Original Research

To assess the effectiveness of information booklet regarding Urinary Tract Infection and its preventive measures among antenatal women at SGT Hospital, Gurugram

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ABSTRACT:
Aim: This study aims to assess the effectiveness of an information booklet on urinary tract infection (UTI) and its preventive measures among antenatal women at SGT Hospital, Gurugram. **Material and Methods:** A descriptive study design was adopted, involving 100 antenatal mothers selected through non-probability purposive sampling. Data were collected using a structured questionnaire consisting of 18 items. Pre-test and post-test knowledge scores were compared to evaluate the impact of the educational intervention. Socio-demographic variables such as age, educational status, gestational age, occupation, and family type were analyzed for their association with knowledge scores using the chi-square test. **Results:** The pre-test revealed limited knowledge, with 15% of participants demonstrating adequate knowledge. Post-test results showed a significant improvement, with 77% achieving adequate knowledge ($p < 0.05$). Educational status and employment were significantly associated with knowledge gain, whereas age and gestational stage showed no significant correlation. Comparison of pre- and post-test item-wise scores highlighted substantial improvements across all knowledge areas. **Conclusion:** The information booklet effectively enhanced knowledge regarding UTI and its prevention among antenatal women. Educational status and employment emerged as key factors influencing knowledge gain. These findings underscore the importance of structured educational interventions in promoting maternal health awareness.
Keywords: Urinary Tract Infection, antenatal women, information booklet, knowledge assessment, maternal health.

INTRODUCTION

Millions of individuals worldwide are impacted by the present global health crisis of urinary tract infections, or UTIs. However, the risk and severity of UTIs are particularly significant during pregnancy, necessitating extra caution and preventative steps.[1-3] Prenatal care is the medical treatment provided to pregnant women prior to delivery and is critical to both the mother's and the growing foetus's health. Urinary tract infections (UTIs) must be prevented and treated as part of prenatal care since they might result in problems that could harm the mother's and the foetus's health.[4-6] Pregnant women are more susceptible to UTIs due to physiological changes. A woman may also be at risk for infection if she has urine retention as a result of her developing uterus.[7,8] A woman may be more vulnerable to infection if she has urine retention because of her developing uterus. Hormone changes can also cause the ureteral muscle to relax, which increases the risk of urinary tract infections by causing urine to build up in the bladder.[9,10] Pregnant women are susceptible to urinary tract infections (UTTIs), which account for up to 10% of infections during pregnancy. They are also recognized as the second most common ailment during pregnancy, after anemia. A UTI, or urinary tract infection, can affect any part of the urinary system, including the kidneys, bladder, and urethra. In addition to hormonal changes, alterations in anatomy and physiology might increase the risk of urinary tract infections during pregnancy.[11,12]

MATERIAL AND METHODS

This study utilized a quantitative research approach with a descriptive study design to evaluate its objectives. The setting for the study was the antenatal unit at SGT Hospital, Gurugram, targeting antenatal mothers as the study population. A total of 100 antenatal mothers participated, with all included in both pre- and post-test assessments. A non-probability purposive sampling technique was employed to select the participants, ensuring the inclusion of individuals who met the specific study criteria.

Inclusion Criteria

- The study includes adult population residing in the selected areas of Gurugram, Haryana.
- The antenatal mother suffering from urinary tract infection.
- The antenatal mother suffering from urinary tract infection 18-45years.
- Antenatal mother who are willing to participate.

Exclusion criteria

- The Antenatal mother suffering from urinary tract infection from more than 5 years.
- 2 UTI patients who are not willing to participate.

Data collection Tool and Technique

Section - I: It consists socio-demographic variable which consists of 8 items (6 items of socio-demographic variables and 2 items of clinical variables) to collect the sample.

Section–II: Structured questionnaire is used to explore the contributing factors for UTI antenatal mothers. It consists of 18 questions.

Validity of the tool: Through literature review and expert consultation from medical and nursing department, the validation of the tool confirmed.

Reliability of the tool: The reliability of the tool was assessed by high correlation was noted questionnaire for urinary tract infection using urine sample method and structured questionnaire to explore the contributing factors for urinary tract infection among antenatal mother.

Data collection procedure

Data collection is the process of acquiring subjects and collecting information needed for the research study.For collecting the data following steps were carried out Administrative permission was taken from the Dean, Faculty of SGT UniversityMedical superintendent of SGT Hospital. Ethical permission was taken from the ethical committee, SGT University.Each sample provided their informed consent after being assured that their identity would be kept private and that all information collected from them would be kept private.The information was gathered. The easy sampling strategy was employed by the investigator to choose the study sample. The researcher gave a brief introduction to the samples, outlining the aim of the investigation and determining the participants' willingness. She also gave the respondents assurances regarding the confidentiality and anonymity of the data they submitted. A systematic questionnaire was utilized to gather data, which was then used to investigate the risk factors for urinary tract infections in expectant moms. Each interview with the investigator lasted, on average, fifteen minutes. Every day, each investigator conducted interviews with between 10–20 subjects.

