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DIAGNOSIS AND MANAGEMENT OF URINARY TRACT INFECTION IN WOMEN IN PRIMARY CARE SETTINGS, SYSTEMATIC REVIEW

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Abstract:

Background: *One of the most typical presentations in the primary care setting is a suspected UTI. Misdiagnosis of UTI may lead to the use of improper tests and/or needless antibiotics. Unless/until it causes urinary symptoms or fever, or if the woman is pregnant or is going to have a urological operation with mucosal trauma, bacteria in the urine may be typical for that person and they may not need to be treated.*

Objectives: *To identify the role of family physician in diagnose and manage women with UTI and discuss prevalence of UTI in primary healthcare settings.*

Methods: *For article selection, the PubMed database and EBSCO Information Services were used. All relevant articles relevant with our topic and other articles were used in our review. Other articles that were not related to this field were excluded. The data was extracted in a specific format that was reviewed by the group members.*

Conclusion: *UTI is a very common compliant among women in primary health care centers. General practitioners and family physicians should be aware and updated of the diagnostic criteria and management approaches for these cases. Consultation time burdens, along with late symptoms are a contest for even the most qualified of GPs. Also, GPs should comprehend that management in women's is dependent on individual predilections for particular treatment modalities.*

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INTRODUCTION:

Urinary tract infections (UTIs) are more common in women than in men and can occur at any age. Women are significantly more susceptible to UTIs than men due to the anatomy of the female lower urinary system and its proximity to the reproductive organs. Because the female urethra is somewhat short, germs require less space to infiltrate [1]. Its annual incidence is anticipated to be around 150 million new cases [2].

Pregnancy and the neonatal period are two other time periods when urinary tract infections are common. Infections and untreated asymptomatic bacteriuria during pregnancy have been linked to an increased risk of pyelonephritis, early birth, and foetal mortality [3]. Urinary tract infections are best treated and managed by primary care providers. Urinary tract infections are often characterised by changes in frequency, dysuria, urgency, and the presence or absence of vaginal discharge, while older women may have unique symptoms. Dipstick urinalysis is frequently used due to its ease of use and usefulness, but results must be understood in the context of the patient's pretest probability based on symptoms and other factors. A negative dipstick urinalysis does not rule out a urinary tract infection in persons who have a high probability of having one based on their symptoms [4, 5].

Simple urinary tract infections are often treated empirically in primary care. The antibiotic used may be impacted by the practitioner's and the patient's prior experiences, available antibiotic sensitivity information, recommendations, and commercial marketing. The first is to choose an appropriate therapy for the individual, and the second is to reduce group resistance by using antibiotics properly. These two goals may occasionally conflict with one another [6]. Several guidelines recommend that women with mild to moderate symptoms take nonsteroidal anti-inflammatory drugs (NSAIDs) to relieve their symptoms. Many women, however, tend to choose to forego antibiotics and instead manage UTI symptoms with NSAIDs and other measures or cures. This is most likely due to their awareness of the potential negative effects of antibiotics, particularly if their doctors have encouraged them to postpone starting antibiotic treatment [7].

As urology specialists choose the current course of care, the role of the family doctor becomes increasingly important because he can better explain and communicate to his patient all of the management options available, boosting compliance and improving outcomes [8].

Study Objective:

- To identify the prevalence of UTI in women attending PHC
- To describe the management of UTI in women attending PHC.
- To identify the role of family physician in diagnose and manage women with UTI.

METHODS AND MATERIALS:

SAMPLE & STUDY GROUPS

Exploratory research employing a quantitative approach is included in this Integrative Literature Review (ILR). ILR is a strategy used in the health sciences to find health-care approaches and determine innovations, allowing the deployment of evidence-based services, ensuring quality, and enhancing patient safety. It consists of six phases that must be completed in the following order: The problem of the study is stated, the inclusion and exclusion criteria are listed, the sample is detailed, the included studies are evaluated, the results are interpreted, and the ILR synthesis is presented.

