

# Evaluation of modification of behaviour of the pregnant women in the field of urinary infections based on the health belief mode

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## ABSTRACT

**Introduction:** One of the most common problems among women during pregnancy is Urinary Infection (UI). Pregnant women are highly susceptible to UI due to body changes and because of its potential complications on mothers and their fetuses, UI receives particular attention. The current study aimed at investigating the modifiability of behaviour of the pregnant women in the field of urinary infections based on the health belief model.

**Methods:** This is a quasi-experimental intervention study. The samples involved 110 pregnant women who attended Health Center in Behbahan (Khuzestan Province) and were randomized to case and control groups. The reliability and validity were established before conducting the study and the tool of the study included a designed questionnaire based on the Health Belief Model (HBM). Before the intervention, the participants in both groups were asked to fill in a questionnaire and the pregnant women of the experimental group received a five session educational program according to (HBM). There was no intervention in control group. One month after intervention, both groups were evaluated by re-completing the questionnaire. And finally, Statistical tests such as Independent t-test, Paired t-test and Chi-Square were used for analysis of data in both groups.

**Results:** The results of an independent t-test revealed that before intervention there were no significant differences between the mean scores of the pregnant women's behaviour in the two groups concerning behavioral prevention of urinary infection such as the way of cleanness and wearing clothes, eating habits, urinary habits, and sexual behaviour. After intervention, however, significant differences were observed between the mean scores of all aforesaid variables ( $P < 0.05$ ). The Paired t-test showed that there were significant differences between the mean scores of the variables in case group before and after educational intervention ( $P < 0.05$ ), whereas the mean scores of control group changed trivially and no significant differences were observed.

**Conclusion:** The findings of current study confirmed the effectiveness of educational intervention based on Health Belief Model in modification of behaviour of the pregnant women in the field of urinary infections.

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## Introduction:

Asymptomatic bacteriuria is the most common urinary tract infection (UI) during Pregnancy (1). The Prevalence of urinary tract infection in women is as a critical social health index (2). Also, urinary tract infection is the second common medical symptom in pregnancy after anemia having principal effects on the results of pregnancy, if not controlled properly (3,4). The noticeable point from which women suffer is recurrent urinary infection, As the results showed 20-30% women following initial urinary tract infection suffered from recurrent urinary infection 2 times or more, and 5% of them suffered from chronic recurrent urinary infection. (5). The UI prevalence is influenced 2-7% by economic status, race and parity of the patient (6). There is evidence indicating UI increases in women with more than three deliveries. UI is seen along with preterm delivery and infants birth with low weight. The preterm delivery involve more than 75% of total foetus and neonate mortality arising from the disease (7,8). Also UI has relevance with increasing blood pressure resulting from pregnancy and anemia. Due to lack of treatment of asymptomatic bacteriuria in pregnant women, one-third of them will suffer from chronic pyelonephritis which is the most cause of hospitalizing women before delivery (9). The chronic pyelonephritis ill symptoms on pregnancy is considerable. The pregnant women with pyelonephritis give birth to low weight infants, the foetus mortality increases and suffer from anemia, pre-eclampsia and premature rupture of fetal membranes, respiratory disorders and septicemia and shock moreover, born infants from mothers with pyelonephritis suffer from disorder in movement and psychological growth (10). UI can be known like other syndromes affected by numerous factors. Based on the studies in this context, these factors are such as: the way of wearing clothes, eating, cleaning way and sexual habits (4,5,9). The health experts can take a step to improve. Health, by training special behavior to prevent UI in the pregnant women.

The importance of using health belief model has been. proved in various studies Based on the results obtained from instruction indicating health belief pattern, when individuals get enough

knowledge and awareness about an issue, and find themselves at the risk of the disease, they notice seriously to its risk, get high understanding of application and benefits arising from preventive behavior, and in additional, feel barriers to do preventive behavior less, so the behaviour is adjusted. Therefore, this investigation is done aiming at adjustability determination of pregnant women behaviour against UI based on health belief model (11).

## Methods:

This applied study was quasi experimental with in case-control method in 1389. The statistical population included the pregnant women who attended health centers in Behbahan. The sample with confidence level of 95% and using sample size formula to compare the means of two groups was calculated 110 people. The samples were divided randomly into two control and case groups. Informed consent was obtained from each subject pregnant women referred as to medical emergency got out of the project.

