Original Research Article

A study to evaluate the impact of patient counselling on the quality of life of female patients with recurrent urinary tract infection

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ABSTRACT

Background: Recurrence of urinary tract infections (UTI) are either due to re infection or relapse. Overall likelihood of developing UTI is approximately 30 times higher in women than men due to their anatomical peculiarities and are normally treated with antibiotics. To evaluate effectiveness of patient counselling in prevention of recurrent UTI in female patients to reduce the risk of developing Antibiotic resistance and assess the quality of life of patients.

Methods: A prospective observational study was carried out for a period of 6 months and samples were taken from the urology department of cosmopolitan hospital, Trivandrum, Kerala. Patient counseling was given regarding the disease, drugs and lifestyle modifications. A suitably validated KAP questionnaire was provided to each patient at their visits. By using an EQ-5D-5L questionnaire the quality of life of patients were assessed and analyzed.

Results: 84 patients were analyzed. After the counseling knowledge level significantly improved to good from 6.9% to 72.4%, the positive attitude level was improved from 35.6 to 57.5% and the practice level was improved to good from 25.3 to 43.7%. The QOL improved to best from 1.2 to 71.4%. After counseling incidence rate was decreased to zero. The mostly observed risk factor was decreased water intake (69%). The common age group observed was 31-50 (41.7%).

Conclusions: Patient counseling had an important impact on medication adherence and QOL of female patients with recurrent UTI. Effective patient counseling and better compliance decreased the incidence of recurrence and improved the quality of life of patients.

Keywords: Recurrence, KAP, EQ-5D-5L, UTI, Quality of life

INTRODUCTION

UTI is an acute or chronic infection, usually bacterial in origin, that may affect any part of the upper or lower urinary system.[1,2] Although, UTI may be caused by yeast, fungi and microorganisms other than bacteria, the most common agent of infection is considered as bacteria.[3] In general UTI may be classified by site of infection such as lower and upper tract. Lower tract infections are referred to as cystitis when the bladder is site of infection and symptoms of dysuria, frequency and the urgency are present.[3] Upper tract infections are often referred to as acute pyelonephritis when infection involves the kidney and the patient has fever with flank pain and tenderness.[4] Although urine is generally sterile, bacteria may be present without causing infection and significant bacteriuria is generally considered to be $\geq 10^5$ per milliliter of urine.[5-7] UTI occur frequently in both community and hospital environment are the most common bacterial infections in humans. Recurrent UTI are characterized by multiple symptomatic episodes with asymptomatic periods occurring throughout.[8] Women are at higher risk than men probably because of anatomic and physiologic differences.[9] Treatment of UTI is necessary

because of the possible complications that may rise from no treatment.

Recurrent UTI's include relapses (symptomatic recurrent UTI'S with the same organism following adequate therapy) and re infection (recurrent UTI's with previously isolated bacteria after treatment and with a negative intervening urine culture for a recurrent UTI caused by a second bacterial isolate).[10,11] Most recurrent UTI's are thought to be caused by re infection with same organism.[12] Recurrent UTI in adult women is usually treated with long term low dose antibiotics and current national and International guideline recommend this as the "gold standard" preventive treatment.[13,14] Although they are reasonably effective long term antibiotics can result in developing resistance in bacteria. This has lead clinicians and patients alike to explore potential non antibiotic option for recurrent UTI prevention.[15-17]

Apart from therapeutic management of UTI an effective patient education could provide a healthy outcome and can improve the quality of life of patients.[18]

So, in this study we are evaluating: The impact of patient counselling on female patients with recurrent UTI, The quality of life of patients

METHODS

Our study was an observational study carried out for a period of 6 months (Dec 2018-May 2019) on outpatients and inpatients from the department of urology, general medicine, gynecology and general surgery at cosmopolitan hospital were included during the study period. All the analysis was carried out with help of software SPSS version 22 for Windows. Sample size included minimum sample size required in study was 80.

Inclusion criteria included females of age between 18-70, patients willing to participate in the study, clinically reported UTI, Patient with lifestyle diseases and patients having H/o of recurrent UTI were the selected patients.

Exclusion criteria excluded post catheterized patients, any chronic illness or risk factors, patients having allergy or intolerance to cranberry, immune-compromised patients, pregnant women and Patients not willing to participate in study were excluded.

Data collection carried out by a written informed consent will be taken in prescribed format from the female patients diagnosed with UTI. All information relevant to the study will be collected from the medical records. The demographic characters, clinical features and other details will be documented in the proforma. The other data collection tools include EQ 5D 5L, MGL and KAP questionnaires.

