

Prevention of Urogenital Tract Infection among Nursing and Non Nursing Female School Students (Comparative Study)

¹ Hend Gamal Abdallah, ² Nawal Mahmoud Soliman, ³ Asmaa Talat Mohamed

1. B.Sc., Banha University.
2. Professor of Community Health Nursing, Faculty of Nursing, Ain Shams University-Cairo-Egypt.
3. Lecturer of Community Health Nursing, Faculty of Nursing, Ain Shams University-Cairo-Egypt.

Abstract

Background: Urogenital tract infections (UGTIs) are a universal public health problem, mainly neglected by many females in adolescence stage. **The study aimed to:** Assess the prevention of urogenital tract infections among nursing and non nursing female school students. **Research design:** A descriptive design was utilized to achieve the aim of this study. **Setting:** The study was conducted at the Technical Nursing Institute in Bab El-sharia University Hospital Affiliated to ElAzhar University, Egypt and secondary school for girls in Bab El-sharia affiliated to Bab Al-Sharia Educational Administration. **Sample:** A convenience sample of 304 (196 Female nursing school students and 108 of non nursing school students) enrolled at first and second grade at the above mentioned setting was involved in this study. **Tools: Self-administered questionnaire: It was included five parts as following: Part (1):** female nursing and non nursing school student's demographic data. **Part (2):** female's nursing and non nursing school student's health history related to exposure to urogenital tract infections. **Part (3):** females nursing and non nursing school students Knowledge related to urogenital tract infections. **Part (4):** female nursing and non nursing school students reported Health practices regarding prevention of UGTIs. **Part (5):** assessing the health needs and problems of female students during infection with the genitourinary system **Results:** Findings of the present study showed that 50% of the studied nursing students, had satisfactory level of total knowledge about urogenital infection, compared with 34.3% of the studied non nursing students had satisfactory level of total knowledge about urogenital infection. 58.2% of the studied nursing students had unhealthy practices to prevent urogenital tract infection compared with 61.1% of the studied non nursing students had unhealthy practices to prevent urogenital tract infection. **Conclusion** there was a statistically non-significant correlation between total practices and age. Also, there was a statistically non-significant correlation between total practices and total knowledge of the studied students (nursing and non- nursing). **Recommendation:** Students counsel about personal hygiene and importance of menstrual hygiene is recommended. **Further study:** Designing and implementing workshops about proper hygienic practices, healthy eating habits would be of great importance to increase students' awareness and prevention of UGTI.

Keywords: Urogenital Tract Infection, Prevention, Nursing and Non Nursing Female School Student.

Introduction:

Urogenital tract infection is a bacterial infection that affects any part of the genital and urinary tract. occurs when too much bacteria especially those that inhabit the gastrointestinal tract and the skin enter the vagina through the anus and thrive inside the

urinary system (kidney ,ureter, bladder and urethras) and consequently reproduce rapidly due to available nutrients (Pascal et al , 2019).

Nursing and non nursing female students have a high risk of making unhealthy lifestyle choices that could affect their health and wellbeing. This is the result and influence of a

variety of popular cultures among this age group, and the typical peer pressure encountered during these years. Uninformed, school students could formulate inaccurate and incomplete notions regarding health, lifestyle, physical activity and fitness (*Niekerk et al., 2018*).

Genital hygiene is the major factor for protection of reproductive health. Infection can occur with reduced acidity, poor menstrual hygiene, the use of reusable cloth, personal unhygienic practices, keeping the genital area moist, using contaminated towels, and using tight and non-absorbent underwear (*Jahan et al, 2019*).

Poor menstrual hygiene is a risk factor for reproductive tract infections. In many communities, female nursing and non nursing school students are performing harmful practices using unclean materials, insertion of unclean materials into the vaginal canal, use of highly absorbent tampons, frequent vaginal douching, and lack of hand-washing. Common products and practices included vaginal/genital moisturizers, anti-itch creams, feminine wipes, washes, suppositories, sprays, powders, and waxing and shaving pubic hair resulted in three times higher odds of reporting an adverse health condition (*Bhusal, 2020*).

In developing countries, the topics of genital health and reproductive health are not freely discussed in society. People feel uncomfortable talking about this in public. Due to taboos and social belief, parents hesitate to discuss this with their adolescent daughters. As a result, student females are not well aware and they have a limited understanding and practices regarding their genital health, which leads to poor hygiene. This increases susceptibility to urinary, vaginal, and pelvic infections (*Shah et al, 2019*).

Lack of adequate knowledge, practice unhealthy behaviors such as gain weight, have altered sleep behaviors, reduce their physical activity, have a pervasive feeling of being stressed and have poor dietary habit may lead to various genitourinary diseases among female nursing and non nursing school students (*Kim & Choi, 2020*).

Teaching performance skills and helping nursing and non nursing female students gain knowledge, to make them follow self-care behaviors, accept and cooperate with inappropriate health behavior, will lead to recovery from illness and control of complications (*Crow & Nelson, 2018*). Therefore, through this study, the researcher seeks to increase the awareness of the female students regarding prevention of urogenital tract infections.

Significance of the Study:

Genitourinary problems are major health problems affecting millions of people each year, especially among female adolescents. This problem often associated with significant morbidity and mortality. Lack of abundant knowledge and hygienic practices and poor hygiene school toilets may conduct to several genitourinary problems of female adolescents (*Jahan et al, 2019*)

No Egyptian clear statistics found because of data regarding GTIs at the community level among women in reproductive age in Egypt are scarce because of the culture of silence among Egyptian women to talk about their reproductive problems (*Dorgham, 2020*).

