

Effect of Educational Program on Knowledge of Early Adulthood Women about Reproductive Tract Infections at Qena City

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Abstract

Background: Reproductive Tract infections (RTIs) in women is one among the wide spread health concerns. Untreated RTIs can cause adverse health and pregnancy outcomes, so there's a requirement for education and consultation thereon. **Aim:** This study aimed to assess effect of program on knowledge of early adulthood women about RTIs. **Methods:** Quasi-experimental research design was utilized in this study. It had been conducted at gynecological outpatient clinics of South Valley University's Hospital and General Qena Hospital. Sample included 380 women. Structured interview questionnaire was used and involved four sections (personal, obstetrics, gynecological and RTIs' knowledge). An academic program about RTIs was implemented on early adulthood women. **Results:** there is statistical significant difference between pre and post intervention regarding total knowledge about RTIs P- values are 0.001. **Conclusion:** There was an improvement within the total knowledge about RTIs after implementation program about RTIs. **Recommendations:** Planning and implementing program as a routine hospitalization with providing a booklet about RTIs and its preventive measures to scale back rate of RTIs among women.

Keywords: Program, knowledge, Reproductive Tract Infections & Early Adulthood.

Introduction:

Reproductive tract infections (RTIs) are a universal public health problem among early adulthood women (20-39 years) in developing countries and occupy the second position in public health problems. RTIs are lead to 17% of economic losses in developing countries (Durai et al., 2019). RTIs are infections that affect the reproductive tract (genital tract) which is part of the reproductive system. Sexually transmitted disease (STD) also known as sexually transmitted infection (STI), is an illness that transmitted between humans using human sexual behavior including vaginal intercourse, oral and anal sex (Singh et al., 2016).

The incidence and prevalence of RTIs are very high; they ranked as the second cause of morbidities among women of reproductive age, next to maternal morbidity and mortality-related causes (Youness & Omar, 2017).

The main causes of RTIs are weak immunity (10%), lack of hygiene behavior during menstruation (30%), and the use of sanitary napkins during menstruation (50%) (Ramli, 2020). Various factors influence RTI occurrence including unprotected sexual intercourse, extramarital sexual partners, socioeconomic status, poor personal hygiene, IUD and place of residence [rural/urban]. Identification of the risk factors and combating them is very much necessary to reduce the growing burden of RTI (Bhilwar et al., 2015).

Untreated reproductive or sexually transmitted infections lead to tubal infertility, stillbirths, abortion, neonatal deaths, ectopic pregnancies, recurrent UTI, pain during coitus, menstrual irregularities, chronic pelvic pain, maternal deaths and increased vulnerability to HIV. With the advent of HIV or AIDS epidemic, the importance of STI's have been properly recognized with good evidence that control of STI can reduce HIV transmission. Serious complications and long-term sequelae due to reproductive tract infection which affect the quality of life can be prevented by their early diagnosis and treatment (Chauhan et al 2017)

To block inflammation, various ways can be done. One of them is clean and healthy lifestyle, prevention that can be done to prevent the occurrence of sexually transmitted diseases, namely by caring for and maintaining the cleanliness of the reproductive organs (Purwoastuti & Walyani, 2015).

The primary role of the nurse in managing RTIs is to provide health education in order to modify the unhealthy behaviors and to prevent the occurrence as well as recurrence of genital infections to improve women's reproductive health (Alexandra et al, 2016).

Significant:

Reproductive tract infections have been identified as potential public and reproductive health challenges worldwide, adversely impacting the reproductive health of women by contributing to a huge burden of disease.

They rank the second or third place among common public health problems of young people, in developing countries (Sreelatha et al., 2016). Prevalence of reproductive tract infection was 36.46% in past year. Prevalence based on their symptoms such as vaginal discharge (32.45%), genital ulcer (0.66%), lower abdominal pain (2.65%), genital skin condition (2.65%). African Region had highest prevalence of RTIs (Simarjeet et al, 2017).

