Institutional Factors and Personal Health Behaviour as Predictors of Urinary Tract Infection among Female Undergraduates in a Nigerian University Halls of Residence

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Abstract
This study investigated institutional factors and personal health behaviour as predictors of urinary tract infections among female undergraduates in the University of Ibadan halls of residence. Two hundred female students were selected from the halls of residence and a structured questionnaire was used as an instrument with a reliability index of 0.834. Inferential Statistics of Regression Analysis was used to test the hypotheses at 0.05 alpha level of significance. The institutional factors of toilet facilities, maintenance and management jointly predicted urinary tract infections ($F=249.316$, $p<0.05$). Also toilet facilities ($\beta=.156$, $t=1.202$, $p<0.05$), maintenance ($\beta=.021$, $t=1.044$, $p<0.05$), management ($\beta=.896$, $t= 28.884$, $p<0.05$) relatively and significantly predicted urinary tract infection. The findings of the study depict that institutional factors and personal health behaviour predicted the prevalence of urinary tract infection among female undergraduates in the University of Ibadan halls of residence. It was recommended among others that there should be adequate provision and regular maintenance of toilet facilities, constant supply of water including orientation of students on cleanliness in hostels.

Keywords: Urinary tract infections, institutional factors, personal health behaviour, female undergraduate

Introduction

Urinary tract infection is a public health problem with profound negative effect on people's wellbeing and economy of countries of the world due to its huge financial burden as a result of the treatment of the disease. It is quite worrisome that the disease continue to ravage the health of the people in an increased manner in the recent times. According to Reed and Kemmerly (2009), urinary tract infection is a serious health problem affecting millions of people each year. In fact, it is one of the most prevalent disease with diverse etiological agents affecting annually 250 million and causes death of 150 million people worldwide. (United States Department of Health and Human Services, 2004).

Essentially, the urinary tract makes and stores urine in the body. It includes such parts as kidneys which remove waste and water from the blood, ureters which are thin tubes that carry urine from the kidneys to bladder, bladder is the part that stores urine before it leaves the body and urethra which is a tube that carries urine from bladder to the outside of the body. Urinary Tract Infection (UTI) is an infection of the urinary system. It encompasses infections of the urethra (urethritis) bladder (cystitis), ureters (urethritis and kidney (pyelonephritis). It occurs when there is anatomical or functional break in the host defense system, allowing for the adherence, multiplication and persistence of bacteria in part of the urinary tract or a microbial infection usually caused by bacteria of any part of the urinary tract. (Olabimtan, Ojo and Oyebode, 2018).

Urine can contain range of salts, fluid and waste products but does not usually have bacteria in it, bacterial entering the bladder or kidney can reproduce rapidly in the urine, causing urinary tract infections. If bacteria move to the bladder and multiply, it is a bladder infection called cystitis, if the infection is not treated promptly, bacteria may then travel further up to the ureters to multiply and infect the kidneys; a condition known as pyelonephritis (Komali, Debjit and Sampan, 2013). In brief, urinary tract infection is caused by the presence of bacteria in urine, although fungi and virus could be involved. Escherichia Coli cause 75-90% of uncomplicated UTIs (Karen, Moses, Lisa, McDonald, Michele and Anna, 2008). Whereas staphylococcus saprophyticus causes an estimated 5-15% of UTIs frequently in younger women (Micheal, Johan, Suen, Carina and Tor, 2007). Enterococcus and other gram negative rods other than E.coli have also been implicated in some causes (Benjamin, Ramirez, Rauch and Mendez, 2018).

Urinary tract Infection affects both genders, but women of reproductive age group (15-44 years) are the most vulnerable and it may be due to their anatomy and reproductive physiology. Women are particularly at risk of developing UTIs because of certain behavioural factors which include delay in micturition. The disease can be developed in 40%-50% of women and 5% of men and in the former, patient complain of severe and low back pain that may be associated with fever due to associated bacteraemia while in the latter, a sensation of perinea fullness is felt; the common causative agent is E. coli but micrococcal infections may account for up to 10-20% of cases in sexually active women (Vorland, Carlson and Aaeelen, 2015).

