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URINARY TRACT INFECTION IN WOMEN: KNOWLEDGE AND PRACTICE OF PHYSICIANS WORKING AT THE PRIMARY HEALTH CARE CENTERS OF AL AHSA DISTRICT OF SAUDI ARABIA

Urology

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ABSTRACT

Background: Urinary tract infection (UTI) .a condition which involves any part of the urinary tract., Is a major public health problem throughout the world. UTI is associated with significant morbidity which may affect the quality of life of the affected women. If not controlled properly, it can lead to more serious conditions which can be fatal to the life. This condition is also reported to be the most common condition attending the outpatient department. UTI can affect both sexes but its prevalence among women is higher than their male counterpart. At least half of the adult women are supposed to have more than one UTI in their life time. The roe of primary health care physicians and family physicians is crucial in optimizing the management of UTIs and preventing the complications related to it. Family physician and Genral physician are the first in a line of Health care service at the primary health care centers. The play a crucial role for the prevention , management ,referral and follow up of the cases suffering from UTIs. Studies have shown that lack of general physicians' time, lack of depth of knowledge and miscommunication between patients and General physicians and non availability of previous antibiotic therapy has played an adverse effect on the management of UTIs. The present study will be conducted in Al Ahsa region of Saudi Arabia to assess the Knowledge, attitude and practice of the family and general physicians working at different primary health care centers. **Materials And Methods:** It was a cross sectional survey. The study population was all the physicians working at different ministry of health operated primary health care centers of Al Ahsa region of Saudi Arabia. The study sample was calculated by Epi info software which was at least 150 physicians. The sampling was done by stratified sampling.The data were collected on a pretested, pre designed and self-administered questionnaires which were made available to the participants on google form (online). The collected data were cleared, coded, entered and analyzed by the SPSS version 26. Descriptive statistics were presented using counts, proportions (%), mean ± standard deviation whenever appropriate. The association of demographic characteristics of the participants with the knowledge and practice towards UTI among women was performed using chi square test. .A p-value cut off point of 0.05 at 95% CI was used to determine statistical significance. **Results:** A total of 150 physicians working at different primary health care centers p participated in this study The mean age of the participants was 36.13 years. The majority of the participants were female (56.0%). Thirty-four percent of the participants were graduate while 44.7% were postgraduate diploma and 21% were postgraduate degree holder. Thirty-four percent of the participants were residents while 45.3% were general physicians and 14.7% were family physician specialist and only 6% were family physician consultant. Majority of the physicians (75.3%) working at the primary health care centers located in the urban area. The mean score of knowledge was 5.84. Majority of the participants (56.7 %() had good know ledge regarding the UTI. The knowledge regarding the Urinary tract infections clinical features, causative organism and epidemiology of the female physicians was significantly higher than their male counterpart (63.10% vs. 48.48, P=0.05). As educational level increased the knowledge regarding UTI also increased. The physician with post graduate degree had higher knowledge than those with diploma and graduate degree (65.62% vs.59.70 vs.47.59, P=0.02).). The family physician specialist had better knowledge regarding UTI than general physician family physician consultant and family physician resident but it was not statistically significant. The mean practice score was 2.38. Fifty-six percent of the physician had poor practice while only 44% had good practice. The good practice score towards the management of UTI was higher among the male physician as compared to their counterpart female but it was not statistically significant (49.23 % vs.40.47% n, P=0.27). The good practice towards the management of UTI was higher among the physician with graduate degree than those with postgraduate diploma and postgraduate degree but it was not statistically significant (60.78% vs.49.25% vs.37.5%, P=0.481). The good practice towards UTI was higher among the consultant family physician than the specialist family physician, resident family physician and the general physician but it was statistically insignificant (66.66%vs.22.72%vs.44.12%vs.49.02%, P=0.092). The good practice score was higher among the physician living in the urban area than those living in rural area but again it was not statistically significant (45.13% vs.40.54% , P=0.385). **Conclusion:** The present study has provided valuable information on the knowledge and practice of the physicians working at different primary health care center. It showed overall moderate level of knowledge regarding the UTI among them but the clinical practice towards the management of UTI has been lacking. It is recommended that clear guidelines should be established for the diagnosis, treatment, and follow-up of female UTIs at the primary health level, which should be designed according to up-to-date sources.

