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Perspective approach to Nutritional anemia among Medical students using Health Belief Model: A cross sectional study in Tamil Nadu

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Abstract

Introduction: Anemia is one of the major public health problem more commonly encountered in both developed as well as developing countries[1]. Various causes for anaemia are nutritional deficiencies, infectious diseases and chronic blood loss. Nutritional anemia is the most widespread nutritional disorder in the world affecting 500 million to 1 billion individuals[4]. The most vulnerable population for nutritional anaemia is Adolescents aged 10-19 years. Most of the anemia initiatives are directed towards maternity and early childhood, there is not much attention shown towards adolescent population. This study was conducted to throw light on attitude towards nutritional anemia among undergraduate medical students by using Health belief model.

Study Methodology: This study was conducted in a private medical college at Chengelpet district of Tamil Nadu. 122 students from first year were selected by using universal sampling method. A self administered questionnaire comprising of two parts was used to collect data, first part was general information about the participants and second part were questions under five factors of Health benefit model.

Result:Mean value of perceived benefit was 3.2$\pm$1.54, perceived barrier was 1.7$\pm$0.47, perceived self efficacy was 2.69$\pm$1.14 interpersonal influence was 2.45$\pm$0.73 and situational influence was 2.26$\pm$1.2. Nearly 82.8% had perceived benefit on highest scale, 76.2% had perceived barrier on a moderate scale and 52.5% had perceived self efficacy on a moderate scale.

Conclusion: The study participants with high self efficacy were able to overcome the barriers and perceive benefit of reduced risk in acquiring nutritional anaemia.

Keywords: Nutritional Anemia. Health Belief Model

Introduction:

Anemia is one of the major public health problem more commonly encountered in both developed as well as developing countries[1]. It is defined as a reduced absolute number of circulating RBCs\ or a condition in which the number of RBCs (and subsequently their oxygen-carrying capacity) is insufficient to meet physiologic needs. The function of Hemoglobin is to carry oxygen to the tissues and this explains the common clinical symptoms associated with anemia like fatigue, shortness of breath, bounding pulses or palpitations, and conjunctival and palmar pallor[2]. Various causes for

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anaemia are nutritional deficiencies, particularly iron deficiency, folate and vitamins B12, infectious diseases, chronic blood loss and hemoglobinopathies[3]. Some trace elements like copper and zincfound in the structures of enzymes that act on iron metabolism are also associated with anemia. Copper may contribute to anemia through reductions in erythropoietin (EPO) thus increasing oxidative stress and reducing RBC life span[2]. Nutritional anemia result when concentrations of hematopoietic nutrients which are involved in RBC production or maintenance are insufficient to meet the demand[2].It is the most widespread nutritional disorder in the worldaffecting 500 million to 1 billion individuals[4]. The most vulnerable population for nutritional anaemia is Adolescents aged 10-19 years and they constitute about 21% of India's population which in absolute numbers translates to 253 million. Adolescents suffer from nutritional anemia because of social factors like erratic lifestyle, structural poverty, social discrimination, negative social norms, and poor eating habits[5].In 2012, the World Health Assembly (WHA) approved a Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition that identified six global targets related to priority nutrition outcomes to be achieved by 2025. Following this initiative in 2014, Member States approved the Global Nutrition Monitoring Framework (GNMF) on Maternal, Infant and Young Child Nutrition that included six global targets[6]. Most of the anemia initiatives are directed towards maternity and early childhood and there is not much attention shown towards adolescent population. This study was conducted to throw light on attitude towards nutritional anemia among undergraduate medical students by using Health belief model

Study Methodology

This study was conducted in a private medical college in Chengelpet district of Tamil Nadu. Total number of students studying first year were 250 and among them 122 students were selected by using universal sampling method. The study was initiated among the study participants after explaining in detail about the purpose of study and getting an informed consent to participate in the study. A self administered questionnaire comprising of two parts was used to collect data, first part was general information about the participants like name, age, sex and second part were questions under five factors of Health benefit model namely perceived benefits, perceived barrier, perceived self efficacy, interpersonal influences and situational influences. Health Belief model is a theoretical model used to guide health promotion and disease prevention programs. The Key elements of Health Belief Model primarily focus on individual beliefs about health conditions and predicts individual health-related behaviours. The model defines the key factors that influence health behaviours as an individual's perceived threat to sickness or disease (perceived susceptibility), belief of consequence (perceived severity), potential positive benefits of action (perceived benefits), perceived barriers to action, exposure to factors that prompt action (Perceived barriers), and confidence to succeed (self-efficacy)[7]. To facilitate response from the participants, the questions were standardised to a five point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). The content validity of questions were evaluated by panel of experts from field of preventive medicine, nutrition and Paediatrics and their comments were also incorporated. Before starting this study the questionnaire was also pilot tested among 15 higher secondary school students in Kancheepuram district. Mean value of each sub-scale was evaluated by dividing total points by number of items in the sub-scale. Depending on the scores in each sub-scale attitude towards each factor among the study participants was categorised as mild, moderate and severe. The data collected was entered in excel sheet and statistical analysis was done by using IBM SPSS software. The scores in each sub-scale of health benefit model was expressed by mean value and Pearson correlation was used to find the association between each of the sub-scales.