Majority of women continue to suffer from RTIs related complications like PID, infertility, cervical cancer, chronic pelvic pain, post abortion and puerperial sepsis and ectopic pregnancy.

One of the important components of the Reproductive and Child Health (RCH) program is to lead a healthy sexual life without any fear of contracting disease. RCH gives a lot of importance to prevention of RTIs and sexually transmitted infections (STIs), also promote and encourage healthy sexual behavior among couple information, education and communication activities (Shelke & Tilak, 2016).

The prevalence of RTIs among the reproductive age group women was 40.4% based on their symptoms, with majority having abnormal vaginal discharge. The prevalence of RTIs based on clinical finding was 37.4% with majority having vaginitis. The laboratory test revealed a prevalence of 34.3% with majority having Candidiasis. The influence of socio-demographic factors like increased parity, poor socio-economic conditions, poor menstrual hygiene, illiteracy has its direct effect on occurrence of RTI in the community. (Sullam et al., 2001)

In a house-to-house survey using cluster sampling, 1344 married women from urban and rural areas of Upper Egypt (Minia, Assiut and Sohag) were interviewed and examined to study the magnitude and determinants of reproductive tract infections. Overall prevalence was found to be 52.8%, with the most prevalent forms being *Candida albicans* (28.0%), *Trichomonas vaginalis* (8.7%), *Aspergillus* species (7.4%), streptococci (4.6%) and *Chlamydia trachomatis* (4.2%). Multivariate analysis identified certain groups of women at high risk of developing reproductive tract infections (those currently using an intrauterine device, those who regularly practised internal vaginal washing). Discriminant analysis showed that symptoms were of low discriminating value. There is a great need to increase community and women's understanding of reproductive tract infections. (Sullam, et al., 2001)

The growing incidence of reproductive tract infections, maternal and child mortality and morbidity highlight the urgent need for appropriate and effective health education regarding RTIs and access to reproductive health services and information (Shelke & Tilak, 2016). The level of knowledge is lacking

due to several things, namely the delivery of inaccurate or incomplete information and the wrong source of information (Ramli, 2020)

Increased investment in sexual and reproductive health, specifically for adolescents, will move the Egypt closer to reaching the proposed sustainable development goals with specific applicable targets. These include SDG target 3 realize sexual and reproductive health as rights for all, and promote the rapid reduction in fertility to replacement level or below through exclusively voluntary means and ensure universal coverage of quality health care, including the prevention and treatment of communicable and non-communicable disease, sexual and reproductive health, family planning, routine immunization, and mental health according to the highest priority to primary health care.

Aim of the study:

This study aimed to assess effect of educational program on knowledge of early adulthood women about RTI.

Research hypotheses: - H0: educational program on about reproductive tract infections will NOT improve knowledge of early adult hood women At Qena City.
H1: educational program on about reproductive tract infections will NOT improve knowledge of early adult hood women At Qena City.

Patients and Methods:

Patients and methods were showed into four designs technical, operational, administrative, and statistical design.

Technical Design: This included research design, setting, sample, and tools of data collection.

Study Design: Quazi- experimental (pre& post) research design was used.

Study Setting: The study was implemented at gynecological outpatient clinics of Qena University Hospital and General Qena Hospital, at Qena city. Both of them service Qena governorate only. Each of them consist of two room one for history taking and physical examination and other for ultrasound examination.

Sample size:

Based on flow of cases to gynecological outpatient clinics in last year (2019) at Qena University Hospital and General Qena Hospital at Qena city was 16560. A convenient sample was utilized in this study and the sample included 375.4 women that increased to 380 women, sample was calculated by using the Richard Geiger equation.

$$z = 1.96$$

$$d = 0.05$$

$$N = 16560$$

$$\text{Sample size (n)} = 375.4$$

$$n = \frac{\left(\frac{z}{d}\right)^2 \times (0.50)^2}{1 + \frac{1}{N} \left[\left(\frac{z}{d}\right)^2 \times (0.50)^2 - 1\right]}$$

Inclusion Criteria:

- All women attending at gynecological outpatient clinics of Qena University Hospital and General Qena Hospital at Qena city
- Early adulthood women.
- Accepted participation in the study.