RESULTS

TABLE 1: Distribution of demographic variables

Variables	Opts	Percentage	Frequency
Age	18-23 Years	43.0%	43
	24-29 Years	41.0%	41
	30-35 Years	16.0%	16
	37-45 Years	0.0%	0
Educational Status	No formal education	4.0%	4
	Primary education	22.0%	22
	Secondary education	48.0%	48
	Graduation and Post graduation	26.0%	26
Religion	Hindu	88.0%	88
	Muslim	5.0%	5
	Christen	7.0%	7
	Other	0.0%	0
Family Income	Less than 15,000	5.0%	5
	Rs 15,001 – 30,000	33.0%	33
	Rs 30,001 – Rs 45,000	49.0%	49
	Rs 45,001 and above	13.0%	13
Residence	Rural area	16.0%	16
	Urban area	70.0%	70
	Semi-Urban	14.0%	14
Gestational age	<13 weeks	24.0%	24
	13-28 weeks	46.0%	46

	>28 weeks	30.0%	30
Occupation	Employed	25.0%	25
	Unemployed	75.0%	75
Family	Nuclear	28.0%	28
	Joint	72.0%	72

Table 1: The majority of respondents (84%) are between the ages of 18 and 29. Of these, 43% are between the ages of 18 and 23 and 41% are between the ages of 24 and 29. The representation decreases substantially after the age of thirty. A minimum of 74% of the respondents have completed secondary school, and 26% have graduated or obtained post-graduation credentials. This suggests that a portion of the population is reasonably educated. With 88% of respondents, Hinduism is the most common religion in the population questioned. Christians and Muslims make up 7% and 5% of the respondents, respectively. The fraction of people who identify with other religions is very small. According to the data, the respondents' incomes are distributed fairly among them; 33% of them make between Rs 15,001 and Rs 30,000, 49% make between Rs 30,001 and Rs 45,000, and 13% make more than Rs 45,001. Just 5% of respondents said they made less than Rs 15,000. Urban areas are the primary focus of the majority of respondents (i.e., 70%), suggesting an urban-centric approach. Of the respondents, 16% reside in rural areas, and the remaining 14% in semi-urban areas. With 46% of respondents falling into the 13–28week gestational age range, 30% falling into the >28week range, and 24% falling into the <13 week range, the data shows a fairly balanced distribution throughout gestational age categories. Of those surveyed, 25% are employed while the vast majority (75%) are unemployed. This implies that populations that are not already employed in a formal capacity could be the focus of future research. Nuclear families make up the remaining 28% of the population polled, with joint families making up the majority at 72%. This suggests that extended family structures are quite prevalent in the neighbourhood.

Table 2: pre-test to assess the knowledge scores

Variables	Opts	ADEQUATE KNOWLEDGE	MODERATE KNOWLEDGE	INADEQUATE KNOWLEDGE	Chi Test	P Value	df	Table Value	Result
		ASSOCIATION OF PRETEST KNOWLEDGE SCORES WITH SELECTED SOCIO-DEMOGRAPHIC VARIABLES.							
Age	18-23 Years	6	24	13	0.288	0.991	4	9.488	Not Significant
	24-29 Years	6	23	12					
	30-35 Years	3	8	5					
	37-45 Years	0	0	0					
Educational Status	No formal education	0	2	2	32.140	0.000	6	12.592	Significant
	Primary education	1	10	11					
	Secondary education	2	31	15					
	Graduation and Post graduation	12	12	2					
Religion	Hindu	12	50	26	5.623	0.229	4	9.488	Not Significant
	Muslim	0	3	2					
	Christen	3	2	2					
	Other	0	0	0					
Family Income	Less than 15,000	0	0	5	47.786	0.000	6	12.592	Significant
	Rs 15,001 – 30,000	1	20	12					
	Rs 30,001 – Rs 45,000	5	31	13					
	Rs 45,001 and above	9	4	0					
Residence	Rural area	0	9	7	6.326	0.176	4	9.488	Not Significant
	Urban area	11	38	21					
	Semi-Urban	4	8	2					

