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Nutrition intervention for improvement of knowledge on anaemia prevention among adolescent girls in Mumbai (16- 19 years)

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Abstract
Context: Adolescent girls are at high risk of Iron Deficiency and Anaemia due to accelerated increase in the requirements for iron, coupled with poor dietary intake, high rate of infection and worm infestation.
Materials and Methods: The study was conducted among 50 adolescent girls by administering a pre- designed self - administered questionnaire based on- knowledge of anaemia, management and preventive measures and dietary pattern was assessed using 3- Day Dietary Recall.
Statistical analysis: Analysis was done using SPSS software and paired- t test was applied for pre and post -test comparison.
Results: Post intervention score on knowledge significantly improved at $p<0.05$ level.
Conclusion: Health education will play an effective role in improving health of adolescents by increasing knowledge and changing their attitude.

Keywords: nutrition education programme (NEP), dietary iron, nutritional anaemia

Introduction

Anaemia is one of the most common and intractable nutrition problem globally that affects both developing and developed countries with major consequences on human health as well as social and economic development. The World Health Organization estimates the number of anaemic people worldwide to be 2 million, with approximately 50% of all anaemia attributable to iron deficiency.

Adolescents (16- 19 years) are at high risk of iron deficiency anaemia due to accelerated increase in requirement, poor dietary intake, high rate of infection and worm infestations as well as the consequence of the social norm of early marriage and adolescent pregnancy. Iron requirement peaks during adolescence due to rapid pubertal growth with sharp increase in lean body mass, blood volume and red cell mass resulting in an increase need of iron for myoglobin in muscles and haemoglobin in the blood.

Nutritional intake has a pivotal role in human health and well- being and is of greatest concern among childhood and adolescence. Nutritional intake has a direct effect on children's health due to their physical and mental growth as well as cognitive development. Park et.al 2009 stated that nutritional intake might have long term effects on health status through formation of life-long eating habits in children.

Adolescence is a period of transition when an individual changes physically and psychologically from a child into an adult. It has been derived from the latin word 'Adolescere' meaning "to grow, "to mature", "to emerge" or achieve an identity. This stage is marked by profound changes in growth rate, body composition, physiological and endocrinal changes. WHO defines 'Adolescents' as individuals in the 10-19 years age group and 'Youth' as the 15-24-year age group. While 'Young People' covers the age range 10-24 years. According to Gopalan et.al 2001 Adolescence is a period of profound growth with increased demand for energy, protein, minerals and vitamins.

Among Adolescents female counterparts are the most neglected segments in the society. Adolescent girls are very important section of our society as they are our potential mothers and future homemakers. Adolescents are vulnerable to both macro and micronutrient deficiencies. Ramaya and Anooja (2015) conducted a study on nutritional status and dietary patterns of adolescent girls (16- 19 years) residing in Kottayam Taluka. 500 adolescent girls were selected for the study. Further concluded that 40.8% subjects skipped meals and 62.2% skipped breakfast and intake of iron and Vitamin C was significantly lower.

Hence this study was undertaken to educate the samples on the impact of anaemia on health and the primary preventive strategies through a planned teaching programme.

Materials and Methods

This interventional study with pre and post comparison group was conducted on 50 adolescent girls between age group of 16- 19 years who were studying in MMP shah College of Arts and Commerce, Matunga Mumbai. Consent from the concerned authorities of the selected institution was obtained prior to data collection. Although education intervention was imparted to all those present on the day of intervention, post- interventional knowledge was assessed only among those students whose pre- intervention knowledge score was available.

Pre-interventional evaluation

Knowledge regarding Anaemia, its causes, symptoms, preventive measures and management was assessed by a

self- administered structured questionnaire.
The questionnaire was constructed by using a mixture of close- ended and multiple choice questions. To assess the preliminary knowledge level, the students were asked to fill the questionnaire independently.

Educational intervention
A nutrition module was developed and the intervention was imparted in 3-4 contact sessions of 1hour duration each by using power point presentations, display of posters and interactive sessions of games.

Post- interventional evaluation
Improvement if any regarding the knowledge of anaemia and its prevention was reassessed by the same questionnaire. Comparison was made between the result of pre and post-test to evaluate the improvement of educational awareness.

