

Research Article

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## Evaluation of Knowledge, Attitude and Behavior in the Field of Urinary Tract Infection among the Iranian Pregnant Women, Based on the Health Belief Model (HBM): A systematic review

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### Abstract

#### Keywords

knowledge;  
attitude;  
urinary tract infection ;  
pregnant women;  
Iran .

**Introduction:** The health belief model is an accurate behavioral model that reflects the relationship between health belief and behavior and assumes that preventive behavior is based on individual beliefs .the objective of the present study is to systematically review the knowledge and attitude of pregnant women about urinary tract infections based on the health belief model constructs in Iran

**Method:** Observational studies conducted on general population have been added and studies conducted on specific population have been removed. Results are summarized as reported in the research. The minimum sample size was 25 patients in each study. To find references, the international Databases (MEDLINE PubMed interface), Google Scholar, and Web of Science) and domestic databases (SIDs and Magiran) and journals were searched; unlimited searching, in terms of both setting and language, was done until June 30, 2018.

**Results:** Average of good knowledge was only 30.9%.An average of 75.4% is reported for Perceived susceptibility towards Urinary Tract Infection among Pregnant Women. Perceived severity was reported with average of 71.83. the average of Perceived benefits, Perceived barriers and Cues to action was calculated 83.5,58.53,51.36 respectively. all included studies reported the family as the most common source of information and guidance for pregnant women in the field of urinary tract infections.

**Discussion and conclusion:** According to the results of the present study, awareness is positively correlated with the health belief model constructs; therefore, in order to increase the awareness of women, health belief model constructs should be promoted as well. Furthermore, by increasing self-efficacy, pregnant women become more self-sufficient in all factors affecting urinary tract infections, especially in their sexual habits.

### Introduction

One of the body organs that is attacked by infectious agents in a variety of ways is the urinary tract system. Urinary tract infections can be considered as a syndrome in which various factors are involved similar to other syndromes. The prevalence of urinary tract infection in women is an important health indicator. Urinary tract infection is the second most common medical condition in pregnancy after anemia

that can have a major impact on pregnancy if not controlled properly. One significant problem that women suffer from is the recurrent urinary tract infections, which in most pregnant women start with the existence of bacteria in the urine with no specific complications occurring before pregnancy. The disease is prevalent during pregnancy by 2-7% and the patient's economic situation and race are considered as

effective factors. In the absence of treatment for the asymptomatic urinary infection in pregnant women, one third of the cases develop acute pyelonephritis, which is the most common cause of women's admission before childbirth. A considerable number of pregnant women with pyelonephritis, even if treated immediately, give birth to low weight babies. Accordingly, there will be an increase in fetal mortality rates, anemia, preeclampsia, premature rupture of membrane, respiratory failure, and systemic and shock risks. Babies born from mothers with pyelonephritis suffer from impaired motor development. The most important goal of health education is to change the health behavior of people through their own participation. The health belief model is an accurate behavioral model that reflects the relationship between health belief and behavior and assumes that preventive behavior is based on individual beliefs. These beliefs include individuals' susceptibility to disease, the impact of disease on one's life, the effect of health measures on reducing the sensitivity and severity of the disease. Therefore, the objective of the present study is to systematically review the knowledge and attitude of pregnant women about urinary tract infections based on the health belief model constructs in Iran.

## Methods

### Eligibility criteria

The methods used for this systematic review were based on the "Cochrane Systematic Study Booklet" and "Appropriate Items for Systematic and Meta-Analysis Study (PRISMA)" tool. Observational studies conducted on general population have been added and studies conducted on specific population have been removed. Results are summarized as reported in the research. The minimum sample size was 25 patients in each study. The target population covers the total population of Iranian pregnant women who entered the study. Knowledge, Attitude and Behavior in the Field of Urinary Tract Infection among the Iranian Pregnant Women, Based on the Health Belief Model was calculated in this study.

