

## Research Paper

# The Effect of Education Based on Theory of Planned Behavior in Promoting Nutrition-related Behaviors to Prevent Anemia in Pregnant Women



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## ABSTRACT

**Background and Aim** Iron deficiency is among the most prevalent nutritional problems during pregnancy. Besides, it can significantly affect pregnant women's health. Therefore, this study aimed to determine the effect of education based on the Theory of Planned Behavior (TPB) on promoting anesthetic prevention nutritional behaviors in the pregnant woman.

**Methods & Materials** This was an educational randomized controlled trial study. In total, 80 pregnant women were randomly divided into two groups of test and control (n=40/group). Data collection with reliable and validity questionnaire consist of demographic factors, knowledge, the construct of TPB (attitude, subjective norms, perceived behavior control, intention), and performance. Before performing the intervention, pre-test data were collected from the study groups. Then, the educational intervention was performed based on the results of the needs assessment for the test group, within a month and in the form of four 60-minute training sessions based on the TPB. The results were collected 3 months after the intervention and analyzed using the Mann-Whitney U test, Chi-squared test, and correlation coefficient.

**Ethical Considerations** The present study was registered with the code IRCT2017052334106N1 in the Clinical Trial Registration Center of Iran and was approved by the Research Ethics Committee of Arak University of Medical Sciences (Code: IR.ARAKMU.REC.1395.445).

**Results** The present research results indicated that before the intervention, all variables were the same in the study groups. However, after the intervention, the research groups significantly differed concerning all the studied structures (P<0.05). Moreover, the Mean±SD pre-test performance score of the intervention group was equal to 2.88±0.415 (out of 5); accordingly, it was significantly improved after training to 3.64±0.216 (P<0.001).

**Conclusion** Educational intervention based on the TPB improved anesthetic anxiety behaviors in the studied pregnant women; such a modification can be attributed to the provided educational program in the intervention group.

## Extended Abstract

### 1. Introduction

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regnancy is associated with women's physiological changes and metabolic

needs increase. Besides, in this time, insufficient reserves or the lack of micronutrient intake can present detrimental effects on individuals [1]. Due to the complications of anemia in pregnant women and their infants, it is necessary to take appropriate measures to raise their awareness in this respect [11]. An essential strategy to prevent anemia is to

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strengthen the diet along with multiple training and adopt appropriate nutritional behaviors.

Health promotion programs are effective in improving the status of preventive nutritional behaviors [14]. Therefore, the present study aimed to investigate the effect of education based on the Theory of Planned Behavior (TPB) to promote nutritional behaviors to prevent anemia in pregnant women.

## 2. Materials and Methods

This study conducted a controlled educational trial on 80 pregnant women referring to urban healthcare centers in Arak City, Iran. The study subjects were randomly divided into the test and control groups ( $n=40/\text{group}$ ). The necessary data were collected using a questionnaire. The sampling method was as follows: first, based on the geographical directions of Arak City, Iran, it was divided into four parts and from each part, two health centers (one center as an intervention group & one center as a control group) were selected. Next, in each center, sampling was performed on the names of pregnant mothers who met the inclusion criteria by a simple random sampling method (lottery).

The inclusion criteria of the research included literate pregnant women who were at the beginning of the fourth month of pregnancy and had a case in health centers in Arak; not having an underlying disease related to anemia; not having anemia, and satisfaction to participate in the study.

Before the intervention, pre-test information was collected from both study groups. Then, the educational intervention was performed in the experimental group in one month and 4 training sessions, based on the TPB. The obtained results were analyzed 3 months after the intervention.

## 3. Results

According to Mann-Whitney U test findings, the differences between the study groups were not significant in quantitative demographic variables (age, pregnancy interval with previous pregnancy, the number of children, gestational week, hemoglobin level) ( $P<0.05$ ).