PubMed and EBSCO Information Services will be used as search databases for the papers used in the study due to their reputation as trustworthy sources. PubMed, one of the largest online digital libraries, was founded by the National Center for Biotechnology Information (NCBI), a part of the United States National Library of Medicine. Topics relevant to childhood hypertension will be used in the writing of the paper. The titles and abstracts of the published publications will be reviewed.

Inclusion criteria: the articles will be selected based on the relevance to the project which should include one of the following topics; urinary tract infections, primary care, family medicine, UTI in women.

Exclusion criteria: all other articles which do not have one of these topics as their primary end, or repeated studies, and reviews studies will be excluded.

STATISTICAL ANALYSIS

The data will be analysed without the use of any programme. The data will be extracted using a specified form that includes (article title, author's name, objective, summary, results, and outcomes). To confirm the validity and minimise errors, each member's results were double-revised.

During the article selection process, studies and their results were double-reviewed to ensure that we enrol

research related to the purpose of our study and to avoid or reduce inaccuracies in the results.

RESULTS:

Figure 1 shows the selection and identification of studies. The search of the mentioned databases returned a total of 517 studies that were included for title screening. 324 of them were included for abstract screening, which lead to the exclusion of 204 articles. The remaining 120 publications full-texts were reviewed. The full-text revision led to the exclusion of 110 studies due to difference in inclusion criteria, and 10 were enrolled for final data extraction **(Table 1).**

4 studies out of 10 were prospective studies (searched hospital databases for UTI diagnosed patients), 4 studies were from doctors' perspectives after face-to-face interview or questionnaire-based studies and the remaining two studies were community based from patient perspective.

Prevalence of UTI among patients who visited primary healthcare centers was reported 35.8%, 62.5%, 66% [14, 11, 13]. GPs were aware of common UTI symptoms and management approach [9- 11, 17], some were unaware of how to send a urine culture, second-line and non-antibiotic monitoring, and did not probe for symptoms and signs [10]. Diagnosis was based on dipstick [11- 13, 15] or urine culture [14, 16]. A dipstick decision rule based on the presence of nitrite, or both leucocytes and blood, was both sensitive (77%) and specific (70%) [12]. A clinical judgement rule based on having two of the following: urine cloudiness, disagreeable odour, and mild dysuria and/or nocturia was less sensitive (65%) (specificity 79%) [12].

Antibiotics were properly prescribed [9- 18] and rarely delayed [15]. Antibiotics were prescribed for 95.1% of people in England, 92.9% of people in Wales, 95.1% of people in Spain, and 59.4% of people in the Netherlands. Before and after correcting for severity, prior UTIs, and antibiotic prescribing, there were no significant differences at the country network level [14]. Also, Physicians prescribed antibiotics for (87%) women and recommended NSAIDs in 14 cases [12].

Patients with resistant isolates had a longer median time to symptom relief, more visits to the clinic, more antibiotics, and higher incidence of significant bacteriuria at 1 month [18].

The included studies had different study designs.