KEYWORDS

Knowledge, Practice, UTI, Family physician

INTRODUCTION.

Urinary tract infection (UTI), a condition which involves any part of the urinary tract, is a major public health problem throughout the world. According to one estimate more than 150 million people are affected by this condition every year globally [1]. UTI has varied etiology and symptoms .UTI can be uncomplicated and complicated .in uncomplicated UTI the bacterial infection involves the bladder and associated structure in absence of associated co morbidities (such as diabetes. Pregnancy or immunosuppressive disease) and structural abnormalities in the urinary tract [2]. However most uncomplicated UTI is limited to the lower urinary tract and bladder (cystitis). The complicated UTI are those which occurs in male, in pregnant women as a result of obstruction in any part of urinary tract, renal tract calculi. immune compromised patients, catheter induced and in renal transplant cases [3]. UTI is associated with significant morbidity which may affect the quality of life of the affected women. If not controlled

properly, it can lead to more serious conditions which can be fatal to the life. This condition is also reported to be the most common condition attending the outpatient department. UTI can affect both sexes but its prevalence among women is higher than their male counterpart. At least half of the adult women are supposed to have more than one UTI in their life time [3]. The vulnerability of women for UTI is due to the proximity of the female urethra to the reproductive organ and relatively short urethra reducing the distance for bacterial ingress. Apart from this the female lower urinary tract opens into the vulgar vestibule which further increases the chances of infection. Other risk factors of UTI among women are pregnancy, increasing number of caesarian sections, postoperative catheterization, falling estrogen level among the postmenopausal women, pelvic organ prolapse and urinary incontinence. Urinary tract infection during pregnancy has adverse maternal and perinatal outcomes increased association of premature labor hypertensive disorder of pregnancy, anaemia and anomalies have been reported in one study [4]. Recurrent UTI among women is another serious issue which must be addressed to prevent the morbidity and mortality. Recurrent UTIs in women are defined as at least 2 UTIs occurring within a 6 month period or at least 3 UTIs in a 12 month period. The prevalence of recurrent UTIs in women is estimated at 25-50% of all infections [5]. Most of the community acquired uncomplicated urinary tract infection (80%) is caused by either Escherichia coli or Staphylococcus saprophyticus especially among women under the age of 50 years [6]. A suspected case of UTI may present at the Primary health Care center with the symptoms of strong urge to urinate that does not go away, burning sensation while urinating ,frequent urination , pelvic pain in women and fever with chills. Tests and procedures used to diagnose urinary tract infections include urinalysis for excluding bacteriurea, urine culture and images of the urinary tract to find out any abnormalities especially in recurrent UTI cases.[7] However urine culture may not be necessary as part of the evaluation of outpatients with uncomplicated UTI but it is necessary for outpatients who have recurrent UTI, complicated UTI or for inpatients that develop UTIs Antibiotic therapy is an effective approach and not only reduces the duration of symptoms but also reduces the bacterial load.[8] However it is very important to prevent the development of resistant due to under treatment or wrong treatment. The roe of primary health care physicians and family physicians is crucial in optimizing the management of UTIs and preventing the complications related to it. Family physician and General physician are the first in a line of Health care service at the primary health care centers. They play crucial role for the prevention, management, referral and follow up of the cases suffering from UTIs. Studies have shown that lack of general physicians' time, lack of depth of knowledge and miscommunication between patients and General physicians and non availability of previous antibiotic therapy has played an adverse effect on the management of UTIs[7]. In the present study was conducted in Al Ahsa region of Saudi Arabia to assess the Knowledge and practice of the family and general physicians working at different Primary Health care Centers towards female patients with UTI.A prior permission from the ministry of health ethical committee was taken before starting this study.

