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Prevention for Genitourinary Tract Infection among Female Adolescents Students

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Abstract: *Genitourinary tract infections (GUTI) are serious health problems affecting millions of people each year, especially among females' adolescents and women. This study aimed to evaluate prevention program on knowledge and habitual practices regarding prevention of urinary tract infection among female adolescents.A quasi experimental design used in this study conducted in three preparatory girls' schools in North Ismailia administration at El Ismailia governorate in Egypt.*

Sample*, multistage random technique used in this study, it consisted of 462 female students in age group (12-15 year) randomly selected.*

Tools*, Data were collected by using interviewing questionnaire which covers socio-demographic data and all items related knowledge of genitourinary tract infection and habitual practices of personal hygienealso medical record for their females' students.*

Results *of this study showed that there was improve knowledge related to prevention of genitourinary infection and improve habitual practices among females adolescents regarding personal hygiene related to prevention of genitourinary infection .*

Conclusion, *there was statistical improvement concerning knowledge related to prevention of genitourinary infection among students regarding personal hygiene items in pre and posttest.*

Recommendations *the study findings the followings are recommended to students counseling during periodic medical examination about personal hygiene, and their important during menstruation.*

Keywords*: adolescents, female genitourinary tract, genitourinary infection, menstrual hygiene, personal hygiene.*

I. Introduction

World health organization *(WHO)* identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to19[1]. Adolescence is a stage between child hood and manhood / womanhood[2]. It represents one of the critical transitions in the life span and is characterized by a tremendous pace in growth and change that is second only to that of infancy. In Egypt 21% of the total population comprises of adolescents[3]. Lack of adequate knowledge may lead to various genitourinary diseases among adolescent girls[4]

Genitourinary 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**[5]**,***[6].***

Infection of the urinary tract could manifest differently depending on the site of the infection and length of time involved, those that affect the lower urinary tract are called the cystitis- involving the bladder alone with symptoms including painful urination, burning sensation, either frequent or urge to urinate (or both) while those that affect upper urinary tract are the pyelonephritis involving the kidney and other organs. The symptoms of the upper urinary tract include; fever and flank pain during urination in addition to those of the lower urinary tract ***[7].***

Several studies have found role of many factors can cause genitourinary tract infection, such as urination habits, clothing, menstrual protection and diet, but it is still less clear ***[8].*** The main factor pre-disposing to genitourinary tract infection has been attributed to poor personal hygiene and culture habit imposition **[9]**. Hence masses should be educated on the importance of personal hygiene in order to help them elevate their health status and manage themselves properly***[10]***.Preventing genitourinary infection is the most effective way of reducing the adverse consequences. Preventing the spread of genitourinary infection requires that females at risk for acquiring infection must change their hygienic practices and behaviors***[11]***

Prevention and management of genitourinary tract infection which includes; improving knowledge of genitourinary tract physiology, reasons of genitourinary infection, complication, andproper health habits like

good personnel hygiene, drinking plenty of water which flush out the bacteria out of the urinary tract, empting bladder completely as soon as feel the urge or at least once in three hours, helps to keep bacteria down, wear cotton underwear which does not trap moisture and proper perennial hygiene with changing sanitary pads and tampons frequently during menstruation***[12, 13].***Nurses are often the primary care givers who can undertake the role of health educator and mentor through proper approaches in identifying and resolving females adolescents issues, when such issues are considered strictly private. They also play a critical role in identifying various infectious symptomologies which may assist in preventing genitourinaryinfectionsas well as in ensuring that the patients comply with the recommended hygienic practices ***[14].***

Significance of the study.