Questionnaire data collecting tool included adjusting factors with demographic information (eight questions) and awareness (thirty questions), forty one questions in aspects of health belief model [including barrier (five questions), benefits (five questions), sensitivity (five questions), perceived-intensity (4 questions), instruction (three questions) and self-efficiency (nineteen questions)] and twenty six behavioral questions, (three questions for the way of dressing, six questions for eating habits, four questions for urinary habits, six questions for cleaning and seven questions for sexual behavior ).

The behavioural questions were arranged based on measures ever and sometime rare or never. In this part, score 3 for option ever, 2 for sometimes, 1 for rare and 0 for never were considered. The total score based on percentile was classified in three groups, desirable (more than 75% of total score), medium (50-70% of total score) and poor (lower than 50% of the total score).

Also, reliability and validity of the questionnaire were measured. Content validity and test-retest in a way that of the questionnaire was confirmed using references and valid scientific

articles with help of experts panel in the field. The questionnaire reliability via test-retest was analyzed and determined. In a way that the questionnaire was filled in by ten pregnant women (except participant groups in the study) returned to them again after a week. So correlation coefficient ( $r = 83\%$ ) was determined before educational intervention, the mentioned questionnaire was completed for both groups (First stage). After collecting and analyzing, the questionnaire information, educational program was designed based on health belief method. Then case group was exposed to researcher intervention i.e. health education program (Second stage). So that they felt danger against the risk of UI according to this model for adjusting preventive behaviour from UI. Then, they felt its risk and different serious symptoms (perceived intensity). By receiving positive signs from around or within environment (instruction), they believe their practical and fruitful behaviours (perceived benefits), and the find preventive factors more costly than its benefits (perceived barrier) and trust their capabilities in following preventive behaviours against UI, so that they can increase preventive behaviours against UI.

The educational program was implemented using lecture with asking and responding, presenting pamphlet and booklet during five sessions. Lecture method due to economizing in time and references and facilities, presentation of theoretic abundant materials and also creation of peace and help in learners was selected. Asking and responding was applied to the learners to participate in learning. The educational content included defining UI and its symptoms, the necessity of attention to UI specially in pregnancy (perceived barrier, intensity and sensitivity) and preventive ways. The data related to the educational unit via the same questionnaire were recollected after a month of implementation (third stage).

After extracting data, they were analyzed with SPSS software. The score mean and behavioral pre-post intervention in each group were compared by paired t-test, the score mean of behavior between both groups using independent t-test and frequency distribution of both groups

was compared by Chi-squared.  $P < 0.05$  was considered as significant statistical level.

## Results:

The findings showed that there was no meaningful difference between two groups regarding to demographic variables. Based on the results, the age mean was 25 (Table 1).

The mean score before intervention in behaviour, among the way of dressing was ( $13.09 \pm 2.58$ ), eating habits was ( $9.18 \pm 2.11$ ), urinary habits ( $11.68 \pm 3.01$ ), the way of cleaning was ( $10.35 \pm 1.92$ ) and sexual habits was ( $11.10 \pm 2.02$ ). The least mean was related to eating habits.

ANOVA test showed that there was a significant difference between total score mean of the studied pregnant in different educational levels ( $P = 0.002$ ). Post experience tests showed that there was a significant difference between the total score mean for behaviour in university education with education levels [primary ( $-7.95 \pm 2.20$ ), secondary ( $-6.46 \pm 2.12$ )]. The total score mean of behaviour was homogeneous in educational levels, primary (50.33), secondary (51.82) and high school ( $\bar{X} = 54.10$ ). The total score mean was homogenous in high school and university (58.28) too, and were placed in another branch. The conscious behaviour ( $P = 0.002$ ) and perceived sensitivity ( $P = 0.041$ ) showed significant positive correlation, but there was no correlation among perceived intensity, barriers and benefits.

Before intervention, no difference was seen between quality variable in dressing, eating habits, urinary habits, the cleaning way and sexual behaviour, but after educational intervention in desirable variables, a significant difference was seen in case group compared to control group (Table 2).

Before intervention there was not a significant difference between case and control groups in score mean of desirable variables (the way of dressing, eating habits, urinary habits, the cleaning way and sexual habits), but after intervention, independent t-test showed that there was a significant difference between both case and control groups in all above variables ( $P < 0.05$ ).

Due to being positive in low and high level of mentioned variables, we may suggest score mean in respective variable in case group was greater than control group. Paired t-test indicated a significant difference between scores mean of respective variables in case group in pre and post educational intervention. Due to being positive in low and high level of mentioned variables, we

may also mention it can be said that scores mean in respective variables in case group after prevention was greater than those before prevention, while by little change in scores mean, paired t-test showed no meaningful difference (Table 3).