### Searching strategies and databases

The review of references and resources was done using the Medical Subject Headings (MeSH) and keywords related to the source of information on Knowledge, Attitude and Behavior in the Field of Urinary Tract Infection among the Iranian Pregnant

Women, Based on the Health Belief Model. To find references, the international Databases (MEDLINE PubMed interface), Google Scholar, and Web of Science) and domestic databases (SIDs and Magiran) and journals were searched; unlimited searching, in terms of both setting and language, was done until June 30, 2018. PRESS standard and the Health Sciences Librarian were used for designing the strategy.

MEDLINE application was used to search other databases. In addition, PROSPERO was used to provide a systematic search that was completed recently. To search for headlines and abstracts, boolean (AND, OR, NOT), mesh, coordinate {truncation} \* and related words were used; following keywords were used to provide a comprehensive context: knowledge; attitude; urinary tract infection ;pregnant women; Iran .

### Research selection and data extraction

According to the research protocol, two researchers observed the titles and abstracts separately according to the eligibility criteria; in the next step, after the removal of repeated studies, the full text of the paper was studied based on the eligibility criteria and the required information was extracted. Consensus method was used to solve the disagreements between two researchers. The extracted data included the general information (corresponding author, year and place), characteristics of the research (research design, sample size, location, study period, and risk of bias), and characteristics of participants.

### Quality control

To assess the quality of the methodology and bias risk, each observation study was evaluated using a tool developed by Hoy et al; this 10-item scale evaluated the quality of the study in two dimensions, including external credentials (items 1 to 4 target populations, sampling frame, sampling method, and minimum indirect neglect) and internal validity (items 5 up to 9 covering methods for data collection, case definition, study tools, and data collection mode and item 10 covering assessing relevant assumptions or analyzes). The risk of abuse was assessed by two researchers separately and possible disparity of ideas was resolved by consensus.

## Results

### 1. Selecting eligible papers and researches

In the initial search on various databases, a total of 428 articles were reviewed, 401 of which turned out to be repetitive during screening process of title and

abstract. 17 articles were removed due to unrelated title; out of the remaining 10 articles, 3 articles met the inclusion criteria. Of the 7 articles that were removed, 1 were reviews, 3 were letters to editors, 2 had no complete text, and 1 had low quality and could not be considered in the research. (Figure 1)



