

## The Effect of Education-Based Intervention Using Small Group Discussion in Empowering Adolescent Girls to Prevent Iron Deficiency Anemia

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ARTICLE INFO	ABSTRACT
<p><b>Article type:</b> Original Article</p> <hr/> <p><b>Article history:</b> Received: 15-July-2014 Accepted: 5-Aug-2014</p> <hr/> <p><b>Keywords:</b> Adolescent girls Empowerment Group discussion Iron deficiency anemia</p>	<p><b>Introduction:</b> Iron deficiency is one of the most common nutritional disorders worldwide. Regarding that fact, the aim of this study was to study the effectiveness of education-based intervention using small group discussions in empowering adolescent girls to prevent Iron deficiency anemia.</p> <p><b>Materials and Methods:</b> The present semi-experimental practical research was performed by choosing 60 female high-schoolers through random cluster sampling (n=30 test group and n=30 control group). The research tools included one questionnaire of demographic information &amp; an assessment questionnaire for subjects' empowerment in preventing iron deficiency anemia. After collecting pre-test data, the educational intervention was implemented for adolescent girls in the test group &amp; the post-test was carried out one week after the intervention ended. The data were analyzed using SPSS software and applying appropriate statistical tests.</p> <p><b>Results:</b> At baseline, independent T-test showed no significant difference between the two groups in the perceived susceptibility, perceived severity, and self efficacy, all of which could be regarded as empowerment process components (P&gt;0.05). However, significant differences were observed after intervention. Also, the paired T-test showed a significant difference before and after the intervention in the test group in means of the perceived susceptibility, perceived severity, self efficacy and, in the grand scheme, adolescent girls' empowerment (P&lt;0.05). No significant differences were evident in the control group.</p> <p><b>Conclusion:</b> Our findings showed that the education-based intervention using small group discussions was effective in empowering adolescent girls to prevent Iron deficiency anemia.</p>

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### Introduction

Anemia is one of the most common public health problems worldwide, especially in developing countries (1, 2). Based on the World Health Organization (WHO) criteria, more than two billion people are estimated to be anemic, globally. The most common type of nutritional anemia is iron deficiency anemia responsible for approximately (50%) of all anemic cases (3- 6). Although many studies have concluded that the main cause of micro-nutrient deficiencies is low dietary intake of the lacking element, several studies have shown a clear correlation between iron deficiency anemia and other determinants, such as low household income, demographic factors such as age, gender and large family size, low parental educational level, high

number of cohabitants, and issues regarding childhood nutrition including incomplete breastfeeding and late introduction to solid food (7- 9). In industrialized countries, anemia has been a major public health concern especially among menstruating women and adolescents. Adolescents make up about (20%) of world population and the proportion is even higher in developing countries. In fact, adolescent girls are at a higher risk for developing anemia due to their rapid growth and physiology. The increased need for both micro and macro-nutrients is especially seen in those who achieve menarche. In addition, iron status and hemoglobin concentration in this age group could be a predisposing factor for later maternal anemia (10- 12).

The functional consequences of iron deficiency on

women of childbearing age have been extensively reviewed (13). These consequences include physical work capacity impairment (such as aerobic fitness, endurance capacity, work efficiency, fatigue and voluntary activity), depressed cognitive function and mood (such as short-term memory, verbal learning, attention span/concentration, intelligence, depressive symptoms), and impaired immune functions (14- 15).

Considering the high prevalence and the negative effects of iron deficiency anemia on women of childbearing age, educational intervention for empowering adolescent girls to prevent the disease seems necessary. The concept of empowerment has been used since 2004 in chronic care, especially in diabetes management (16). In fact, empowerment can be regarded as the process of discovering and developing the individual's inherent capacity for accepting the responsibility of his/her own health by making decisions through sufficient knowledge, and evaluating the made decisions effectiveness, afterwards (17). Many authorities believe that empowerment is a positive, dynamic (18- 19), social and interactive (20-21) process. In recent years, the concept of patient empowerment has had a special importance in both nursing and medical research. This concept has even been regarded as a necessity of nursing profession (22).

It was believed that small group discussions could be an effective method patients' empowerment. Group interventions have been used in a variety of pediatric and adolescents populations. The focus of group intervention has been on various domains such as emotional support (e.g. living with cancer), enhancing adaptation and specified skills (e.g. coping with diabetes, asthma), and reduction of apparent symptoms through behavioral change (e.g. encopresis, obesity).

Studies on the effectiveness of group interventions show promising results, particularly in establishing coping skills and improving the patient's knowledge about symptom reduction and disease-related problem-solving (23- 24). Considering these facts, the present study was performed in order to investigate the effectiveness of education-based intervention using small group discussions in empowering adolescent girls to prevent Iron deficiency anemia.