**Table 1. Distribution of relative frequency in studied individual based on age, education level and job condition**

Demographic Traits	Case Group		Control Group		Total		P-value
	Number	Precent	Number	Precent	Number	Precent	
Age	< 25 years	27	49.1	27	49.1	54	0.64
	25-30 years	20	36.4	21	38.2	41	
	> 30	8	14.5	7	12.7	15	
	Total	55	100	55	100	100	
Education (Level)	Elementary	5	9.1	10	18.2	15	0.41
	Secondary	11	20.0	6	10.9	17	
	High School	27	49.1	30	54.5	57	
	University	12	21.8	9	16.4	21	
	Total	55	100	55	100	100	
Job Gnition	Housewife	48	87.3	52	94.5	100	0.18
	Employee	7	12.7	3	5.5	10	
	Total	55	100	55	100	100	

**Table 2. Comparison of behavioural frequency (the way of wearing clothes, eating habits, urinary habits, the way of cleaning sexual habits) in studied pregnant women in control and case groups pre and post intervention**

Variable	Intervention	Group	Weak		Midium		Good		Total		P-value
			Number	Perecent	Number	Perecent	Number	Perecent	Number	Perecent	
Way of Wearing Clothes	Pre intervention	Case	1	1.8	6	10.9	48	87.3	55	100	0.38
		Control	4	7.3	6	10.9	45	81.8	55	100	
	Post intervention	Case	0	0.0	1	1.8	54	98.2	55	100	0.01
		Control	4	7.3	6	10.9	45	81.8	55	100	
Eating Habits	Pre intervention	Case	15	27.3	32	58.2	6	10.9	55	100	0.91
		Control	17	30.9	11	20.0	44	80.0	55	100	
	Post intervention	Case	0	0.0	11	20.0	6	10.9	55	100	0.00
		Control	17	30.9	32	58.2	21	38.2	55	100	
Urinary Habits	Pre intervention	Case	13	23.6	21	38.2	21	38.2	55	100	0.12
		Control	7	12.7	17	30.9	31	56.4	55	100	
	Post intervention	Case	0	0.0	8	14.5	47	85.5	55	100	0.001
		Control	7	12.7	17	30.9	31	56.4	55	100	
Way of Cleaning	Pre intervention	Case	10	18.2	26	47.3	19	34.5	55	100	0.13
		Control	5	9.1	36	65.5	14	25.5	55	100	
	Post intervention	Case	0	0.0	11	20.0	44	80.0	55	100	0.00
		Control	5	9.1	36	65.5	14	25.5	55	100	
Sexual Habits	Pre intervention	Case	5	9.1	27	49.1	23	41.8	55	100	0.60
		Control	5	9.1	22	40.0	28	50.9	55	100	
	Post intervention	Case	0	0.0	4	7.3	51	92.7	55	100	0.00
		Control	5	9.1	22	40.0	28	50.9	55	100	

**Table 3. Comparison of behavioural mean scores (way of wearing clothes, eating habits, urinary habits, cleaning way, sexual habits) in studied pregnant women in control and case groups pre and post intervention**

Variable	Group	Pre intervention	Post intervention	P-value (Paired t-test)
		SD	SD	
Way of Wearing cloths	Case	7.58±1.30	8.78±0.59	0.00
	Control	7.52±1.67	7.56±1.67	0.15
	P (Independent T)	0.84	0.00	
Eating Habit	Case	10.74±2.30	15.05±1.80	0.00
	Control	10.45±2.57	10.49±2.57	0.15
	P (Independent T)	0.53	0.00	
Urinary Habits	Case	8.63±2.41	10.85±1.32	0.00
	Control	9.34±2.18	9.36±2.19	0.32
	P (Independent T)	0.10	0.00	
Way of Cleaning	Case	12.10±2.13	14.67±1.30	0.00
	Control	11.78±2.30	11.81±2.29	0.15
	P (Independent T)	0.44	0.00	
Sexual Habits	Case	14.80±2.59	18.83±1.80	0.00
	Control	15.09±2.86	15.10±2.87	0.32
	P (Independent T)	0.57	0.00	