**PRISMA 2009 Flow Diagram**

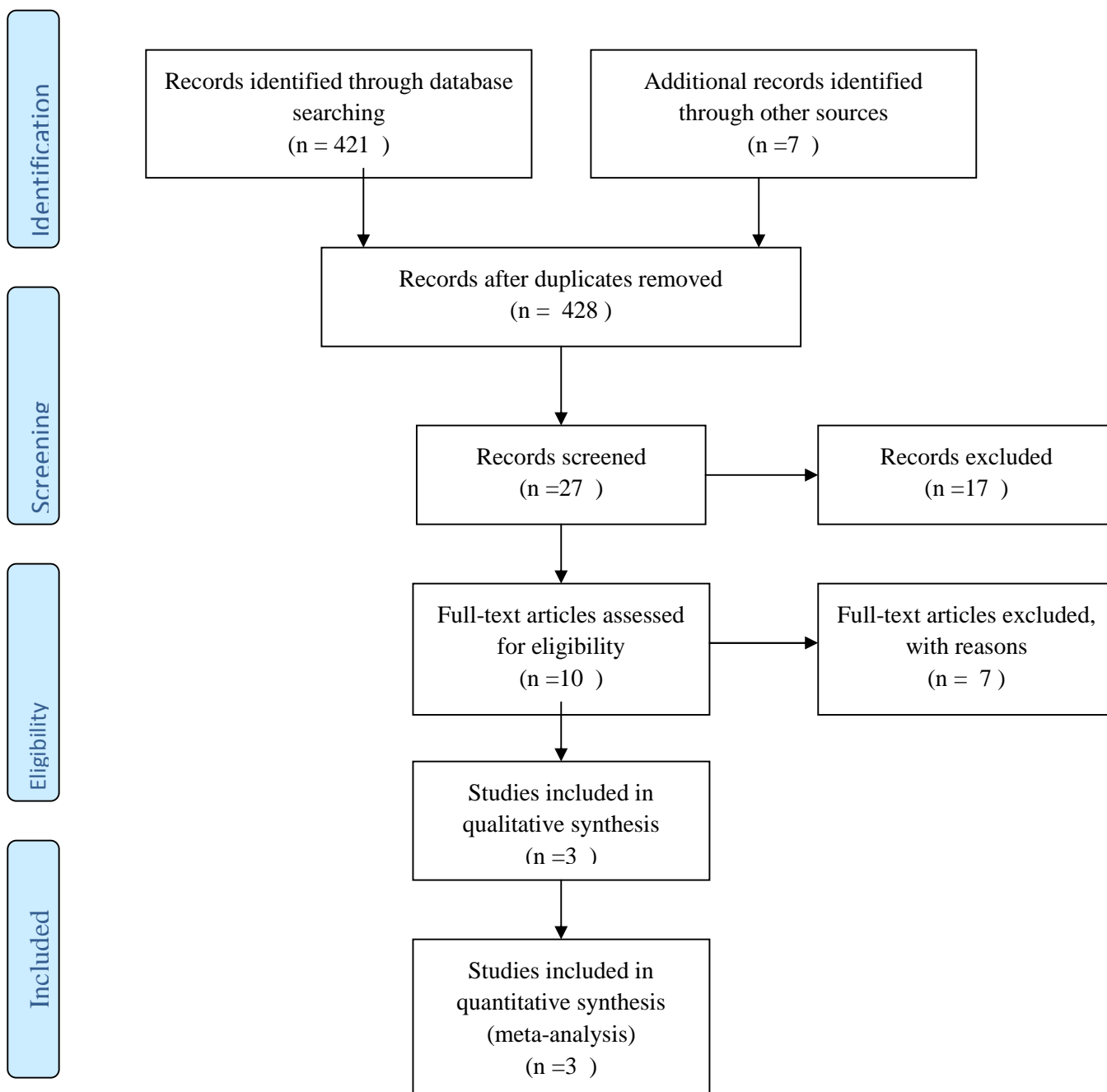


Fig. 1 Study selection process

## 2. Characteristics of the researches and papers

The final research was conducted on 410 participants; with an age range of 18 to 35 years old; a cross-sectional design was used in all studies. Research was conducted in only 3 provinces out of 31 provinces of Iran. Of the 3 studies [10-11], one was from Yazd [10], one from Zahedan [11] and One from Behbahan. Required data was collected through interview (n = 3) and had a low bias risk (n = 3) (Table 1).

### Main results

In general, all tools used in the research were made by the author and each was done through reviewing articles and consulting with experts in each field. The purpose of the questionnaire was to assess the general and approximate Knowledge, Attitude and Behavior in the Field of Urinary Tract Infection among the Iranian Pregnant Women, Based on the Health Belief Model. The total number of items in the questionnaire was 75. All of the studies included in this research validated the tools used in this research. The validity of the tools

was tested by Cronbach's alpha test, and the results turned out to be around 0.81 (25) and 0.83 (26).

### Attitude and Behavior in the Field of Urinary Tract Infection among the Iranian Pregnant Women, Based on the Health Belief Model :

The positive and negative attitudes of the participants were met by answering the question that whether awareness of the Urinary Tract Infection among Pregnant Women is beneficial or not. Positive participants' attitude was reported in only one study with an average of 54.5% (26). The average of good knowledge was only 30.9%. An average of 75.4% is reported for Perceived susceptibility towards Urinary Tract Infection among Pregnant Women. Perceived severity was reported with average of 71.83. The average of Perceived benefits, Perceived barriers and Cues to action was calculated 83.5, 58.53, 51.36 respectively. All included studies reported the family as the most common source of information and guidance for pregnant women in the field of urinary tract infections.

