Data used to describe general characteristics of the sample was expressed through frequency and percentages. Maternal knowledge was analyzed by developing categories such as poor, average and high knowledge. Total score ranging from 0 to 14. Subjects scoring < 5 were categorized as having poor knowledge, 5-9 as average knowledge and 10-14 as having high

knowledge.

Anemia was defined as a hemoglobin concentration of <11.1 g/dl and <11.5 g/dl for children 2 – < 5 years and 5 – 11 years, respectively.

The independent t-test was used to analyze the means of the sample, whereas association between maternal knowledge of IDA and hemoglobin level of their children was conducted by applying a correlation test (chi-square test) to assess the statistical significance between them. The p-value <0.05 was considered as a cut-off value for significance.

RESULTS

This study of 143 subjects included children of age 2-10 years with their mothers. The demographic characteristics were asked from the mothers through questionnaire, which described that the subjects selected, comprised of 49.7% girls and 50.3% boys.The only criteria opt for the selection was based on their agesof children which should be between 2 – 10 years. Majority of the children belong to joint family andmost of the families had more than 6 members.

Most of the mothers reported their education level as intermediate.To analyze the economic status of the households, family income was asked from mothers. The majority of the sample reported that their family income lies between 36000– 55000.

Another major part of questionnaire was concerning Nutritional knowledge about Iron Deficiency Anemia. 14 questions regarding knowledge were asked to fill by mothers.The overall results showed that majority of mothers had average knowledge.

Hemoglobin status was analyzed using HemoCue 201, to determine the prevalence of anemia. The results expressed that out of 143 children, 79.7% were anemic and only 20.3% were non-anemic. This indicates that every 5 out of 4 children are anemic.

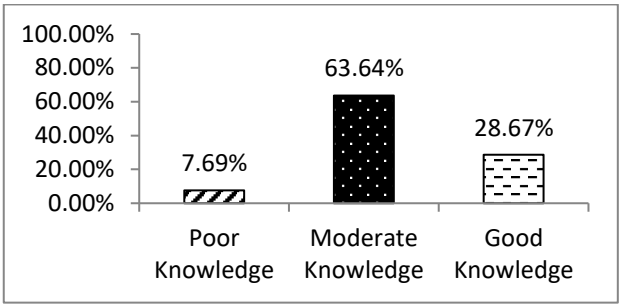

Figure 1: Percentages of mothers having various level of Nutritional Knowledge

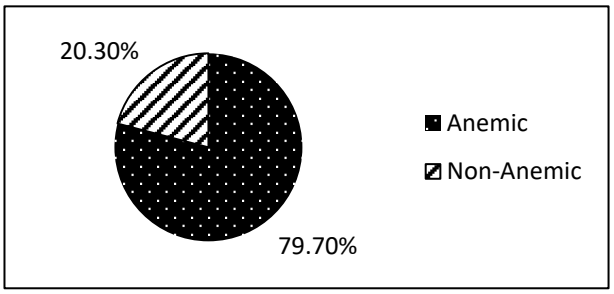

Figure 2: Hemoglobin Status of Children

The major association found in this study was of maternal nutritional knowledge of IDA and Hemoglobin status of their children. The comparison of variables though independent t-test proved the significance of p = 0.001< 0.05.The results of chi-square showed that a significant association exist between these two variables (i.e. p = 0.001< 0.05).

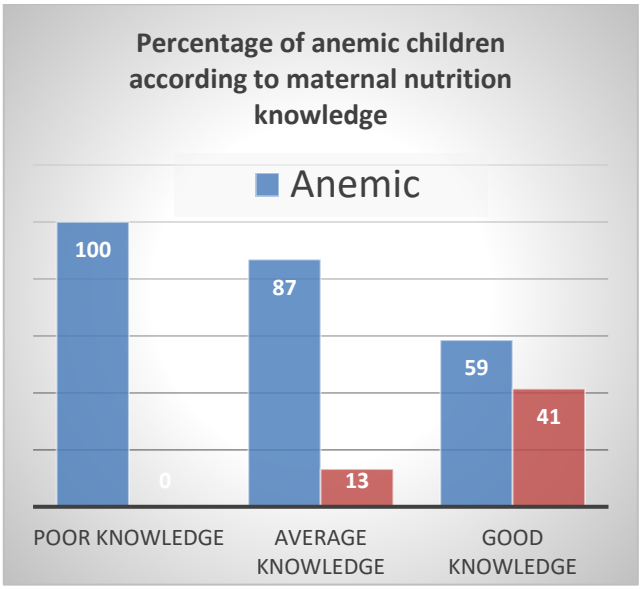

Figure 3: Association of Maternal Nutritional Knowledge and Hemoglobin status of Children

It was evaluated that if the nutritional knowledge of the mothers will increase, they will probably provide healthy food choices to their children, which will in turn enhance child's nutritional status.

Table 1: Mean difference between Maternal Nutritional Knowledge and Hemoglobin status of Children

Nutritional status	Mean	p-value
Anemic Children	7.62	0.001
Non- Anemic Children	10.24	

DISCUSSION

The purpose of this study was to determine the association between maternal nutritional knowledge and hemoglobin status of their children age 2 – 10 years. According to the analysis, the research proved that there is significant association between these 2 components, as mothers are responsible for the diet of young children.

In the present study it was proved that no significant difference exist between the gender of child and hemoglobin status. According to a study which was conducted in India, the same results were found; there was no significant gender difference on the prevalence on anemia, until before the time of menarche in women. (G Alvarez-Uria, 2014)

As the school-aged children have received less attention compared with preschoolers and women of child-bearing age. (Rasha and Meray., 2016) Therefore this study was conducted for evaluating the prevalence of anemia in school-age children. Results showed that no significance difference was found in the presence of anemia in different age groups of children. As they grow with a slower pace, that doesn't mean that this age group should be regarded as being in the safe zoon in relation to anemia. The current study indicated that out of 143 children 76.7% were anemic.

The major association found in this study was of maternal nutritional knowledge of IDA and Hemoglobin status of their children. It was revealed that significant association lies between these components. According to another study, lack of awareness among mothers about Anemia is an additional risk factor associated with lower hemoglobin level in children (Rasha and Meray, 2016). According to a study, maternal schooling also contributes to micronutrient deficiencies, through its effects on nutritional knowledge. (Block, 2006)

The results are valid and reliable because the data gathering tool i.e. questionnaire was pretested and ensured to give relevant data but reliability of result depends on what the subjects have mentioned. Moreover, another tool which was used in the study was the Hemoglobin meter which was calibrated, therefore there are less chances of error in Hemoglobin status but there are chances of human error in it.

Due to scarcity of time, this study was conducted on small sample size and using only hemoglobin tests for evaluating the presence of Anemia. For further implications, research may examine presence of Anemia by Complete Blood Count (CBC), serum ferritin levels or other tests.

The research study concludes that overall majority of mothers had average nutritional knowledge and majority of the children were found to be anemic. This proved that significant association exists between maternal knowledge and Hemoglobin status of their children, as proved by many studies.

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