Statistical Analysis
Data was analysed by using SPSS software and paired t- test was applied for pre and post- test comparison.

Result

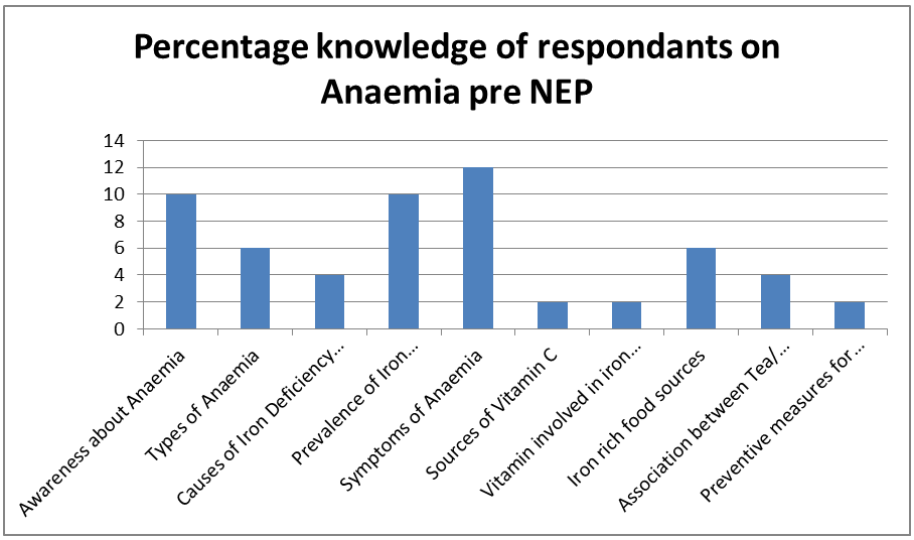

Fig 1: Knowledge of the respondents on Anaemia pre-Nutrition Education Programme (n= 50)

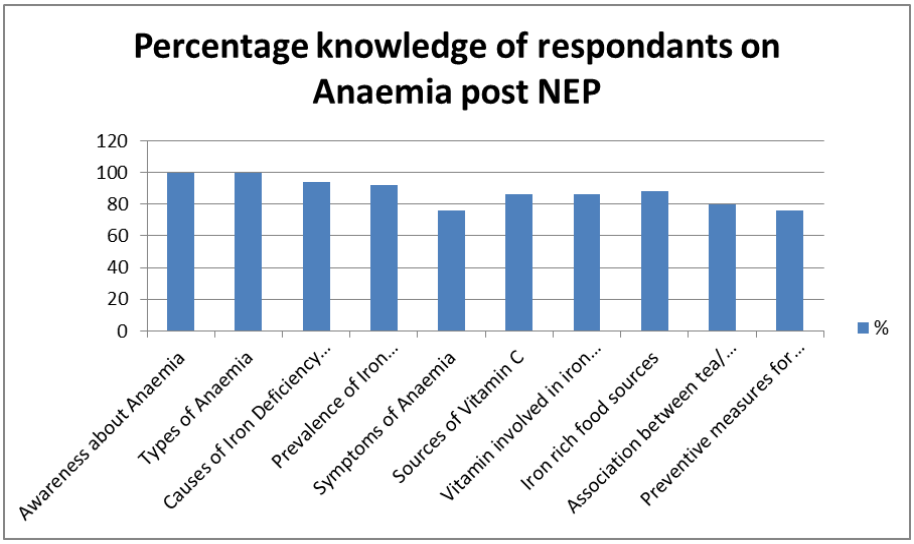

Fig 2: Knowledge of the respondents on Anaemia post Nutrition Education Programme (NEP) (n=50)

Discussion
When subjects were inquired on awareness about anaemia 90% were unaware of it. Education programme involved various photographs, charts and power points about the causes of anaemia and the standard levels of haemoglobin according to different ages. Thus post NEP percentage awareness on causes of Anaemia was found to be increased and a highly significant difference at p=0.05 (p=0.000) was noted statistically between pre and post-test.
When subjects were questioned about the types of anaemia, among the total, half (94%) were unaware about the type of anaemia. Education on types of Anaemia along with physiological role of iron in the body was imparted to the subjects. Post NEP percentage awareness showed an incremental increase among subjects it and was found to be highly significant (p=0.000) at p=0.05.
When subjects were questioned about the causes of anaemia 44% were unaware about it. Education was imparted to the subjects regarding anaemia its causes and preventive measures. Post NEP percentage awareness regarding the same was increased and was found to be highly significant (p=0.000).