Study procedure included female patients presenting with UTI are selected from various departments (urology,

general medicine, gynaecology, general surgery) of the hospital. Patients satisfying the inclusion and exclusion criteria's and who are willing to participate in the study are included after obtaining their informed consent. Patients were provided with the proforma to get details about their risk factors and comorbidities and other relevant data's will be collected from medical records.

The initial follows up is done after 2 weeks and the subsequent follow up is done after 1 month, 3 months and 6 months. EQ-5D-5L (European quality of life) questionnaire and knowledge attitude and practice questionnaires are taken during the first visit and last follow up. They are used to assess the quality of life and effect of patient counselling respectively.

RESULTS

In this study 90 patients satisfying the inclusion and exclusion criteria were selected. Among them 4 patients lost follow up and 2 patients were reported to have the infection during the period of study. The remaining 84 patients were analyzed finally. Through this study knowledge level of patients were categorized into poor, average and good. Before counseling 6.9% were having good knowledge and after counseling it has been raised to 72.4%, which is represented in (Table 1).
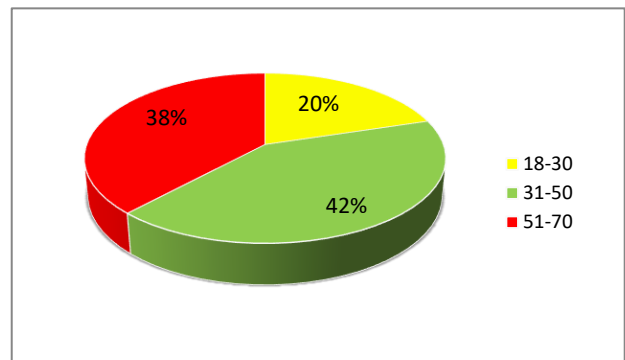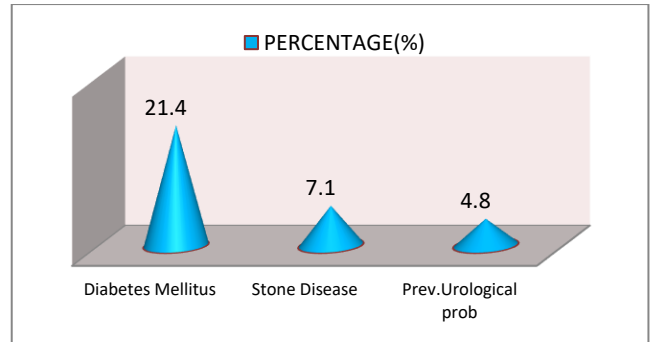

Figure 1: Distribution of patients based on their age.
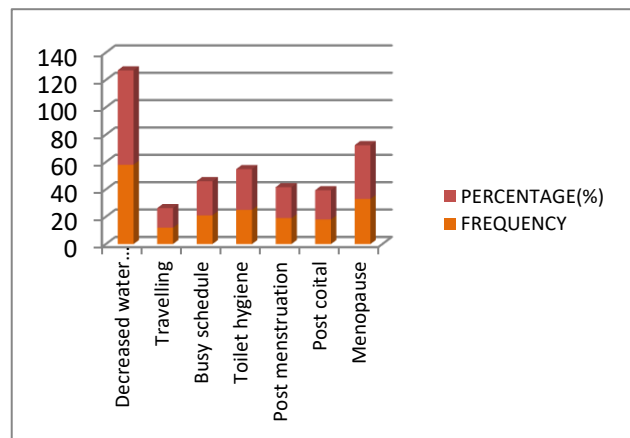
Figure 2: Distribution of patients based on risk factors.

Before counseling about 35.6% patients were having positive Attitude level and after counseling it has raised to 64.6%. Represented in (Table 2). Before counseling only 25.3% were having a goof practice while after counseling it has increased to 48.7%, shown in (Table 3).

Regarding the quality of life, its categorized into poor, good, average and best. 1.2% patients were having best QOL and after treatment it has raised to 71.4%. All these results showed a significant effect of patient counseling on the quality of life of patients. It is represented in (Table 4).

Figure 3: Distribution of patients based on comorbidities.

Table 1: Effectiveness of patient counselling on the knowledge level of patients.

Variable	Test	Mean	SD	Median	Range	P value
Knowledge	Before	37.93	16.22	40.0	10-80	<0.05
	After	94.02	11.25	100	60-100	<0.05

Table 2: Effectiveness of counselling on attitude level of patients.

