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Educational technology for the prevention of urinary tract infections during pregnancy: a descriptive study

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ABSTRACT

Problem: urinary tract infections are one of the main conditions that occur in the pregnancy period, causing important maternal-fetal complications that can lead to death. **Aims:** to implement an educational booklet on the prevention of urinary tract infections in a group of pregnant women and analyze the nursing problems related to the occurrence of this disease. **Method:** a descriptive, qualitative study with fifteen pregnant women at a Family Health Unit in Petrópolis, RJ, Brazil in April, 2015. Data was collected through interviews - individual and group - and was analyzed using the data triangulation technique. **Results:** the application of the booklet revealed nursing problems related to hygiene, food, water intake, intestinal and urinary elimination and coitus. **Conclusion:** the use of printed technology is an important tool for discussion and learning in the health education process, and it can be used to qualify the nurses' care practice.

Descriptors: Pregnancy; Urinary Tract Infections; Health Education.

INTRODUCTION

Urinary tract infections (UTI) are characterized by colonization, invasion and multiplication of microorganisms in the urinary system. Its main etiological agent is *Escherichia coli*, a Gram-negative bacterium colonizing the intestinal tract^(1,2).

In pregnancy, this type of infection is responsible for serious maternal-fetal complications, such as chorioamnionitis, pre-eclampsia, endometritis, prematurity, low birth weight and neonatal death^(3,4). It is worth mentioning that in Brazil, more than 60% of infant deaths that occur in the neonatal period, are likely caused by prematurity and low birth weight⁽⁶⁾.

Thus, reflecting on this problem, it is clear that such complications are mostly preventable⁽⁵⁾, especially through comprehensive and resolute assistance provided to pregnant women and their families during prenatal care. To prevent urinary tract infections, health education, early identification and adequate management is essential to reduce maternal and infant morbidity and mortality.

In this context, government policies have encouraged the practice of health education in recent years. In Nursing, this practice has already started in undergraduate education, aiming to democratize scientific knowledge along with popular knowledge and encourage autonomy, critical reflection and individual decision making.

In order to support and facilitate this health education process, printed educational technologies, resulting from daily experience and research for the production of material and non-material results, have been introduced in order to intervene in a real situation⁽⁶⁾.

The use of these technologies in primary health care favors the teaching-learning process through the established relationships

between nurses, users and their families. This can bring benefits to an individual's health and contribute to the democratization of scientific knowledge.

Considering the importance of the aforementioned problem, this study aims to present a prevention of urinary infection educational booklet to a group of pregnant women and to analyze the nursing problems related to the occurrence of this infection in pregnancy.

METHOD

This is a descriptive study that uses a qualitative approach, developed in a Family Health Unit (FHU) in the city of Petrópolis/RJ, with the participation of fifteen pregnant women.

The established inclusion criteria were: to be registered in the health unit and to present gestational age less than or equal to thirty-seven weeks of evolution. The exclusion criterion was: to be in follow-up at the private prenatal service.

The fifteen pregnant women participated in three, weekly, ninety minute meetings held in a private room of the FHU in April 2015. At these meetings, the data was collected through individual and group interviews.

In the individual interview, which occurred in the first meeting, a structured questionnaire was used with closed questions to determine the sociodemographic situation of the interviewee. In the group interview, which took place during the three meetings, a tape recorder, field notes and an educational booklet were used with a focus on urinary infection prevention.

At the meetings there was the presence of the principal investigator (first moderator) and a higher level of health professional (second moderator), who already participated

in health education groups occurring at FHU and held the record field notes. Following the group interview, the data was transcribed. The anonymity of the participants was guaranteed by the identification of the lines only by the capital letters "PW" followed by an Arabic numeral.

The Methodology of Problematization with the Arch of Magueres⁽⁷⁾ was used to guide the three meetings with the pregnant women. This methodology consists of an innovative teaching strategy composed of five stages: observation of reality, key points, theorization, hypotheses of solution and application to reality⁽⁷⁾.

For the analysis of the information collected, the triangulation of the data was used, which increases validity as the research is verified using a range of academic sources.⁽⁸⁾ It consists of three stages: organization and transcription of empirical data; articulation of this data with the researchers of the subject and a deeper analysis of the conjuncture of the study⁽⁸⁾.

Thus, in the first stage of the analysis the information collected was organized and globally interpreted. The collected data was transcribed in order to increase awareness of non-verbal clues used in meetings, such as tone of voice, gestures and laughter. The narratives relevant to the study were highlighted by the researcher for discussion in the text. A pre-analysis then followed according to the study objectives.

In the second phase of interpretation, the selected data was thoroughly studied and related to the appropriate, scientific literature. Thus, a broader analysis of the subject was made through contextualization of the data, seeking to discover information that was not transcribed and to understand the meaning of the data in a deeper way.