## Materials and Methods

This study was carried out using a demographic questionnaire (20 questions) and an adolescent empowering assessment questionnaire in preventing iron deficiency anemia designed in three parts of perceived susceptibility, perceived severity, and self-efficacy (60 multiple-choice questions). The questions were marked using a four-point scoring system (with the possible answers being never, sometimes, often, and always). The questionnaires validities were assessed through content validity and terms by ten members of faculty experts in Tarbiat Modarres and Tehran universities. In order to assess the reliability of the instrument, it was given to ten students and

Cronbach's alpha was calculated for each part. Based on similar previous studies, a population size of 60 adolescent girls (30 in each group) were enrolled (20).

In this study, the inclusion criteria were: 1) the patients ranging from 15 to 18 years old in whom the menstrual periods had started. 2) The patients' willingness to participate in the research. 3) Having full access to the patient's address and phone number for follow-up the exclusion criteria were as follows: 1- patients' unwillingness to continue the study 2- patients with physical or mental illness during the study period 3- Respondents' unaccounted for transferred to other school after obtaining the University Ethics Committee approval, one of nineteen districts in Tehran was selected using cluster random sampling. There are twelve high schools in the selected district, from which two were selected and randomly allocated as the study group (test) and the control group. Each school was divided into four sections, whereby one class from one of the sections was randomly selected to involve in this study. The study group was divided into six equal groups and group discussions led by the researcher were held over time for about 45 minutes per session for each group in order to increase the perceived severity, perceived susceptibility, self-efficacy, and awareness of the disease, its treatment and complications. No discussions were held for the controls. Final evaluation was performed one week after the intervention in both groups. The data were analyzed using SPSS version<sub>16</sub> software, descriptive statistics, Chi-square test, paired sample T-test and independent sample T-test. We used Kolmogorov-Smirnov test for normalizing the data and statistical significance was set at  $P < 0.05$ . Finally, in order to ethical considerations, the results of research were provided to the study participants in both groups.

## Results

The findings of the study indicated that the mean ages of the control and the test groups were  $16.25 \pm 0.79$  and  $16.0 \pm 0.77$ , respectively. Mean starting menstrual cycle was two years and six months in tests and three years in controls. The average maternal ages in the test and the control groups were (47.43 and 46.47), respectively. The mean paternal age was (49.43) in tests and 50.73 in controls. More than 50 percent of fathers in both test and control groups had non-governmental jobs. More than 70 percent of mothers in both test and control groups were housewives. Chi-squared test ( $\chi^2$ ) showed no significant difference between the test and control groups in terms of demographic characteristics ( $p > 0.05$ ). In this study, independent T-test showed no significant difference in the perceived susceptibility, perceived severity, self efficacy and, the subjects' empowerment in iron deficiency anemia prevention between the test and the control groups before intervention ( $P > 0.05$ ). However, significant differences in these parameters were found between the two groups

after the intervention. The paired sample T-test showed a significant mean difference (within group difference) among the respondents in the test group after the intervention in perceived susceptibility, perceived severity, self-efficacy and overall, the empowerment in Iron Deficiency Anemia (IDA) prevention ( $P < 0.05$ ).

No significant difference was demonstrated in the control group (Table 1).

**Table1: The mean and standard deviation scores of perceived susceptibility, Perceived severity, Self efficacy & empowering of adolescent girls about iron deficiency anemia before and after Intervention in test and control group**

		Before Intervention Mean $\pm$ SD	After Intervention Mean $\pm$ SD	P*	After-Before Intervention Mean $\pm$ SD
Perceived susceptibility	Control	8.76 $\pm$ 2.17	9.06 $\pm$ 2.34	0.34	0.30 $\pm$ 0.17
	Test	8.66 $\pm$ 1.91	13.90 $\pm$ 1.39	0.000	5.24 $\pm$ 0.52
	P*	0.85	0.007		<0.0001
Perceived severity	Control	8.03 $\pm$ 2.12	8.30 $\pm$ 1.76	0.25	0.30 $\pm$ 0.3
	Test	8.23 $\pm$ 2.07	15.96 $\pm$ 1.49	0.000	7.73 $\pm$ 1.42
	P*	0.714	0.000		<0.0001
Self-efficacy	Control	41.00 $\pm$ 13.72	41.86 $\pm$ 15.27	0.18	0.86 $\pm$ 1.55
	Test	41.13 $\pm$ 11.30	79.60 $\pm$ 9.52	0.000	38.47 $\pm$ 1.78
	P*	0.97	0.010		<0.0001
Empowering	Control	57.79 $\pm$ 18.01	59.22 $\pm$ 19.37	0.175	1.43 $\pm$ 1.36
	Test	58.02 $\pm$ 15.28	109.46 $\pm$ 12.4	0.000	51.44 $\pm$ 2.88
	P*	0.921	0.000		<0.0001

P\* = Independent T-test P\*\* = Pared T-test

## Discussion

Iron deficiency anemia is one of the main nutrition and public health problems in the world. Teenagers especially girls, are those who are in the risk of anemia.

