دراسة بكتريولوجية وكيميائية حيوية لعدوى المسالك البولية في بعض عينات البول ومقارنة نتائج التحاليل بين مختبرات بني وليد

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Bacteriological, Biochemical Study of Urinary Tract Infections in some urine samples and comparison of the results of analyzes between Bani Waleed laboratories

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الملخص: التهابات المسالك البولية تعد من اهم واكثر الامراض شيوعا اذ تحدث نتيجة الاصابة بالبكتريا وتكاثرها في الجهاز البولي، وبإجراء تحليل البول يمكن التوصل لتشخيص صحيح لأمراض الجهاز البولي . وهذه التحاليل تحدد من قبل الطبيب الفاحص وذلك على حسب الحالة المرضية الراهنة التي تم تشخيصها سريرياً، ومن أجل أن تكون النتائج المخبرية والتحاليل صحيحة لابد من الالتزام والتقيد بإجراءات كيفية جمع عينات البول وحفظها داخل المختبر.

أجريت هذه الدراسة في مختبرات بني وليد في الفترة ما بين (ديسمبر2022 الي فبراير 2023)، هدفت هذه الدراسة الى التعريف بمرض إلتهاب المسالك البولية وتوضيح طرق تحليل البول وتقييم بعض المتغيرات الكيميائية والمجهرية المصاحبة للمرض والمقارنة بين المختبرات في دقة وجودة تحاليلها. شملت الدراسة شقين: الشق الاول دراسة تحليلية لنتائج المرضي تحليل البول لعدد 45 عينة لمرض التهاب المسالك البولية تم الحصول عليها من سجل مصحة أيادى الرحمة لكلا الجنسين (ذكور واناث) بمختلف الفئات العمرية. الشق الثاني من الدراسة مقارنة النتائج تحليل لعدد 6 أشخاص من مختلف الفئات العمرية ثم إجراءها لقياس دقة وجودة التحاليل في ستة مختبرات فى مدينة بني وليد. تم تقييم نتائج المرضي في هذه الدراسة بناءاً علي معطيات الفحوص المخبرية واستخدام برنامج أكسل Excel الإحصائي لدراسة النتائج . ومقارنتها بنتائج عالمية. اظهرت الدراسة أن نسبة الإصابة في الاناث بنسبة (68%)، كما لوحظ ارتفاع فى الفئة العمرية (40 – 21) سنة بنسبة (48.8%). اوضحت نتائج الفحص المجهري والكيميائي وجود خلايا طلائية Epithelial cells بنسبة (84.4%) وخلايا الصديد Pus cells بنسبة (62.2%) والمخاط Mucus بنسبة (66.6%). بينما التشخيص الجرثومي اوضح ارتفاع في النمو الجرثومي المفرد لبكتيريا الكروية cocci بنسبة (60%). كما اظهرت نتائج المقارنة فى مختبرات بني وليد تفاوت واختلاف كبير وعدم تشابه فى نتائج التحليل لكل عينة وهذا يؤدي الى وقوع الاطباء فى خطر التشخيص الخاطئ بناءاً على نتائج تحاليل ليست دقيقة من قبل الفنيين والمختبرات. على ضوء النتائج المتحصلة وضعت توصيات للحد من المرض وتجنب الأخطاء التحليلة.

الكلمات المفتاحية: إلتهاب المسالك البولية, تحاليل, مختبر.

Abstract Urinary tract infection is one of the most significant and widespread illnesses because it is brought on by infection with bacteria and the subsequent proliferation of those germs inside the urinary system. By conducting urine

analysis, a correct diagnosis of urinary system diseases can be reached. In order for the laboratory results and analyzes to be correct, it is necessary to adhere to and adhere to the procedures for collecting urine samples and keeping them inside the laboratory.

This study was conducted at Bani Waleed Labs between December 2022 to February 2023, this study aimed to define urinary tract infections and clarify urinary analysis methods and evaluate some chemical and disease variables associated with the disease And compare laboratories in the accuracy of its analyzes. The study included two parts: the first part was an analytical study of the results of patients, urinalysis of 45 samples of urinary tract infection, which were obtained from the record of the Mercy Hands Clinic for both sexes (male and female) in different age groups. The second part of the study is to compare the results of the analysis of 6 people of different age groups, and then conduct them to measure the accuracy and quality of the analyzes in six laboratories in Bani Waleed city. Patients' results were evaluated in this study based on laboratory test data and Excel statistical software was used. The study showed that the infection rate was in females at a rate of (68%), and an increase in the age group (40–21) years at a rate of (48.8%) was noted. The results of the microscopic and chemical examination showed the presence of epithelial cells (84.4%), Pus cells (62.2%), and Mucus (66.6%). While the bacterial diagnosis revealed an increase in the single bacterial growth of Cocci by (60%). The results of the comparison in the Laboratories showed a large difference and not similar to the results of the analysis for each sample and this leads to doctors at risk of mistaken diagnosis based on the results of analyzes are not accurate by technicians and laboratories. In light of the marketing results developed recommendations to reduce the disease and avoid analytical errors.

key words: Urinary Tract Infections (UTIs), Analysis, Laboratory.