## Conclusion:

The effect of educational intervention to prevent UI is studied in Iran for the first time. The surveys showed that health behavioral habits have an important role to create UI. So recognizing the factors producing UI and creating change in health behavior, we can take an efficient step to decrease UI especially in women (12). The recent study underlines the positive correlation between behavior and awareness. Based on studies by Leila Tabrizian et al, among individual and health factors, wearing shorts, wearing plastic underwear, changing underwear less than twice a week, Drinking no sour liquids, eating no yoghurt daily or every other day, lack of cleanness of penis before and after coitus are known as susceptible factors to UI. Also according to this study, lack of respect to some health points concerned with sexual behavior is related to UI, hence, implementing sexual health educational programs for married women are suggested to prevent UI (13). In the recent study, educational content in sexual habits includes lack of urinating before coitus, urinating in a short time after coitus, washing sexual organ before and after coitus,

consuming liquids after coitus, respecting sexual health from spouses, lack of coitus for two weeks in case of being UI.

The results of this study showed that there is a correlation between health behavior and UI. The habit in delayed urinating had relation with UI (9). The lack of respect in health behavior in every society, trained, knowledgeable, unknowledgeable, affluent or destitute is observed. The proper or improper function is a part of the culture. Individual preparation to recognize and act to an appropriate life way to be healthy and avoid the disease needs forming their behavior (14). The researchers believe that awareness is not good enough to adopt preventive behavior by itself. But the attitude and thought about a disease is a key factor in preventive steps.

In the survey done by Khajuy Shojaei et al, in studying awareness and attitude and pregnant women function about pregnancy nutrition the results showed that the attitude and awareness of the pregnant women should be increased to improve their function in above mentioned fields. One of the findings in recent study was to correlation between awareness and the main

structure of health belief model. It seems that every intervention in awareness affects the mentioned structures as adjusting factors (15,16), the positive effect of education on increasing students' awareness and attitude emphasized the model efficiency (17).

The findings in this research showed that implementing health educational program has affected improving the behavior of studied units prevention from UI. These findings correspond with the finding of Mahmood Karimi et al about HIV and GolamReza Sharifirad et al in nutrition training to the patients with type 2 diabetes (10,14).

In the study done by Kazemi et al in analyzing educational impact based on health belief model on adjusting the pregnant women to environmental tobacco smoke (ETS), the association between the structure of health belief model and weekly confrontation with tobacco smoke was significant and effective on its decrease (18).

In a study done by Solhi et al, on training mouth and tooth health by health belief model, the efficiency of health belief model was underlined. He suggested the understanding effect on adopting the preventive behavior from mouth and tooth diseases. In the recent study via improving the understanding, we could increase the preventive functions from UI (19).

In a study by Sharifirad et al, in investigating educational impact on health belief model on regarding care in the patients with type 2 diabetes, there was no considerable difference between score mean of foot care at home and checklist after educational intervention in both case and control group, while generally the foot care had not suitable condition. But the significant difference between foot care at home and checklist after educational intervention in two case and control groups showed the positive educational impact on improving function and increasing foot care level in case group. The findings in this study showed that designed health training program based on health belief model by increasing information level and positive effect on barriers and perceived benefits, sensitivity and intensity, has had remarkable effect on increasing preventive functions from UI (20).

In a study by Hezavae et.al, regarding individual and respiratory preservation via health

belief model in safety function of workers, the results indicated that training is effective in this respect and this impact was due to participating in the educational classes and using various educational methods including speech (Lecture), collective discussion and asking-responding. In various educational methods including lecture, asking-responding and presentation of booklet and pamphlet has been used to improve the function (21).

The result in this study showed that designing and implementing educational program according to health belief model can be effective in preventive behaviors from UI in the pregnant women. This is similar to finding of Sibr et.al in acting breast self-examination, Tersa et.al in preventing from sexual risk functions, Jefri in preventing from dengue (22-24).

Regarding to analyzing education intervention impact on UI at the first time in Iran and the world, the most important limitation were nonexistence of similar studies to discuss and compare and lack of pursuing behavioral modification in long term due to time limitation. Therefore, based on the topic importance, it is suggested:

- 1) To do similar studies.
- 2) To use other educational models.
- 3) To control the reliability and follow training in implementing these programs.
- 4) To modify the current educational programs in UI and training the pregnant women from educational authorities and increasing health using health belief model.

The results of this study contained practical information for programmers and authorities in educational advancement programs in UIs. Hopefully, this research can be as a beginning of the other studies in this field and training with focus on the important aspects of presentation from UI aiming increase of knowledge, attitude and the pregnant women behavior level to be a component of the current programs of health centers so that we can take a step to enhance the pregnant women health.