Urinary Tract Infection (UTI) occur more often in women than men, at a ratio of 8:1. Approximately 50-60% of women report at least one UTI in their lifetime, and one in three will have at least one symptomatic UTI necessitating antibiotics treatment by age 24 (Isah, Ismail, Allamin, Shetima and Mustapha, 2013). The higher prevalence in females as compared with males is as a result of the fact that urethra which is the tube that carries urine out of the body in females is shorter and closer to the anus where E-coli bacteria are common. Also, shortness of the female urethra makes it more liable to contamination during sexual intercourse, urethra massage and even urination with chronic flora that resides in the perinea skin so as the effect of turbulence of the urinary stream (Starr and Tajgart, 2012).

Prevalence of UTI among female students is associated with poor level of personal hygiene,

unsanitary condition of toilet facilities in hostels and sexual activities (Ojo and Anibijuwon, 2010). James (2018) suggested that urinary tract infections can be prevented by having adequate fluid intake especially water, not resisting the urge to urinate, taking showers, practicing good hygiene, cleaning genital area prior to and after sexual intercourse, voiding before and after sexual intercourse and wiping from anterior to posterior. Women should use good hygiene practice during their menstrual cycle to avoid infections, change their pads and tampons frequently as well as not using feminine deodorants to prevent UTIs (Cleveland Clinic, 2019).

In this study institutional factors are toilet facilities, maintenance and management of toilet facilities that should be put in place by universities to prevent urinary tract infections. Toilet facilities include water closets, urinals, lavatories, and the room set aside for installation of these units and privies. Maintenance is the process of preserving a facility. Maintenance activities of toilet facility are ensuring that only toilet paper and human waste products are flushed down the toilet, regular cleaning to remove clogs and build-up. Management connotes the coordination and administration of tasks to achieve a set goal. According to Anuna (2011) management is the process of allocating an organisation's input (human and economic) by planning, organizing, directing and controlling for the purpose of producing output (goods and services) desired by its customers so that organisation's objectives are accomplished. In this sense, University management should use human resources available to see to the maintenance of students' hostel facilities so that they can have a conducive learning environment capable of improving their academic performance.

Health behaviours are actions and inactions that affect significantly health status of an individual. In the context of this study, personal health behaviour describes action and inactions of an individual that continue to increase the risk of urinary tract infection. Amali, lndinyero, Omoh and Awodi (2009) identified unsanitary personal health behaviour such as poor hand washing practice, squatting over the toilet seat and wiping from the back to the front which transfer faecal matter from renal region as factors that continue to increase the urinary tract infection. Olabimtan, Ojo and Oyebode (2018) reported the result of a study which found that higher prevalence of urinary tract infection is due to the fact that exogenous infections in female spread from the anus due to poor anal cleaning, to the vagina where the bladder might be infected. Dirty toilet shared by female students, sharing of underwear and buckets including poor personal hygiene all contribute to urinary tract infections.

The observed increase in the incidence of urinary tract infection is quite in line with submission of Chevins (2001) that the infection was a common medical complaint among women in their active years. He further reported that the age class of 18-23 had highest prevalence rate of 38.9% and that of this age range, girls/women tend to live active sexual life and promiscuity is sometimes on the increase. APUA (2003) also reported that women at the peak of their sexual active years had high prevalence of urinary tract infection. In most times young women who contracted urinary tract disease feel ashamed of going for medical check-ups and therefore indulge in one form of self-medication or the other or even prefer to die in silence (Ehinmidu, 2003). Therefore, this study was designed to investigate institutional factors and personal health behaviour as determinants of urinary tract infection among female undergraduates.