Aim of the study:

This study aims to assess the prevention of urogenital tract infections among nursing and non nursing female school students through:

- Assessing knowledge of nursing and non nursing female school students regarding prevention of UGTIs.
- Assessing reported practices of nursing and non nursing female school students regarding prevention of UGTIs.
- Assessing health needs and health problems of nursing and non nursing female school students regarding prevention of UGTIs.

Research questions:-

1. What is the knowledge of nursing and non nursing female school students regarding prevention of UGTIs?

2. What are the reported practices of nursing and non nursing female school students regarding prevention of UGTIs?
3. Is there a relation between personal characteristics of nursing and non nursing female school students and their reported practices?
4. Is there a relation between knowledge of nursing and non nursing female school students and their reported practices?
5. Is there a relation between knowledge and health needs and health problems of nursing and non nursing female school students?

Subjects and Methods:

Research design:

A descriptive design was utilized to achieve the aim of this study.

Setting:

The study was conducted at the Technical Nursing Institute in Bab El-sharia University Hospital Affiliated to ElAzhar University, Egypt and secondary school for girls in Bab El-sharia affiliated to Bab Al-Sharia Educational Administration which contains three secondary schools. This school represents the highest density among the administration schools.

Subjects:

Sample type:

A convenience sample technique used to conduct the study.

Sample Size:

A total of 304 (196 Female nursing school students and 108 of non nursing school students) enrolled at first and second grade at the above mentioned setting was involved in this study.

Data collection tools:

One tool was used:-

Self-administered questionnaire:

It was included five parts as following:

Part (1): female nursing and non nursing school student's demographic data. Including (age, Study grade, Number of family members,

Overcrowding rate, water supply, sanitation and bathroom in the house). It included questions from 1-7.

Part (2): female's nursing and non nursing school students health history related to exposure to urogenital tract infections including (occurrence of UGTIs, duration of UGTIs, went to the doctor, taking medications, color of vaginal discharge, Vaginal discharge accompanied by, duration). It included questions from 8-20.

Part (3): females nursing and non nursing school students Knowledge related to urogenital tract infections including (definition of UGTIs, Predisposing factors, Signs and symptoms, Types, Methods of treatment, complications, Ways to prevent infection). It included questions from 21-28.

❖ Scoring system:

Each question was evaluated as 2 scores for the complete correct answer, 1 score for incomplete correct and 0 score for incorrect answer. The total score for all questions related to knowledge was 14 point which represents 100% and categorized into tow level as following:

- Unsatisfactory less than 50% (0-7)
- Satisfactory 50% or more (8-14)

Question no.28 was excluded from the scoring

Part (4): female nursing and non nursing school students reported Health practices regarding prevention of UGTIs it was adapted from (El-Beih, 2014) including:

1-female student's practices towards infection of the genitourinary system including:

A- Healthy practices including (eat healthy food, drink adequate amount of water, reduce salt, urine analysis, take analgesics.). It included questions from 29-36.

B- Perineal hygiene includes questions concerning cleaning perineal area, methods of cleaning, direction of cleaning,

dryness of perineal area, removal of pubic hair). It include questions from 37- 45.

C- Suitability & care of underwear includes questions about type of underwear, changing underwear, and ways of cleaning underwear. It include questions from 46-48

D- Treatment and follow up including (take medication, monitor health , number of follow up, urine analysis , time to stop treatment). It include questions from 49-53.

2- Female student's practices to prevent genitourinary infection including:

A. Perineal hygiene includes questions concerning cleaning perineal area, methods of cleaning, direction of cleaning, dryness of perineal area, removal of pubic hair). It include questions from 54-57.

B. Menstrual hygiene, includes questions about type of towels used during menstruation, changing of towels, shower during menses,). It include questions from 58-64.

C. Suitability & care of underwear includes questions about type of underwear, changing underwear, and ways of cleaning underwear. It include questions from 65-67.

D. Student health seeking behaviors: It includes sources of health advice when having symptoms of UGTIs (mother, mother in law and friends). It include question 68.

❖ Scoring system:

Each question was scored as 1 for done and zero for not done. The total score of practices was 39 points, which represent 100%.

The total practices were classified into:

- Unhealthy practices less than 60% (0-23)
- Healthy practices 60% or more (24-39)

Question no.68 was excluded from the scoring.

Part (5): assessing the health needs and problems of female students during infection with the genitourinary system including:

First, health needs including:

1- Physical needs including:

A. Diet including (healthy diet, drink adequate amount of water, avoid soft drink, reduce salt, take analgesics). It include questions from 69-73.

B. Rest and sleep including (hours of sleep, take break during day, sleep regularly and reason for irregular sleep). It include questions from 74-77.

C. Exercise and sports including (need to exercise, kind of sports). It include questions from 78-79.

2- Psychological and social needs (home and family) including (need guidance, read about GUTIs, spend time with friends, practice favorite hobby). It include questions from 80-86.

❖ Scoring system:

Each question was evaluated as 2 scores for always, 1 score for sometimes and 0 score for never. The total score of needs was 36 points, which represent 100%. The total needs were classified into:

- Low level less than 50% (0-12).
- Moderate level from 50% - 75 % (13-24).
- High level more than 75 % (25-36).

Second, assessing the health problems of female students during infection of the genitourinary system including:

A. Physical problems including (bad odor, lower abdominal pain, burning sensation during urination). It include questions from 87-92.

