DESCRIPTION OF URINE NITRITE LEVELS IN PATIENTS OF URINARY TRACT INFECTION (UTI) IN TOTO KABILA HOSPITAL BONE BOLANGO REGENCY GORONTALO PROVINCE

Widya Mardiyanti Domili[1)], Laksmyn Kadir[2)], and Wiharsri[3)]
[1,3)] Bina Mandiri University Gorontalo
[2)] Gorontalo State University
Email: widyamdomili123@gmail.com

ABSTRACT

This study aims to determine the results of urine nitrite examination in patients with Urinary Tract Infection (UTI) as well as to determine the factors that influence it.

The method in this study uses a descriptive quantitative approach. The type of data used is primary data in the form of research results and secondary data in the form of data from literature, books and documents. The sampling technique in this study used a purposive sampling technique, with a sample of 30 people.

The results showed that of the 30 patients diagnosed with UTI, 19 people or 63.3% had positive urine nitrite, while 11 people had negative urine nitrite or 36.7%. Factors that affect urine nitrite levels in patients with Urinary Tract Infection (UTI) are individual hygiene, use of catheters, and gender. UTI sufferers are more common in women than men.

Keywords: Urinary Nitrite Level, Urinary Tract Infection

INTRODUCTION

Infectious disorders including world health problems, infection and exposure are attacks and self-reproduction carried out by pathogens in the body of living things. Pathogens trigger infection where microorganisms such as viruses, bacteria and fungi. In addition, parasites such as worms with unicellular organisms can also cause infection [1].

One of the biggest infections is a urinary tract infection.Urinary tract infection is one of the main terms used to describe the presence of invading microorganisms in the urinary tract [6]. The urinary tract is composed of the bladder, urethra, ureters, and kidneys. Urine is generally a sterile fluid, but if infected, it can contain bacteria [11]. Urinary tract infection (UTI) is an inflammatory reaction through the urothelium due to the entry of microorganisms into the urinary tract. UTIs can threaten all ages, starting with no symptoms to more serious symptoms.The results of clinical epidemiological observations reveal that up to 25-35% of all adult women get UTIs throughout their lives. In urinary tract infections, microorganisms can multiply in the urinary tract, with normal conditions not containing bacteria, viruses or other microorganisms [8]. Urinary tract infection is an infection that is found along the urinary tract, including the kidneys, due to the proliferation of

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microorganisms. Most urinary tract infections are caused by bacteria, viruses and fungi [7].

A major condition that is always a concern in the symptoms of UTI is bacteriuria. Bacteriuria is a condition when bacteria can be found in the urine, but this condition cannot be called a UTI. Bacteriuria is sometimes asymptomatic. Bacteriuria is sometimes referred to in another meaning as pyuria, which means the condition when leukocytes are found in the urine. Leukocytes in urine are signs of an inflammatory response due to bacterial infection[3].Urinary tract infections are primarily found in women, accounting for about a third of adult women who have had occasional episodes of cystitis with symptoms. Things also seem to be experienced in the episode in relapse. If the predisposing cause has not been identified by elimination, UTI can have very serious consequences, kidney damage with renal failure [4].

Urinary Tract Infection Disorders are mainly caused by the presence of Gram negative bacteria such as Escherchia colli, Klebsiella, Pseudomonas, Proteus; Gram positive eg Staphylococcus aureus; with various benefits also viruses [17]. Escherichia coli is associated with 80–85% of urinary tract infections, with Staphylococcus saprophyticus occurring in 5–10%. Although rare, viral or fungal infections can cause the disorder. Other bacterial effects are: Klebsiella, Proteuse, Pseudomonases, with Enterobacters. It is not commonly seen and is usually associated with urinary tract abnormalities and the use of urinary catheters. Urinary tract infections caused by Staphylococcus aureus are generally secondary to blood-borne infections [6]. The most frequently isolated pathogenic germs were Escherichia coli, Klebsiella spp and Enterococcus spp. Escherichia coli uses fimbriae in adhesion to the urinary tract epithelium, reducing the risk of flushing. Infections caused by the presence of Proteus spp are highly formed for patients with stones, Proteus spp have urease activity in increasing urine pH, until the formation of stones is supported. Staphylococcus saprophyticus is isolated data that is always found in sexually active women [9]. Proteus spp has urease activity in increasing urine pH, thus supporting stone formation. Staphylococcus saprophyticus is isolated data that is always found in sexually active women [9]. Proteus spp has urease activity in increasing urine pH, thus supporting stone formation. Staphylococcus saprophyticus is isolated data that is always found in sexually active women [9].