		ADEQUATE	MODERATE	INADEQUATE	Chi Test	P Value	df	Table Value	Result
Gestational age	<13 weeks	3	11	10	3.419	0.490	4	9.488	Not Significant
	13-28 weeks	9	26	11					
	>28 weeks	3	18	9					
Occupation	Employed	14	10	1	46.230	0.000	2	5.991	Significant
	Unemployed	1	45	29					
Family	Nuclear	6	16	6	2.056	0.358	2	5.991	Not Significant
	Joint	9	39	24					

Table 2: The pretest knowledge scores and the age groups (18–23, 24-29, 30-35, and 37–45) do not significantly correlate, according to the chi-square test. The study's pretest knowledge levels are not significantly impacted by age, as indicated by the p-value being greater than the significance level of 0.05. Pretest knowledge scores are significantly correlated with educational status (no formal education, primary, secondary, graduation, and post-graduation). The substantial (p < 0.05) chi-square test result indicates that pretest knowledge levels are influenced by educational status. Pretest knowledge levels do not significantly correlate with gestational age categories (<13 weeks, 13-28 weeks, and >28 weeks). Pregnancy does not appear to be a significant effect in pretest knowledge levels, according to the non-significant chi-square test result (p > 0.05). The pretest knowledge scores and occupation (employed, unemployed) are significantly correlated. The significant outcome of the chi-square test (p < 0.05) suggests that pretest knowledge levels are influenced by employment position.

TABLE 3: post-test to assess the knowledge scores

ASSOCIATION OF POSTTEST KNOWLEDGE SCORES WITH SELECTED SOCIO-DEMOGRAPHIC VARIABLES.									
Variables	**Opts**	**ADEQUATE KNOWLEDGE**	**MODERATE KNOWLEDGE**	**INADEQUATE KNOWLEDGE**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age	18-23 Years	36	7	0	2.043	0.360	2	5.991	Not Significant
	24-29 Years	29	12	0					
	30-35 Years	12	4	0					
	37-45 Years	0	0	0					
Educational Status	No formal education	1	3	0	20.264	0.000	3	7.815	Significant
	Primary education	12	10	0					
	Secondary education	38	10	0					
	Graduation and Post graduation	26	0	0					
Religion	Hindu	67	21	0	1.653	0.438	2	5.991	Not Significant
	Muslim	5	0	0					
	Christen	5	2	0					
	Other	0	0	0					
Family Income	Less than 15,000	0	5	0	22.848	0.000	3	7.815	Significant
	Rs 15,001 – 30,000	23	10	0					
	Rs 30,001 – Rs 45,000	41	8	0					
	Rs 45,001 and above	13	0	0					
Residence	Rural area	10	6	0	6.147	0.046	2	5.991	Significant
	Urban area	53	17	0					
	Semi-Urban	14	0	0					
Gestational age	<13 weeks	16	8	0	2.168	0.338	2	5.991	Not Significant
	13-28 weeks	36	10	0					
	>28 weeks	25	5	0					

Occupation	Employed	25	0	0	9.957	0.002	1	3.841	Significant
	Unemployed	52	23	0					
Family	Nuclear	24	4	0	1.668	0.197	1	3.841	Not Significant
	Joint	53	19	0					

Table 3: The chi-square test reveals no discernible correlation between post-test knowledge scores and age groups (18–23, 24-29, 30-35, and 37–45 years). In this study, age did not substantially affect post-test knowledge levels, as the p-value is bigger than the significance level of 0.05. Post-test knowledge scores are significantly correlated with educational status (no formal education, primary, secondary, graduation, and post-graduate). The significant chi-square test result ($p < 0.05$) indicates that post-test knowledge levels are influenced by educational status. The post-test knowledge scores do not significantly correlate with the gestational age categories (<13 weeks, 13-28 weeks, and >28 weeks). The lack of significance ($p > 0.05$) in the chi-square test result indicates that post-test knowledge levels are not significantly influenced by gestational age. The post-test knowledge scores and occupation (employed, unemployed) are significantly correlated. The significant result of the chi-square test ($p < 0.05$) suggests that post-test knowledge levels are influenced by employment position.

TABLE 4: COMPARISON OF PRE AND POST-TEST LEVEL OF KNOWLEDGE

Item wise Analysis	PRE-CORRECT (%)	POST CORRECT (%)	PRE-CORRECT (f)	POST CORRECT (f)
Qno.1	75.0%	97.0%	75	97
Qno.2	65.0%	99.0%	65	99
Qno.3	36.0%	86.0%	36	86
Qno.4	14.0%	55.0%	14	55
Qno.5	54.0%	89.0%	54	89
Qno.6	27.0%	67.0%	27	67
Qno.7	78.0%	97.0%	78	97
Qno.8	79.0%	96.0%	79	96
Qno.9	26.0%	61.0%	26	61
Qno.10	34.0%	82.0%	34	82
Qno.11	42.0%	78.0%	42	78
Qno.12	60.0%	92.0%	60	92
Qno.13	43.0%	76.0%	43	76
Qno.14	66.0%	89.0%	66	89
Qno.15	38.0%	76.0%	38	76
Qno.16	62.0%	84.0%	62	84
Qno.17	32.0%	69.0%	32	69
Qno.18	36.0%	78.0%	36	78

Table 4: This table shows that in pre test the percentage of knowledge is less, but after getting knowledge regarding the topic, the knowledge level is increased.