B. Psychological problems including (feeling anxious, feeling sad, insomnia, inability to doing daily activities). It include questions from 93-97.

C. Social problems including (social relationship, isolation during infection). It include questions from 98-99.

D. Financial problems including (cost of treatment, patents approval to follow up). It include questions from 100-101.

❖ Scoring system:

Each question was scored as 1 for yes and zero for no. The total score for problems was 15 points, which represent (100%). The total problem was classified into:

- Hadn't a problem less than 50% (0-7).
- Had a problem 50% or more (8-15).

Validity:

It was tested by 5 experts from community health nursing, faculty of nursing Ain Shams University to review the tools for clarity, relevance, comprehensiveness, understanding and applicability.

Reliability:

Reliability is the consistency of measurement tool. The degree to which the instrument measures the same way each time, it is used under the same condition with the same subjects and it was done by using an alpha Cronbach test. The Cronbach's alpha model which is a model of internal consistency was used in the analysis of female's student knowledge, reported practices, health needs and health problems and the results were overall =0.93 and each part: knowledge = 0.77, reported practices = 0.89, health needs = 0.81 and health problems = 0.71. Statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1. Higher values (more than 0.7) denote acceptable reliability.

I. Ethical considerations:

The research approval was issued from the Scientific Research Ethical Committee in the Faculty of Nursing at Ain Shams University before starting the study. The researcher clarified the importance and aim of the study to all the female student included in the study. In addition to Oral consents were obtained from them. They were assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture and beliefs will be respected. They were informed that the collected data would be used only for

the research purpose, as well as for their benefits.

Pilot study:

It was carried out on 10% from the total sample (30 cases) for one week to evaluate the feasibility, applicability and time needed to fill the tool to find the possible obstacles that might be faced during data collection. The sample was chosen randomly from the previously mentioned setting. There were no modifications found after the pilot study. The sample of pilot study was included in the research.

Field work:

This study started from beginning of November 2021, till the end of April 2022, covering six months for data collection. An official approval letter clarifying the purpose of the present study was issued from the Dean of the Faculty of Nursing at Ain Shams University to the General Director Bab El-sharia University Hospital, and Scientific Research Ethical Committee in the Faculty of Nursing as an approval to conduct this study. The previously mentioned setting was attended by the researcher three days/week (Monday to Wednesday) from 9.00 a.m. to 2 p.m.

Firstly, the researcher met female students at the Nursing Lab. The researcher met them in groups; the total sample (304) was divided into small groups of 10 groups. The researcher held the first meeting by interviewing all female students to introduce her-self and briefly explained the nature and the purpose of the study.

They were informed that participation in this study was voluntary and they had the right to withdraw at any time without giving any reason. Oral approval of students to share in this study was achieved.

Secondly, an interviewing questionnaire was distributed to each female student to assess student's socio-demographic characteristics, knowledge, reported practices, health needs and health problems regarding

prevention of GUTIs. The questionnaire took about 20-30 minutes to be completed.

Administrative design:

An official permission was issued from the Dean of the Faculty of Nursing at Ain Shams University to the General Director Bab El-sharia University Hospital, Out-patient Gynecological Clinic Director, and Scientific Research Ethical Committee in the Faculty of Nursing as an approval to conduct this study.

Statistical analysis:

Data were collected, coded and entered into a personal computer (P.C) IBM compatible 2.6 GHz. They were analyzed using Statistical Package for Social Science (SPSS), under windows version 20. The collected data were organized, revised, analyzed, tabulated using number and percent distribution. Proper statistical tests were used to determine whether there were statistically significant differences between the variables of the study. The statistical tests used in this study were:

1. Chi-square test (X^2) for qualitative variables.
 2. Correlation coefficients (r) to find correlations between quantitative data.
 3. Spearman rank correlation to find correlations between categorized data.
- $P > 0.05$ there is a statistical insignificant difference
 - $P < 0.05$ there is a statistical significant difference
 - $P < 0.01$ there is a statistical highly significant difference.

Results:

Table (1): shows that , 67.3% of the studied nursing students were in the age group 16-17 years and in the second grade and 100% of them had water ,bathroom , sanitation and compared with 37% of studied non nursing students were in the age group 16-17 years , 38.9% of studied non nursing students in the second grade and 100% of them had water ,bathroom , sanitation , with highly statistically significant difference ($P < 0.01$) .

Table (2): shows that, 32.1% of the studied nursing students had genitourinary infection twice time , 35.7% of them had the last genitourinary infection from month and 85.7% of them weren't seeking to treat symptoms of genitourinary infection compared with 30.6% of the studied non nursing students had genitourinary infection once time ,32.4% of them had the last genitourinary infection from week and 87% of them weren't seeking to treat symptoms of genitourinary infection, with highly statistically significant difference ($P < 0.01$) .

Table (3): shows that 51.5% of the studied nursing students suffering from white vaginal discharge 48% of discharge last for one week and sometimes 38.8% felt a burning sensation during urination compared with 44.4% of the studied non nursing students suffering from white vaginal discharge 60.2% of discharge last for one week and 31.5% felt a burning sensation during urination, with highly statistically significant difference ($P < 0.01$).

Table (4): shows that, there was a statistically non-significant correlation between total practices and total knowledge of the studied students (nursing and non nursing) (p -value > 0.05).

Figure (1): illustrates that, 57,1% of the studied nursing students, their sources of knowledge regarding symptoms of GUTIs were from their studies , 41,8% of them from their family member and 18.4% of them from their friends/neighbors compared with 0, 0% of the studied non-nursing students from their studies , 43,5% of them from their family member and 21.3% of them from their friends/neighbors.