Egyptian puberty girls have most common medical complains are genitourinary infections.It is estimated that 8% of girls visited health care clinic each year due to lack of adequate knowledge and hygienic practices and poor hygiene school toilets***(Hamed 2015).***Escherichia coli (Ecoli) that live on the skin near the anus or vagina that can spread and enter the urinary tract through the urethra and bacteria can enter the urinary tract when women wipe from back to front after using the bathroom***[10].***

Learning about healthy behaviors can affect their susceptibility to the disease. G UTIs can be prevented by appropriate healthy behaviors. Adolescents girls in all communities also need to acquire proper healthy behaviors in order to learn and practice healthy lifestyles, maintain health and prevent disease ***[13].***

Aim of the Study:

The aim of this study was to evaluate the prevention program on knowledge and habitual practices regarding genitourinary tract infection among female adolescents' studentsthrough:

1. Assessing students' knowledge and habitual practices regarding prevention of genitourinary tract infection.
2. Assessing the health problems related to genitourinary tract infection among school age students to detect their needs.
3. Designing and implementing the prevention programto preventgenitourinary tract infection according to their needs.
4. Evaluating the prevention program regarding the students practices for prevention of genitourinary tract infection

Research Hypotheses:

To fulfill the study aim, the following hypotheses are formulated

1- The program will improve knowledge related to prevention of genitourinary infection among females' adolescents' students.

2- The program will improve habitual practices among females adolescents regardingtheir personalhygiene related to prevention of genitourinary infection.

II. Subjects And Methods

Research design: A quasi-experimental study design was usedin this study**.**

Setting: This study was conducted at threepreparatory females' schools in Ismailia city (North Ismailia administration), (Namely SafyaZaghlol 144 girls ,Asmaa bit AbiBakr 153girls , and Garden City preparatory 165 girls).

Sampling: Multi stage random technique sample used in this study: First stage the total number of schools were 13, three schools were chosen randomly, second stage three class from each school at different educational level first, second and third preparatory grades were selected randomly. Third stage all students from nine classes attended the program, the total number who attended the program were 462 adolescent's female students (50 from each class) from the above setting.

Sample size Calculation

- The greatest sample size is obtained considering the proportion of some health problem is reduced from 10% to 5% were 435 cases assuming significance level 0.05 and power 80%.
- If we consider the program will raise the level from 20% satisfactory to only 60% it need 27 cases on significance level 0.05 and power 80%

Tools of data collection:

An interviewing Questionnaire: was designed to collect data and comprised of four main parts to assess the followings:

1) *Socio-demographic characteristics*: includingage, parents' educational, & occupation, number of family members, monthly income, residence, this part includes **(**9**)** questions.

2) Health problems complains**: i**ncludes **(7)** questions aboutvaginal discharge, vaginal itching, burning sensation during urination and pain, redness valve and chronic lower abdominal pain.

3) Students' Knowledge: It included both open & closed ended questions pertaining to assess their knowledge: ***A-*** *Biological health aspect,* such as anatomicalstructure, physiological functions of fallopian tubes, ovaries, labia majora, uterus, and questions about kidneys, ureter, bladder and urethra. It included**(12)** questions. **B-** *genitourinary tract infection,* it included **(10)** questions on meaning of *genitourinary tract infection*, causes, risk factors, signs and symptoms, types, complications, and effect of *genitourinary tract Infection* on reproductive health.

4- Personal hygienehabitual practices among female students regarding prevention of *genitourinary tract Infection* ,which encompassing **(33)** questions about the healthy practices related to**:** ***A-*** *Perineal hygiene*included questions concerning cleaning perineal area, methods of cleaning, direction of cleaning, dryness of perineal area, using antiseptic solution or talcum powder, removal of pubic hair. ***B-*** *Menstrual hygiene* included questions about type of towels used during menstruation, changing of towels, and shower during menses, route of shower, cleaning perineal area during menstruation, using perfumed materials, washing hands.**C-**Change underwear and pantyhose every day; avoid wearing tight-fitting pants. Wear all cotton or cotton-crotch underwear.