Urinary tract infections are more common in women than men and peak into childbearing age. The shortened female urethra provides rapid access to the bladder for organisms by colonizing the perineum through the intestinal and genital tracts. To urinate with a short urethra can also cause turbulence with backflow. For women, sexual activity, whether initially or with a new partner, is associated with infection because the bacteria present in perineal secretions can move up the urethra. Urination before and after sexual activity reduces the formation of infection. Urinary tract infections (UTIs) are always present in pregnancy. UTI is divided into lower UTI (asymptomatic bacteriuria, acute cystitis) with upper UTI (pyelonephritis). Morphological and physiological changes in the genitourinary system during pregnancy are associated with an increased risk of UTI. Urinary tract infections are associated with a worsening of the outcome of pregnancy, eg preterm delivery, prevented fetal life, chorioamnionitis, with stillbirth, to increased neonatal mortality [15].

Not all UTI patients get complaints, but often there are, for example, constant

urination, a burning sensation and pain in the bladder or urethra during micturition and others. Women generally experience pressure in the superior part of their symphysis, but men always experience fullness in the rectum. Therefore, routinely for UTI patients in complaining, even though they always urinate, the amount of urine excreted is quite small. Urine often appears cloudy, or red if there is bleeding with a UTI sometimes causing pain if the bacterial culture area is applied to the bladder or urethra in addition to the kidneys. Other complaints of UTI include back pain, nausea and vomiting [14].

Based on the World Health Organization (WHO), urinary tract infections (UTI) are the second most common infectious disorder after respiratory tract infections with 8.3 million reported cases per year. The prevalence of UTI in those aged under 40 years was 3.2% but the prevalence of UTI in those aged over 65 years was 20%.Based on estimates from the Ministry of Health of the Republic of Indonesia, the number of UTI sufferers in Indonesia is 90-100 cases per 100,000 people per year or around 180,000 new cases per year. [14].Infection through the urinary tract has several symptoms with signs being more prominent among women, with an incidence ranging from 3-9% for young women with 20% for women over 65 years. Approximately 2,692 in every 100,000 Americans individually diagnosed with a urinary tract infection [3].

Based on data from the Ministry of Health in 2014, the population of Indonesia with UTIs is estimated at 222 million. Based on the Ministry of Health of the Republic of Indonesia, the number of UTI patients in Indonesia is around 180,000 new cases per year at 90-100 cases per 100,000 population per year. UTI is caused by a bacterial infection such as Escherichia coli. Escherichia coli is one of the most common pathogenic bacteria causing UTI, which is 75-90%, followed by Klebsiella sp, Proteus sp, Enterococcus sp, Staphylococcus saprophyticus (especially in adolescent girls and women who engage in sexual activity), Streptococcus group B (especially in neonates).), and Pseudomonas aeruginosa. Fungi (Candida sp) can also cause UTI, especially after instrumentation of the urinary tract [5].

The incidence and prevalence of UTI in Gorontalo Province is still quite high, this is supported by the results which reveal that the Gorontalo region occupies the lowest level of Province that carries out clean and healthy living (PHBS) in PHBS standardization which is 38.7% [8].

According to the results obtained through the Gorontalo Provincial Health Office 2018 [2] the number of UTI sufferers is (35.5%), of which the City of Gorontalo (20%), North Gorontalo (9%), Bone Bolango (18%), Pohuwato (10 ,5%), Kab. Gorontalo (21%), Boalemo (8.5%) [16].The results obtained through medical records at the Regional General Hospital (RSUD) Toto Kabila Kab. Bone Bolango in 2021 the results obtained from January to April stated that there were 32 patients with Urinary Tract Infections [9].