The results of comparing the mean scores of knowledge, attitude, mental norms, perceived behavioral control, behavioral intention, and the performance of the explored pregnant mothers are presented in Table 1. Before the intervention, all variables in both research groups were not significantly different; however, after the intervention, the study groups presented a statistically significant difference in all explored structures (Table 1).

The control group was matched concerning demographic variables with the test group; thus, confounding variables, such as age, education, etc., as well as the implementation of other educational programs through the media or healthcare centers were controlled in this investigation.

## 4. Discussion and Conclusion

The current research results suggested that the presented educational intervention significantly improved performance in the intervention group, compared to the controls. Significant changes in the mean value of knowledge in the case group, compared to the controls after the educational intervention indicated the effect of the educational intervention on improving awareness in the explored pregnant women. These findings were consistent with those of numerous studies, like the study of Corel and associates [20].

In this study, the mean attitude score of the experimental group significantly increased after the intervention, i.e., in line with the results of Tavassoli et al. [23] and Pawlak and colleagues [26].

Significant increases in the score of mental norm structure in the experimental group after implementing the educational intervention were inconsistent with the findings of Jafarpour and associates [29]. In Jafarpour's study, the lack of using group discussion is a reason for not upgrading the structure of mental norms.

The present study data on the structure of perceived behavioral control were inconsistent with those of Hardman et al. [30]; perhaps it is because perceived behavioral control depends on the presence or absence of facilitators or barriers to behavior.

Regarding the construct of behavioral intention, the collected results were consistent with those of Jelmbadani et al. [31]; however, in the study of Ahmadi et al., this structure provided no significant difference after the educational intervention in the experimental and control groups [33].

Education is among the main pillars of healthcare. Moreover, the old methods of education are gradually being replaced with novel approaches. Thus, health education must also pay more attention to educational planning based on educational theories.

**Table 1.** Comparing the pre-test, post-test Mean±SD scores of the structures of the TPB in the control and test groups

Group	Variable	Mean±SD		P*	Mean Diff.
		Test (n=40)	Control (n=40)		
Awareness	Before training	0.602± 0.213	0.647	0.186± 0.320	-0.045
	After training	0.925± 0.108	0.654	0.153± 0.001	0.25
	p**	0.001	0.888		
	Mean difference	0.323	-0.002		
Attitude	Before training	3.82± 0.238	3.85	0.213± 0.465	-0.03
	After training	4.55± 0.338	3.86	0.245± 0.001	0.69
	p**	0.001	0.670		
	Mean difference	0.73	0.01		
Mental norms	Before training	3.81± 0.332	3.87	0.268± 0.503	-0.06
	After training	4.50± 0.398	3.91	0.335± 0.001	0.59
	p**	0.001	0.267		
	Mean difference	0.69	0.04		
Perceived behavioral control	Before training	3.81± 0.415	3.92	0.367± 0.074	-0.11
	After training	4.52± 0.379	4.97	0.315± 0.001	0.55
	p**	0.001	0.289		
	Mean difference	0.71	0.05		
Behavioral intention	Before training	3.84± 0.401	3.88	0.061± 0.332	-0.04
	After training	4.72± 0.319	4.01	0.281± 0.001	0.71
	p**	0.001	0.267		
	Mean difference	0.88	0.13		
Function	Before training	2.88± 0.415	3.04	0.431± 0.120	-0.16
	After training	3.64± 0.263	3.11	0.344± 0.001	0.53
	p**	0.001	0.296		
	Mean difference	0.76	0.07		

\*Mann-Whitney U Test; \*\*Wilcoxon Signed-Rank Test.

## Ethical Considerations

### Compliance with ethical guidelines

The present study was registered with the Code IRCT2017052334106N1 in the Clinical Trial Registration Center of Iran and was approved by the Research Ethics Committee of Arak University of Medical Sciences (Code IR.ARAKMU.REC.1395.445).

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### Authors' contributions

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### Conflicts of interest

The authors declared no conflicts of interest.

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