Iron nutritional status of adolescent girls is a matter of great concern especially in the urban poor and rural areas, since these girls enter reproductive life soon after attainment of their menarche. Side effects of anemia like decrease in Intelligence Quotient (IQ) and learning ability and physical growth disorders that cause mental retardation and physical capabilities endanger development of countries. In terms of dietary factors, anemia is induced by lower levels of the consumption of dietary iron derived from foods such as meat and reduce intake of the nutrients involved in iron metabolism such as vitamins A and C. The presence of iron-absorption inhibitors (such as phytates in bran, calcium in dairy products, polyphenols in certain vegetables, and tannins in tea) also play a role in anemia (25). Several studies have reported that a higher intake of carbonated drinks was associated with a higher intake of energy and carbohydrates as well as a lower intake of protein, vitamins and minerals. It is possible that the food consumption behavior of children may lead to both iron deficiency and obesity. Specific habits, such as snacking and eating junk food, may also contribute to anemia (26, 27). Today, curative and medical approaches towards dealing with patients and disease are mainly replaced by preventive and participatory approaches in which patients play a determinant role for their health (28). The adolescent girls need to know why and how they are at risk for iron deficiency anemia. Educating teenager girls about

iron deficiency and anemia, the consequences of iron deficiency anemia and its prevention methods is important to help adolescent to establish a healthy lifestyle. Today education through group discussion is an effective strategy in the health sciences (29). Group discussion has been considered as a popular method for assessing the collective experiences and identify ideas of the population about health and health threatening behaviors (30).

Social influences model also shows that health behaviors and adherence to drug therapy in patients are encouraged and increased by bystander support (such as family members and friends) (31). So in this study, we used small group discussions to educate female high school and to increase their knowledge, perceived susceptibility, perceived severity, self efficacy and thus empowering them in preventing iron deficiency anemia. The results of the study showed that the group discussion with students may improve their knowledge and their ability to prevent iron deficiency anemia.

Independent T-test showed no significant difference in the perceived susceptibility, perceived severity, self efficacy and in total, empowerment of adolescent girls about iron deficiency anemia prevention between the test and control groups before intervention ( $P > 0.05$ ).

However, significant differences in the means of these parameters were found after the intervention between the two groups.

The means of the perceived susceptibility, perceived severity, self-efficacy and in total, the empowerment of adolescent girls towards Iron Deficiency Anemia (IDA) prevention differed within groups ( $P < 0.05$ ). No significant difference was demonstrated in the control group. The results from the present study are consistent with previous reports.

Morisky point out in his study family members of patients with hypertension who participate in group discussions, play an important role in controlling blood pressure and adherence to the correct medication regimen in their patients (31). Sobhanian and Mossalanejad had also indicated a positive impact of group education on the promotion of knowledge and health issues in some diseases (32). Parto azam showed that an educational intervention on the knowledge and practice of the students and their mothers can effectively prevent iron deficiency anemia (33).

Shakouri (34), Fallahi (35), Sadeghi Far (36) have done similar studies to determine the effect of an educational intervention on girls' empowerment in preventing iron deficiency anemia and have come to similar conclusions. This study showed that systematic and regular instructive sessions can be effective in subject's the empowerment. It seems that the small group discussion programs could be an effective strategy for improving the nutritional habits to increase dietary iron and preventing iron deficiency anemia in adolescent girls.

The results are similar to findings of earlier studies on the effectiveness of group interventions mainly done

in homogeneous patient groups, like children with diabetes and asthma (37). The findings of this study confirm the results of the study done by Creedy in a small, but heterogeneous group of children with a chronic health condition (24).

Schools provide a good access ability to educate a great portion of young population of the country (38), eventually empowering teenager girls about prevention of chronic diseases can lead to transferring this capacity to families and community about prevention of chronic diseases. The limitations of the study can be related to differences in individual characteristics and adolescent mental-emotional state in response to the intervention.

## Conclusion

Adolescent girls' education and the application of control measures for iron deficiency anemia prevention

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