DISCUSSION
The study collected data on the knowledge of urinary tract infections (UTI) during pregnancy, focusing on awareness related to its risk factors, symptoms, prevention, and management. The analysis involved calculating the mean, standard deviation, mean difference, standard mean percentage, t-value, degree of freedom, and p-value to evaluate the gain in knowledge from pre-test to post-test. The findings revealed a statistically significant improvement in knowledge scores following the intervention. Additionally, the study examined the association between the level of knowledge and selected demographic variables of pregnant mothers. The results highlighted significant associations with certain variables, while others showed no notable correlation.

Objective 1: Finding the knowledge related to Urinary Tract Infection during pregnancy.

The findings of the study in pre-test 30% inadequate knowledge, 55% moderate knowledge, 15% adequate knowledge regarding urinary tract infection. Similarly, the post-test score depicted that the participants have 0% inadequate knowledge, 23% moderate knowledge, 77% adequate knowledge. The adequate knowledge scores for pretest and post-test were 15 and 77. This demonstrated that post-test had significantly increase from pre-test score.

Objective 2: Finding the effectiveness of information, education, and communication.

The pre-test and post-test mean difference was 6.040. This suggests that the IEC approach contribute to a higher knowledge score on the pots-test. In order to determine the significant increase in knowledge score from the pre-test to post-test, a paired "t" test was used. The resultant value of t=28.272 was deemed significant at the 0.05 level. In the current study, prenatal mother's understanding of urinary tract infection knowledge was greatly increased by the IEC program. Finding was supported by the study done by Deborah Tolulope Esan, Paul Oladapo Ajayi, Cecilia Bukola Bello (2023).[3] Regarding the pre and post -test knowledge scores of the analysed sample, there was a very statistically significant difference with p=0.05. Additionally, the findings showed that the mean overall knowledge score with 78.9% good practice, 21.1% poor practice.

Objective 3: Finding related to association between level of knowledge with their selected demographic variables. There was not much found to be having significant association between the level of knowledge of pregnant mothers regarding Urinary Tract Infection with selected demographic variables. The study findings were supported by study done by 1 Latisha Kishore Patel, visit Shiva Gained, Sara Tom, Poroma nail, bushman toolbar association between the information folder on urinary tract information and its prevention among expectant mothers in a designated area.[1]

The lack of correlation between post-test knowledge scores and age groups ($p > 0.05$) suggests that age alone does not play a significant role in determining knowledge acquisition in this context. This finding is consistent with a study by Gupta et al. (2020), which reported that age did not significantly affect the uptake of health education regarding antenatal care.[13] However, the strong correlation between educational status and post-test knowledge scores ($p < 0.05$) underlines the role of education in enhancing comprehension and retention of health information. Higher education levels likely facilitate better understanding of complex topics like UTI prevention. This is supported by Sharma et al. (2019), who found a positive association between educational attainment and the efficacy of health education interventions among pregnant women.[14] The absence of a significant correlation between post-test knowledge scores and gestational age ($p > 0.05$) suggests that the timing of pregnancy does not influence the ability to benefit from health education. This aligns with findings from Wilson and Johnson (2019), which reported similar outcomes for health literacy among women at different stages of pregnancy.[15] Finally, the significant correlation between post-test knowledge scores and occupational status ($p < 0.05$) indicates that employment may play a role in influencing health awareness. Employed women may have greater exposure to information or structured routines that facilitate learning, as suggested by Ahmed et al. (2023), who found that occupational engagement positively impacted the effectiveness of health education interventions in maternal health.[16]

CONCLUSION

This study concludes that an information booklet on urinary tract infection (UTI) and its preventive measures is an effective tool to enhance knowledge among antenatal women. The pre-test results revealed limited knowledge, which significantly improved in the post-test, indicating the positive impact of the educational intervention. Educational status and employment emerged as significant factors influencing knowledge gain, while age and gestational stage showed no significant correlation. The comparison of pre- and post-test scores demonstrates the efficacy of targeted information dissemination in empowering antenatal women to prevent UTIs effectively. These findings highlight the critical role of structured education in promoting maternal health.

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