Figure (2): illustrates that, 50% of the studied nursing students, had satisfactory level of total knowledge about genitourinary infection and 50% of them had unsatisfactory level of total knowledge, compared with 34.3% of the studied non nursing students had satisfactory level of total knowledge about genitourinary infection and 65.7% of them had unsatisfactory level of total knowledge.

Figure (3): reveals that, 58.2% of the studied nursing students had unhealthy practices to prevent urogenital tract infection and 41.8% of them had healthy practices compared with 61.1% of the studied non nursing students had unhealthy practices and 38.9% of them had healthy practices to prevent urogenital tract infection.

Figure (4): illustrates that, 45.4% of the studied nursing students had low levels of health needs to prevent urogenital tract infection,

37.8% of them had moderate levels and 16.8% of them had high levels compared with 38% of the studied non nursing students had low levels of health needs, 44.4% of them had moderate levels and 17.6% of them had high levels.

Figure (5): presents that, 59.7% of the studied nursing students hadn't a problem regarding urogenital tract infection and 40.3% had a problem compared with 55.6% of the studied non nursing students hadn't a problem and 44.4% of them had a problem.

Table (1): statistical differences between nursing and non-nursing students regarding their personal characteristics (n=304).

Item	Nursing (n=196)		Non nursing (n=108)		X ²	p-value
	N	%	N	%		
Age(in years)						
14 -	64	32.7	68	63.0	26.03	.000**
16 -	132	67.3	40	37.0		
Mean ±SD	15.32±1.26		14.21±1.57			
Study grade						
First grade	64	32.7	66	61.1	23.03	.000**
second grade	132	67.3	42	38.9		
Number of family members						
three	23	11.7	13	12.1	1.490	.828
four	32	16.3	23	21.3		
five	88	44.9	43	39.8		
More than five	53	27.1	29	26.8		
Overcrowding rate						
>2	112	57.1	62	57.4	.002	.964
<2	84	42.9	46	42.6		
Availability of water supply						
Yes	196	100.0	108	100.0	-	-
Presence of Bathroom						
Yes	196	100.0	108	100.0	-	-
Sanitation						
Yes	196	100.0	108	100.0	-	-

** Highly statistically significant

Table (2): statistical differences between nursing and non-nursing students regarding their past history (n=304)

Item	Nursing (n=196)		Non nursing (n=108)		X ²	p-value
	N	%	N	%		
Presence of genitourinary infection						
Once	35	17.9	33	30.6	9.518	.023*
Twice	63	32.1	32	29.6		
three or more times	37	18.9	23	21.3		
I've never had before	61	31.1	20	18.5		
The last infection of the genitourinary system						
Week	33	16.9	35	32.4	12.441	.006**
month	70	35.7	33	30.6		
two months or more	32	16.3	20	18.5		
other	61	31.1	20	18.5		
seeking to treat the symptoms of genitourinary infection						
Yes	28	14.3	14	13.0	.102	.749
No	168	85.7	94	87.0		

*Statistical significant

**Highly statistical significant

Table (3): statistical differences between nursing and non-nursing students regarding their present history (n=304).

Item	Nursing (n=196)		Non nursing (n=108)		X ²	p-value
	N	%	N	%		
Suffering from genitourinary infections at the present time						
Yes	74	37.8	38	35.2	3.902	.142
No	74	37.8	52	48.1		
Sometimes	48	24.4	18	16.7		
The color of vaginal discharge						
Colorless	58	29.6	40	37.1	1.915	.384
White	101	51.5	48	44.4		
Yellow tends to green	37	18.9	20	18.5		
Vaginal discharge accompanied by						
Very bad odor	76	38.8	33	30.6	12.108	.002*
I will always be wet	43	21.9	44	40.7		
Strong irritation	77	39.3	31	28.7		
How long do this discharge last						
Less than one week	83	42.3	18	16.7	24.520	.000**
One week	94	48.0	65	60.2		
More than 2 week	19	9.7	25	23.1		
Feeling any pain in the lower abdomen						
Yes	87	44.4	56	51.8	4.913	.086
No	63	32.1	38	35.2		
Sometimes	46	23.5	14	13.0		
Feeling burning sensation during urination						
Yes	48	24.5	34	31.4	16.049	.000**
No	72	36.7	56	51.9		
Sometimes	76	38.8	18	16.7		
Feeling need to make urination several times						
Yes	64	32.7	39	36.1	28.438	.000**
No	51	26.0	54	50.0		
Sometimes	81	41.3	15	13.9		
Feeling straining sensation during urination						
Yes	58	29.6	29	26.9	2.800	.247
No	83	42.3	56	51.9		
Sometimes	55	28.1	23	21.2		
Descending urine spot especially during straining or coughing						
Yes	53	27.0	29	26.9	5.390	.068
No	97	49.5	65	60.1		
Sometimes	46	23.5	14	13.0		

*Statistical significant

**Highly statistical significant

Table (4): statistically relation between total practices among studied students (nursing and non-nursing) and their total knowledge (n=304).