Scoring system for students' knowledge: The female students' knowledge was calculated for each item as follows: Complete and /or correct answer was scored (2 points), Incomplete correct answer was scored (1point), while don't know or wrong answer was scored (zero point). The total score for all questions related to knowledge was 59 point which represents100% and categorized into two levels as followings: Satisfactory >= 60% of the total score and Unsatisfactory < 60% of the total score

Scoring system for student Personal hygiene habitual practices questionnaire as student's reported:

Each Personal hygiene practices were scored as one point and each unhygienic practice scored as zero point. For the practice "yes" response scored as one and if response "no" scored as zero. The total score of practices was 43 points, which represents 100%. Final practice assessment score was as hygienic practice ≥ 75% and unhygienic practice < 75%.

Second tool:

Medical record for collecting data about students' health status related to genitourinary tract infection such as diagnosed urinary tract infection or abnormal vaginal discharge, vaginal itching….etc.)

Validity test was done by three expertises from faculties' staff nursing of the pediatric and community specialists.

Reliability test was done by applying the questionnaire to 20 students using test-retest and Pearson Coefficient factor was 90.8%. The scale was applied on them and retested after 2 weeks. The degree of Spearman's rank correlation coefficient test was (0.82).

Pilot study: It was carried out on 10% students to ascertain the clarity and applicability of the tools. Those girls who shared in the pilot study were excluded from the main study sample.

Ethical consideration: The agreement for female's students of the subjects was taken after fully explanation the aim of the study to get their approval for participation in the study. In addition, they were assured that the information would be confidential and used for the research purposed only

Field work: The study was conducted during the period September 2015 and ended December 2015. After taking permission from school authority to apply aprevention program among females' adolescents'students to prevent genitourinary tract infection and in the same line prevent recurrent infection for adolescents who had a history of genitourinary infection.

Prevention program construction; it contained four phases

Phase I; (pre-planning) the researcher established a professional relationship with students emphasizing the purpose of the study and reassuring the students that all data and results will be treated confidential. Before starting-up program design the study tools and were applied it to assess females' adolescent students' knowledge and habitual practices about personal hygiene related to genitourinary infection. Two months were taken to collect data (pre-tested) from schools (3days/3hours).

PhaseII;(program planning) the program was developed based on the identified needs and demands of females adolescent students.

PhaseIII; (program implementation)**the content of prevention program**covered theoretical and habitual practices.Threesession were used to implement the program (theory and practice) the total sample was classified into 9 groups each group ranged from 45-50 students.Each group was attended according to their available times and place, which commonly in the morning between9.00 AM until 12.00 AM. throughthree days/week, each session ranged from45- 60 minutes. First session, included, pretest and anatomy and physiology of genitourinary tract; meaning of genitourinary tract infection, causes and risk factors, signs and symptoms, and it

is effect on reproductive health.Second session**,** included practices regardingpersonal hygiene, proper perinealcare.Third session,included practice regarding menstrual hygiene such as washing during menses, type of pads, frequency of change, perineal hygiene, underwear and methods of cleaning.At the end of each session the researchers ensured the females' adolescents students' instructions**.** The program was presented in clear and concise form and focused on the point of learning using different teaching methods , as illustrative lecture, group discussion, role playing, demonstration, and re -demonstration were used. Also different audio visual materials were used as pamphlets, hand out, pictures, and posters to facilitate the teaching of each topic. Phase V;evaluation of the program was done by comparing the change in females students' knowledge and habitual practices, after 9 weeks implementation of the programand used the same questionnaire was again administered to the students (post-test).

Statistical analysis:

Data were entered using Epi- Info version 3.5.3 and analysis was performed using SPSS version 18.0 statistical software. Bivariate and multivariate models were run to assess any relationship between each independent variable (socio-demographic factors, school environment, parental education factors, knowledge about menstruation and its hygienic management).

III. Results

Table (1) Shows mean age of suited sample was 13.6±DS1.18, 42.9% in second grade. Concerning the level of mother education, it was found that 63.9% of their mothers completed only Intermediate education & 76.4% of their mothers were housewives. 73.6 % of the studied students had sufficient monthly income. Regarding housing conditions 76.4% of students' homes were found to be healthy, according to their stated description.

