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A preliminary survey of urinary tract infection in females attending at private clinics in Baglung Municipality, Nepal

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Abstract

Urinary tract infection is the result of microbial pathogens such as bacteria and other microorganisms that destroy the mucous layer of the urinary tract and genital tract in both male and female individuals of the community. This study investigated the prevalence rate of urinary tract infection among females visiting a private clinic in Baglung Municipality. This research was conducted from Baisakh to Ashar 2080 at Jharana and Sapana clinic on Hospital Road, Baglung Bazar, by survey and experimental methods. A total of 141 urine samples were purposively collected and tested by macroscopic, microscopic, wet film, and Gram staining methods. Data were also collected by interviews, questionnaires, and observation methods to find out knowledge, attitude, and practice concerning UTI. This finding exposed a high prevalence of UTI diseases among childbearing females (61.39%) as compared to childbearing females (35%), with a statistically significant difference ($X^2_{cal} = 8.03$, $X^2_{cal} > X^2_{0.05}$ at 1 d.f.). UTI infection was also higher among females participating in cooperative and agricultural occupational fields without a statistically significant difference, $p=0.066 > 0.05$ ($X^2_{cal} = 11.84$, $X^2_{cal} > X^2_{0.05}$ at 6 d.f.). This study highlights the need for a health awareness program, hygienic toilets, improved sanitation, personal hygiene, a balanced diet, and proper treatment to reduce UTI infections in the community.

Keywords: Baglung bazar, Chi-square test, Occupation, Urinary tract infection, Urine examination.

Introduction

A urinary tract infection is caused by *Escherichia coli* (*E. coli*). It is transmitted through the use of an unhygienic toilet, an unhygienic personality, an unsterilized bed, using the same underwear as an infected individual, and the major factor is multiple sexual relationships.

Burning sensation during the urine ejection process, increased frequency of urination, extreme pain during urine removal, feeling the need to urinate frequently for a short duration, and blood in the urine are significant symptoms of UTI as compared to kidney infections that are more serious. Simple UTIs never show back pain, nausea, vomiting, lower abdominal discomfort, low-grade fever, chills, and shivering (Amiri, F. N., Rooshan, M. H., Ahmady, M. H., & Soliamani, M. J., 2009).

A variety of preventive measures can be applied to prevent this disease. Some preventive measures include maintaining proper toilet hygiene, drinking enough water, using clean and sterilized bed sheets, washing the genital organs regularly, wearing healthy underwear, and avoiding unsafe sexual activity. A multi-drug-resistant treatment system is the best option for the treatment of UTIs. Drugs used for treatment of UTI caused by *Pseudomonas* spp are fluoroquinolones, ceftazidime, cefepime, piperacillin-tazobactam, including meropenem, carbapenem, and fosfomycin, ceftolozane-tazobactam, aminoglycosides, including cefiderocol, colistin, plazomicin, and aztreonam (Bader, M. S., Loeb, M., Leto, D., & Brooks, A. A., 2020).

Each year, millions of people are affected by the significant health issue known as a urinary tract infection (UTI). It is the leading global cause of mortality and morbidity, impacting people of all ages and stages of life. In her lifetime, one in five women will acquire a UTI; males are less likely to get it. 30% of women who experience a UTI will go on to experience another one, and nearly 20% of those women will experience UTI 1 again (Kattel, H. P., 2008). Early detection and eradication of bacteria is very important for the prevention of recurrence and complications, e.g., chronic pyelonephritis, chronic renal failure (Kattel, H. P, 2008).

The general objective of this research was to identify the prevalence rate of Urinary Tract Infection infections among females in Baglung Municipality. The main objectives of this research were to identify the relationship between UTI and factors such as age, sex, community, socio- economic status, marital status, cultural factors, prostitution activity, hygienic condition, causative factors, occupation factors, and environmental factors.

This research provides better awareness for the community to prevent this disease. This research helps to improve the socio-economic condition, health hygiene, better cultural practices, and awareness in the whole community of Baglung Municipality. Females should be aware of maintaining a hygienic condition of the genital organs. Medical personnel also get better benefits in the field of UTI disease for causative agents, mode of transmission, and preventive measures. The study was conducted prospectively at only two private hospitals due to a lack of manpower, time, economic conditions, and permission from the government hospital. Only 141 urine samples of females were collected from 1/ 27/2080[B.S.] to 3/19/2080[B.S.] or 10 May, 2023 to 4 July, 2023 because most females suffer from urinary disorders.

Collected samples were tested from Baishak 27 to Aashar 19, or from 10 May to 4 July. This research area is concentrated on the female individuals of Baglung Municipality because most of the people of this municipality are visiting the government, private, and public hospitals of Baglung city.