Total practice	Unsatisfactory		Satisfactory		X ²	p-value
	N	%	N	%		
Nursing (n=196)						
Unhealthy (n=114)	56	57.1	58	59.2	.084	.772
Healthy (n=82)	42	42.9	40	40.8		
Non nursing (n=108)						
Unhealthy (n=66)	44	62.0	22	59.5	.065	.799
Healthy (n=42)	27	38.0	15	40.5		

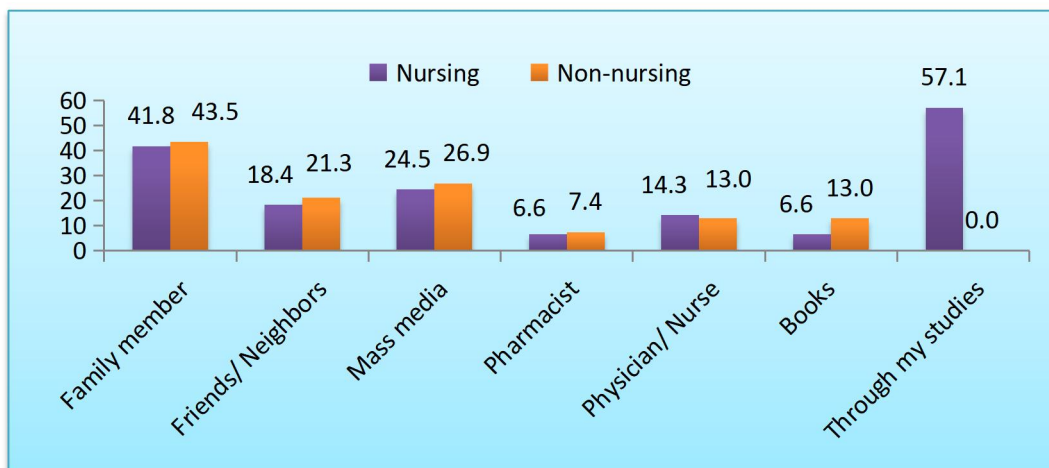


Figure (1): Percentage distribution of studied students regarding their sources of knowledge regarding genitourinary tract infection (n=196 for nursing; n=108 for non-nursing).

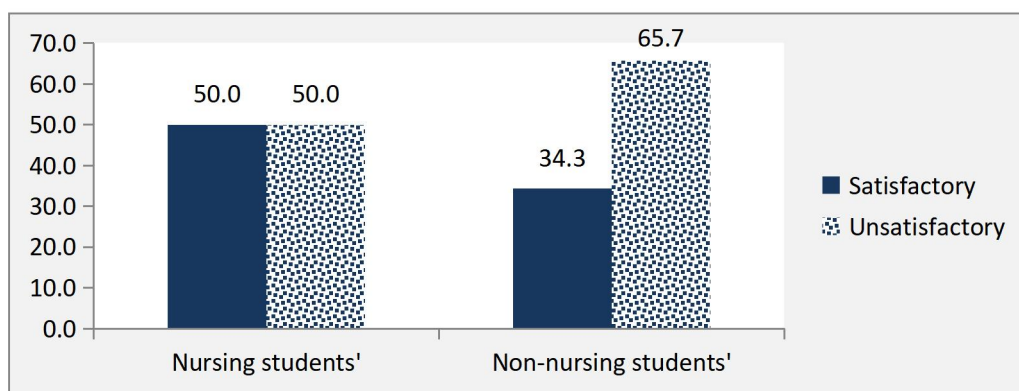


Figure (2): Percentage distribution of studied students regarding their total knowledge score level about urogenital tract infection (n=196 for nursing; n=108 for non-nursing)

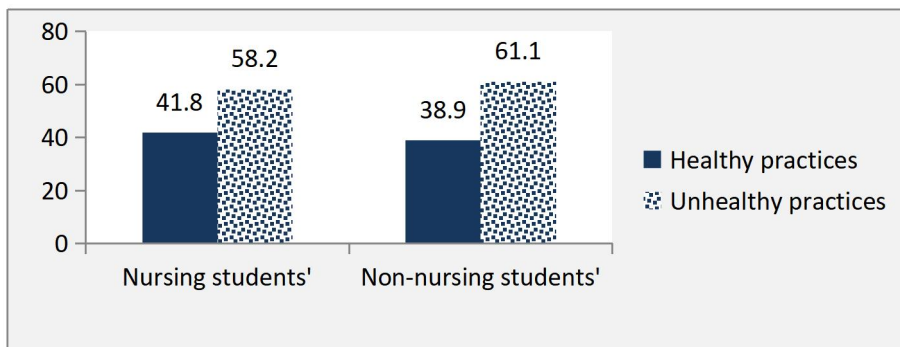


Figure (3): Percentage distribution of studied students regarding their total reported practices score level regarding urogenital tract infection (n=196 for nursing; n=108 for non-nursing).

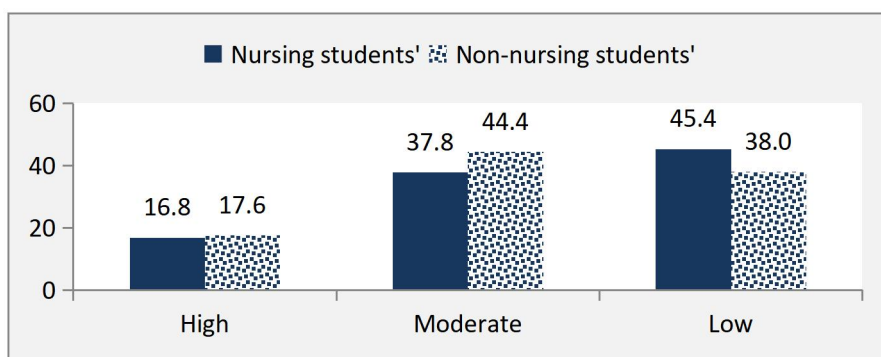


Figure (4): Percentage distribution of studied students regarding their total health needs score level to prevent urogenital tract infection (n=196 for nursing; n=108 for non-nursing).