Table (2) reveals that the females' adolescents' students had medical history for urinary tract infection symptoms 13%. As regard present health complaints were burning sensation with urination 50.6% of the studied students reported having symptom, 21.4% having vaginal itching after menses and 18.6% of them having vaginal discharge with inflammation between thighs. Additionally, 16.2% and 13% had symptoms of dysuria and redness in vulva.

Table (3) reveals a general pattern of improved female adolescent students' knowledge score level after program implementation, regarding menstruation from 80.5% unsatisfactory shifted to 100%. Anatomy and physiology from 73.2% unsatisfactory knowledge shifted to 88.3% satisfactory knowledge after implementation. Concerning meaning of genitourinary tract infection from 79.9% unsatisfactory shifted to 93.5% satisfactory. Meanwhile, causes and symptoms 81% and 70.6% respectively unsatisfactory shifted to 35.7 % and 99.8 % respectively satisfactory knowledge.Fig(1) illustrate that there were improving of total score knowledge after implementation program to 99.40%.

Table (4) reveals a general pattern of improved hygienic practices related to habits score level after program implementation and shown in reduces unhygienic level to hygienic level specifically hygiene practices regarding clean perineal area as 89% before shifted to 53.9 after implementation. Concerning menstrual hygiene as 95% pre shifted to 70.3%. Additionally 92% regarding suitability and care of underwear before shifted to 75%.Fig (2) shows that hygienic practices related to habits improved after implementation program.

Table (5) shows that reduce health complains from genitourinary tract among studied students post implementation program regarding burning sensation during urination 50.6% to 6.1% after implementing the program, and complain from abnormal vaginal before shifted 18.6% to 0.4% after implementation, and there were statically significant differences between pretest and posttest regarding health complains from genitourinary tract

Table (1) Socio-demographic characteristics of the studied sample(n=462).

Items	**No**	**%**
Age in years:		
12-	**118**	25.5
13-	**86**	18.6
14-	**112**	24.2
15-	**146**	31.6
Mean age	**13.6± SD1.18**	
Grades:		
First	118	25.5
Second	198	42.9
Third	146	31.6
Mother education:		
Basic	123	26.6%
Intermediate	295	63.9%
High education	44	9.5%
Mother job:		

House wife	353	76.4%
Working	109	23.6%
Family monthly income:		
Enough	340	73.6%
Not enough	80	17.3%
Enough and saving	42	9.1%
Housing condition		
Sanitary (healthy)	353	76.4%
Non sanitary (unhealthy)	109	23.6%

Table 2: Distribution of Female adolescents Students according to their stated genitourinary tract infection related to medical record and health complains (n= 462).

Items	Frequency	Percent
History of urinary tract infection	61	13%
Present health complains:		
Vaginal discharge with inflammation between thigh	**86**	18.6%
Vaginal itching after menses	**99**	21.4%
Redness in vulva	**60**	13.0%
Burning sensation with urination	**234**	50.6%
Dysuria	**75**	16.2%

Number not mutually exclusive

Table 3: Distribution of Female adolescents Students knowledge before and after the implementation the program as regards items related genitourinary tract infection (n= 462).

Items	Score of knowledge								X test	p- value
	Before				After					
	unsatisfactory		satisfactory		unsatisfactory		satisfactory			
	No	%	No	%	No	%	No	%		
Menstruation	372	80.5	90	19.5	0	0.0	462	100.0	99.71	0.000*
Anatomy &Physiological function	338	73.2	124	26.8	54	11.7	408	88.3	357.36	0.000*
meaning GUTI	369	79.9	93	20.1	30	6.5	432	93.5	506.92	0.000*
Causes	374	81.0	88	19.0	297	64.3	165	35.7	32.27	0.000*
Symptoms	326	70.6	136	29.4	1	0.2	461	99.8	499.94	0.000*
Complication	241	52.2	221	47.8	0	0.0	462	100.0	326.04	0.000*

(*) statistically significant

Figure (1): Distribution of studied students according their total score knowledge regarding prevention of genitourinary tract infection (n=462)