MATERIALS AND METHODS:

It was a cross sectional survey conducted during September 2024 to November 2024 at the Primary Health Centers of Al Ahsa region of Saudi Arabia. The study population was all the physicians working at different Ministry Of Health operated Primary Health Care centers of Al Ahsa region of Saudi Arabia which is around 500 in number according to the pay roll of the Al Ahsa health directorate. The study sample was calculated by Epi info software assuming that 40% of the primary health care physicians would have the poor knowledge about UTI among female. To achieve this at the 95% of confidence interval with an acceptable error of 5%, at least 150 physicians were needed. The sampling was done by stratified sampling from the list of all the physicians working at the Primary Health care centers of Al Ahsa district. There are four sectors of primary health care system of Al Ahsa. These are North, East, West and central. The sample was selected proportionate to the physicians working in these sectors. The selected participants were sent an e- mail and were requested to fill the google form with the questionnaires to answer with their consent. All the physicians working at the primary health care centers of Al Ahsa region of Saudi Arabia Those physicians who were not practicing and are on administrative post were excluded from this study. The data were collected on a pretested, pre designed and self-administered questionnaires which were made available to the participants on google form (online).The data collection contained demographic characteristics of the participants ,questionnaires to assess the knowledge about the UTI among women and their preferred practice towards the management of UTI among women. There were 10 questions to assess the knowledge while 5 questions to assess the practice of physician towards the management of UTI among women. The collected data were cleared, coded, entered and analyzed by the SPSS version 26.Descriptive statistics were presented using counts, proportions (%), mean ± standard deviation whenever appropriate. The association of demographic characteristics of the participants with the knowledge and practice towards UTI among women was performed using chi square test. .A p-value cut off point of 0.05 at 95% CI was used to determine statistical significance. The correct answer of the questionnaire was awarded 1 mark while the incorrect answer with 0 mark. The mean of the marks was the cutoff point demarcating the good knowledge with poor knowledge and good practice with the poor practice. The score above the mean was considered as good knowledge and good practice.

RESULTS:

A total of 150 physicians working at different primary health care centers of Al Ahsa region returned the filled google form. The mean age of the participants was 36.13 years ± Std. Dev 6.67 years (23-55 years). The majority of the participants were female physicians (56.0%). The vast majority of the participants (87.3%) were married followed by those (10.7%) who were unmarried and only 2% were widow. Thirty-four percent of the participants were graduate while 44.7% were postgraduate diploma and 21% were postgraduate degree holder. Thirty-four percent of the participants were residents while 45.3% were general physicians and 14.7% were family physician specialist and only 6% were family physician consultant. Majority of the physicians (75.3%) working at the primary health care centers located in the urban area. The details of the socio demographic characteristics of the participants is shown in table1.

Table 1: Showing the socio demographic characteristics of the participants

Variables	No.	Percentage
Age: Mean age 36.13 years ± Std Dev 6.67 years (23-55 years)		
Sex Male Female	 66 84	 44.0 56.0
Marital status Unmarried Married Divorced	 16 131 3	 10.7 87.3 2.0
Educational qualification Graduate Post graduate Diploma Post graduate degree	 51 67 32	 34.0 44.7 21.3
Position General physician Family physician resident Family physician specialist Family physician consultant	 51 68 22 9	 34.0 45,3 14.7 6.0
Location Urban Rural	 113 37	 76.3 24.7

Knowledge Section:

More than fifty percent of the physicians (54.0%) agreed with the statement that at least half of the adult women are supposed to have more than one UTI in their life time while 37.3% did not agree on it and 8.7% did not know about it. Almost fifty-seven percent (56.7%) of the physicians answered that UTI is most common in male while 37.3% answered that UTI is more common among female and 6% answered that UTI is affecting both sexes equally. When asked about the organs mostly involved by UTI ,36.7% of the physician answered that its kidney while 6.7% answered it to be ureter and 8.7% answered that its bladder . Ten percent of the participants answered that it may affect all of these and 40% narrated that none of these organs are involved. As far as the causative organism for the UTI is concerned more than forty one percent of the physicians (41.4%) answered it to be E coli followed by those(22.7%) who blamed Pseudomonas aurgenosa as the main causative organism and 20.0% of the physicians answered that its Staphylococcus aureus .Sixteen percent of the physicians narrated that its Streptococcus is mainly responsible for the UTI. When asked about