1. **Introduction**:

According to the comprehensive studies conducted by Haneen et al. (2021) and Flores et al. (2015), urinary tract infections (commonly referred to as UTIs) stand out as one of the most prevalent forms of infections affecting individuals spanning all age groups worldwide. These scholarly investigations reveal that symptomatic UTIs lead to a staggering volume of up to 7 million outpatient visits, as well as an additional 1 million trips to emergency departments annually in the United States alone. Equally noteworthy is the estimation that these infections necessitate approximately 100,000 hospitalizations each year within the same nation. The empirical basis for these statistics is firmly rooted in the meticulous collection and analysis of data from diverse medical facilities (2002).

Foxman's authoritative insights further underscore the significance of UTIs in the realm of nosocomial infections. As asserted by Foxman, these infections account for a substantial portion—up to 35 percent—of all nosocomial infections, asserting their position as the second most prevalent cause of bacteremia among patients hospitalized (Stamm, 2002). The evolution of UTIs into the most commonly encountered

nosocomial infection type is a testament to their clinical impact. Remarkably, the incidence of outpatient visits stemming from UTIs reaches a noteworthy figure of approximately ten million annually (Schappert & Rechtsteiner, 2011).

Moreover, UTIs are pivotal contributors to the outpatient prescription of antibiotics for both adults and children, constituting the third major factor behind such prescriptions (Shapiro et al., 2014) and (Hersh et al., 2011). Within the United States, the burden of severe UTIs translating into hospital admissions is substantial, accounting for around 626,000 admissions annually. Impressively, this figure constitutes approximately 1.8 percent of the overall yearly hospitalizations, with a noteworthy 80 percent of these cases unrelated to catheterization (Zilberberg et al., 2022).

Considering the emergency healthcare landscape, UTIs maintain a notable presence. Over 3.6 million individuals annually seek emergency room care due to UTIs, ranking these infections as the eighth most prevalent cause for such visits. Additionally, the intricate facet of complex UTIs, constituting a notable 22 percent of all UTIs addressed in emergency departments, stands as the cause of 1 out of every 200 emergency department visits overall (HCUP, 2021).

In culmination, the collective findings from Haneen et al. (2021), Flores et al. (2015), and other reputable sources unveil the remarkable ubiquity and clinical impact of urinary tract infections. These infections extend their reach across demographics, healthcare settings, and treatment modalities, commanding attention as a foremost healthcare concern on a global scale.

Urinary tract infections pose a multifaceted challenge. Not only do they account for a substantial annual caseload, but the intricate nature of UTI diagnosis further complicates matters. Physicians must discern between urinary tract infections (UTIs) and similar disorders marked by analogous clinical manifestations. The landscape is diversified by covert UTIs devoid of symptoms or those exhibiting aberrant ones. Even in instances of manifest clinical diagnoses, the medical community often resorts to laboratory assays to ascertain the etiology or acquire isolates for antibiotic susceptibility testing (Sawatzky et al., 2015).

Unsurprisingly, urine sample analysis constitutes a significant share of the labor undertaken in hospital laboratories. Notably, the screening and treatment of asymptomatic bacteriuria—denoting the presence of bacteria in urine sans

concomitant symptoms—is judicious only for expectant mothers or individuals preparing for urinary tract-stressing surgeries (Nicolle et al., 2019 and Nace et al., 2014). This preference arises from the heightened proclivity of pregnant women towards UTIs vis-à-vis their non-pregnant counterparts. In cases of positive urine tests or cultures within other patient cohorts, antibiotics are contraindicated due to potential drawbacks such as therapy-related adverse effects, the specter of antimicrobial resistance, and undue fiscal encumbrances (Nicolle et al., 2019), (Nace et al., 2014), and (Hooton & Gupta, 2022).