Result

This study was done to evaluate the attitude of adolescents towards nutritional anemia and to understand their needs to overcome a major health issue like anemia. Anemia unlike any other disease does not have major symptoms unless there is severe decrease in Hemoglobin and remains unnoticed especially in adolescent age group because of the other social factors more common during this age group. Medical undergraduate students were selected since they are the future of healthcare and it is important to address their positive outcome towards any health ailment. Among 122 participants selected majority were girls 64.8% and the remaining were boys 35.2%. As mentioned earlier 5 factors in health belief model was used and their mean values were obtained by using Likert scale from 0-4 for each questions in

the factor. Accordingly mean value of perceived benefit was 3.2±1.54, perceived barrier was 1.7±0.47, perceived self efficacy was 2.69±1.14 interpersonal influence was 2.45±0.73 and situational influence was 2.26±1.2. A frequency distribution table was made to know the number of participants who had perceived more belief on the factor concerned and it was found that nearly 82.8% had perceived benefit on highest scale, 76.2% had perceived barrier on a moderate scale and 52.5% had perceived self efficacy on a moderate scale. With regards of interpersonal and situational influences 82% of individuals had faced interpersonal influence on moderate scale and 77.9% had faced situational influence on moderate scale. According to the Health Belief Model Perceived barriers were the most powerful single predictor of preventive health behavior across all behaviours and perceived severity was the least powerful predictor[8]. The most common barrier perceived by medical students were that most of the students stay away from their hometown and second common barrier was skipping breakfast for want of time. There was also a positive association found with Pearson correlation between perceived benefit with self efficacy and perceived self efficacy with interpersonal influences. These associations were also found to be statistically significant.

Table 1: Mean value of HBM constructs

HBM Constructs	Mean±SD
Perceived benefit	3.2±1.54
Perceived barrier	1.7±0.47
Perceived self efficacy	2.69±1.14
Interpersonal influences	2.45±0.73
Situational influences	2.26±1.2

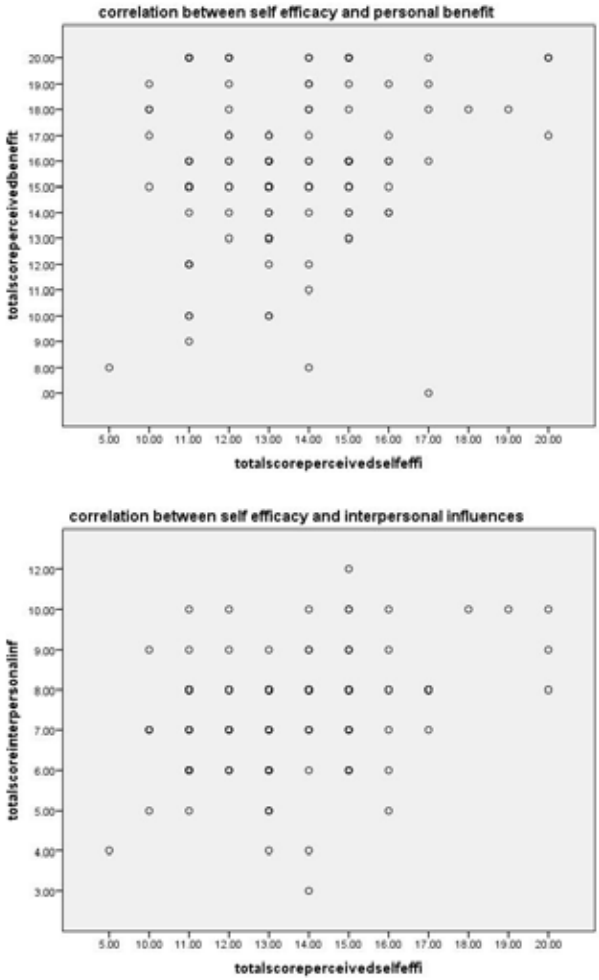

Figure 1: Scatter plot showing positive correlation between self efficacy to personal benefit and interpersonal influences