In the third and last phase of interpretation, the empirical data was analyzed by the

researchers using triangulation methodology. This articulation allows a broader analysis of the subject⁽⁸⁾. From this, the data was categorized.

The research project was submitted to the Research Ethics Committee of the Antônio Pedro University Hospital (HUAP), *Universidade Federal Fluminense* (UFF – Fluminense Federal University), based on Resolution CNS No. 466/2012, which regulates all research undertaken with humans. It was approved by means of Opinion No 866.758. The Informed Consent Term (IC), containing the objectives of the study and ensuring confidentiality and anonymity, was signed by all research participants. There was no participant withdrawal during the entire process and they continued as voluntary participants throughout.

RESULTS

In this study, fifteen pregnant women aged between fifteen and thirty-seven years (mean age of 23.2 years) were individually interviewed and participated in all three meetings. These pregnant women, enrolled in the FHU (study scenario), were monitored at the prenatal clinic by a physician and a nurse. Their sociodemographic characteristics are presented in table 1.

Table 1. Sociodemographic characteristics of the pregnant women participating in the study. Petrópolis, 2015 (n=15).

Skin color	N	%
White	07	46,6
Brown	04	26,7
Black	04	26,7
Education	N	%
Elementary School	10	66,7
High school	05	33,3
Higher education	-	-

Conjugal Situation	N	%
Without a partner	07	46,7
With a partner	08	53,3
Occupation	N	%
housewife	09	60,0
Student	02	13,3
Housekeeper	02	13,3
Hairdresser	01	6,7
Community Health Agent	01	6,7
Family income	N	%
≤ 1 salary	01	6,7
1 - 2 salaries	12	80,0
≥ 3 salaries	02	13,3

Source: survey data, 2015.

The majority of the pregnant women were white (46.6%), had a companion (53.3%), had completed elementary education (66.7%), were housewives (60%), and had a combined household income of one to two minimum wages (80%).

In the meetings, structured using the Methodology of Problematization with the Arch of Maguerez, the educational booklet was applied with a focus on preventing urinary infections during pregnancy. Figure 1 clarifies the structure of the meetings with the pregnant women.

In the first meeting, the first two stages of the Arch of Maguerez were developed. The pregnant women were encouraged to reflect on the occurrence of urinary infections and

its maternal-fetal consequences (Reality Observation stage). They were then instructed to undertake an initial analysis of the problem concerning the UTI and to seek answers to this problem (Key-Points step)⁽⁷⁾. At the end of the first meeting, an educational booklet on UTI was given to each pregnant woman.

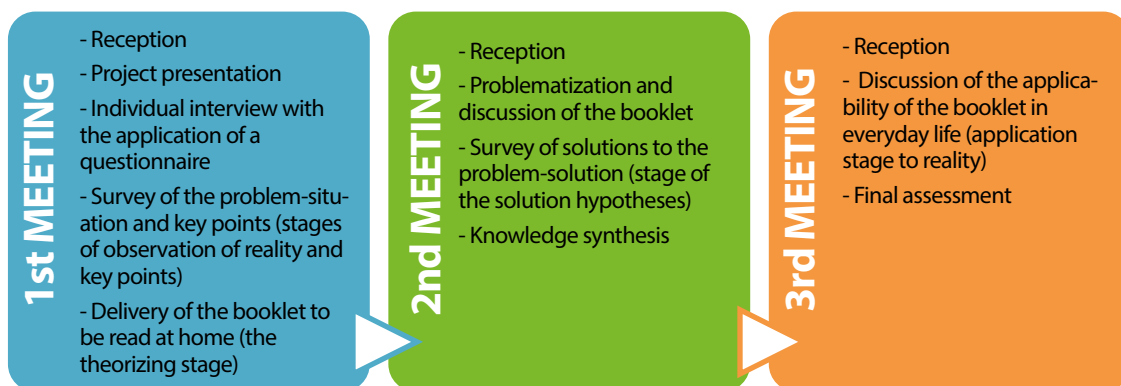
The Theorization stage was carried out at home by each pregnant woman through the reading of the booklet, with the aim of facilitating a deeper understanding of the issue⁽⁷⁾, thus favoring critical reflection:

In the second meeting, the pregnant women developed hypotheses to solve the problem (UTI) based on theorization, the previous stages developed and the problematizing discussion of the booklet, in order to transform that reality. Creativity was encouraged to develop new solutions to confront the problem (step Solutions Hypothesis)⁽⁷⁾.

In the third meeting, the researcher favored a discussion in terms of the practical application of the previously identified hypotheses, so that the pregnant women could reflect on which solutions would be priority, plan their executions and analyze their results (Application to Reality stage)⁽⁷⁾.