Among the 77 districts of Nepal, Baglung is one of the most important places for parasitic fauna due to its diverse topographic and socio-cultural characteristics, which are located in Gandaki Province. It is an underdeveloped district. There is one government hospital, three public and ten private hospitals/clinic which are located in Baglung municipality. The present study was carried out among all the people of Baglung Municipality regarding urinary tract infections. Our research focuses on those patients who are visiting the private hospital, especially Jharana and Sapana clinics.

Investigations were conducted on 200 pregnant women who visited the maternity and children's hospital in Makkah, Saudi Arabia. The findings showed that 20% of the pregnant women who were tested tested positive for UTI (12% had symptomatic UTI and 8% had silent UTI). According to Faidah (2015), *Escherichia coli* was the bacteria that was isolated the most commonly (25%) from both symptomatic and asymptomatic bacteria. The relationship between microbial infections and economic development is quite complicated. According to Oliver (1974), it is difficult to assess the socioeconomic impact of parasitic disease, but the adverse effect of parasitic disease on economic development is widely accepted.

Nepal is also a significant area for this research. Among other municipalities of Nepal, Baglung Municipality is also a key zone for this research. The objectives of this research work are related to the UTI disease in the whole Municipality of Baglung due to a lack of resources. Therefore, this research focused on UTIs among people who visit the private hospital in Baglung city. Hence, this research was focused on a private hospital. Many people suffered from this disease in different localities of Baglung Municipality. The researcher has provided information on this disease, including its causative factors, mode of transmission, symptoms, and preventive measures.

Materials and Methods

Study area

The research has been selected among people of different communities visited at private hospital of Baglung Municipality. Objective of the present study is to highlight infection of bacterial microorganism in urinary tract of female that pose serious problem in Baglung municipality.

Figure 1
Baglung District

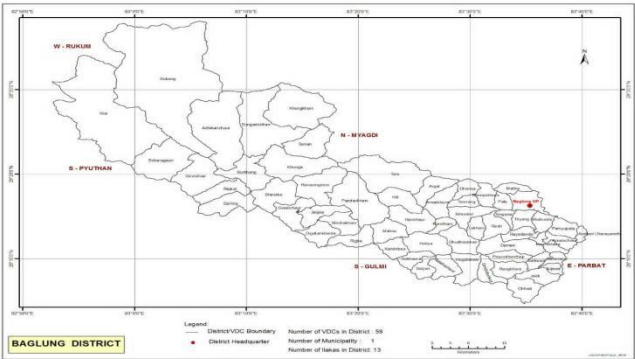
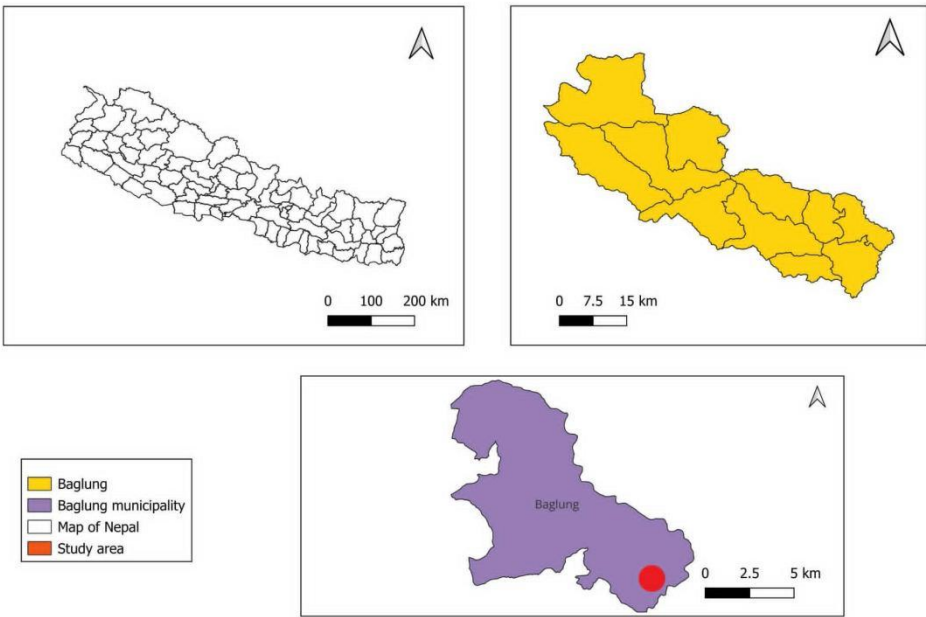


Figure 2
Baglung Municipality



Sample size

141 urine samples were the universe of the study and purposive sampling method was used for this research work. The urine sample were collected from private clinic of Baglung Municipality and examined. Out of 141 urine samples, 68 urine samples were collected from Jharana and 73 urine samples were collected from Sapana clinic.