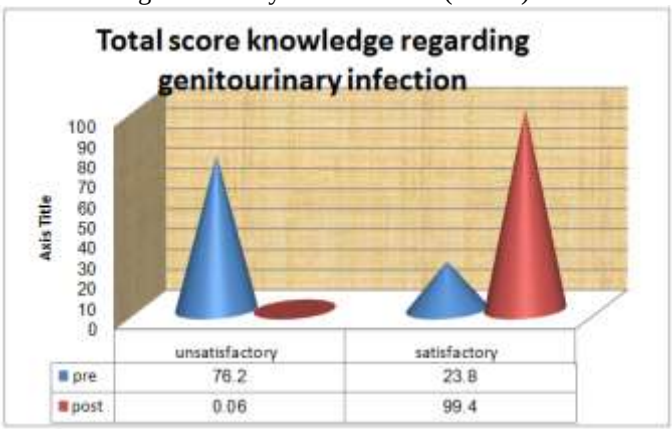

Table 4.Distribution of Female adolescents Students according to their personal hygiene practices related to habits before and after implementation program (n= 462).

tems	Personal hygiene practice								Chi-squared	P value
	Before				After					
	unhygienic		hygienic		unhygienic		hygienic			
	o		o		o		o			
Perienal hygiene	13	9.4%	9	0.6%	13	6.1%	49	3.9%	198.13	0.000000*
Menstrual hygiene	39	5.0%	3	.0%	37	9.7%	25	0.3%	420.42	0.000000*
Suitability & care of underwear	28	2.6%	4	.4%	12	4.2%	50	5.8%	444.96	0.000000*
Total Practices	16	0.0%	6	0.0%	12	4.2%	50	5.8%	408.40	0.000000*

(*) statically significant

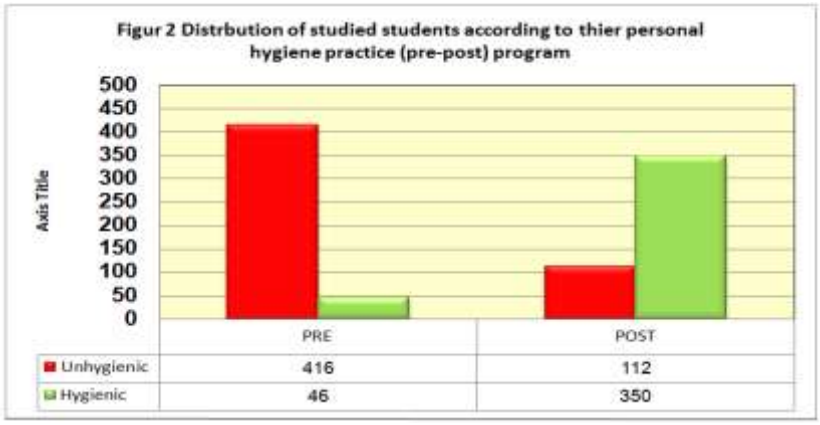

Table 5. Distribution of suited students according to their genitourinary tract health complains before and after implementing the program (n=462)

Items	Genitourinary tract complains				Z	p- value
	Pre		**Post**			
	No	**%**	**No**	**%**		
Vaginal discharge with inflammation between thigh	**86**	18.6%	**2**	0.4%	9.41	0.000000*
Vaginal itching after menses	**99**	21.4%	**2**	0.4%	10.23	0.000000*
Redness in vulva	**60**	13.0%	**0**	0.0%	8.01	0.000000*
Burning sensation with urination	**234**	50.6%	**28**	6.1%	15.04	0.000000*
Dysuria	**75**	16.2%	**25**	5.4%	5.29	0.000000*

(*) Statically significant

IV. Discussion

Genitourinary tract infections are common in females' adolescents, often associated with significant morbidity and mortality, and may affect females of all age groups especially when married ***[12].***Regarding socio-demographic characteristics of the studied students, the results showed that, the mean ages of students were 13.6±1.8 years; more than half of them were between 14-15 years, thirteen percent of them had history of genitourinary tract infection. Similarly, in another study on the effect of education by peers on urinary tract infection-related preventive behavior according to health belief model among first-grade high school female students in Iran,this study showed that eleven percent of the female's students at the age of 15 years had a history of urinary tract infection ***[13].*** Our finding also agreed with Egyptian study ***by (Hamed2015)*** who reported that the majority of females' adolescents' students having symptoms of genitourinary tract infection.