Using triangulation of all the data collected in the above meetings allowed the cate-

Figure 1. Stages of the meetings with pregnant women based on the Methodology of Problematization. Petrópolis, 2015.



Source: survey data, 2015.

gorization of nursing problems in “knowledge deficit of pregnant women regarding UTI” and “risk behaviors for UTI in pregnancy”.

Deficit of pregnant women’s knowledge in terms of UTI

The pregnant women presented many doubts in terms of what a urinary tract infection was, ways of avoiding it, its complications and the importance of the treatment.

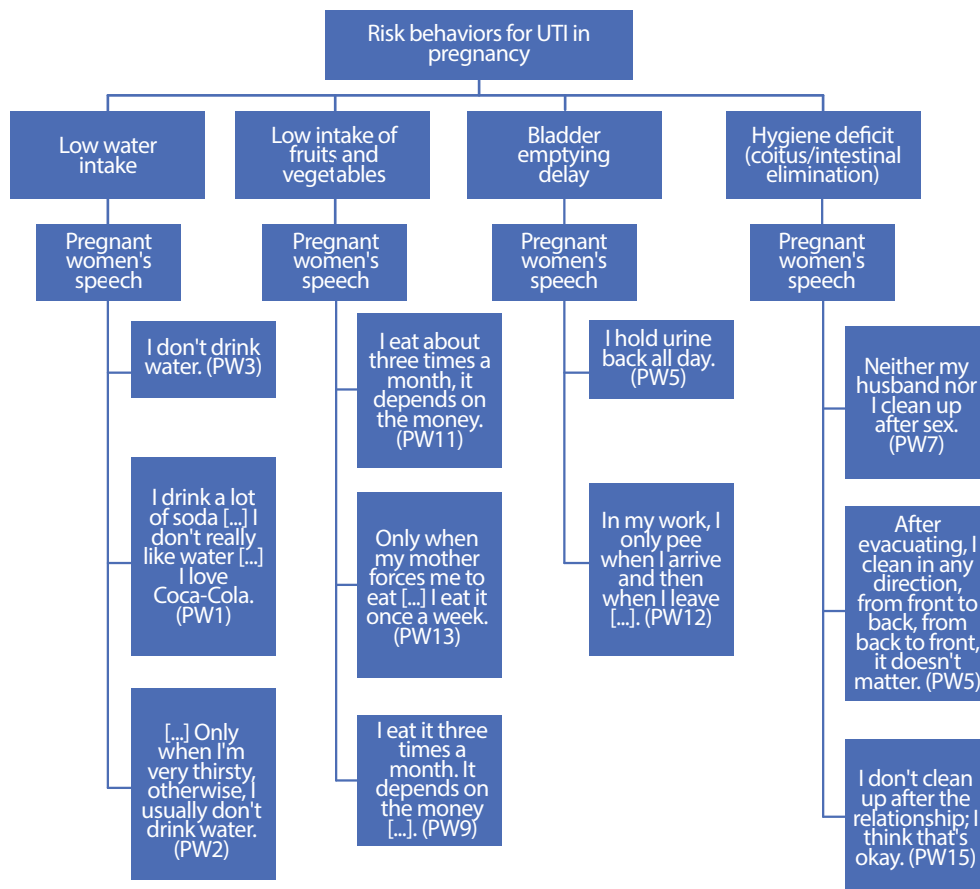
I have this infection, but I can’t say it. [...] The only thing is that the urine is very yellow and smelly. (PW5)

The doctor said I had urine infection, but what I don’t know what it is, yet, I took antibiotics. [...] It burned and itched a lot. (PW7)

My God, I didn’t know it could be harmful to my baby. I thought it had nothing to do with it. (PW10)

In the last testimonial presented above, the pregnant woman expresses astonishment when she becomes aware of complications arising from the occurrence of a urinary tract infection (field diary).

Figure 2. Risk behaviors of pregnant women for the occurrence of UTI and their respective speeches in the group interview. Petrópolis, 2015.



Source: survey data, 2015.

Risk behaviors for the occurrence of UTI in pregnancy

Nursing problems related to the occurrence of UTI during pregnancy were low water intake, low fruit and vegetable intake, delayed bladder emptying, post-coital hygiene deficit and intestinal elimination, as shown in Figure 2.

DISCUSSION

The socioeconomic profile of the pregnant women assisted in the primary health care network (evidenced in this study) supports the results of other Brazilian studies that have also found that pregnant women assisted by the *Sistema Único de Saúde* (SUS - Unified Health System) have a lower economic and education level^(1,2,4,9). It should be highlighted that such characteristics are risk factors in the occurrence of urinary infections in pregnancy^(4,9,10) and in situations of inappropriate frequency in prenatal care by the users in the consultations and the care provided by health professionals^(4,10).