The result of urinary tract infection is thatthere is an invasion and multiplication of microorganisms in the urinary tract in significant amounts (≥ 105 per mL of urine).[7]. Gram-negative bacteria in urine called bacteriuria can be detected accurately in urine culture, but its implementation takes a long time to require other parameters such as urine nitrite. [6].

Urinary tract infection (UTI) includes an inflammatory reaction through the urothelium due to the entry of microorganisms into the urinary tract (bacteriuria). Risk factors for urinary tract infections include: individual hygiene, diabetes mellitus and the use of catheters.

In the laboratory, the diagnosis of UTI consists of examination of leukocytes, urine, urine nitrite and urine culture. The urine nitrite test uses a chemical reaction that produces a colored reaction when the absorbent paper contacts in the urine. The reagent test strip is immersed in a homogeneous urine sample for up to a few seconds. The data can be read visually (eyes) or using a reader. Interpretation according to the color produced is compared in the standard color against the reagents available at the manufactors.

Gram-negative bacteria reduce nitrate to form nitrite which is assisted by the reductase enzyme after bacteria contaminate urine for at least 4 hours [9].Inorganic nitrite (NO3-) is the last ingredient through uropathogenic bacteria. Nitrite is used by gram-negative bacteria in meeting the needs of oxygen whose role is as a hydrogenic acceptor to the formation of energy. Urine nitrite examination using a dip urine test strip in a qualitative way has a sensitivity of 105 bacteria/ml urine[12].

Facultative anaerobic microorganisms with aerobic reduce nitrate in the absence of oxygen which includes the anaerobic stage. Anaerobic respiration is an oxidative step, using inorganic substances such as nitrite (NO3-) and sulfate (SO4-) in the supply ofoxygen which plays a role in hydrogenic acceptors until the end of energy formation. Various organisms have the ability to reduce nitrite directly through enzymatic reactions into ammonia (NH3+) and nitrogen (N2).

Until now, the parameters of urine nitrite urinalysis examination with the number of urine leukocytes are used in laboratory examinations for screening examinations as well as in establishing the diagnosis of urinary tract infections in a short way so that brief behavior can be carried out which is also suitable for patients with urinary tract infections [11].

The nitrite test includes the standard urine dipstick examination which is used during a brief screening examination. Gram negative bacteria due to urinary tract infections that can reduce nitrate to nitrite where Escherichiae colli, Enterobakters, Citrobakters, Klebsiellas with proteuse sp. Urine is always exposed to certain bacteria for at least 4 hours to form nitrite [1]. The nitrite test is also used for data marking of specific pathogenic substances in the urinary tract [2].

Research conducted by Pelita Wijayanti who examined the value of the occurrence of urinary tract infections for inpatients at Bhayangkara Hospital Makassar showedthat through 193 people, experiencing urinary tract infections in the greatest frequency was the age group with the greatest risk of 143 people (74.09%) with the lowest risk age group is 50 people (25.91%) in women 127 people (65.80%) men 66 people (34.20%), while Ursula and Purwanto, who examined the correlation of leukocyte esterase with nitrite using urine culture when infected with the urinary tract, data showed that there was a weak positive association with urine leukocyte esterase in urine culture ($p = 0.044$ with $r = 0.152$) and there was no significant association with urine nitrite in urine culture ($p = 0.272$)[16].

RESEARCH METHODS

The type of research used in this research is descriptive using a quantitative approach, the sampling technique used is purposive sampling. The number of samples used as many as 30 samples. Data collection techniques used informed consent and urine nitrite examination using dip strips.After that Observational data are presented in tabular form and reported on the percentage of nitrite in urine calculated using the formula as suggested by Sugiyono.

RESEARCH RESULT

Based on the research that has been done, the following results were obtained:

1. Characteristics by Gender

Table 1. Distribution of Samples Based on Gender of UTI Patients

No	Gender	Abnormal		Normal		Total	%
		F	%	F	%		
1	Man	3	50	3	50	6	20
2	Woman	16	66.6	8	33.3	24	80
Amount		19	116.6	11	83.3	30	100%

Source: Research Primary Data 2021

In accordance with the table, it shows that in 30 respondents, there are 3 abnormal male sexes in the percentage (50%), and normal 3 in the percentage (50%), while the abnormal female sex is 16 with a percentage (66.6%), and normal as many as 8 with a percentage (33.3%).