However, this approach engenders a significant number of false positives, contributing to excessive antibiotic administration (Medina & Jove, 2011). Despite this, the diagnostic landscape for UTIs predominantly hinges on clinical history and urinalysis (Little et al., 2009). The unequivocal benchmark, a urine culture, remains indispensable for UTI detection (Schmiemann et al., 2010), albeit characterized by a time-intensive protocol. Invariably, the initiation of therapy is frequently driven by intuition while awaiting culture results (Aabenhus et al., 2017). This underscores the exigency for a swift yet precise test catering to high-risk individuals predisposed to urinary germ colonization.

Key determinants fueling UTI development encompass demographic factors and health conditions. According to Ayan et al., 2023, notable contributors include female gender, advanced age, diabetes, obesity, prolonged catheter usage, and frequent interpersonal interactions.

(Bates, 2013) Urinary tract infections may be diagnosed and treated successfully if the urine contains bacteria, leukocyte esterase or white blood cells, nitrites, and haemoglobin or red blood cells.

2. Problem of the study

Urinary tract infection (UTI) is one of the health problems that many countries of the world suffer from, and it is ranked second after respiratory tract infection (UTI). The performance of the laboratory is the basis of the treatment system, and this research aims to discover areas of weakness, imbalance and deficiencies in the laboratory service, which reflects positively on the medical and treatment services provided and increases

reassurance on the level of quality of medical services and the health of its employees represented in Bani Waleed General Hospital and Bani Waleed city laboratories.

3. **Assume of the study**:

Urinalysis is an essential component of the diagnostic toolbox for the vast majority of systemic diseases. It is possible to acquire essential knowledge that demonstrates the existence or absence of a urinary tract infection. It offers a straightforward and often speedy method for monitoring the patient's reaction to therapy in various conditions, all without causing the patient undue stress. In order for urinalysis to be as effective as possible as a diagnostic tool, it is necessary to pay careful attention to the technique of urine collection, to ensure that samples are processed in a timely manner, and, most importantly, to have an in-depth understanding of the numerous abnormalities that might be uncovered during an examination. Moreover, illness. In spite of the fact that many other studies have been undertaken in the area of medicine and that quality management techniques have been used, there has been no research done to assess the level of performance provided by medical labs in Bani Waleed.

4. **Material & methods**

Forty-five urine samples were collected from both sexes who visited the Ayad al-Rahma clinic for the period from December 2022 to February 2023, and then using standard methods for treating, incubating and examining samples, and conducting a chemical and microscopic examination of urine. The first step in the chemical analysis test is to fully submerge the strip in a urine sample that has been well mixed for a brief amount of time. After this, the strip is removed from the container and taped to the wall of the container to remove any surplus urine. The strip is then allowed for a certain period of time for the reaction to take place (typically 1-2 minutes), and the findings are then read by comparing the colours to the colorimeter that was given by the manufacturer (Strasinger et al, 2012). Direct microscopic examination of each sample by taking a drop of urine and placing it on a slide and covering it with a slide cover before centrifugation and examining it under a light microscope to see dead white blood cells or bacterial cells that exceed 105 cells per ml of urine, as well as conducting a microscopic examination by taking a drop of urine precipitate after Centrifugation to

see the purulent cells (Pus Cell) and each sample free of these cells is considered negativ**e** (**Macfaddin**, **2000**).

5. Result & Discussion

This study was conducted to determine changes in the physical, chemical and microscopic parameters and to compare the results of the samples by means of statistical analysis of the study samples, which included 45 samples that were selected from the laboratory, Hands of Mercy Clinic. The samples were divided into two groups according to gender, males and females.

5.1 First: The relationship between age and urinary tract infection:

The results show that the percentage of reluctant individuals from the female group is (31), which is significantly higher than the percentage of males (14). It is noted that the highest percentage of reluctance to conduct a urine analysis (UTL) in the study sample falls within the age group (21–40) years, at a rate of (48.88%), respectively. While the percentages are significantly lower in all other age groups. We also note that the infection rate among females is higher than that of males by (40%). That are described typical UTI symptoms lead to infection confirmation in as many as 90% of young women, which is in agreement with Brodie et al (2020) and Van den Boom et al (2021).

Table 1 displays the distribution of samples that were separated according to age categories. The first group has members whose ages range from 21 to 40 years old, and the second group has members whose ages range from 21 to 40 years old. The third group has members whose ages range from 21 to 40 years old. Their ages ranged from 41 to 60, and 4.4% of them were between the ages of 61 and 80. The findings agreed with those of other studies, as international research has shown that frequent UTIs in women are defined as at least one UTI occurring within a period of six months or at least three UTIs occurring within a period of twelve months. According to the findings of Scholes et al. (2000), the prevalence of recurrent urinary tract infections (UTIs) in women is believed to range anywhere from 25–50 percent of all infections. UTIs are reportedly the most frequent kind of pregnancy–related illness, with up to 50–60% of all pregnant women being diagnosed with the condition (Baraka et al., 2021).