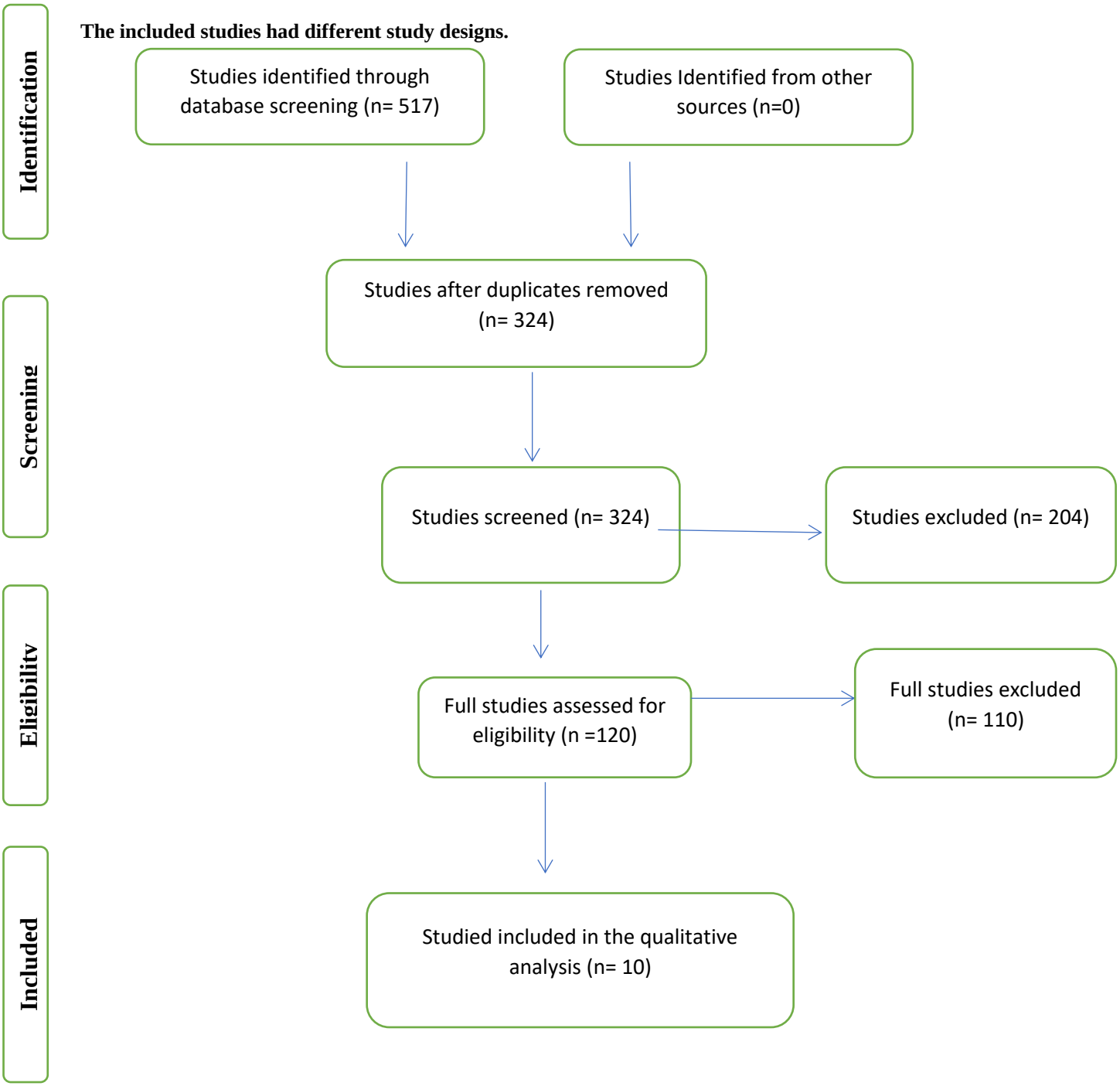

Table 1: Author, country, year of publication, methodology and outcome:

Author, Publishing Year	Methodology	Management
Flower, A., et al. (2015) [9]	To investigate GPs' experiences managing recurrent urinary tract infections in women, 15 GPs were purposively sampled and participated in semi-structured face-to-face and telephone interviews.	GPs faced major difficulty in managing recurrent UTIs, with decisions concerning antibiotic administration being particularly difficult.
Cooper, Emily et al. (2020) [10]	The study gathered opinions from 57 primary health care personnel in England with varying levels of experience in the diagnosis and management of UTI in women under the age of 65.	Although most GPs were aware of common UTI symptoms and nitrofurantoin as first-line treatment, some were unaware of how to send a urine culture, second-line and non-antibiotic monitoring, and did not probe for symptoms and signs to specifically exclude vaginal causes or pyelonephritis before prescribing. Many consultations were conducted over the phone, many by nurse practitioners, and adhered to predetermined protocols, which frequently involved urine dipsticks and receptionists.
Little, Paul et al. (2006) [11]	Clinical and dipstick findings in GPs were validated in comparison to laboratory testing. Using European urinalysis criteria, the laboratory diagnosis of 427 women with suspected UTI was evaluated.	In 62.5% of women with suspected UTI, UTI was confirmed. Only nitrite, leucocyte esterase, and blood were found to predict diagnosis independently. A dipstick decision rule based on the presence of nitrite, or both leucocytes and blood, was both sensitive (77%) and specific (70%). A clinical judgement rule based on having two of the following: urine cloudiness, disagreeable odour, and mild dysuria and/or nocturia was less sensitive (65%) (specificity 79%).
Gágyor, Ildikó et al. (2020) [12]	A prospective cohort research based on clinical data from local practises and patient surveys in German primary care. Participating women (120) filled out a baseline data form in the clinic, and their urine samples were examined with a dipstick and cultured in a laboratory.	The urine dipstick was positive for leucocytes in 92%, erythrocytes in 87%, and nitrites in 23%. Physicians prescribed antibiotics for (87%) women and recommended NSAIDs in 14 cases. Only 60% took antibiotics, while the remainder took NSAIDs and other remedies. Symptoms declined from day 0 to day 6, irrespective of whether women decided to take an antibiotic, NSAIDs, none or both, as confirmed by a significant curvilinear time effect
Little, Paul et al. (2010) * [13]	Bacteriuria was measured using the European Urinalysis Guidelines in a validation study in primary care settings on 434 adult females with suspected lower UTI.	66% had UTI. The prognostic qualities of nitrite, leucocyte esterase, and blood were confirmed. The previously developed dipstick rule, which was based on the presence of nitrite or both leucocytes and blood, was highly sensitive (75%) but less specific (66%). Urine unpleasant smell was not shown to be prognostic in this group; for a clinical score considering the remaining three predicted clinical factors
Butler, Chris C., et al. (2017) [14]	Prospective observational research of 797 females presenting to primary care networks in England, Wales, the Netherlands, and Spain with symptoms of simple UTI. Clinicians took notes on the patient's history, symptom severity, and therapy, and they obtained a mid-stream urine culture. For 14 days, participants kept a diary and reported the intensity of their symptoms.	In all, 35.8% of females with a result had a positive urine culture for UTI. Antibiotic sensitivities and pathogens were comparable. Antibiotics were prescribed for 95.1% of people in England, 92.9% of people in Wales, 95.1% of people in Spain, and 59.4% of people in the Netherlands. Before and after correcting for severity, prior UTIs, and antibiotic prescribing, there were no significant differences at the country network level.
Butler, Chris C., et al. *(2015) [15]	A random sample of 2424 females aged 16 years old were interviewed about their UTI symptoms, seeking care, and managing them. To be generally representative of the overall population, data were weighted by	37% experienced at least one UTI in their lifetime (29% had multiple episodes). In the previous year, 11% of all females had a UTI, with 3% having recurring UTIs (3 or more). 48% of individuals who had previously experienced a UTI assessed their most recent UTI as fairly or very severe. In all, 95% sought the advice of a health expert, with 65% visiting their local GP practise within normal business hours.

	gender, age, ethnicity, working status, social grade, housing tenure, and Government Office Region.	Seventy-six percent of those who contacted a health professional had a urine test, and seventy-four percent were prescribed an antibiotic, but only six-three percent reported taking the drug. Antibiotic prescribing was rarely delayed.
Kornfält Isberg, Helena, et al. (2021) [16]	A prospective observational study included 192 women with symptoms of simple UTI in eight different PHC centres in Sweden. To collect patient data, questionnaires and symptom diaries were used. Urine culture and susceptibility testing were performed on all urine samples.	The median time between symptoms and seeking medical attention was four days. The majority (74%) of responders reported daily restrictions due to symptoms of uncomplicated UTI. The median number of days after consultation for any symptom was 4.0 for patients treated with antibiotics and 6.5 for those not treated with antibiotics. There was a link between greater symptom duration after consultation and being over the age of 50. Antibiotic treatment was associated with a reported shorter duration of symptoms (RR 0.47).
Lecky, Donna M et al. (2020) [17]	To investigate how consultation conversations about diagnosis, antibiotic use, self-care, safety netting, and UTI prevention could be improved, 29 qualitative telephone interviews with GPs and patient focus group interviews were done.	Lack of GP time, misconception of depth of expertise and communication breakdowns between the patient and the GP, nature of consults (such as telephone consultations), and a history of past antibiotic medication were all barriers to an effective collaborative consultation and proper dosing.
McNulty, C A M et al. (2006) [18]	In a prospective cohort research, 497 women coming to general practitioner surgeries in Norwich and Gloucester with at least two symptoms of acute (7-day) uncomplicated UTI were included. Bacteriuria was defined as more than or equal to 10(4) cfu/mL in mid-stream urine (MSU).	75% of the patients recruited showed severe bacteriuria, and 13.9% developed trimethoprim resistance. Patients with resistant isolates had a longer median time to symptom relief, more visits to the clinic, more antibiotics, and higher incidence of significant bacteriuria at 1 month. Half of the patients who returned within the first week had a resistant pathogen.