Table 2: Correlation between HBM Constructs

HBM Constructs	Perceived benefit	Perceived barrier	Perceived self efficacy	Interpersonal influences	Situational influences
Perceived benefit	+	-.114	.92**	.177	.164
Perceived barrier	+	+	.121	-.092	-.183*
Perceived self efficacy	+	+	+	.64**	.042
Interpersonal influences	+	+	+	+	-.053
Situational influences	+	+	+	+	+

Discussion

Most of the previous study done by using Health Belief Model was interventional studies using education as a tool and it primarily focussed on effect of health education. Health Belief Model has been an effective tool over years in evaluating several health programs. It proposes that people are most likely to take preventative action only if they perceive the threat of a health risk to be serious and feel that they are personally susceptible. Health Belief Model could

function as a causal chain, It is referred to as serial mediation, for example, campaign exposure could increase self-efficacy, self-efficacy could influence perceived barriers, and perceived barriers could predict behavior[9]. This study takes into account the demographic, socio-psychological, and structural variables which affect an individual's perceptions of dietary change and thus indirectly influence his or her ability to sustain new eating behaviors[10].

In a study done by Mirzaei Hamed et[11] on Application of Health Belief to promote preventive behaviour against iron deficiency anemia among female students, the students were divided into intervention and control group and education on iron deficiency was given. The study suggested that following education there was a significant difference in the mean score of perceived susceptibility, severity, benefits, barriers, perceived self-efficacy, practice guidance and health performance and this was found to be statistically significant. In present study association between the factors of health belief model was analysed inorder to guide the health care workers to focus on the factor which will provoke beneficiary effect in the participants. Khadije Baharzadeh[12] study on health belief model to promote preventive behaviors against iron deficiency anemia among pregnant women was also an interventional study in the form of health education. The highest score belonged to the structure of perceived susceptibility 63.12 before intervention and 97.1 after intervention and this was found to be statistically significant. In our study nearly 82.8% had perceived benefit on a highest scale and the mean value of this factor was 15.7. Naseh Ghaderi[13] study on effect of education on anemia preventive behaviours among Iranian girl students by using HBM was a quasi experimental study conducted among 128 students. This study had highest score for perceived benefit before and after intervention which was similar to our study.

Marziye Reisi[14] did a cross sectional study for Investigating of Mothers' Behavior Based on the Health Belief Model about using iron Supplementation in 6 to 24 month old children. This study concluded that awareness, sensitivity and perceived severity and also perceived benefits of most studied cases (59%) were acceptable but the attitude of a considerable number of the cases (41%) towards removing the barriers (perceived barriers) was found to be poor. In our study there was a significant positive association between perceived benefit and self efficacy. The study participants were having more self confidence to perceive benefit in order to overcome the health ailment.

Hamideh Mohaddesi[15] studied effect of intervention based on health belief model on the change in nutritional behaviour of pregnant mothers with iron deficiency anemia referred to health centres and the results showed that there was no significant difference between the two intervention and control groups in terms of the health belief constructs and nutritional behavior before the intervention. It was also suggested that based on independent t-test, the mean scores of knowledge, model constructs, self-efficacy and nutritional behavior after intervention were significant compared to the control group ($P < 0.001$). In our study self efficacy had significant association with perceived benefit and interpersonal influences. Marshall H Becker[16] in his study on prediction of dietary compliance by using Health Belief Model which was a prospective experimental design evaluated the ability to predict and explain mothers' adherence to a diet prescribed for their obese children. The result of this study suggested significant correlations between each major dimension of the Model and the outcome measures, and findings from multiple regression analyses also supported the usefulness of the Model as a whole.

Conclusion

Health Belief Model is a psychological model that attempts to explain and predict health behaviors by focusing on the attitudes and beliefs of individuals[10]. The study concludes that 82.8% of participants had perceived benefit on highest scale, 76.2% had perceived barrier on a moderate scale and 52.5% had perceived self efficacy on a moderate scale. It also suggested that the study participants with high self efficacy will be able overcome the barriers and perceive benefit of reduced risk in acquiring nutritional anaemia.

Recommendation

The Health belief model is likely to be influential when used by health practitioners especially doctors in a clear and specific manner, when it is placed in the context of overall risk for diseases, and dietary change recommendations can be linked prospectively to tangible risk reduction[10]. According to RMNCH+A strategy all interventions are aimed at reproductive, maternal, newborn, child, and adolescent health under a broad umbrella focusing on the strategic lifecycle approach[17]. Hence adolescent health should

be of primary concern and everyone in the chain of life cycle including the adolescents should understand their responsibility to lead a healthy life.

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