Table1. shows the number of respondents according to age groups and gender

Age	Male	Female	Percentage%
0>20	15.55%	6.66%	22.22%
21–40	8.88%	40%	48.88%
41–60	4.44%	20%	24.44%
61–80	2.22%	2.22%	4.44%
Total	31.11%	68.88%	100%
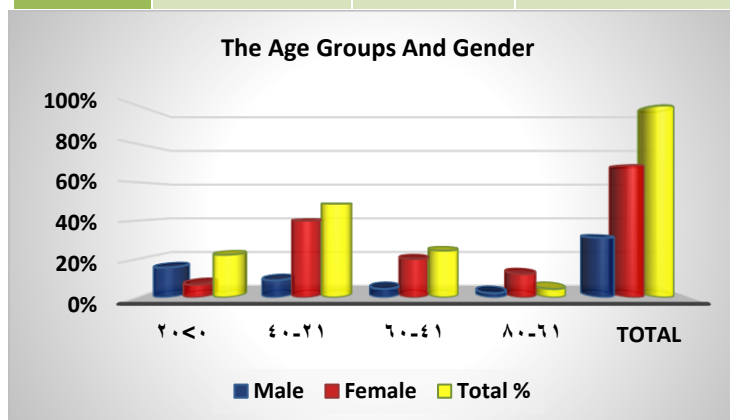
**Graph 1**. shows the number of respondents according to age groups and gender

5.2 Second: **Analysis of microscopic and chemical variables**:

As for the microscopic examination of the urine, it was found that Epithelial cells predominated in the female group and the male group (84.4%), followed by Mucs with a percentage of (66.6%), followed by Crystal and Blood with a percentage of (51.1%). The results of the statistical analysis of the microscopic examination of the urine showed that the presence of red blood cells predominates over the presence of Pus cells by (37%) and RBCs by (36%), as the number of abscess cells is proportional to the severity of the infection, and red blood cells may appear as a result of the presence of moving stones inside the urethra. polycarbonate. It may result in insufficiency in the work of the kidneys. It was mentioned in a previous study that the correlation between the presence of abscess cells and red blood cells gives an idea of the severity of the infection (Al–Husseini & Raad, 1996). Microscopic examination of the urine plays an important role in diagnosing urinary tract infections as well as (Crystals Epithelium cell, R.B.Cs, pus cell) depending on the presence or absence of the possibility of seeing bacteria in the sediment of the urine under the high magnification power of the microscope in large numbers confirming its presence in the urine in a significant number on Rather, urine culture and sensitivity testing remain the basic rule in

diagnosing urinary tract infections (Nihad and Kholoud, 2009). In female patients, the presence of nitrate or leukocyte esterase with haemoglobin exhibited a sensitivity of 77%, a specificity of 70%, a positive predictive value of 81%, and a negative predictive value of 65% in UTI. When both nitrite and serum or leukocyte esterase are present, the positive predictive value jumps up to 92%. If all three of these conditions are met, then the negative predictive value jumps up to 73%. The findings of using a dipstick have been shown to have a positive predictive value of 83 percent in men older than 60 years old and a negative predictive value of 60 percent. According to this, the number of leukocytes is the most important factor that is considered when making a diagnosis of a UTI; a count of more than 10 leukocytes/mm3 is indicative of an infection (Krzysztof et al., 2021), which is consistent with the findings that we obtained.