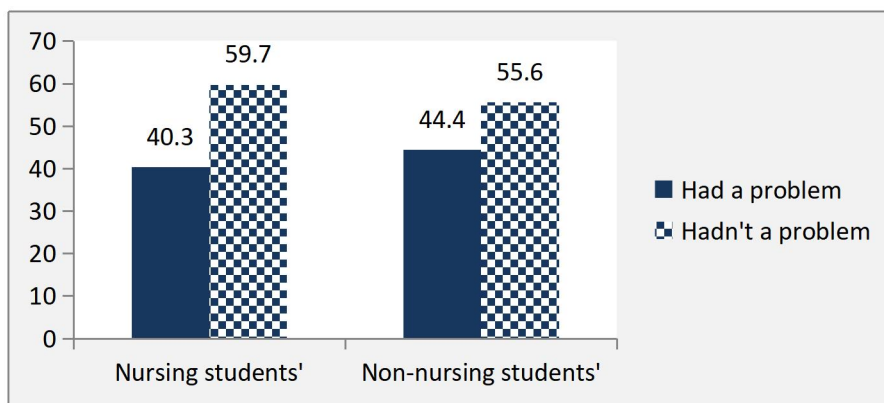


Figure (5): Percentage distributions of studied students regarding their total health problems score level about urogenital tract infection (n=196 for nursing; n=108 for non-nursing).

Discussion:

Urogenital Tract Infection (UGTI) is very common among females in all age groups. During adolescence hormonal changes favor vaginal colonization by nephritogenic strains of bacteria, which can migrate to the periurethral area and cause UTI. It is associated with poor self-esteem, impaired quality of life. Many factors like low water intake, infrequent voiding and poor menstrual hygiene, the main factor predisposing to urogenital tract infection (UGTI) has been attributed to poor personal hygiene and culture habits (Nofal et al., 2020).

Regarding personal characteristics of the studied students (nursing and non-nursing) the current study result showed that , more than two thirds of the studied nursing students were in the age group 16-17 years and in the second grade and all of them had water ,bathroom , sanitation, and compared with more than one third of studied non nursing students were in the age group 16-17 years and all of them had water ,bathroom , sanitation (Table1)

The present study result disagree with **Al-Kotb et al.,(2016)** who conducted study in Egypt the study contenting 462 female students, entitled " Prevention for genitourinary tract infection among female adolescents students" and founded that, age of suited sample was $13.6 \pm DS1.18$ years , less than half of them in second grade, less than three quarters of the studied students had sufficient monthly income. Regarding housing conditions more than three quarters of students' homes were found to be healthy, according to their stated description.

Also, the current study result contrast with **Kandula et al., (2022)** who applied study in Ethiopia the study contenting 60 teenage girls, entitled "Efficacy of video educational program on interception of urinary tract infection and neurological stress among teenage girls" and noted that, less than half of the studied non-nursing students were between the ages of 13 - 15, one third of them were between the ages of 16 – 18. Most of the respondents were living in a rural area, more than one tenth of them were living in an urban area.

Regarding past history of the studied students (nursing and non-nursing) the present study result showed that , about one third of the studied nursing students had genitourinary infection twice time , more than one third of them had the last genitourinary infection from month and most of them weren't seeking to treat symptoms of genitourinary infection compared with less than one third of the studied non nursing students had genitourinary infection once time , about one third of them had the last genitourinary infection from week and most of them weren't seeking to treat symptoms of genitourinary infection (Table2).According to the investigator point of view this may be due to genitourinary tract infection is very common among females in all age groups.

The current study result agree with **Hemida et al, (2021)** who applied study in Egypt and content of 100 females, entitled " Effect of Web Causation Epidemiological Model on Preventive Behaviors of Diabetic Females with Genitourinary Tract Infection" and demonstrated that, more than half of the student had recurrence of genitourinary tract infection per year from 4-6 times/yearly.

While disagree with, **Semwal & Sharma, (2020)** who conducted study in India and containing of 469 females, entitled "A study to estimate the occurrence, knowledge, practice regarding prevention of urinary tract infection among adolescent girls in selected community areas" and mentioned that, the majority of female adolescent having no infection of genitourinary tract infection past 6 months. According to the investigator point of view this may be due to difference in demographic characteristics between studied samples.

Concerning reasons for not seeking medical assistance of the studied students the current study result illustrated that, more than less than half of the studied nursing students didn't perceive symptoms as a major health problem to seek treatment and less than one fifth of them preferred to depend on natural herbs compared with half of the studied non nursing students didn't perceive symptoms as a major health problem and one fifth of them

preferred to depend on natural herbs (Figure 1). The current study result in accordance with **Semwal & Sharma, (2020)** who mentioned that, the studied adolescent taken medicine and taking home remedies. According to the investigator point of view this may be due to the studied adolescent believed this ways are safe more than medications.

While, disagree with **Al Youssef et al.,(2020)** who applied study entitled "Asymptomatic Urinary Tract Infection among Female University Students" and demonstrated that, less than one fifth of the studied students reported taken medication without prescription more than two-thirds of them reported that they had no previous complaints of UTIs.

Regarding present history of the studied students (nursing and non-nursing) the current study result showed that, slightly more than half of the studied nursing students suffering from white vaginal discharge, less than half of them had discharge last for one week and sometimes, less than two fifths of them felt a burning sensation during urination, compared with less than half of the studied non nursing students suffering from white vaginal discharge, less than two thirds of them had discharge last for one week and less than one third of them felt a burning sensation during urination (Table3).

