

# Women's perceived internal control of future pregnancy outcomes and its related factors

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## ABSTRACT

**Background:** With regards to the importance of women's beliefs in improving pregnancy outcomes, this study was performed to determine the perceived internal control on future pregnancy outcomes and its related factors in women who participated in pre-marital counseling.

**Materials and Methods:** In a cross-sectional study, women's perceived internal control was investigated. The study population comprised the women in reproductive age of whom 400 were selected by random sampling. Data collection instrument was a questionnaire consisting of demographic, pre-conceptional care, and internal control questions. Two categories of favorite and not favorite levels of internal control were defined based on the total score. The validity of the questionnaire was determined via content validity method by use of experts' opinion and its reliability was evaluated through the calculation of Cronbach's alpha coefficient which was 0.76. Data were analyzed through frequency tables, correlation coefficient, and Chi-square test at the confidence level of 0.95.

**Results:** Two hundred sixty-five (65%) women had a good perceived internal control and it was significantly associated with the age, educational level, and hearing about pre-conceptional care. The internal control score also showed a positive and significant correlation with both age and the subject knowledge about folic acid ( $r = 0.19$  and  $r = 0.15$ , respectively).

**Conclusion:** The majority of women had a favorite perceived internal control. Since age and educational level were the affecting factors on the perceived internal control of women, promoting the level of internal control in young women and those with low education in pre-marital counseling classes seems necessary.

**Key words:** Iran, locus of control, marriage, pregnancy outcomes

## INTRODUCTION

Prevention of adverse pregnancy outcomes is one of the most important goals of public health. Obstetrics' recommendations on starting prenatal care in the first trimester of pregnancy to assess the risk factors and the necessary training have not been able to reduce prenatal mortality significantly.<sup>[1]</sup> Since many pregnancies are unplanned, at the onset of prenatal cares, the embryonic period is over, and many biological, psychological, social, and environmental risk factors have adversely affected the fetus. With regard to this important issue, the guidelines of pre-conceptional care were presented by American Centers for Disease Control and Prevention for improving pregnancy outcomes in 2006.<sup>[2]</sup> Pre-conceptional cares are performed in different countries for various goals,<sup>[3]</sup> which

provide an opportunity to reduce risk factors possibly affecting mothers' future pregnancy. Screening programs for diseases and appropriate interventions have also led to improvement in pregnancy outcomes, maternal, and family health, and indirectly a reduction in social costs.<sup>[4]</sup> In most of the studies, control approaches to pregnancy outcomes were focused on behavior management or special services such as: Encouragement of the early onset of prenatal care, smoking cessation during pregnancy, consumption of folic acid to prevent neural tube defects, and use of family planning services to prevent teen pregnancy and spacing between pregnancies.<sup>[1]</sup> Nowadays, studies have shown that despite of a large percentage of pregnant women who take prenatal care,<sup>[5]</sup> a behavior change and paying attention to doctor's recommendations have only been observed in a small percentage of the mothers. As reported in Safdarian's study, from 50% of women who were advised to take folic acid, only 31% took folic acid during their pregnancy period.<sup>[6]</sup>

Today, one of the concepts that may predict the behavior of persons is locus of control that includes the opinions of individuals, and demonstrates the relationship between an activity and its consequences. This was derived from

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Rotter's social learning theory and is an important factor in personal perceived control on health behavior. According to this theory, those who have external locus of control believe that certain and occurred events in their lives are determined by some forces such as doctors, chance, fate, and fortunes. Instead, those who have internal locus of control believe outcomes and certain events are as a result of their actions and behavior, and determinant factors of their health are their actions and behaviors indirectly.<sup>[7]</sup> Establishing internal controls in people is the goal of all health providers. If women do not believe that their health consequences depend on their behavior, we cannot expect them to change their lifestyle and unhealthy behaviors;<sup>[8]</sup> health field includes promoting high-risk behavior changes or the use of health care services. Therefore, to improve pregnancy outcomes, more attention is needed to be paid to women's belief and perception and until women do not percept high internal control, health educations, health advertising on adopting health behavior, and pregnancy cares will have no effect.<sup>[9]</sup> It is so that high rate of unwanted pregnancy occurs in those with poor education and low socioeconomic women who have low internal control.<sup>[1]</sup> This theory has been used in other health-related studies including cancer<sup>[10]</sup> and adherence to treatment regimen with positive results.<sup>[11]</sup> Although in the past decade, some studies have been conducted on internal control, there is still little evidence on how Iranian women's internal pre-pregnancy control interacts with cultural and underlying factors; in what place and time internal control is beneficial, and needs further research. With regard to the fact that pre-conceptual care is not widely and routinely performed in Iran, and many pregnancies are unplanned, it is the best time to hold pre-marriage counseling classes, counseling, and empowerment of women on control in order to affect their pregnancy outcomes. Midwives are in a good position to raise the rate of referrals, targeted educations, and pregnancy cares. Women's perceived internal control is a good stimulus for women's participation in pre-conceptual care. Therefore, for a better understanding of the status of women's internal control, this study aimed to determine women's perceived internal control from their future pregnancy outcomes.