Based on the assumption that health is related to the ability of the population to exercise self-care, the more the individual has knowledge in terms of the issues surrounding health, the more critical and reflective it becomes. This justifies the importance of health education from the perspective of developing free members of society, capable of generating changes and improving their life and health conditions⁽¹¹⁾.

In a study carried out with pregnant women at a FHU in the state of Pernambuco, 124 pregnant women were divided into two groups and monitored by two nurses. One group received health education regarding urinary tract infections and the other did not. There was a significant reduction in the occurrence of this in the first group⁽¹²⁾.

Thus, as to the importance of education in health promotion and disease prevention, the essential role of nurses as health educators to assist people in the resolution of coping with their problems, should be noted, as well as the use of the Problem-Solving Methodology as a strategy for discussion that favors a critical analysis of their reality and motivates the individual to transform it.

This study used the Problem-Solving Methodology in order to lead the pregnant women to perform the dialectic relation action-reflection-action. The guiding axis of the Problematization Methodology, which has its roots in social reality, is to provide support to develop reflective and critical skills. This should encourage more autonomy in individuals⁽⁷⁾. This process favored the democratization of scientific knowledge, since one of the problems evidenced was the pregnant women's lack of knowledge of urinary infections, which can put the mother-child binomial at risk.

In addition to this problem, others have been identified, such as low water intake, low consumption of fruit and vegetables, delayed bladder emptying and poor hygiene in relation to intestinal elimination and coitus. All of these are considered risk factors for the occurrence of urinary tract infections.

The low water intake causes the individual's urine to be more concentrated, becoming a culture medium rich in metabolites that contribute to the growth of microorganisms⁽¹³⁾. In addition, the fact that the subject urinates less frequently (due to the low fluid intake) causes the urine to remain longer in the bladder, also favoring the multiplication of pathological agents. Therefore, the delay in voluntary emptying of this organ also increases the risk of urinary tract infections. For this reason, daily consumption of six to eight glasses of water per day is recommended⁽¹⁴⁾.

The low consumption of fruit and vege-

tables directly affects the functioning of the intestine, since the intestinal peristalsis slows down and, therefore, the stool bulk stays inside the individual for longer⁽¹⁴⁾. This increases the risk of urinary tract infections, as there is a greater proliferation of microorganisms in this stool bulk that, when eliminated, can contaminate the female external genitalia⁽¹⁵⁾. In addition, this behavior also favors intestinal constipation, a nursing problem also evidenced in the pregnant women in this study⁽¹⁴⁾. It is worth mentioning that the main microorganism causing urinary infections in pregnant women is *Escherichia coli*, a bacterium commonly found in the intestine^(1,2).

Another item identified as a nursing problem was the hygiene issue, both regarding intestinal elimination and coitus. After evacuations, hygiene should be performed with soap and water or with toilet paper, which should be used in the anterior-posterior direction, in order to avoid vaginal and urethral contamination by enteric bacteria⁽¹⁶⁾. Post-coital hygiene with acid ph hypoallergenic soap and water is another practice that should be adopted by pregnant women in the prevention of urinary tract infections⁽¹⁶⁾.

Besides the fact that precarious hygiene is a risk factor for UTI, sexual activity is also a factor. Studies indicate that women with sexual activity greater than or equal to three times a week present a higher risk of urinary infections^(4,17). This is due to the fact that the perianal region is colonized by microorganisms potentially causing this infection, the use of irritating substances such as vaginal creams and deodorants and the lack of cleaning of the sex organs.

All such risk behaviors described above should be detected early by the health professional during prenatal care. It should intervene adequately to reduce maternal-fetal morbidity and mortality⁽¹⁸⁾. Therefore the performance of

health education, an activity encouraged by the Ministry of Health, is necessary and contributes to comprehensive prenatal care focused on the health needs of the patients⁽¹⁹⁾.

CONCLUSION

The application of a printed educational technology focused on the prevention of urinary tract infections during pregnancy was an important discussion and learning tool - facilitated by the use of the Problematization Methodology, which aims to transform reality to develop autonomous, reflective and critical individuals.

It is noteworthy that the health education process based on this methodology has become more dynamic and attractive with the application of the booklet, which helped in the identification of a number of nursing problems, such as low water intake, low consumption of fruits and vegetables, delayed emptying of the bladder and poor hygiene related to intestinal elimination and coitus.

To conclude, this study reinforces the importance of the nurse's role in prenatal care, which must be resolute and based on the most current scientific evidence as well as the merit in utilizing educational technologies, applied using the Methodology of Problematization in the process of health education.

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