According to the investigator point of view this may be due to Genitourinary tract infection (GUTI) had different signs and symptoms. The current study result contrast with **Nofal et al.,(2020)** who conducted study in Egypt and containing 770 female students, entitled " Impact of Educational Program on The Level of Knowledge and Self-Care Behaviors towards Genitourinary Tract Infection among Female Adolescent Students In Zagazig City" and illustrated that, less than one fifth of the studied student had vaginal discharge while less than two thirds of them had burning. Also **Al Youssef et al.,(2020)** who demonstrated that, the majority of the studied students reported complaint from urine spots and the majority of them t didn't complain from dark urine.

Regarding total knowledge score level about genitourinary tract infection the present study result illustrated that, half of the studied nursing students, had satisfactory level of total knowledge about genitourinary infection, compared with slightly one third of the studied non nursing students had satisfactory level of total knowledge about genitourinary infection while more than two thirds of them had unsatisfactory level of total knowledge (Figure2).

According to the investigator point of view this reflects the studied students' needs to implementation of educational program or develop curriculum about this topic to increase student knowledge score level about urinary tract infection.

The current study result disagree with **Semwal & Sharma, (2020)** who mentioned that, the majority of adolescent having moderately adequate knowledge related to genitourinary tract infection, minority of them had inadequate knowledge score, and minority of them and only had adequate knowledge score.

Also contrast with **Hemavathy and Sarathi (2017)** who conducted study in India containing 30 students, entitled "Assess the effectiveness of self -instructional modules on knowledge of prevention of urinary tract infection among b.sc nursing students at Sree Balaji college of nursing " and founded that, the finding of study in pre-test less than half number of female adolescent having moderately adequate knowledge score regarding genitourinary tract infection, more than one third of them had adequate knowledge, more than one tenth of them had inadequate knowledge, compared after post-test most of female adolescent had adequate knowledge, more than one tenth of adolescent had moderate adequate knowledge, and no one adolescent had inadequate knowledge.

Regarding total reported practices score level regarding urogenital tract infection the current study result revealed that, more than half of the studied nursing students had unhealthy practices to prevent urogenital

tract infection and less than half of them had healthy practices compared with more than half of the studied non nursing students had unhealthy practices and less than one third of them had healthy practices to prevent urogenital tract infection (Figure 2).

According to the investigator point of view enhancement of knowledge, practice, and values about prevention of genitourinary tract infection at individual family, and community level is the most urgent need to reduce the incidence rate.

The current study result in accordance with **Tolba et al., (2018)** who conducted study in Egypt and the study include 440 female's students, entitled "Knowledge, Practices and Attitude of Adolescent Females towards External Genital Organs Infection" and mentioned that, highly percentage of the studied students had unsatisfactory practice regarding external genital organs infection. According to the investigator point of view this may be due to the insufficient knowledge and lack of awareness about hygienic practices that negatively affects their practice.

Regarding total health needs score level to prevent urogenital tract infection the present study result illustrated that, less than half of the studied nursing students had low levels of health needs to prevent urogenital tract infection, more than one third of them had moderate levels and less than one fifth of them had high levels compared with less than two more than one third of the studied non nursing students had low levels of health needs, less than half of them had moderate levels and less than one fifth of them had high levels(Figure 3). According to the investigator point of view this may be due to the insufficient knowledge and lack of awareness that negatively affects on their practice level.

The current study result disagree with **Abdelnaem et al, (2019)** who mentioned that, the mean score of total quality of life at post-test was higher than the mean score at pretest. There was a significant improvement in total quality of life among students in post-test as compared to pretest assessment ($p < 0.001$).

Hence, the finding of the current study is interpreted that self-care guideline regarding vaginitis was effective in improving the quality of life of students

Regarding total health problems score level about urogenital tract infection the current study result presented that, more than half of the studied nursing students hadn't a problem regarding urogenital tract infection and less half of them had a problem compared with more than half of the studied non nursing students hadn't a problem and less than half of them had a problem(Figure 4). The current study result supported with **Jahan et al., (2019)** who reported that, significant number of respondents suffer from one or more genitourinary problems.

According to the investigator point of view every health problems situation cannot be prevented, but the adequate knowledge regarding prevention of urogenital tract infection can be minimized with effective prevention. Female students can share learning to their friends, families, and communities so that it is essential to meet the educational need to optimize the quality of life.

Regarding statistically relation between total practices among studied students (nursing and non-nursing) and their total knowledge the current study result showed that, there was a statistically non-significant correlation between total practices and total knowledge of the studied students (nursing and non- nursing) ($p\text{-value} > 0.05$)(Table 23). The current study result disagree with **Fathy et al.,(2019)** who mentioned that, strong positive correlation was detected between students' total knowledge score and total practice score also contrast with **El-Beih et al., (2014)** who conducted study in Egypt included 100 female students, entitled "Health Practices among Female University Students Regarding Prevention of Reproductive Tract Infections" and found positive correlation between having the satisfactory knowledge and healthy practices. Also disagree with **Bobhate and Shrivastava, (2011)** who mentioned that, positive association was observed between having good, fair knowledge and good practice regarding

menstrual health. According to the investigator point of view this may be due to the fact that when knowledge improves practice tends to be healthier.