## MATERIALS AND METHODS

In a cross-sectional study, women's perceived internal control of their future pregnancy outcomes was investigated. The study population was literate women in reproductive age, living in Zanjan, participating in the pre-marriage counseling classes, of whom 400 were selected by random sampling. Data were collected with a questionnaire consisting of demographic characteristics (three questions), taking folic acid (five questions), pre-conceptual care (five questions), and internal control questions (five questions). Establishing an internal control in people is the goal of all

health providers, and those who have the internal locus of control believe outcomes and certain events are as a result of their behavior and actions.

The questions used contained only internal control that was the aim with prenatal care and had been applied in similar studies.<sup>[1]</sup> Questions of internal control were five items in the Likert scale. Replies had been rated ranging from completely agree to disagree. The subjects who had the most undesirable status of internal control were scored one, and those who had the best conditions were score 5. Minimum and maximum internal control scores ranged between 10 and 25. Score 20 was considered acceptable as the minimum participant's internal control score. Scores equal or lower than this cut-off point were considered as not favorite perceived internal control and score more than 20 as favorite. The validity of the questionnaire was determined via content validity method through experts' opinion and its reliability was evaluated by the calculation of Cronbach's alpha coefficient which was 0.76. Participation was voluntary and informed. In this study, the association between some underlying factors including knowledge about folic acid, pre-conceptual care, and demographic details with the internal control were investigated. Data were analyzed by frequency tables, correlation coefficient, and Chi-square tests at the confidence level of 0.95.

## RESULTS

Most of the participants were homemaker, between 20 and 30 years of age, and with education level of high school [Table 1]. More than 65% of the women had a favorite perceived internal control [Table 2]. Half of them had heard about folic acid and 70% about pre-conceptual care.

More than 97% of them believed that pre-conceptual care can improve maternal and child health. More than 70% of them believed that an obstetrician can help the

**Table 1: Demographic characteristics of the women (N=400)**

Variable	Frequency	Percent
Education		
<elementary	63	15.8
Diploma, high school	192	48.0
Academic	145	36.2
Job situation		
Employment	70	17.5
Unemployment	330	82.5
Age (years)		
<19	121	30.3
20-30	262	65.5
>30	17	4.2

mothers to receive pre-conception-related care better. The most common place that participants preferred to receive pre-conceptual care was the private offices of an obstetrician or public health clinics as well as the private offices of midwives. The greatest sources of information about pre-conceptual care were friends, internet, and counseling classes, whereas the lowest source was from public centers. There was a statistically significant association between women's perceived internal control with age, educational level, and hearing about pre-conceptual care so that the women in the age group 20-30 years with university education level and informed about pre-conceptual care had a favorite perceived internal control [Table 3]. The level of women's perceived control showed a positive correlation with their age and their knowledge about folic acid ( $r = 0.19$ ).

## DISCUSSION

Strengthening women's internal control is an essential element for their acceptance and practice of health providers' recommendations and to increase their skills to control the risk factors based on their lifestyle changes.

**Table 2: Frequency and percent table of women's perceived internal control**

Perceived internal control	Frequency	Percent
Favorite	135	33.8
Unfavorite	265	66.2

**Table 3: Factors associated with women's perceived internal control (N=400)**

Women's perceived internal control	Favorite N (%)	Unfavorite N (%)	P value
Age (year)			
<19	68 (25.7)	53 (39.3)	0.02
20-30	185 (69.8)	77 (57.0)	
>30	12 (4.5)	5 (3.7)	
Education			
<elementary	29 (10.9)	34 (25.2)	0.0001
Diploma-high school	115 (43.4)	77 (57.0)	
Academic	121 (45.7)	24 (17.8)	
Job situation			
Employment	50 (18.9)	20 (14.8)	0.19
Unemployment	215 (81.1)	115 (85.2)	
Aware about folic acid			
Low	204 (64.6)	112 (35.4)	0.1
Good	61 (72.6)	23 (27.4)	
Aware about pre-conceptual care			
Yes	205 (75.1)	68 (24.9)	0.0001
No	60 (47.6)	66 (52.4)	