When subjects were inquired about the prevalence of anaemia majority were unaware of it. Nutrition Education Module which was curated involved information on prevalence of anaemia among adolescents which majorly affected the female counterparts due to loss of iron during menstruation, higher requirement of iron during pregnancy and indications to combat the root cause of anaemia. Post NEP percentage awareness regarding the same was increased exponentially and was found to be highly significant (p=0.000)

When subjects were inquired about the symptoms of anaemia out of the total samples taken under the study, majority were unaware about the symptoms of anaemia. Nutrition Education module which was prepared included information on symptoms and its consequences on the health of the individuals. Post NEP there was an exponential increase in the knowledge regarding the same, and a highly significant difference was noted (p=0.000) between pre and post- test.

Similarly, subjects were inquired about the sources of Vitamin C, majority were unaware of the same Nutrition Education Module included information on sources of Vitamin C and the ways in which it could be incorporated into various foods. Post NEP there was an exponential rise in the knowledge regarding the same, and was found to be highly significant (p=0.000) between pre and post- test.

Subjects were also unaware of the correlation between vitamin and iron absorption. Out of the total subjects 46% were unaware about the correlation. Education was imparted regarding the inter- relation between vitamin and iron absorption and benefits of the inter- relation. In post NEP there was an exponential rise in the knowledge and was highly significant p=0.000 which was eminent between pre and post- test.

Subjects were questioned on Knowledge about the iron rich food sources. From the total 100 subjects taken under the study 94% were unaware about iron rich sources. Education was imparted regarding various sources of iron, its interaction with other nutrients and also the form of iron present in the sources. In Post NEP there was an exponential increase in knowledge and a highly significant difference (p=0.000) was noted between pre and post- test.

Subjects were inquired about the association between tea/ Coffee and iron absorption. Out of the total subjects, 46% were unaware about the association. Nutrition Education module involved the knowledge about phyto- inhibitors like tannins and phytates that might obstruct the iron absorption and measures to prevent the hindrance. Post NEP there was a spike in the knowledge regarding the same and was statistically significant (p=0.000) between pre and post-test.

Subjects when inquired about the preventive measures of anaemia. Result showed that majority of the subjects was unaware about the same. NEP module included various methods for prevention of anaemia, suggested various homely recipes along with the ingredients and the method of preparation, importance of iron rich food sources. Post NEP there was an exponential increase in the knowledge and was found to be highly significant (p=0.000) between pre and post- test.

Conclusion

In this study maximum number of subjects was unaware about Nutritional Anaemia. Among the total subjects majority were unaccustomed about various types of anaemia and post NEP there was a significant increase in their knowledge regarding Nutritional Anaemia and its various types. Very few subjects were aware about the symptoms of anaemia. Post NEP there was an exponential increase in their knowledge regarding the same. When subjects were inquired about the sources of Vitamin C majority were unaware and when NEP was imparted there was a rise in their knowledge regarding the same. Majority of the subjects were unaware about the Vitamin involved in iron absorption, post NEP there was an increment in their knowledge. Very few people were aware about the iron rich food sources, post NEP there was a significant increase in their knowledge. Majority of the subjects were ignorant about the association between tea/ coffee and iron absorption, post NEP a significant improvement in their knowledge was observed. Prior to the NEP maximum number of subjects were unaware about the preventive measures for Nutritional Anaemia, post NEP there was a significant increment in their knowledge. Thus it can be concluded that NEP had a positive impact on dietary iron and vitamin C consumption.

Acknowledgment

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Ethical approval – The study was approved by the jury members of Institutional Ethical Committee (IEC) which was established in 2012.

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