Statement of the Problem

Urinary Tract infection is a common infection which affect humans, cause significant distress to the individuals, and is associated with high health care and social cost (Sheerin, 2011). Urinary tract infection and its associated complications are the cause of death of many people in developed and developing countries of the world. The social health and economic burden of the disease is widespread but developing countries world share the larger part. About 6,220 cases of urinary tract infection was recorded within 2015 to 2019 among students at University Health service (Jaja) University of Ibadan, Ibadan. The record shows that the occurrence of urinary tract infection is on the high side among student population and still persisting till recent times.

Several researches have been done on urinary tract infection but majority of the studies focused on causes, prevalence and prevention of UTIs. Ojo and Anibijuwon (2010) worked on assessment of knowledge and preventive practices of urinary tract infection among female undergraduates in hall of residents of University of Jos but little research attention has been focused on factors that can predict urinary tract infection among female undergraduates.

Therefore, this study focused on institutional factors and personal health behaviour as predictors of urinary tract infection among female undergraduates in the University of Ibadan halls of residence.

Objectives of the study

The broad objective of the study was to examine institutional factors and health behaviour as predictors of urinary tract infection among female undergraduates in University of Ibadan halls of residence.

Specifically, the study examined:

(i) the joint effect of institutional factors on urinary tract infection among female undergraduates in University of Ibadan halls of residence.

(ii) the relative contribution of institutional factors to urinary tract infections (UTIs) among female undergraduates in the University of Ibadan halls of residence.

(iii) relative contribution of personal health behaviour to urinary tract infections among female undergraduates in University of Ibadan halls of residence.

Significance of the study

This study would provide baseline information that can be used by institutions of learning to design intervention programmes for urinary tract infection burden. The information obtained may also facilitate a better understanding of the specific preventive measures against urinary tract infections. Health care professionals have the obligation to disseminate proper information about urinary tract infection so that female individuals will be aware of the causes, risk factors, symptoms and preventive practices against the infection.

The result of the study will be made available to Ministry of Health so that it can be used to increase the level of awareness and knowledge of complications associated with urinary tract infection. Also, awareness and knowledge of urinary tract infection created as a result of information from the study will help people to build up a good health behaviour to prevent diseases.

Research Question

1. What is the relationship between institutional factors and personal health behaviour, and urinary tract infection among female undergraduates in the University of Ibadan halls of residence?

Hypotheses

1. There will be no significant joint effects of institutional factors (toilet facilities, maintenance and management) on urinary tract infection among female undergraduates in the University of Ibadan halls of residence.
2. There will be no significant relative contribution of institutional factors (toilet facilities, maintenance and management) to urinary tract infection among female undergraduates in the University halls of residence.
3. There will be no significant relative contribution of personal health behaviour (personal hygiene) to urinary tract infection among female undergraduates in the university of Ibadan halls of residence.

Methodology

The descriptive survey research design was used for this study. The population for this study comprised of all female undergraduates in the University of Ibadan halls of residence. The sample size of two hundred (200) respondents who were selected from female undergraduates in the University of Ibadan halls of residence using multi-stage sampling procedure was used for this study. In stage one, random sampling technique of fish bowl without replacement was used to select two out of all the female undergraduate halls of residence in the University of Ibadan. In stage two, blocks, floors as well as rooms used were selected using simple random selection technique. In stage three proportionate sampling technique was used to select 200 respondents from selected rooms using hall register as sample frame. The major instrument used for data collection was a self-developed questionnaire(r=0.83), structured according to the variables in the hypotheses. The researchers with two assistants administered the questionnaire on the respondents. Data were analysed using Multiple regression at 0.05 alpha levels.

Results

Research Question One What is the relationship between institutional factors and personal health behaviour and urinary tract infection among female undergraduates in the University of Ibadan halls of residence?