the definition of recurrent UTI, 44% of the physicians answered that it's at least 1 UTI occurring every month for 6 months followed by those (30.0%) who answered that its at least 2 UTIs occurring within 3 month. Twenty eight percent of the physicians were of the opinion that recurrent UTI is all about at least 2 UTIs occurring within 6 months of period or at least 3 UTIs in a 12 month period. As far as the risk factor of the UTI is concerned, almost three fourth of the physicians did not agree with hypertension while 11.3% each disagreed with the using a catheter and pregnancy respectively. A minority (2.0%) of the physicians narrated that postmenopausal women is not a risk factor for UTI. On the question that diabetes is an important risk factor to get UTI , 80.7 % of the physician answered 'yes' while 11.5% answered ;no' and only 8.0% of them did not know about it. On the statement that Retrograde movement of which specific bacteria from the gut into the lower urinary tract is the most common pathogen causing UTI, the majority of the physicians (70.0%) narrated it to be E coli while 16.7% of the physician mentioned Streptococcus fecalis and 13.3% of them blamed Staphylococcus. The details of the responses on the knowledge questionnaires is shown in table2.

Table2: Showing the details of the responses on the knowledge questionnaires

Knowledge questions	No.	Percentage
At least half of the adult women are supposed to have more than one UTI in their life time		
True	81	54.0
False	56	37.3
I don't know	13	8.7
Urinary tract infection is most common in		
Male	85	56.7
Female	56	37.3
I don't know	9	6.0
Urinary Tract infection may involve		
Kidney	55	36.7
Ureter	10	6.7
Bladder	10	6.7
All of the above	15	10.0
None of the above	60	40.0
The most common causative organism of UT is		
Pseudomonas aurgenosa	34	22.7
Staphylococcus aureus	30	20.0
Streptococcus	24	16.0
E coli	62	41.4
Recurrent UTI in women is defined as		
At least 1 UTI occurring every month for 6 months	66	44.0
At least 2 UTIs occurring within 3 month	45	30.0
At least 2 UTIs occurring within 6 months of period or at least	39	26.0
Which of the following is not the risk factors for UTI among adult women		
Hypertension	112	75.0
Using a catheter	17	11.3
Pregnancy	17	11.3
Postmenopausal women	4	2.4
People with diabetes are more likely to get UTIs		
Yes	121	80.7
No	12	11.3
I don't know	17	8.0
Retrograde movement of which specific bacteria from the gut into the lower urinary tract is the most common pathogen causing UTI		
Staphylococcus	20	13.3
Streptococcus fecalis	25	16.7
E coli	105	70.0
Which of the following is the best juice for classic home remedy?		
Apple juice	6	4.0
Orange juice	18	12.0
Strawberry juice	30	20.0
Cranberry juice	96	64.0
Urinary tract infection during pregnancy can cause		
Hypertensive disorder of pregnancy	20	13.3
Maternal anemia	34	22.7
All of the above	96	64.0

Practices towards the management of UTI:

Majority of the participants (54.7%) affirmed that Urine culture should be the first line of investigation for women patients with suspected UTIA and 38.7% of them rejected this practice. A minority of the participants (6.7%) did not know about it. When asked about the correct urinary microscopic interpretation of UTI ,40% of the participants answered that its 10 ^{3}CFU/mL uro pathogens on mid stream urine in uncomplicated acute cystitis of women followed by those who answered that its 10^{2} CFU/mL uro pathogens on mid stream urine of men and 22.0% of the participants answered that its 10^{5} CFU/mL uro pathogens on mid stream urine of women On the practice that pregnant women should be recommended for bacteriuria screening in every antenatal care, 68.7% of the participants answered 'yes' while 22.0% disagreed and 9.3% did not know about it. On the management question 27.3% of the participants advised 7 days regimen of Amoxycillin – clavulanate 1 gm PO q 12 hourly for Symptomatic or asymptomatic cystitis among female patients while 25.3% suggested 7 days regimen of Nitrofutantoin 100mg PO Q 12 hourly and 24.0% were of the opinion that 7 days regimen of Cefuroxime 500mg PO Q 12 hourly should be given However 13.3% and 10.0% agreed with all these treatment and none of these treatment respectively. Three fourth of the participants(76.0%) did agreed with the fact that Urine culture should be performed in pregnant women due to less meaningful of dipstick urinalysis while 20.0% of the participants disagreed with this decision and 9.3% did not know about it. The details of the responses on the practice question is shown in table 3.