Table 2. shows the distribution of chemical analysis results for the sample

Parameters	PH	Protein	Sugar	Acetone	Nitrite	Leucocytes	Blood
Male	7%	18%	7%	9%	0%	7%	11%
Female	13%	24%	7%	11%	2%	31%	40%
Total	20%	42%	13%	20%	2%	38%	51%
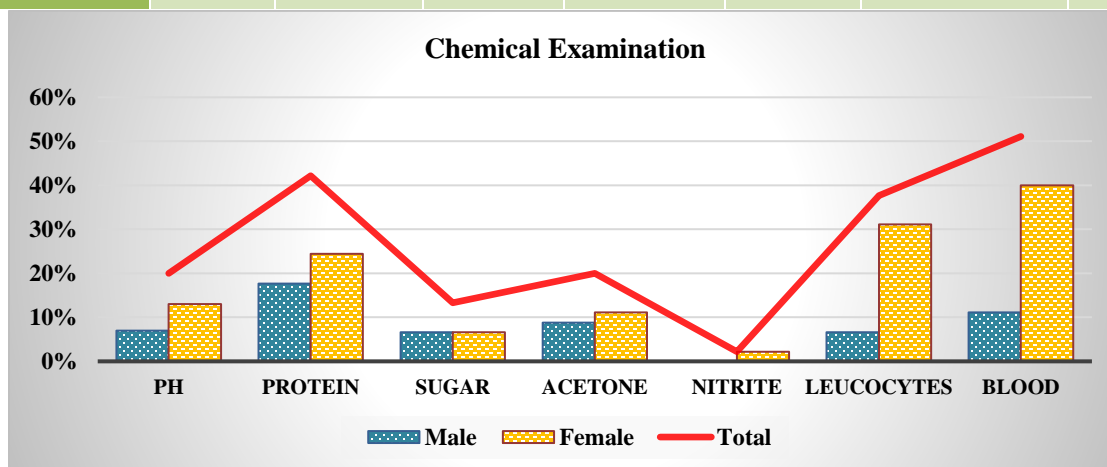
Graph2. shows the distribution of chemical analysis results for the sample

According to Table (3), the analysis of the chemical data revealed that the amount of nitrite present was just 2%. This provides an explanation for why bacteria are unable to convert nitrate to nitrite, which is responsible for the subsequent change in colour that occurs in a solution or on a reagent strip when bacteriuria is present. Positive, In

a study with just sixty participants that was carried out in London by Leman (2002), the researchers came to the conclusion that urinalysis was sensitive for identifying urinary tract infection (UTI) in 95.8% of patients, and that the presence of both positive leukocytes and nitrites provided a positive predictive value of 100%. 12 After that, in 2016, Van Delft et al. evaluated a cohort of six Dutch general practises that included 234 patients. They found that the presence of nitrites in urine showed a sensitivity of 91%, which is comparable with our findings.

In a similar manner, the occurrence of urinary tract infection as a result of the hormonal and anatomical emergency changes, in addition to the increase in the urine pH and the presence of glucose in the urine as a result of pregnancy and diabetes, contributes to supporting the growth of bacteria in the urine, and thus the occurrence of infection (Loh & Sivalingam, 2007). This contributes to the fact that urinary tract infections are more likely to occur during these times. The findings indicated that there was a proportion of leucocytes (31%) in the sample. Inflammatory processes, the most frequent of which is infection, are indicated by the presence of white blood cells. There are a number of other inflammatory stimuli that have been linked to the development of allergic interstitial nephritis, including collagen vascular disease and xanthrosis. For instance, the presence of leucocytes with white cells that also include red cells and red cell casts increases the likelihood of collagen vascular disease. According to Wallker (1990), an infection is most likely present when white cells are discovered on their own in a patient who has suddenly developed a fever and dysuria. According to Little et al. (2009), the presence of nitrate or leukocyte esterase in combination with haemoglobin has a sensitivity of 77%, a specificity of 70%, a positive predictive value of 81%, and a negative predictive value of 65% in the diagnosis of a urinary tract infection (UTI) in female patients. When both nitrite and blood or leukocyte esterase are present, the positive predictive value jumps up to 92%. If all three of these conditions are met, then the negative predictive value jumps up to 73%. 14 According to Den et al. (2012), the findings of using a dipstick on men aged 60 and older were shown to have a positive predictive value of 83% and a negative predictive value of 60%.

Table 3. shows the distribution of the results of the microscopic analysis of the sample

Parameters	Pus cells	R.B.Cs	Epithelial Cells	Casts	Crystal	Mucus
Male	20%	4%	22%	4%	13%	16%
Female	42%	31%	62%	4%	38%	51%
Total	62%	36%	84%	9%	51%	67%
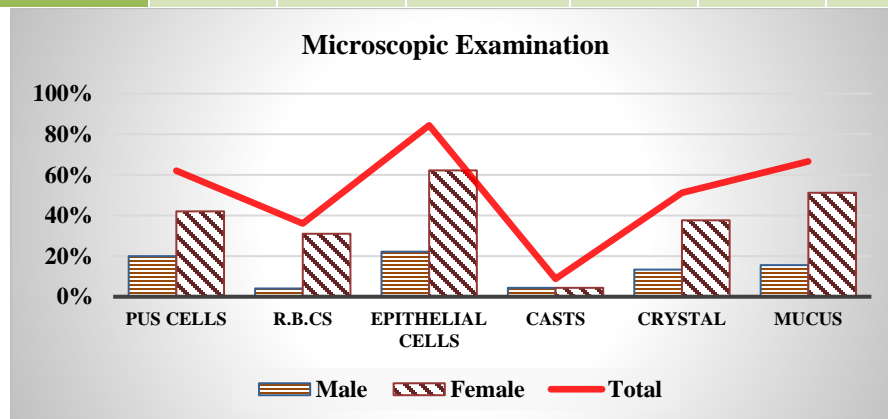
**Graph 3**. shows the distribution of the results of the microscopic analysis of the sample