Table 1: Correlation matrix table showing the relationship between the independent variables (institutional factors and personal health behaviour) and dependent variable (urinary tract infection) among female undergraduates in the university of Ibadan halls of residence

	Toilet Facility	Maintenance	Management	Personal Hygiene	Urinary Tract Infection
Toilet Facility	1	.466**	.203**	.290**	.156**
Maintenance	.446**	1	.194**	.233**	.070
Management	.203**	.194**	1	.178**	.674**
Personal Hygiene	.290**	.233**	.178**	1	.032
Urinary Tract	.156**	.070	.674**	.032	1

Correlation is significant at the 0.05 level (2-tailed)

The table above shows that independent variables of toilet facilities (r=.156; p<.05), maintenance (r=.070; P<.05), management (r=.674; p<0.05) and personal hygiene (r=.032; p<0.05) correlated positively with urinary tract infection in this study. The identified independent variables have relationship with urinary tract infection.

Hypothesis 1: There will be no significant joint effects of institutional factors (toilet facilities, maintenance and management) on urinary tract infection among female undergraduates in the University of Ibadan halls of residence.

Table 2: Regression table showing the joint effects of institutional factors (toilet facilities, maintenance and management) on urinary tract infection among female undergraduates in University of Ibadan halls of residence

R =.915 Multiple R =.836 Multiple R^2 adjustment = .833 Standard Error Estimate = 2.68338 Analysis of Variance					
Model	Sum of Square	Df	Mean Square	F	R
Regression	7180.850	4	1795.213	249.316	.000
Residual	1404.105	195	7.201		
Total	8584.955	199			

Table two revealed the joint effect of institutional factors (toilet facilities, maintenance and management) on urinary tract infection among female undergraduates in University of Ibadan halls of residence was significant [F(4,195)=249.316, p<0.05). This independent variable also yielded a coefficient of multiple regression (R) of .915 meaning that about 92% of the variation is accounted for by the independent variables. Therefore, the hypothesis which says there will be no significant joint effect of institutional factors (toilet facilities, maintenance and management) on urinary tract infection among female undergraduates in University of Ibadan halls of residence is rejected

Hypothesis 2: There will be no significant relative contribution of institutional factors (toilet facilities, maintenance and management) to urinary tract infection among female undergraduates in the University of Ibadan halls of residence

Table 3: Regression table showing the relative effects of institutional factors (toilet facilities, maintenance and management) on urinary tract infections among female undergraduates in the University of Ibadan halls of residence

Model	Unstandardized Coefficients		Standard Coefficients		
	B	Std. Error	Beta	T	Sig.
1 (Constant)	2.969	1.415		2.098	.037
Toilet facilities	-.039	.195	.156	1.202	.040
Maintenance	.004	.102	.021	1.044	.016
Management	2.598	.090	.896	28.884	.000

Table above shows for each institutional factors, the unstandardised regression weight (β), the standardized error of estimate (SEβ), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. The table revealed that management has the highest contribution of 89.6% (β=.896, t=28.884, p<0.05) followed by toilet facility with 15.6% (β=.156, t=1.202, p<0.05) while maintenance contributed the least with 0.21% (β=.021, t=1.044, p<0.05). Therefore, the null hypothesis was rejected.

Hypothesis 3: There will be no significant relative contribution of personal health behaviour (personal hygiene) to urinary tract infection (UTI) among female undergraduates in University of Ibadan halls of residence.

Table 3: Regression table showing the relative contribution of personal health behaviour (personal hygiene) to Urinary Tract Infections among female undergraduates in University of Ibadan halls of residence

Model	Unstandardized Coefficient		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig
1 (Constant)	16.525	1.833	1.833		.000
Personal Hygiene	.445	.081	.362	5.469	.000

Table above shows for personal health behaviour, the unstandardised regression weight (β), the standardized error of estimate (SEβ), the standardized coefficient, the t-ratio and the level at which the t-ratio is significant. The table revealed that personal health behaviour is a significant predictor of urinary tract infection among female undergraduates in University of Ibadan halls of residence contributing 36.2% (β=.362, t=5.469, p<0.05). Therefore, the null hypothesis is rejected.