Survey study

A questionnaire is an important tool during a survey study. The questionnaire was pre-tested by the local people who were visiting the private clinic. The questionnaire was translated into the Nepali language for those respondents who did not understand. So that the respondent could understand the questions very clearly. The questionnaire was filled out by the interviewer. During the survey, research was mainly oriented to those people who visited these clinics. Materials required for this research are a mask, gloves, a urine container, a urine sample, a test tube, a slide, a dropper, a centrifuge machine, and a microscope.

Nature of data

Collected data were primary and secondary in nature. The source of the primary data collection was related to the interview, direct observation, and questionnaire in survey methods, whereas the urine test was associated with the testing method. Sources of secondary data include the internet, reports, journals, theses, related books, online journals, and medical personnel.

Methods

Experimental and Survey methods are used to collect the related data for our research work. Every female patient visited in the Jharana and Sapana clinic provided a urine sample for the UTI test. Primary and secondary data were collected after obtaining permission from the patient to visit the clinic. Every female patient provided urine in vials for UTI diagnosis.

Sample collection

Urine collection and examination were held in Jharana and Sapana clinics from 27 Baisak 2080 to 19 Asad 2080. Respondents were interviewed individually and provided a sterile vial to collect urine. Urine was collected directly from people who visited the Jharana and Sapana clinics.

Laboratory analysis

Laboratory analysis of bacteria present in urine is based on microscopic and macroscopic examinations.

Smear Preparation of Urine for Microscopic Observation

Wet film preparation and Gram's staining methods are used for the identification of pus cells, epithelial cells, red blood cells, and bacteria. A total of 141 urine samples were prepared to observe urinary tract infection. A prepared sample of urine was taken in a test tube and put in the centrifuge machine for five minutes. After centrifuge processing, a few drop of crystallized urine was taken on a slide and observed under the low power (10x) microscope with an oval-shaped smear. To get proper visibility of pus cells and bacteria, the 40x power of the objective lens of the microscope was used. Numerous epithelial, pus cells, and infecting bacteria were observed, which verify urinary tract infection (Fatima et al., 2017).

Identification

During microscopic examination of a urine sample smear under 10x and 40x objectives, the identification of the pus cell epithelial, bacteria, and RBC was done on the basis of the medical laboratory manual and experts. For the identification of size, shape, shell content, color, and external features, a systematic study of all characteristics of the cell was carried out to confirm their identification. Urinary tract infections were identified with the help of pus cells, epithelial cells, and related bacteria with the help of expert (Fatima et al., 2017).

Questionnaire and Interview Survey

Data obtained from examination of urine samples of Baglung municipality was mainly oriented to those people who visited the two different clinics. Besides these laboratory data, surveillance data like knowledge, attitude, practice, and behaviors were collected by direct observation, questionnaire, and interview. Data on symptoms of related disease patients visiting the two different medical centers were collected using a questionnaire and interview, which were kept as primary data. Data collected from the internet, reports, journals, theses, related books, online journals, and medical personnel will be kept as secondary data.

Data Analysis

Thus obtained data from urine examination as well as the survey study will be edited, coded, classified into different categories, tabulated, and analyzed. Data analysis was conducted based on age, occupation, literacy, knowledge, attitude, and practice in the study area. Thus, the analyzed data will be interpreted by representing it in a table. A significant difference will be calculated by the chi-square test.

Figure 3
Pathology Lab



Result and Discussion

Result

This study was conducted among the people visiting Jharana and Sapana Clinic at Baglung Municipality, Baglung district. A total of 141 urine samples from different age groups were collected and examined directly. The result of the present study was divided into two categories.

1. Result of questionnaire survey

Result of questionnaire survey analysis

An interview was carried out at the same private clinic in Baglung Municipality where patients visit, where urine samples were collected and examined, and those who could not answer themselves were assisted by their parents. For this survey, a set of questionnaires was prepared, and respondents were asked about their knowledge of bacterial infections and associated risk factors, including behavior, age, sex, marital status, and occupation. The results obtained from the questionnaire survey analysis are as follows.

Table 1

Showing the ratio of married and unmarried respondents

S.N	Total no of respondents	Married	Unmarried
	141	Total number	Total number
		106	35
		Percentage (%)	Percent age (%)
		75.18	24.82

Out of 141 respondents, married individuals are 106(75.18%), but unmarried individuals are 35(24.82%).