Conclusion:

Half of the studied nursing students, had satisfactory level of total knowledge about urogenital infection, compared with slightly one third of the studied non nursing students had satisfactory level of total knowledge about urogenital. Also more than half of the studied nursing students had unhealthy practices to prevent urogenital tract infection compared with more than half of the studied non nursing students had unhealthy practices to prevent urogenital tract infection.

Recommendation

- Students counsel about personal hygiene and importance of menstrual hygiene is recommended.
- Health education to female students about the danger of unhygienic measures related to urogenital infection.

Further study

- Further researches are needed to investigate the incidence, contributory factors leading to urogenital infection and the adequate preventive interventions as well as complications of urogenital infection.

References:

- Abdelnaem, S. A., Mohasib, S., & Mohamed, H. (2019).** Effect of self-care guidelines on knowledge and quality of life among faculty of nursing students with vaginal infection. *Obstetrics & Gynecology International Journal*, 10(1), 15-29
- Al Youssef, S, Mohamed A, Abdelrahman R, Baker R, Abass N& Ahmed H (2020):**Asymptomatic Urinary Tract Infection among Female University Students. Original Article Egyptian Journal of Health Care, 2020 EJHC Vol.11No.4
- Al-Kotb H, Elbahnasawy H, El Nagar S& Ghabyen N (2016):** Prevention for genitourinary tract infection among female

adolescents students. *IOSR Journal of Nursing and Health Science*, 5, 12-8.

- Bhusal, C. K. (2020).** Practice of menstrual hygiene and associated factors among adolescent school girls in Dang district, Nepal. *Advances in Preventive Medicine*, 2020.
- Bobhate, P. & Shrivastava, S. (2018):** A cross-sectional study of knowledge & practices about reproductive health among female adolescents in urban Mumbai. [Journal of Family & Reproductive Health]; 5(4): 123.
- Crow, M.L. & Nelson, L.P. (2018):** The effects of using academic role-playing in a teacher education service – Learning course. [Int J Role-Playing].
- Dorgam N (2020):** educational program for genital tract infection, docotrate thesis, faculty of nursing, ain shams university
- El-Beih, A. A., Dawah, A. A., Abd-El Aal, E. M., & Mohamed, H. A. (2014).** Health Practices among Female University Students Regarding Prevention of Reproductive Tract Infections. *International Journal Infect, Microbial*, 1(1), 29-33.
- Fathy M, Mohamed G, Abd-Elsalam N& Mohamed M (2019):** Self-care practices regarding prevention of Urinary Tract Infection among Secondary Nursing Students. *Port Said Scientific Journal of Nursing*, 6(3), 195-220.
- Hemavathy V& Sarathi S(2017):** Assess the effectiveness of self-instructional modules on knowledge of prevention of urinary tract infection among b.sc nursing students at Sree Balaji college of nursing, Chennai. *Int J Curr Adv Res* 2017;6:2159-60.
- Hemida, S., Ragheb, S., El Sayied, H., & Mohamed, H. (2021):** Effect of Web Causation Epidemiological Model on Preventive Behaviors of Diabetic Females with Genitourinary Tract Infection. *Evidence-Based Nursing Research*, 3(1), 12. <https://doi.org/10.47104/ebnrojs3.v3i1.185>

- Jahan S, Ara R, Hossain I, Alam U & Islam A. (2019):** Genitourinary Problems of Female Orphan Adolescents. *Journal of Preventive and Social Medicine*, 38(2), 9-14.
- Kandulam U, Philip D, Mathew S, Subin A, Godphy A, Alex N & Renju B (2022):** Efficacy of video educational program on interception of urinary tract infection and neurological stress among teenage girls: An uncontrolled experimental study. *Neuroscience Informatics*, 2(3), 100026
- Kim, K. M., & Choi, J. S. (2020).** Female university students' menstrual-hygiene management and factors associated with genitourinary-tract infections in Korea. *Women & health*, 60(5), 559-569.
- Niekerk, V., Barnard, E., and Justhinus, G. (2018):** Women College Students Health Aspects, *College Student Journal, Project Innovation (Alabama)*; 45(3).
- Nofal H , Hammad N, Abdallah A, Magdya H, (2020):** Impact of Educational Program on The Level of Knowledge and Self-Care Behaviors towards Genitourinary Tract Infection among Female Adolescent Students In Zagazig City The Egyptian Journal of Community Medicine Vol. 38 No. 3 July 2020
- Pascal, A., Mathew, A. M., Philip, B. A., Sebastian, E., Sibi, S. M., & Jasmine, P. V. (2019).** A Study to assess the Effectiveness of Structured Teaching Programme on knowledge regarding prevention of Urinary Tract Infection among Adolescent girls in selected schools at Kollam District. *Asian Journal of Nursing Education and Research*, 9(3), 391-394.
- Semwal, T & Sharma M (2020):** A study to estimate the occurrence, knowledge, practice regarding prevention of urinary tract infection among adolescent girls in selected community areas, Dehradun, Uttarakhand. *International Journal of Medical Science and Public Health*, International Journal of Medical Science and Public Health2020 | Vol 9 | Issue 9
- Shah, S. K., Shrestha, S., Maharjan, P. L., Karki, K., Upadhyay, A., Subedi, S., & Gurung, M. (2019).** Knowledge and practice of genital health and hygiene among adolescent girls of Lalitpur Metropolitan City, Nepal. *American Journal of Public Health Research*, 7(4), 151-156.
- Tolba A, Fahmy N, Hassan Omran A & Mohamed A (2018):** Knowledge, Practices and Attitude of Adolescent Females towards External Genital Organs Infection. *Egyptian Journal of Health Care*, 9(1), 61-70.