As the education is one of the main principles of health cares, it needs more attention to education designing and programming based on models and training theories and behavioral and

social sciences for disease and health various subjects. The result showed that education based on health belief model containing participants' attitudes and opinion can be applicable to increase the preventive behaviors from UI. The reason of impact was due to recognizing the weak points pre intervention via evaluation in educational program and designing the appropriate content and educational ways.

This investigation shows that training program should be done to nourish maternal mind to preventive function from UI that among them health-treatment television personnel are the most important information references for mothers.

The initial prevention from UI is considered as cost-effective guideline. We can draw a conclusion that the coherent educational programming based on addressed requirement in every time is the most important means to prevent. The importance of increasingly attention to mother and baby health is obvious. Therefore, all health personnel should employ their intervention using this criteria and they do education as a pioneer of their efforts.

The accomplishment should direct us toward searching the practical solution to control and prevent UI. Increasing the awareness, attitude of pregnant women through education are recommended and necessitate a broad steps and programming in society level.



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# ارزیابی تعدیل رفتار زنان باردار در زمینه عفونت‌های ادراری بر اساس مدل اعتقاد بهداشتی

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## چکیده

**مقدمه:** عفونت‌های دستگاه ادراری از رایج‌ترین مشکلات طبی در زنان می‌باشد و به علت تغییراتی که در حاملگی در بدن ایجاد می‌شود، زنان باردار معمولاً برای ابتلا به عفونت‌های ادراری مستعدتر هستند و به علت عوارض بالقوه‌ای که بر مادر و جنین دارد، بسیار با اهمیت است. مطالعه حاضر با هدف تعیین تعدیل‌پذیری رفتار زنان باردار در زمینه عفونت‌های ادراری بر اساس مدل اعتقاد بهداشتی انجام شد.

**روش کار:** این مطالعه نیمه تجربی است که در آن ۱۱۰ نفر از زنان باردار مراجعه‌کننده به مراکز بهداشتی درمانی شهرستان بهبهان شرکت داشتند که به طور تصادفی به دو گروه مورد و شاهد تقسیم شدند. ابزار گردآوری اطلاعات، پرسشنامه طراحی شده بر اساس الگوی اعتقاد بهداشتی بود که قبل از مطالعه رویایی و پایایی آن بدست آمد. قبل از اجرای مداخله آموزشی، پرسشنامه برای هر دو گروه تکمیل شد و زنان باردار گروه مورد، برنامه آموزشی مطابق با مدل اعتقاد بهداشتی را به مدت ۵ جلسه دریافت کردند. در گروه شاهد مداخله صورت نگرفت. یک ماه پس از اتمام مداخله آموزشی، هر دو گروه مجدداً پرسشنامه را تکمیل نمودند. در نهایت اطلاعات حاصل با استفاده از نرم‌افزار SPSS 16 و بوسیله آزمون‌های آماری تی مستقل، تی زوجی و کای دو مورد تجزیه و تحلیل قرار گرفت.

**نتایج:** آزمون تی مستقل نشان داد که قبل از مداخله بین میانگین نمره عملکرد زنان باردار دو گروه مورد و شاهد در زمینه رفتارهای پیشگیری‌کننده از عفونت ادراری (نحوه لباس پوشیدن، عادات غذایی، عادات ادراری، نحوه نظافت، عادات مربوط به رفتار جنسی) اختلاف معنی‌داری وجود نداشت ( $P > 0/05$ ). اما پس از مداخله آموزشی، بین گروه مورد و شاهد، در میانگین نمره همه متغیرهای ذکر شده اختلاف معنی‌داری بوجود آمد ( $P < 0/05$ ). آزمون تی جفتی نشان داد که بین میانگین نمرات متغیرهای مورد نظر در گروه مورد، قبل و بعد از مداخله آموزشی، اختلاف معنی‌دار وجود دارد ( $P < 0/05$ ) در حالی که در گروه شاهد با تغییر اندک این میانگین نمرات، آزمون تی جفتی هیچ گونه اختلاف معنی‌داری را نشان نداد ( $P > 0/05$ ).

**نتیجه‌گیری:** تدوین برنامه آموزشی بر اساس مدل اعتقاد بهداشتی در تعدیل رفتار زنان باردار در زمینه عفونت‌های ادراری سودمند و اثربخش است.

**کلیدواژه‌ها:** عفونت ادراری - زنان باردار - آموزش

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