Result of urine examination

Table 2

Prevalence of Bacterial Infection among Childbearing and Non-Childbearing Women

Total respondent	Child bearing					child not bearing						
141	a	b	c	d	e	f	g	h	i	j	k	l
	101	71.6	62	61.39	39	38.6	40	28.4	14	35	26	65

Note. A = total number, b = Percentage (%), c = +ve number, d = Percentage (%), e = -ve number, f = percentage, g = number, h= percentage, I = +ve number, j = Percentage (%), k = -ve number, l = Percentage (%)

Out of 141 responded people who visit private and public clinic of Baglung Municipality, 101(71.6%) child birth female and 40(28.4%) child not bearing female were participated. Out of 101 child bearing female of Baglung Municipality 62(61.39%) were found to be positive for UTI and 39(38.6%) were found to be

negative for urinary tract infection. This result shows that urinary tract infection is found to be higher in child birth female than in child not bearing female. This might be due to immune system and less hygienic activity.

Table 3

Occupation Wise Prevalence of Urinary Tract Infection (n=141)

occupation of respondent	Number	Percent age (%)	UTI +ve number	Percentage (%)	-ve number	Percentage (%)
Home maker	34	24.11	13	38	21	61.76
Agriculture	46	32.62	27	58.7	19	35.2
Teacher	4	2.84	2	50.0	2	100
Child	14	9.93	5	35.7	9	64.3
Student	19	13.48	8	42.1	11	57.9
Co-operative	9	6.38	8	88.9	1	33.3
Other	15	10.6	5	33.3	10	66.7

Out of 141 respondents, 34(24.11%), 46(32.62%), 4(2.84%), 14(9.93%), 19(13.48%), 9(6.38%), 15(10.6%) were homemaker, agriculture, teacher, child, student, co-operative profession, and other respectively. Among the listed occupations, the highest urinary tract infection rate was recorded among respondents involved in co-operative professions, while the lowest was reported among individuals involved in other professions.

Discussion

This project deals with urinary tract infection (UTI) of females at Baglung Municipality. A total of 141(100%) samples were collected and tested at Jharana and Sapana Medical Clinic for our study. The present study shows that 62(61.39%) childbearing females were suffering from urinary tract infection, whereas 14(35%) childbearing females were not. Present findings reveal that there was a significant difference in the infection of bacteria between childbearing and non-childbearing females ($X^2_{cal} = 8.03$, $X^2_{cal} > X^2_{0.05}$ at 1 d.f). Our research findings cannot compare with the findings of Al Haddad, A. M. (2005), who reported that 30% of pregnant women suffered from urinary tract infection. The difference in this research with Al Haddad, A. M. (2005) may be due to the handling of urine, the method of testing the urine sample, dietary factors, hygienic factors, etc.

Respondent who involve in co-operative profession appeared highest infection 8(88.9%) by urinary tract disease as compared to the other profession like agriculture 27(58.7%), teacher 2(50%), student 8(42.1%), home maker 13(38.2), child 5(35.7%) and others 5(33.3), that is higher as compare to the finding of Fakhriddien (2011) who reported 52.2% infections in co-operative profession. Present finding shows that there was not significant difference in infection of bacteria among the different occupations $p = 0.066 > 0.05$ ($X^2_{cal} = 11.84$, $X^2_{cal} > X^2_{0.05}$ at 6

d.f.). Highest infections in the occupation of the co-operative field, but Fakhriddeen (2011) identified in the housewife ($X^2_{cal} = 4.1$, $P < 0.05$).

This research cannot expose the relationship of UTI infection with other associated factors like less hygienic behavior, use of unsafe (unhygienic) toilets, lack of knowledge about health and hygiene, multiple use of toilets, socio-economic factors, cultural factors, and prostitution activity.

Conclusion

This research work reveals that 62 (61.39%) childbearing females are suffering from urinary tract infections, compared with non-childbearing females, whereas respondents involved in the co-operative field show the highest infection rate, 8 (88.9%), compared with other working fields. It is a serious health problem affecting millions of people each year. It is also a common disease in the Nepalese population due to using unhygienic toilets, multiple sexual activities, unhygienic behavior, non-sterilized beds, and the common use of clothes. The individual suffering from a urinary tract infection may be symptomatic or asymptomatic. This research concludes that a high prevalence of suspected urinary tract infections was observed among females in Baglung Municipality who visited the selected clinic. Childbearing females across different occupations experience urinary tract infections in this research area. Hence, health authorities and related organizations must be focused on controlling such diseases. This research suggests that other researchers find out the relationship of UTI with nutritional factors, sexual behavior, sex factor, community group, different age groups, climatic factors, and the nature of the toilet.

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Consent for publication: Not applicable

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Ethical conduct of research: This paper is written ethically

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