Discussion of the Findings

The findings of this study revealed that there is positive relationship between institutional factors (toilet facilities, management and maintenance) and personal health behaviour, and urinary tract infection. It can be inferred from this result that institutional factors (toilet facilities, maintenance and management) and personal health behaviour are correlates of urinary tract infection among female undergraduates in the University of Ibadan halls of residence. The result is in support of the finding of Ojo and Anibijuwon (2010) that there is a link between the prevalence of urinary tract infection and level of personal hygiene and states of toilet facilities in the hostels.

The study showed that the institutional factors (toilet facilities, maintenance and management) had joint and relative contribution to urinary tract infection among female undergraduates in the University of Ibadan halls of residence. This finding is in line with that of Vyas, Varshney, Sharma, Juyal Nautiyal and Shrotriya, 2015) who reported in a study that the chances of pathogen transmission are very high in toilets that are not properly managed, lack standard regulation, poorly design and in an unhygienic condition. In the same vein Ojo and Anibijuwon (2010) reported that unflushed toilet due to inadequate supply of water can lead to accumulation of urine sediments, forming a thick scum that is detrimental to health. Lack or inadequate toilet facilities in student's hostel can force the students to urinate and defecate at surroundings especially secluded places or nearby bushes and that is not good for their health. Poorly maintained toilet facilities as a result of poor provision of water, detergents and disinfectants as well as cleaners can render the place dirty and lead to urinary tract infection. It is of note that in the recent times the common request of students especially the female ones is improved condition of toilet facilities. This demand is quite expected because they are more susceptible to urinary tract infection as a result of unhygienic condition of toilet facilities.

The finding of this study also showed that personal health behaviour (personal hygiene) had significant contribution in the prediction of urinary tract infection among females undergraduate in University of Ibadan halls of residence. This is quite in agreement with the report of Olabimtan, Ojo and Oyebode (2018) in a study that poor personal hygiene of some students such as using unwashed toilet, not washing hands after toilet, improper cleaning of anus and vagina after defecation, use of dirty underwear are among practice that can easily transmit UTI in the halls of residence. It has been observed that most teenage girls perhaps due to ignorance do cleaning after defecation by wiping from back to the front and this practice of course could enhance susceptibility to urinary tract infection. Mbata, Ateru, Azike, Adewoye, Emeka and Ugwueke (2016) also reported a study which found that females are susceptible to bacteria due to the proximity of the vagina to anus from there, the bacteria can easily be transferred into their urethra during improper wiping from back to the front after urination or bowel movement. It is important that hand-washing should be done after defecation using water together with liquid soap. This is because regular hand washing can prevent disease infection in an individual.

Conclusion

This study concluded that institutional factors and personal health behaviour are predictors of urinary tract infection among female undergraduates in the University of lbadan halls of residence. Put in another words, toilet facilities, maintenance, management as well as poor personal health behaviour contribute to the prediction of urinary tract infection among female students.

Recommendations

Lack or inadequate toilet facilities, poor maintenance and management as well as unhygienic personal health behaviour of students are all responsible for poor state of hostel and particularly toilets. Meanwhile, the use of dirty toilet can cause urinary tract infection. The prevention of urinary tract infection is a function of addressing the identified factors that lead to its prevalence. It is along this line that the following recommendations are made:

1. University Health Centres should be equipped with resources to treat students who contracted urinary tract disease. Also students who experience UTI should be encouraged to visit hospital in order to treat it at its early stage to avoid it becoming severe.
2. There should be provision of toilet adequate to serve the number of students in halls of residence of each University.
3. There should be regular maintenance of hostels together with constant water supply and cleaners.
4. It is important that during general orientation of the students, cleanliness of the hostel should be emphasised.
5. Health Education programme in which prevention of urinary tract infection will feature prominently should be put in place for all students in universities.

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