5.3 Third: **Bacterial growth**:

Table No. (4) In addition to the foregoing, the bacterial growth rate in this study is due to Cocci bacteria by (60%), while Bacilli bacteria by (18%), while the percentage of mixed bacterial growth was (16%). This result is not consistent with the results of Hajarnis (1996) in his study of urinary tract infection, as he indicated that the rate of single bacterial growth (infection with one type of bacteria) was 6.3% in his studies. This is consistent with what Al–Fahdawi obtained in his study (2001). If it is shown that the ratio of infection of females to males is 1:1:28. The reason for this is due to the anatomical difference between males and females. As a result of the shorter length of the urethra in females and the existence of an opening in the perineum that is situated relatively near to the opening of the outflow, female urine is more prone to being contaminated than male urine. Additionally, sexual activity may cause tiny sores to form in the urethra, which can then allow germs to enter the bladder. In addition to the aforementioned, females have a greater Because of the varying acidity of the vagina and the hormonal changes that occur naturally with ageing, older women have a

greater risk of being infected with bacteria that cause urinary tract infections (UTIs). (Allene and G. 1980) Haslett et al.'s research from 1999 is cited here.

Table 4. Types of bacteria present in the urine of the sample

Bacteria	Male	Female	Total %
Cocci	18%	42%	60%
Bacilli	7%	11%	18%
Cocci & Bacilli	2%	13%	16%
Total	31%	69%	100%
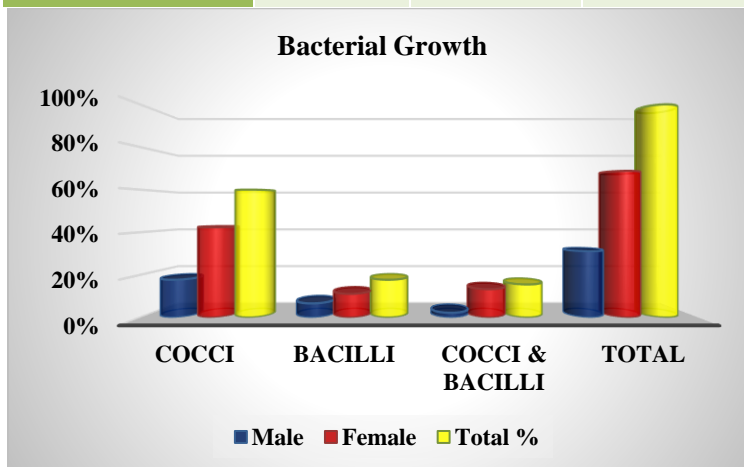
Gragh 4. Types of bacteria present in the urine of the sample

F5.**4 ourth**: **Comparison of the unit method for analyzing urine in a number of laboratories in the city of Bani Waleed**:

Table No. (5) shows the urine test for six samples on which the study was conducted. Laboratory analyzes of urine urine were conducted for them. The study was for three age groups for each sex, denoted for the males by the letter M and the females by the letter F. So that each person conducted a laboratory analysis in each of the following laboratories (hospital laboratory Bani Waleed – Northern Rural Hospital Laboratory – Ibn Sina Clinic Laboratory – Baghdad Clinic Laboratory – Elite Laboratory for Medical Analysis – Oqba Laboratory for Medical Analysis), where these analyzes were conducted to diagnose (spherical bacteria – bacillus bacteria – pus cells – red blood cells – cells epithelial– mucus). The study proved that there is a discrepancy and a difference in the percentage of results in some medical laboratories, where some of the results were close or completely identical in the Aqaba laboratory and the Northern Village Hospital laboratory, while most of the results were completely different from each