Some women can easily adapt with their pregnancy during pregnancy and are able to reduce many risks, whereas some others cannot.<sup>[12]</sup> Despite of a large percentage of pregnant women participating in prenatal care, behavior changes and paying attention to doctors' recommendation are seen in a small percentage of the mothers. In this study, over two-thirds of women had a good internal control. This ratio was 45% in the study of Weizmann *et al.*, which was less than the finding of this study. This difference can be due to cultural beliefs of Iranian women, especially their religious beliefs. In Weizmann's study, internal control was significantly associated with age, education, living with a partner, and physical and mental good health. Results were similar in increasing of the internal control with increase of age.<sup>[1]</sup> It shows the necessity of planning for the education of young women in order to strengthen internal controls in pre-marriage counseling classes.

In this study, more than 86% of the women believed that health pregnancy outcome is related to their health behavior. In other words, "I could do many things to make sure my child is born healthy." Approximately, 85% believed that they could do things before they became pregnant to make sure their child would be born healthy in future. In Weizman n colleagues' study, 67% and 54% of the women had answered "agree" to the above questions, respectively.<sup>[1]</sup> It was less than the results of this study and indicates that the high motivation of Iranian women to change behavior in order to achieve optimal pregnancy outcomes. Internal belief about vaccination, taking folic acid, smoking cessation, control of chronic diseases, physical activity, and pre-conceptual care can improve health of the mothers and their babies. To improve women's internal control, Hillemeier showed that women in the intervention group, in comparison with the control group after becoming pregnant, had significantly higher internal control for healthy eating, health nutrition, increase of physical activity and multivitamin use, and paying attention to food labels before its use, stress management with relaxation exercises or a spiritual connection, and taking folic acid.<sup>[8]</sup> After education in intervention group, short-term follow-up was accompanied with women's self-efficacy increase concerning modification of behavior and improvement of personal health, and in long-term follow-up, reduction in adverse pregnancy outcomes such as low birth weight, preterm labor, and complications of pregnancy had been reported.<sup>[13]</sup> It showed the effectiveness of education in improving women's internal controls in order to make behavior change to control adverse pregnancy outcomes and it can be considered as one of educational aims of the pre-marriage counseling classes. Tinsley reported that women's internal control during pregnancy was significantly associated with accepting health recommendations and their pregnancy outcomes.

It was so that woman with high internal control accepted the realities of pregnancy and birth outcomes better.<sup>[14]</sup> And in Flavio and colleagues' study, it caused to increase referrals of postpartum in Latino women<sup>[15]</sup> reflecting the impact of persons' internal control in control of adverse outcomes in pre-, inter-, and post-stages of pregnancy, which is one of the objectives of mothers' and infants' health programs. There have been also conflicting results in this field which had been reported.<sup>[16]</sup> With regards to the effectiveness of cultural factors, interventions in different time and place can demonstrate new dimensions of valuable effectiveness of internal control in improving the pregnancy outcomes. Studies on Iranian women's perceived internal control are limited. Bastani, in an experimental study, investigated the impact of pre-conceptional training on the knowledge and locus of control about suitable nutrition (with emphasis on the consumption of folic acid and iron) in women admitted to pre-marital counseling region in west Tehran. The reported results showed that the levels of awareness and women's internal control were 63% in low level, 15% in moderate, and 4% in high level before intervention. After the intervention, it increased in comparison with the control group and this enhancement was statistically significant. But, this difference about the external locus of control was not statistically significant.<sup>[17]</sup> People's belief related to their responsibility in the field of health and adopting appropriate nutritional behavior can be considered a positive step for health promotion. Health promotion is possible through the process of strengthening people in the form of increase and improvement of control on health. In this study, although 92% of the women believed that their role as a mother makes their children's birth healthy; approximately, 32.2% of the women believed that they could make very few choices to affect their children's health at birth. This rate was 42% in the Weizmann's study.<sup>[1]</sup> Women doing some risky behaviors such as smoking, alcohol consumption in spite of being aware of its harms on the fetus and putting them in danger deprive their children from their right to have a healthy life. However, this belief was among a very small percentage of the women, but since it can be as a disincentive factor for improving women's perceived internal control; special attention should be paid to educational programs.

## CONCLUSIONS

Majority of the women had a favorite perceived internal control. Since age, educational level, and awareness of pre-conceptional care were affecting factors on the perceived internal control of the women, promoting the level of internal control in young women and those with low education in pre-marital counseling classes seems necessary.

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