Table 3: Showing the details of the responses on the practice question

Practice questionnaires	No.	Percentage
Urine culture should be the first line of investigation for women patients with suspected UTIA		
Yes	82	54.0
No	58	38.0
I don't know	10	8.0
The correct unary microscopic interpretation of UTI		
10^{2} CFU/mL uro pathogens on mid stream urine in uncomplicated acute cystitis of women	60	40.0
10^{3}CFU/mL uro pathogens on mid stream urine of men	57	38.0
10^{5} CFU/mL uro pathogens on mid stream urine of women	33	22.0
On pregnant women bacteriuria screening is recommended in every antenatal care		
Yes	103	68.7
No	33	22.0
I don't know	14	9.3
Symptomatic or asymptomatic cystitis among female patients should be treated by		
7 days regimen of Amoxycillin – clavulanate 1 gm PO q 12 hourly	41	27.3
7 days regimen of Nitrofutantoin 100mg PO Q 12 hourly	38	25.3
7 days regimen of Cefuroxime 500mg PO Q 12 hourly	36	24.0
All of the above	20	13.3
None of the above	15	10.0
Urine culture should be performed in pregnant women due to less meaningful of dipstick urinalysis		
Yes	114	76.0
No	31	20.7
I don't know	5	3.3

Knowledge Score

The mean score of knowledge was 5.84 ± std. Dev.1.58 (Range 2-9). Majority of the participants (56.7 %() had good know ledge regarding the UTI. The knowledge regarding the Urinary tract infections clinical features, causative organism and epidemiology of the female physicians was significantly higher than their male counterpart (63.10% vs. 48.48, P=0.05). As educational level increased the knowledge regarding UTI also increased.. The physician with post graduate degree had higher knowledge than those with diploma and graduate degree (65.62% vs.59.70 vs.47.59, P -0.02).). The family

physician specialist had better knowledge regarding UTI than general physician family physician consultant and family physician resident (63.64% vs.58.82% vs.55.55 vs.52.94%).However it was not statistically significant(P=0.820). The knowledge score regarding the UTI was almost equal among the rural and urban doctors (56.63vs.56.76).However it was not statistically significant (P=0.572).The details of the knowledge score and its association with the socio demographic characteristics of the participants is shown in table 4.

Table 4: Showing The Knowledge Score And Its Association With The Socio Demographic Characteristics Of The Participants

Knowledge score	Poor knowledge No.(%)	Good knowledge No.(%)	P value
Mean knowledge score 5.84 ± std. Dev.1.58 (Range 2-9)	65(43.3)	85(56.7)	
Sex Male Female	 34(51.52) 31(36.90)	 32(48.48) 53(63.10)	 0.05
Marital status Unmarried Married Divorced	 6(37.5) 58(44.28) 1(33.34)	 10(62.5) 73(55.72) 2(66.66)	 0.822
Educational qualification Graduate Postgraduate diploma Postgraduate degree	 27(52.41) 27(40.3) 11(34.36)	 24(47.59) 40(59.70) 21(65.62)	 0.200
Position General physician Family physician resident Family physician specialist Family physician specialist	 21(41.18) 32(47.06) 8(36.36) 4(44.45)	 30(58.82) 36(52.94) 14(63.64) 5(55.55)	 0.820
Location Urban Rural	 49(43.37) 16(43.24)	 64(56.63) 21(56.76)	 0.572

Practice Score:

The mean practice score was 2.38 ± std. dev. 0.98 (00-5.0).Fifty six percent of the physician had poor practice while only 44% had good practice. The good practice score towards the management of UTI was higher among the male physician as compared to their counterpart female but it was not statistically significant (49.23 % vs.40.47% n, P=0.27). The good practice towards the management of UTI was higher among the physician with graduate degree than those with postgraduate diploma and postgraduate degree but it was not statistically significant (60.78% vs.49.25% vs.37.5%, P=0.481). The good practice towards UTI was higher among the consultant family physician than the specialist family physician , resident family physician and the general physician but it was statistically insignificant (66.66%vs.22.72%vs.44.12%vs.49.02% , P=0.092). The good practice score was higher among the physician living in the urban area than those living in rural area but again it was not statistically significant (45.13% vs.40.54% , P=0.385).The details of the practice score and its association with the different socio demographic characters is shown in table 5.

Table 5: Showing Knowledge Score And Its Association With The Socio Demographic Characteristics Of The Participants

Practice score	Poor practice No.(%)	Good practice No.(%)	P value
Mean practice score :2.38 ± std. dev. 0.98 (00-5.0).	84(56.0)	66(44.0)	
Sex Male Female	 34(50.77) 50(59.53)	 32(49.23) 34(40.47)	 0.27
Marital status Unmarried Married Divorced	 8(50.0) 73(55.73) 3(100.0)	 8(50.0) 58(44.27) 0(0.0)	 0.273
Educational qualification Graduation Postgraduate diploma Postgraduate Degree	 30 34 20	 21(60.78) 33(49.25) 12(37.5)	 0.481
Position General physician Family physician resident Family physician specialist Female physician consultant	 26(50.98) 38(55.88) 17(77.28) 3(33.34)	 25(49.02) 30(44.12) 5(22.72) 6(66.66)	 0.092
Location Urban Rural	 62(54.87) 22(59.55)	 51(45.13 15(40.45)	 0.385

DISCUSSION:

The present study has assessed the knowledge and practice towards urinary tract infection among) the physicians working at different primary health care centers of Al Ahsa district of Saudi Arabia. The present study has found adequate knowledge of UTI among the majority of the participants but the practice towards the management of UTI was lacking in majority of the participants. A high level of knowledge and adequate level of practice towards Urinary tract infection has been reposted from an Ethiopian study where 72.2% of the participant healthwokers had good knowledge and 56.4% of them had good practice towards UTI. Like the present study the knowledge of participants of this study increased with the higher qualification [9]. In a Similar study conducted in Netherlands, the researchers have reported a sound knowledge regarding the UTI symptoms, causative factor and investigative procedure among ninety percent of the general practitioners working at the primary health care centers. As far as practice towards the management of UTI is concerned unlike the present study where 75% of the physicians indicated that they felt the dipstick test is inadequate for the diagnosis of a UTI, the Netherlands study has shown that almost half of the physician had this view [10]. An inadequate knowledge and practice were also reported in one Iranian study where the general physicians and pediatrician had participated in the study. However, 75% of the family physician had adequate knowledge about UTI in this study [11]. A study conducted on the medical staff in a teaching hospital of Iraq has revealed that a little more than 50% of the nursing staffs had adequate knowledge about UT[[12] .There is scarce published data on knowledge and practice of general practitioners (GPs) and family physicians about UTI to compare with.

CONCLUSION:

The present study has provided valuable information on the knowledge and practice of the physicians working at different primary health care center. It showed overall moderate level of knowledge regarding the UTI among them but the clinical practice towards the management of UTI has been lacking. It is recommended that clear guidelines should be established for the diagnosis, treatment, and follow-up of female UTIs at the primary health level, which should be designed according to up-to-date sources.

Introduction

Purpose:

The purpose of this study is to assess the knowledge and practice of family physicians working at the primary health care centers of Al Ahsa district of Saudi Arabia towards the Urinary tract Infection among the women.

Methods: It will be a cross sectional survey

Importance: The result of this study will provide vital information regarding the knowledge of the family physicians working at different MOH operated Primary health care centers of Al Ahsa district towards Urinary tract infection among women. The will enable the Ministry of health to formulate effective teaching programme to enhance their knowledge and practice if found deficient.

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