In the present study more than two third of them their mother were intermediate education. While, majority of their mothers job were housewife and enough monthly income. This finding were agreed with other study in Iran**by[13],**reported girl students enrolled in your study mean age (±SD) was 15.7(0.6) years and 76.4 % of their mothers were housewives. Most of the students had mothers with high school diploma (36%) and (23%) had mothers with lower secondary education

It could be, there is no association between the mother education level and their job and mothers aware of prevention of genitourinary tract infection among their female adolescent.The present study demonstrates that knowledge regarding anatomy and physiological of genitourinary tract, menstrual cycle, were low before implementation of the program. After implementation, there was a significant increase in knowledge among females' adolescents' students.This finding agrees with the results of other studies in Iran and Bangladesh by ***[13]and [10]shown*** that the educational program resulted in significant improvements in knowledgeamong students regarding GUT and menstrual cycle.

Majority of studied students had unsatisfactory knowledge about definition genitourinary tract infection, causes, sings and symptom in the pretest, where as in the post test, there were gain in knowledge among studied students, and there is statistically significant between pretestand posttest. The present results agreed with other study in India by ***[8]***who reported structured teaching program had shown significant improvement in the knowledge on urinary tract infection and its prevention.

It could be, school years are the most appropriate time for gain awareness and shaping attitudes for several reasons. Messages disseminated in schools are age-specific and tailored to the students' needs. Communities usually value schools and consider them to be a safe and trustworthy source of information.Concerning personal hygiene habitual practices among the females' students, findings showedthat majority of students had unhealthy hygienic habitual practices regarding perianal area , menstrual hygiene and

care of under wearin the pretest,whereas in the post test, there were improvement in habitual practice regarding personal hygiene, after implementation program.

Our finding is in the same line with study in Indian, this study reported the majority of girls were using incorrect washing and wiping technique to wash genitals of which most had a symptomatic genitourinary tract infection. And also don't wash Genital region in correct direction***[15]***. Similarly, in another study in Egypt by ***[9]***on impact of health education intervention on knowledge and practice about menstruation among female secondary school student, reported the majority of females' students had satisfactory menstrual hygiene practices after implementation the intervention.

In the present study, founded the minority of studied students complain from the symptoms of genitourinary tract infection before implementing program disappear after implementation.And also, there were statically significant relation betweenthe symptoms of genitourinary tract infection complaint before and after implementing the program regarding prevention of genitourinary tract infection.Other studies identify clear links between poor menstrual hygiene and health problems such as urinary and reproductive tract infections (UTI) therewere a higher risk of infections during menstruation when the cervix opens up and creates a pathway for bacteria to enter the uterus and pelvic cavity. In scientific terms the pH in the vagina is less acidic and this creates a good environment for yeast infections such as Candidiasis during this period.The above is confirmed by a Bangladesh survey and a cross-sectional study undertaken in South India ***[16]and [10].***It could be, females' adolescents' students in this stage needs for repeated educational content regularly to increase durability due to their knowledge and good practices decrease overtime.

V. Conclusion

Based on the findings and revealed hypothesis of the present study, it can be concluded that the majority of the studied students have improved their knowledge related to genitourinary tract infection causes, signs and symptoms and its effect on themselves and on their health. The study findings also reported improvement in habitual hygiene practices after implementation of the program which lead to reduced complain of symptoms of genitourinary tract infectionregarding studied students

VI. Recommendation

The study findings the followings are recommended to students counseling during periodic medical examination about personal hygiene, and important of menstrual hygieneHealth education to female students about the danger of unhygienic measures of perianal care related to genitourinary infection

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