Variable	Test	Mean	SD	Median	Range	P value
Attitude	Before	45.83	26.73	37.50	0-100	<0.05
	After	62.50	24.03	62.50	12.50-100	<0.05

Table 3: Distribution of patients based on practice level of patients.

Variable	Test	Mean	SD	Median	Range	P value
Attitude	Before	48.60	19.54	42.85	0-100	<0.05
	After	54.18	22.33	42.85	0-100	<0.05

Table 4: Assessing the quality of life of the patients using eq 5d 5l questionnaire.

QOL score	Before counselling (%)	After counselling (%)	P value
Poor	23.8	8.3	
Good	48.8	2.4	0.000*
Average	26.2	17.9	
Best	1.2	71.4	

*significant (p<0.05)
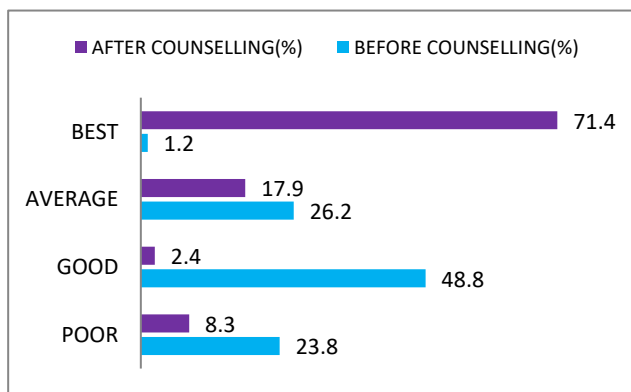
Figure 4: Assessing the quality of life of the patients using eq 5d 5l questionnaire.

DISCUSSION

UTI are common and among the most frequent medical conditions requiring outpatient treatment. Approximately 80% of all UTI s occur in women and 20 to 30% of women with a UTI will experience recurrence.[19] Nowadays the incidence of recurrence is increasing and usually low dose antibiotic prophylaxis for several months are recommended.[20] But antibiotic use is associated with the development of antibiotic resistance and the occurrence of side effects. No large-scale population data are available specifically for female patients with recurrent urinary tract infections regarding the risk factors, controlling measures and a good non antibiotic prophylaxis. Here we evaluated the efficacy of

cranberry extract supplements in prevention of recurrent UTI in female patients.

Recurrent UTI is the occurrence of more than two UTI s in a year. Recurrent UTI can affect the health-related quality of life of the patients badly and is considered as a significant public health problem. The study aimed to understand the effectiveness of patient counseling on their health-related quality of life. A structured interview with by-stander or patient was conducted by using questionnaires to elicit information about the knowledge of UTI by using validated KAP questionnaire. Thus, the study was undertaken to address these questions in patients with recurrent urinary tract infections to analyze the knowledge, attitude and practice of patients on UTI before and after counseling for evaluating the effectiveness of patient counseling.

The data on personal details (age, history of recurrence, symptoms) and risk factors were collected from 90 UTI patient's medical records and direct interviews with the patient or bystander, analyzed using appropriate statistical methods. Frequency and percentage were calculated as summary measures for categorical study variables while mean, SD, median and range were calculated as summary measures for continuous study parameters.

Wilcoxon signed rank test has been used for assessing effectiveness of treatment on study variables before and after treatment. Chi-square test for proportion difference was employed for finding significant risk factors for Urinary Tract Infection. Chi-square test was used for assessing significant proportion differences in various classes. A calculated p value less than 0.05 is considered to be statistically significant

Detailed analysis was presented in the following sections

Personal details of patients: In the section personal details such as age, history of recurrence, symptoms , co-morbid conditions were collected from medical records of the selected UTI patients or direct interview with the patient or bystanders and carry out a percentage analysis and it is observed that majority of the selected UTI patients were at an age group of 31-50 (42%), followed by 51-70 (38%), and then 18-30 (20%). Most of the patients enrolled in the study were having history of two to three times of recurrence in a year (72%). Also found that majority of patients were having co-morbidity of DM.

Precursor factors for UTI

In this section the various risk factors such as Decreased water intake, busy schedule, post coital, post menstruation, toilet hygiene and menopause were collected and tested for significance using chi-square test for proportion. By using the proper analytical method,

showed that the most significant risk factors associated with UTI patients were decreased water intake (69%), menopause (39.3%), toilet hygiene (29.8%), busy schedule (25%), post menstruation (22.6%), post coital (21.4%) and travelling (14.3%). The study conducted on the risk factors of urinary tract infection by Remis et al found that sexual intercourse is a main risk factor and that there is a dose-response effect for increasing levels of coital frequency. They also found that use of the diaphragm was significantly associated with urinary tract infection, an association which remained significant even after controlling for possible confounding by coital frequency. In their study the finding did not show an association with many of the factors commonly believed to be important such as type of clothing and volume of fluids consumed.[21] In our study the decreased water intake was the most common risk factor associated with UTI. UTI after sexual intercourse was limited to patients less than 50 years of age. Toilet hygiene and busy schedule was found as the risk factor in most of the working women. UTI associated with travelling was the most little found precursor factor.