2. Characteristics by Age

Table 2. Distribution of Samples Based on Age of UTI Patients

No	Age	Abnormal		Normal		Total	%
		F	%	F	%		
1	20 – 30 Years	3	60	2	40	5	16.6
2	31 – 40 Years	1	25	3	75	4	13.4
3	41-50 Year	5	55.5	4	44.4	9	30
4.	51 years and over	9	75	3	25	12	40
	Amount	19	116.6	12	267.7	30	100%

Source: Research Primary Data, 2021

Based on the table, it shows that 30 respondents who are UTI sufferers, age 20-30 years are abnormal as many as 3 with a percentage (60%), and normal are 2 with a percentage (40%), age 31-40 years are abnormal as much as 1 with a percentage (25%) and normal as many as 3 with a percentage (75%), age 41-50 years old with abnormal as many as 5 with a percentage (55.5%), and normal as much as 4 with a percentage (44.4%), and age 51 years and over abnormal as many as 9 with a percentage (75%), and normal as much as 3 with a percentage (25%).

3. Based on Individual Hygiene Factor

Table 3. Distribution of Samples Based on Individual Hygiene

No	Individual Hygiene	Abnormal		Normal		Total	%
		F	%	F	%		
1	Qualify	1	20	4	80	5	16.6
2	Not eligible	18	72	7	28	25	83.3
Amount		19	92	11	108	30	100%

Source: Research Primary Data, 2021

In accordance with the table, it shows where in 30 respondents of UTI patients, after being asked questions about cleanliness when urinating, the results obtained where most of the respondents did not meet the requirements when maintaining individual hygiene in urinating, of which 18 were abnormal with a percentage (72%), and normal as many as 7 with a percentage (28%), while those who meet the requirements in maintaining individual hygiene are abnormal as much as 1 with a percentage (20%), and normal as many as 4 with a percentage (80%).

4. Characteristics Based on History of Diabetes Mellitus (DM)

Table 4. Distribution of Samples Based on History of Diabetes Mellitus (DM)

No	DM history	Abnormal		Normal		Total	%
		F	%	F	%		
1	Not	10	50	10	50	20	66.6
2	Yes	9	90	1	10	10	33.3
Amount		21	140	11	60	30	100%

Source: Research Primary Data, 2021

Based on the table, it shows that in 30 respondents with UTI, after being asked questions about a history of diabetes mellitus (DM), data were obtained that most of the respondents had never or were not suffering from DM, which was abnormal as many as 10 with a percentage (50%), and normal as many as 10 with a percentage (50%), while respondents who have or are suffering from abnormal DM are 9 with a percentage (90%), and normal are 1 with a percentage (10%).

5. Characteristics Based on History of Catheter Use

Table 5. Distribution Based on Hb Levels Using a Hematology Analyzer

No	Catheter Use	Abnormal		Normal		Total	%
		F	%	F	%		
1	Not	10	66.6	5	33.3	15	50
2	Yes	9	60	6	40	15	50
Amount		19	126.6	11	73.3	30	100%

Source: Research Primary Data, 2021

Based on the table shows where in 30 respondents with UTIs to be asked questions about the history of catheter use during treatment at the Puskesmas or at the hospital, data were obtained that the number of history of catheter use and those who had never had a catheter were appropriate, where each amounted to 15 people (50 people).

DISCUSSION

The location of the research was carried out at the Toto Kabila Hospital Bone Bolango Regency, Gorontalo Province. Research process is descriptiveaims to see the description of urine nitrite in patients with urinary tract infections (UTI), while the collection of samples by purposive sampling method. Observation process in progressfor 17 (seventeen) days, from 01 to 17 July 2021.

The observation data is also supported by the material through Strasinger, who revealed that the inorganic compound nitrite (NO3-) is the final product via uropathogenic bacteria. Nitrite is used by gram-negative bacteria in meeting the needs of oxygen whose role is as a hydrogenic acceptor to the formation of energy.