Table 2. Studies included in the systematic review (N=3)

First Author	year	Province	Sample size	Target population	Age group(year)	Sampling Method	Methodology	Risk of bias
Mazlumi <sup>[24]</sup>	2016	Yazd	160	Pregnant women	26.86±4.64	convenience	Cross-sectional	low
Rahimi <sup>[25]</sup>	2016	Zahedan	140	Pregnant women	22.5±4	convenience	Cross-sectional	low
Taghdisi <sup>[26]</sup>	2008	Behbahan	110	Pregnant women	25±4.68	convenience	Cross-sectional	low

Table 2. Sources of Information

study	Sources of Information					
	Book	Internet	TV	Journals	Family	husband
Mazlumi et al			✓		✓	✓
Rahimi et al					✓	✓
Taghdisi			✓		✓	✓

Table 3. Knowledge, Attitude and Behavior in the Field of Urinary Tract Infection among the Iranian Pregnant Women, Based on the Health Belief Model

First Author	Year	Outcome Measure	Instrumentation	Overall knowledge	Perceived susceptibility	Perceived severity	Perceived benefits	Perceived barriers	Cues to action
Mazlumi	2016	Knowledge, attitude, behavior	questionnaire	36.9% good	95%	81.3%	95%	73.1%	80.6%
Rahimi	2016	Knowledge, attitude, behavior	questionnaire	24.9% good	40.4%	49.7%	61%	56.1%	38%
Taghdisi	2008	Knowledge, attitude, behavior	questionnaire	30.9% good	90.9%	84.5%	94.5%	46.4%	35.5%

### Discussion and Conclusion

The results of this study indicated a correlation between knowledge and the main health belief model constructs; accordingly, any intervention in knowledge as a moderating factor seems to affect these constructs as well. However, the relationship between knowledge, attitude, and behavior cannot be easily interpreted, but with increasing awareness, attitude increases as well, though it may not influence behavior. It can be argued that, one may have an intention for a behavior, but he has not yet been able to put that behavior into practice due to barriers. In fact, the findings demonstrate that increasing awareness of people at risk for urinary tract infections does not necessarily lead to promoting preventive behaviors. In order to achieve long-term self-management, changing attitudes and motivating individuals are more important than increasing awareness by itself. The perceived severity score is correlated with the perceived awareness, barriers, benefits, and perceived susceptibility. This means that, the more an individual understands the seriousness and complications of an illness, the more his awareness about the disease, his perception of the barriers to a behavior, the benefits that a behavior may have, and susceptibility to diseases will increase. In addition, by increasing perceived severity, the scores of dressing and behavior related to urinary behavior increases; however, the perceived barriers are effective as a strong construct in health-protective behaviors. If one perceives that he is at risk of developing an illness even without symptoms, this sensitivity leads to preventive behavior. This suggests that pregnant women are well aware of the risk of urinary tract infection and also have a high understanding of the benefits of preventing urinary tract infection. They

also have a good understanding of the barriers to preventing urinary tract infection, though it is less than the two previous constructs. Therefore, it is essential to consider the constructs of perceived barriers as an intervention point in future studies. The results of the frequency distribution of the answers to the questions related to the constructs indicate that the rate of correct answers to questions of perceived barriers is less than those in other constructs. In this regard, more attention should be paid to the issues raised in this construct and measures should be taken to remove the barriers. Considering that perceived barriers affect preventive behaviors, barriers to preventive actions need to be eliminated; one of these barriers is lack of awareness. According to the results of the present study, awareness is positively correlated with the health belief model constructs; therefore, in order to increase the awareness of women, health belief model constructs should be promoted as well. Furthermore, by increasing self-efficacy, pregnant women become more self-sufficient in all factors affecting urinary tract infections, especially in their sexual habits.

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