Effectiveness of counseling from KAP level of UTI patients

In this section the KAP course of patients were collected and converted to a percentage scale before and after the counseling. The effectiveness of counseling was statistically assessed by Wilcoxon signed ranks test. The knowledge, attitude and practice (KAP) were assessed by using suitably designed questionnaire prior to counselling. The knowledge domain was designed to test the knowledge of the etiologies, diagnosis and treatment of UTI. A counseling was provided to each patient about disease, life style modification and diet using suitable validated Patient Information Leaflet. The KAP questionnaire will be conducted during the first visit and the last follow up visit and the change in scores was statistically plotted.

After proper analysis it is observed that before counselling 49.4% patients reported a poor level of knowledge, 43.7% reported average level of knowledge and 6.9% were in good level of knowledge. But after the counselling the knowledge level significantly improved to good (72.4%). In case of attitude before counselling 35.6% patients shown a positive attitude and 64.4% patients shown negative attitude towards UTI. But after counselling the positive attitude towards UTI has significantly improved to 57.5%. For practice section before counselling 24.1% patients reported a poor level of practice, 50.6% reported average level of practice and 25.3% were in good level of practice. But after the counseling the practice level significantly improved to good (43.7%).). It shows that there is increase in the KAP score of the patients after counseling session. Thus, the counseling provided was effective in improving the knowledge, attitude and practice of patients with urinary tract infection.

When we compare with the antibiotic treatment good patient counselling is a best alternative. The study conducted by Gupta et al. states that prophylactic treatment does not modify the natural history of UTI. When such treatment ceases, even after long periods of treatment, more than 50% of women will have another infection within three months.[22] Thus, here also they specify the need of another better method for prevention. The study conducted by Randheer et al concluded that improvement in knowledge of the disease and its management had positive impact on treatment outcomes and quality of life.[23] The detailed study of risk factors and proper knowledge about the medical and personal history of individual patients will help in providing provide a better patient counselling.[24]

Improvement of quality of life of the patient: In this section a standard EQ-5D-5L questionnaire was used for scoring the health-related quality of life of the patient before and after counseling and treatment. The questionnaire is provided during the first visit and the final follow up. The data were analyzed using the suitable statistical technique for the result. The scores were categorized as poor, average, good and best and are compared. The observed changes were Poor QOL (23.8-83%). Good QOL (48.8-2.4%), average QOL (28.2-17.9%) and best QOL (1.2-71.4%). It was found that the health-related quality of life has improved significantly during the final follow up which indicate the effectiveness of the counseling and the treatment. The study conducted by Schaeffer et al. states that intermittent self-start therapy is effective, safe and economical in women with recurrent UTI.[25]

The study population was quite small and it was having shorter duration which limited our study. We recommend further extensive studies involving more patients more objectives and comparative studies.

CONCLUSION

UTI are very high but data regarding the treatment of recurrent UTI are not much sufficient and the use of antibiotic for the prophylaxis was associated with the development of side effects and antibiotic resistance. The study concluded that our patient counselling was effective in improving the quality of life of the patients. The patient counseling was effective in improving the knowledge, attitude and practice of the patients and the health-related quality of life of patients improved significantly after the counseling and treatment. Involvement of female patients having the previous history of recurrent UTIs, assessment of risk factors and co morbidities were the main pillars of our study.