Based on the results of urine nitrite examination in UTI patients, which showed that of the 30 respondents who were examined for urine nitrite, 11 people (36.7%), negative results were obtained, while 19 people (63.3%). In accordance with certain data, so that the research data or analysis of this research datais 63.3% which can then be concluded where the majority of UTI patients have positive urinary nitrite. In this study, examining urine nitrite using dipstick test strips in a qualitative way has a sensitivity of 105 bacteria/ml urine.

The high results in this study cannot be separated from the cause of the UTI itself, namely because: there is an invasion by multiplying microorganisms in the urinary tract with the highest total, this is in accordance with the theory stated by Lisa and Suryanto, which states that gram-negative bacteria are the most important bacteria responsible for the presence of bacteria in the urine, which is called bacteriuria. Gram-negative bacteria reduce nitrate to form nitrite in the presence of the enzyme reductase after the bacteria have contaminated the urine for at least 4 hours.

The observation data is in accordance with the observations Evy et al., who observed the association between nitrite levels in the number of urine leukocytes in suspected urinary tract infections, showed that all urine nitrite was positive with an increase in the number of urinary leukocytes (82.7%) and an average of 26-30 per LPB. In addition, research by Ursula and Purwanto, also supports the results of this study in which they examined the correlation of leukosite esterase with nitrite in urine culture in infecting the urinary tract, obtaining data where there was a weak positive association with urine leukosite esterase in urine culture ($p = 0.044$ and $r = 0.152$) there is also no significant correlation through urine nitrite in urine culture ($p = 0.272$).

To analyze the presence of urinary nitrite in UTI sufferers, patients or respondents consisting of patients diagnosed with UTI and currently on treatment at the RSUD were given a questionnaire and informed consent which

was then filled out and signed by the respondent. After the patient filled out and signed the questionnaire and informed consent, the researcher then checked the completeness of the contents of the questionnaire and the informed consent. Then the researcher gave a urine pot to the respondent and explained the technique of taking the middle portion of the urine sample (mid stream urine).

The respondent's urine then the researchers proceed to the examination stage, namely the examination of urine nitrite by the dipstick method, namely by examiningDip the dip in the urine and then remove excess urine by placing it on a tissue paper. After that, the researcher reads the results by comparing the colors formed with the comparison standard.The results were then recorded on the sheet that the researcher had prepared. The number of samples or respondents obtained is as many as 30 people.

The observational data are in accordance with the theory proposed by Sudoyo, which reveals where the UTI is very often experienced by women compared to men, the ratio of UTI for women to men is around 30:1 and about 50% of women who are infected will develop recurrent UTIs, this is because women have a very small urethra that is very susceptible to infection. The small female urethra provides rapid access to the bladder for organisms when it colonizes the perineum through the intestinal and genital tracts. To urinate a small urethra can also cause turbulence with reverse drainage. For women, sexual activity, both initially and with a recent partner, is associated with infection because the bacteria present in perineal secretions can travel up the urethra. Urinating before and after sexual activity reduces the formation of infection. Besides that, UTI is also found in pregnancy. UTI is divided into base UTI (asymptomatic bacteriuriae, acute cystitis) and top UTI (pyelonephritise) [16]. Meanwhile, according to Dharma, UTIs in men are rare and if they experience UTIs for men, it is sometimes based on urological abnormalities.

In accordance with observational data, most of the respondents diagnosed with UTI were female compared to male, where through 30 respondents, 6 were male, but 24 were female.These observational data are consistent with observations made by Pelita Wijayanti who observed the value of urinary tract infections for inpatients at Bhayangkara Hospital Makassar. It showed that through 193 people, there were 127 women (65.80%) suffering from UTI and men. only as many as 66 people (34.20%). In addition, other observations which also support the data are observations by Reza Agustyatwo who researched the relationship between age, gender, level of knowledge and history of diabetes mellitus in the occurrence of urinary tract infections for inpatients and outpatients at Muhammadiyah Hospital Palembang. that of the 30 samples suffering from UTI, the highest gender was female where 18 people (53.3%),

These results are based on the theory by Ronald, who said that the incidence of UTI increases with age. Smeltzer with Bare, added that the elderly could experience increased susceptibility to abnormalities. In over 50 years, experience a reduction in strength while maintaining the best sterility in the bladder and urethra.