DISCUSSION:

Urinary tract infections, after lung infections, are the second most prevalent illnesses in women, causing significant distress and morbidity. Underlying structural abnormalities in women with recurrent lower urinary tract infections are uncommon, and additional investigations such as imaging scans are rarely necessary [19].

A more extensive evaluation is required in women who have atypical symptoms, which may include a pelvic examination, urinalysis, and urine culture. Better evidence about the validity of dipstick analysis is needed, however treating on the basis of dipstick outcomes (positive nitrite and/or leucocyte results) is a fair strategy. Dipstick testing that is positive for blood necessitates microscopic analysis to distinguish between haematuria and haemoglobinuria and to find casts to differentiate between lower and upper urinary tract infection. The presence of more than 20 epithelial cells per high-powered field indicates that urine has been contaminated with vaginal discharge [20, 21].

Unless there are any risk factors for upper tract or complicated infections, most individuals with consistent symptoms and a positive dipstick test do not require a urine culture. When the pretest likelihood of infection is high, a negative dipstick test result cannot clearly rule out infection, and a culture is recommended. Cultures are also recommended to find rare or resistant organisms in women whose symptoms do not improve or return after two to four weeks of treatment [22].

Some believe that empirical treatment of all patients with symptoms is the most beneficial approach, yet it entails unneeded antibiotic prescriptions. When the impact of this technique on antibiotic resistance is realised, the dipstick strategy may be deemed a preferable strategy overall [23].

Empirical treatment may be appropriate when the history is typical (for example, dysuria and frequency without vaginal discharge or discomfort; presence of risk factors). This strategy is justified by the extremely predictable spectrum of etiological agents producing urinary tract infections and their antibiotic resistance patterns [24].

Trimethoprim is the first-line treatment option, except in women from high-resistance populations, in which case local recommendations should be followed. Trimethoprim resistance is most common in patients who have previously been exposed to trimethoprim or

other antibiotics, and the chance of resistance increases with age. This data could be used to categorise women based on their risk of becoming infected with trimethoprim-resistant bacteria [25].

Most women with lower urinary tract infections, especially the elderly, should only require three days of antibiotic treatment. Treatment with a single dose is less effective but has fewer negative effects [21].

Sometimes, despite treatment, the patient's symptoms persist or worsen, a urine culture and prescribe antibiotics based on the results of the culture and sensitivity tests. Upper urinary tract infection can be treated with oral antibiotics for seven to ten days if caught early should be conducted. Women who are seriously ill should be admitted to the hospital [26].

Management of urinary tract infections during pregnancy necessitates a thorough diagnostic workup and awareness of antimicrobial drugs in order to optimise maternal outcome, maintain foetal safety, and prevent problems in both the foetus and the mother [27].

There are still many unanswered questions. Just as the relationship between prescribing practises, resistance, and clinical outcomes is complex, so is the relationship between detected infection and antibiotic response. Ironically, strict prescribing recommendations for first-line treatment may be less effective in limiting antibiotic resistance. It has been proposed that diversity of first line agents may dilute selection pressure, and that additional examination of a range of techniques is required. Some persons with symptoms respond to antibiotics faster than placebo when they do not have infection by any accepted definition, whilst others with sensitive organisms do not respond to medications [28].

CONCLUSION:

UTI is a very common compliant among women in primary health care centers. General practitioners and family physicians should be aware and updated of the diagnostic criteria and management approaches for these cases. Consultation time burdens, along with late symptoms are a contest for even the most qualified of GPs. Also, GPs should comprehend that management in women's is dependent on individual predilections for particular treatment modalities.

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