ACKNOWLEDGEMENTS

REFERENCES

1. Hudson JQ, Chaudhary K. Chronic Kidney Disease: Therapeutic approach for the management of complications. In, Joseph T Di Piro (ed). Pharmacotherapy: A Pathophysiologic Approach, 6th ed. New York, Medical Publishing Division. 2005;822-27.
2. Mason DL, Assimon MM. Chronic Kidney Disease. In, Brian K Alldredge (ed). Applied Therapeutics: The clinical use of drugs, 10th ed. USA, Williams and wilkins. 2013;764-67.
3. Marriott J, Cockwell P, Stringer S. Chronic kidney disease and end-stage renal disease. In, Roger Walker(ed). Clinical Pharmacy and Therapeutics, 5th ed. London, Elsevier. 2012;272-6.
4. Tripathi KD. Antihypertensive drugs. In, Tripathi(ed). Essentials of Medical Pharmacology, 8th ed. New Delhi, Jaypee Brothers Medical Publishers. 2019;604-18.
5. Mohan H. The Kidney and Lower Urinary Tract. Text Book of Pathology, 7th ed. New Delhi, Jaypee brothers' medical publishers. 2015;651-56.
6. Machin D, Day S, Green S. Text book of clinical trial, 2nd ed. 2010;593-94.
7. Ravishankar K, Kiran Mayi GVN. Clinical pharmacy and pharmacotherapeutics, 2nd ed. 2018;365.
8. Colledge NR, Walker BR, Ralston Sh. In, Davidson (ed). Principal and Practice of Medicine, 21st ed. 2010;459.
9. Greene RJ, Harris ND. Pathology and Therapeutics for Pharmacist: A basis for clinical pharmacy practice, 3rd ed. 2008;903.
10. British National Formulary, BHJ group. 2012;18.
11. Nseir W, Farah R, Mahamid M, Ahmad HS, Mograbi J, Taha M, Artul S. Obesity and recurrent urinary tract infections in premenopausal women: a retrospective study. Int J Infect Dis. 2015;41:32-5.
12. Polewski MA, Krueger CG, Reed JD, Leyer G. Ability of cranberry proanthocyanidins in combination with a probiotic formulation to inhibit in vitro invasion of gut epithelial cells by extra-intestinal pathogenic E. coli. J Functional Foods. 2016;25:123-34.
13. Dune T, Hilt E, Price T, Brincat C, Fitzgerald C, Brubaker L et al. Specific urinary tract infection symptoms in women relate to uropathogens while false negatives of standard urine cultures may delay patient treatment. Obstet Gynecol. 2017;130(4):718-25.

14. Raz R, Chazan B, Dan M. Cranberry Juice and Urinary Tract Infection Review article. Clin Infect Dis. 2004;38(10):1413-9.
15. Price TK, Dune T, Hilt EE. The Clinical Urine Culture: Enhanced Techniques Improve Detection of Clinically Relevant Microorganisms. J clinical microbiology. 2019;54(5):1216-22.
16. Chang SJ. Reliability and Validity of a Chinese Version of Urinary Tract Infection Symptom Assessment Questionnaire. 2015;41(4):729-38.
17. Makwana SP, Solanki MN. Comparative analysis of safety and efficacy of cefotaxime/sulbactam verses piperacillin/tazobactam combinations in the treatment of complicated urinary tract infections. Int J Basic Clin Pharmacol. 2019.
18. Howella A, Souzab D, Rollerc M, Fromentinb E. Comparison of the Anti-Adhesion Activity of Three Different Cranberry Extracts on Uropathogenic P-fimbriated Escherichia coli: A Randomized, Double-blind, Placebo Controlled, Ex Vivo Acute Study: Natural Product Communications. 2015;10(7):1215-8.
19. Wing DA, Rumney PJ, Preslicka C, Chung JH. Daily cranberry juice for the prevention of asymptomatic bacteriuria in pregnancy: A randomized controlled pilot study. J Urol. 2008;180(4):1367-72.
20. Liska DJ, Kern HJ, Maki KC. Cranberries and Urinary Tract Infections: How Can the Same Evidence Lead To Conflicting Advice? Am Society Nutri. 2016;7(3):498-506.
21. Remis RS, Gurwith M. Risk factors for urinary tract infection. Am J epidemiol. 1987;12(4):85-94.
22. Gupta K, Scholes D, Stamm WE. Increase in prevalence of antimicrobial resistance among uropathogens causing acute uncomplicated cystitis. J Am Med Assoc. 199;2081:73-8.
23. Puvadae RC, Muthukumar VA. Impact of patient counselling on the knowledge, aptitude, practice and quality of life in patients with hypertension with diabetes mellitus. IJPER. 2018;52(2):305-10.
24. Clayson D, Wild D, Doll H, Keating K, Gondek K. Validation of A Patient-Administered Questionnaire to Measure The Severity And Bother sameness Of Lower Urinary Tract Symptoms In Uncomplicated Urinary Tract Infection (UTI): The UTI Symptom Assessment Questionnaire. 2005;96(3):350-9.
25. Schaeffer AJ, Stuppy BA. Efficacy and safety of self-start therapy in women with recurrent urinary tract infection. J Urol. 1999;161:207-11.