other in the rest of the laboratories, despite our keenness to be at the same time and in Close times and the fastest time to conduct the analysis, which confirms the incompetence of the technicians present in the laboratories, or lacks the inaccuracy and quality of equipment and devices. Studies conducted in the 1970s by Wheldon and Jeffers et al. shown that the quality of urine samples suffered when there was a delay in either the transportation or processing of the samples. In each of the studies, the sampling was done at random and without any instructions. According to Holm and Aabenhus. (2016), there were no differences that were clinically significant across the various methods of self-collection. Studies have demonstrated that there may be certain sample collecting procedures that are favoured over others based on the demographics of the patient. For example, there may be some sample collection methods that are chosen over others depending on whether the patient is an adult male, an adult female, or an infant or kid. There is no advice other than disinfection before to collection (Holm & Aabenhus, 2016). For females, there was no significant difference in contamination or diagnostic accuracy between midstream urine collection with or without predisinfection. Mid-stream catches were chosen over specimen collection from the first void because they resulted in much less contamination in adult males. This was the case because mid-stream catches were employed as the collection strategy. The prepurge does not considerably affect the group that is considered to be mid-stream. However, mid-stream collection with pre-disinfection proved effective in minimising contamination in children and babies compared to other approaches, such as mid-stream collection without disinfection, sterile urine bag collection, and nappy collection (Holm & Aabenhus., 2016). This was found in research conducted by Holm & Aabenhus. Because pre-collection disinfection techniques do not minimise the danger of contamination from commensal bacteria, they have been declared unnecessary for the vast majority of adult populations.(Lifshitz and Kramer, 2000)." Nevertheless, patients continue to follow the usual guideline of decontamination as the first step in collecting urine samples, despite the fact that there has been no change in diagnosis, therapy, or course of action. Urine samples should be plated within two hours after collection, unless they have been preserved by being put in a preservative or chilled in the refrigerator. This is because there is a possible increased risk of formation of colony-forming units that are not

reflective of the real patient sample. (Silver and colleagues 2009). The media that the sample is maintained in is also a crucial factor in determining the real aetiology of urological conditions. (Watson & Duerden, 1977) found that employing boric acid as a storage and preservation medium inhibited both Escherichia coli and Klebsiella pneumoniae. Due to the problems of contamination and obfuscation of the organisms that cause UTIs, a mistaken diagnosis and subsequent incorrect therapy of the patient as well as incorrect monitoring of antibiotics will occur. The most feared consequences will transform into complex UTIs and maybe even sepsis (Foxman et al., 2000). Therefore, accurate diagnosis of an infection of the urinary tract or silent bacteriuria is of the utmost significance. For instance, early identification of asymptomatic bacteriuria during pregnancy is critical in order to avoid the terrifying consequences of pyelonephritis, which may lead to injury for the unborn child (Smaill & Vazquez., 2007).Samples that have been left out at room temperature for more than four hours run the danger of bacterial overgrowth, which may lead to the introduction of pollutants and pathogenic organisms. (LaRocco and co-workers, 2016) On the other hand, according to a meta-analysis of different methods of data retention, the statistical analysis of this data was given a poor rating (Holm & Aabenhus, 2016). On the other hand, urinary tract infections are caused by Gram-negative germs. In point of fact, the interpretation of the significance of these findings is contingent on the outcomes of all urinalysis tests. Even when the physician does a physical examination rather than relying on a technician's report, it is important for the physician to analyse the macroscopic data, inspect the sediment, and explain the results to the patient. This is true even when the physician relies on a technician's report rather than doing a physical examination.

Table (5) shows a comparison of urine analysis results between Bani Waleed

Aqaba Laboratory	Alnokba Laboratory	Baghdad clinic	Ibn Sina Clinic	Northern Village Hospital	Bani Waleed General Hospital	Type of analysis	Age	Sample code
Nil	+	+	+	–	+ +	Bacteria	59 year	M1
8–10	1–3	1–2	3–5	4–6	1–2	Pus cells		
Nil	4–6	2–3	1–2	28–30	1–2	R.B.Cs		
+	Few	Few	+	+	Few	Epithelial cells		
–	–	Nil	+ +	+	+ +	Amorphous ureate		
–	–	Nil	+	Nil	Nil	Mucus		
Nil	+	Few	+	Nil	+ +	Bacteria	52 year	F1
6–8	4–6	1–2	1–3	6–8	4–6	Pus cells		
Nil	2–4	1–2	0–2	2–3	1–2	R.B.Cs		
+ +	+	+	+	+ +	+ + +	Epithelial cells		
Nil	–	Nil	+	Nil		Amorphous ureate		
	+	Few	+	+	+	Mucus		
Nil	+	Few	+	+	+ +	Bacteria	20 year	M2
3–4	4–6	1–2	1–2	2–3	3–5	Pus cells		
4–5	2–4	1–2	+	8–10	1–2	R.B.Cs		
+	+	Few	–	+ +	+	Epithelial cells		
–	–	Nil	+ +	–	–	Amorphous ureate		
Nil	+ + +	+ + +	+	+ +	+	Mucus		

General Hospital and some laboratories in Bani Waleed city.