In terms of age characteristics, according to the observational data obtained where most of the respondents who experienced UTI were in the age group of 51 years and over, as many as 12 people. Then followed by the age group 41-50 years with a total of 9 people, then the age group 20-30 years with 5 people and finally the age group 31-40 years with 4 people.

Several studies that support the observational data are observations carried out by Reza Agustyatwo, where from the 30 respondents studied it is known that the most age in the sample experiencing UTI is the age group > 50 years, namely 16 people (53.3%), with the group under 50 years are 14 people (46.7%). Other observations that are in accordance with the observation data are observations made byPelita Wijayanti obtained results where in 193 people, the occurrence of urinary tract infections in the greatest frequency was in the age group above 50 years, namely 143 people (74.09%) and the age group under 50 years was 50 people (25.91%).

In this study, respondents were also asked to fill in their latest education data in the informed consent, so that data regarding the respondent's education level was obtained.

In this study, the questionnaire sheet, the researchers also asked questions about risk factors that could cause bacteriuria, one of which was individual hygiene factors, especially the attitude of the respondents in doing hygiene when urinating.

The questions that the researcher asked the respondents were 3 (three) points, namely: at the beginning and after urinating if in cleaning hands initially using soap? When washing the intimate area from the front (vagina) to the back (anus)? What water is used to urinate from running water?

The standard questions above are questions about the respondent's behavior in maintaining cleanliness when urinating. The three questions have a score of 1 (one), if answered correctly, that is, with a YES answer. Thus, if all of the respondents' answers are correct, the respondent's score will be 3 (three) points. If the respondent's point is 3 (three), then the individual's cleanliness is categorized as fulfilling the requirements with the number in the objective criteria being 2 (two). On the other hand, if the respondent's answer does not reach a value of 3 (three), then the individual cleanliness is categorized as not meeting the requirements, with the number in the objective criteria being 1 (one).

This observational data is supported by the theory by Haryono, who revealed that vulvar hygiene measures or the habit of cleaning the vulva in the genital area include personal hygiene behavior in reducing or minimizing the number of bacteria and viruses in the body, especially in the female genital area in an organized vulva hygienes, which is expected to be minimized through microorganisms. due to UTI in the urinary tract.

UTI is one of the infections caused by the existence of microorganisms in the human urinary tract. Causes of risk that can lead to the formation of UTI are age, gender, regular urination with poor vulvar hygiene measures to cause symptoms: pain when urinating, fever with chills, low back pain, weakness and nausea [7].

The results are shown where some Most of the respondents did not meet the requirements when protecting their individual hygiene when urinating which there were as many as 25 people (83.3%), but to fulfill the requirements to maintain individual hygiene as many as 5 people (16.7%).

The observation data is in accordance with Rani's observation data with Muhartono who observed the value of the occurrence of urinary tract infections (UTI) with risk causes that affect female employees at the University of Lampung when getting data where the majority of respondents had the lowest hygiene where a number of 17 respondents (51.5 %), but the remaining 16 respondents (48.5%) had appropriate hygiene. Statistical test analysis data obtained the number of p-value = 0.019 so that conclusions can be

drawn where there is a significant relationship in hygiene in the occurrence of urinary tract infections.

These data are not in line with the observation data by Maria which revealed that the respondents most often did not pay attention to the vulva hygiene behavior of 39 people (79.6%), who paid more attention to the vulvar hygiene behavior of 9 people (18.4%) by paying attention to the vulvar behavior. hygienes in an appropriate manner in 1 person (2%). Statistical observation data resulted in the number of p-value = 0.103 (> = 0.05) where there was no significant correlation with vulva hygiene behavior in the occurrence of UTI for inpatients at Mamami Hospital Kupang.

The researcher's assumption is that the decrease in cleaning in the vaginal area is caused by respondents sometimes not changing their underwear because they are busy working and always come home late at night, when interviewing, there are also those who say that after urinating they have not used a tissue in wiping until the underwear becomes moist. Also by way of theory respondents get the formation of UTI in the symptoms that appear, but respondents do not know when and what are the causes of the risk of UTI formation and how to overcome it. In addition to individual hygiene, another bacteriuria factor added by the researcher in the questionnaire was a history of diabetes mellitus (DM). on this variable, the researcher only gave the respondent whether he had a history of (have or is suffering from) the DM disease. If the respondent answered YES, then on the objective criteria of the study, the researcher gave a score of 2 (two), whereas if the respondent answered NO, the researcher gave a score of 1 (one).

The observation data is in accordance with the theory by Haryono, which reveals where For DM patients, the cause of urinary tract changes due to autonomic neuropathy results in incomplete bladder voiding, thus facilitating the formation of colonization of microorganisms.

Another theory that supports this result is by Hurst who said that hyperglycemic conditions for patients with diabetes mellitus encourage very high bacterial life in the urinary tract because bacteria live in a region that is highest in glucose. If the bacterial life has not been stopped, then the bacteria can spread through the urethrain the bladder or through the ureters to the kidneys, enter through the hematogenic route (rare), or through the lymphatic channel that connects the intestine to the urinary tract.

Girishbabu added that asymptomatic bacteriuriae that have not been handled properly can develop to form symptomatic bacteriuria which can lead to septicemia, pyelonephritis, with adverse complications that require special treatment.

Respondent's answer is shown above, that most of the respondents have never or are not suffering from DM, which are 20 people (66.7%), but the respondents who have or are currently suffering from DM are 10 people (33.3%).

The high data obtained in these observations, is in line with the research Reza Agustyatwo who examined the relationship between age, gender, level of education with a history of diabetes mellitus on the formation of urinary tract infections for inpatients with outpatients at Muhammadiyah Hospital in Palembang, who obtained the results that of the 30 samples suffering from UTI, respondents who had a history of There were 13 people with DM (56.7%) and 13 people (43.3%).

In this study, another bacteriuria factor was added, namely the respondent's history of using a catheter while being treated at the Puskesmas or in the hospital. If the respondent answered YES, then the research objective criteria were given a

score of 2 (two), whereas if the respondent answered NO, the researcher gave a score of 1 (one).

This result is supported by Sudoyo's theory, that the placement of a catheter according to the SOP greatly affects the incidence of UTI. Ernawati and Yuwono, added that the procedure for inserting a catheter is always based on established standards, this guarantees the implementation of the appropriate technique, and it is recommended that it be applied by nurses who have received special training. The risk of developing urinary tract infections is even greater when the procedure for installing it has not been carried out based on standardization.

Respondent's answer is shown above, the number of history of catheter use and those who have never had a catheter are appropriate, each of which is 15 people (50%). These results are in accordance with the results of Janasiska et al., in which the results of their research, namely in 30 respondents in attaching a urinary catheter not based on standard operating procedures (SOP) with respondents who had not yet had a urinary tract infection, where as many as 4 respondents (17.4%), but respondents in pairing urinary catheters have not been based on SOPs with respondents regarding urinary tract infections where as many as 19 respondents (82.6%), in addition to respondents in pairing urinary catheters based on SOPs with respondents who have not regarding urinary tract infections where as many as 6 respondents (85.

According to the researcher, by comparing the observational data in the data obtained by Janasiska et al, it can be concluded that the catheter insertion process by health workers in this research data is in accordance with the SOP.

Inserting a catheter includes an intervention that results in patients with urinary tract disorders. The catheter alone inhibits the natural resistance through the urinary tract in preventing the periurethral tract, irritates the bladder mucosa and also creates an artificial pathway for organisms to penetrate the bladder. Certain organisms in causing the formation of urinary tract infections.

CONCLUSION

Based on these observations, conclusions can be drawn where:

1. Causes that can affect positive urine nitrite levels for patients with urinary tract infections (UTI) at RSUD Toto Kabila Kab. Bone Bolango are: individual hygiene, use of catheters, Diabetes Mellitus (DM) and gender.
2. Results of urine nitrite examination in UTI patients at Toto Kabila Hospital, Bone Bolango Regency positive results were obtained for 19 people (63.3%), but negative results were 11 people (36.7%).

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