Table (5) shows a comparison of urine analysis results between Bani Waleed

Aqaba Laboratory	Alnokba Laboratory	Baghdad clinic	Ibn Sina Clinic	Northern Village Hospital	Bani Waleed General Hospital	Type of analysis	Age	Sample code
Nil	+	Few	+	Nil	+ +	Bacteria	52 year	F1
6–8	4–6	1–2	1–3	6–8	4–6	Pus cells		
Nil	2–4	1–2	0–2	2–3	1–2	R.B.Cs		
+ +	+	+	+	+ +	+ + +	Epithelial cells		
Nil	–	Nil	+	Nil		Amorphous ureate		
	+	Few	+	+	+	Mucus		
Nil	+ + +	+ + +	+	+ +	+	Mucus		
Nil	Few	Few	+		+	Bacteria	22 year	F2
4–6	2–4	1–2	2–4	4–6	2–4	Pus cells		
Nil	1–2	1–2	1–2	10–12	1–2	R.B.Cs		
+ +	Few	Few	+	+	Few	Epithelial cells		
–	–	Nil	+	Few	+ +	Amorphous ureate		
Nil	+ +	Nil	Nil	Few	–	Mucus		
Nil	+	+	+ +	Few	Nil	Bacteria	12 year	M3
4–5	1–3	1–2	2–3	4–6	1–2	Pus cells		
Nil	0–2	1–2	1–2	2–4	0–1	R.B.Cs		
+		Few	+	Nil	+	Epithelial cells		
+	–	Nil	+	–	–	Amorphous ureate		
Nil	–	Few	+	Nil	+ +	Mucus		

General Hospital and some laboratories in Bani Waleed city.

<p align="center">Table (5) shows a comparison of urine a</p>
<p align="center">nalysis results between Bani Waleed General Hospital and some laboratories</p>
<p align="center">in Bani Waleed city.</p>

Nil	+	+	Few	+	+	Bacteria	13	
6–8	4–6	1–2	2–3	2–3	2–3	Pus cells	year	F3
Nil	8–10	2–3	0–2	6–8	1–2	R.B.Cs		
+	+	Few	+	+	–	Epithelial cells		
–	–	Nil	Nil	–	–	Amorphous ureate		
Nil	+ +	Nil	+	Nil	–	Mucus		

6. Conclusion

Urinary tract infections, sometimes known as UTIs, are one of the most frequent types of bacterial infections and account for a significant amount of the work load in clinical microbiology labs. remain. Even when clinical diagnosis are apparent, clinicians may still perform lab tests to ascertain the origin of the illness. Clinicians often depend on a limited number of incomplete laboratory tests to boost clinical impressions. Therefore, it should not come as a surprise that the analysis of urine samples in the laboratory accounts for a significant amount of the workload in a lot of different laboratory labs.

The study showed that the infection rate was in females at a rate of (68%), and an increase in the age group (40–21) years at a rate of (48.8%) was noted. The results of the microscopic and chemical examination showed the presence of epithelial cells (84.4%), pus cells (62.2%), and mucus (66.6%). While the bacterial diagnosis revealed an increase in the single bacterial growth of the cocci bacterium by (60%). The results of the comparison in Bani Waleed laboratories showed a great disparity and difference in the results of the analysis for each sample, which leads to the risk of misdiagnosis and

taking medications that are not compatible with the health status of the patient's condition.

The purpose of this study is to illustrate the laboratory analysis of routine UTI. And a comparison of the results of analyzes in Bani Waleed laboratories was presented, which is a subject that deserves a separate review.

Recommendations: To avoid infection of the urinary tract, eat sufficient amounts of fluids, and ensure the cleanliness of the genitals. The necessary information must be prepared for all the chemicals used, including the quantity, method of transportation and storage, and their physical and chemical characteristics, such as temperature, sensitivity, explosive and flammable potential, the degree of interaction with water, and the method of disposal of the remaining chemicals used. When preparing samples and sub-samples, the procedures proven to provide a typical analytical value and not affect the concentration of the existing residues should be followed.

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