Research hypothesis:

There is an improvement in women's knowledge about RTIs after implementation of educational program.

Tools of data collection:**Tools of the study:**

A structured interview questionnaire was organized by researchers and involved four sections.

Section one: included personal characteristics of studied sample as (age, education, occupation, residence and marital status). **Section two:** involved obstetrics history of studied sample as gravidity, parity and abortion **Section three:** previous and current gynecological history as history of any infection and history of recurrent infection. **Section four:** included items and questions directed to studied women to assess their knowledge about RTIs as (definition, risk factors, causes, types, signs & symptoms, complications and prevention of RTIs. It included 11 questions, from which 6 have a multiple answer that ended to have 48 items.

Knowledge scoring system:

Each correct answer was scored as (1) and (0) for incorrect answer. Total item score was 48, While the total knowledge score was calculated as the following: <50% (<24 score) was poor 50- less than 75% (24-35 score) was average and good if 75% or more (36 score or more).

Supportive materials:

It was prepared by the researcher based on literature review. It planned in a form of booklet with using a simple and clear Arabic language that contained knowledge about RTIs and supported with photo to act as a guide for them at home and support their information.

Tool validity

The study tool was assessed and reviewed by a jury of 3 expert staff maternity and gynecological nursing and community health nursing, faculty of nursing, South Valley University for comprehensiveness, accuracy, and clarity in language.

Tool reliability:

Study tools were tested for its internal consistency by Cronbach's Alpha. It was 0.842 for the questionnaire.

Operational design: It was presented in two phases pilot study and field work.

Pilot study: Pilot study was involved (10%) according to inclusion of the sample size (38 cases) of women to evaluate clarity and efficiency of the study's tool.

Field work:

Data collection took about 6 months started from the beginning of January 2020, and completed by the end of October 2020. As there are stopping period from April to July 2020 due to Covid 19. It was carried out in three phases, pre intervention, intervention and post intervention:

Phase one: (Pre intervention phase):

After taking all formal permissions from both Hospitals, the researcher attended at Gynecological outpatient clinics four days per week from 9am to 1pm (two in South Valley University Hospital and two in General Qena Hospital). The researcher interviewed with each woman individually, introduced herself then explained the aim of the study and ensures their participation in the study. Then oral consent from participants was obtained. Then the researcher started to fill the structure interview questionnaire from woman to assess personal characteristics as (age, education, occupation, residence and marital status), obstetrics history as (gravidity, parity and abortion) and gynecological data as (history of any infection and history of recurrent infection). Then the researcher assess woman's knowledge about RTIs as a pretest through questions directed to studied women about definition, risk factors, causes, types, signs & symptoms, complications and prevention of RTIs. It took about 25 to 30 minutes.

Phase Two (Intervention phase):

After filling data from studied women, the researcher asked women to be involved to a lecture that included information about definition, risk factors, causes, types, signs & symptoms, complications and prevention of RTIs. The women's number in each educational session ranged from 3-5 women. The researcher explained to women lecture about RTIs to each group. The researcher used his laptops to support lecture by pictures and videos. This took a time from 50-60 minutes. The researcher gave booklet to woman that involved all contents explained in the lecture to be a guide at home.

Phase three (Post intervention phase):

After four weeks of lecture the women was asked to come for follow up at gynecological outpatient clinics and posttest was performed to her to assess knowledge about RTIs.

Administrative design:

This study was carried out under the approval of faculty of nursing's ethical committee, South Valley University, also an official permission was obtained from the director of South Valley University Hospital and General Qena Hospital, informed consent was taken from each woman involved in the study, confidentiality was assured. The woman was freely to withdraw from the study at any stage.

Statistical design:

The collected data were organized, categorized, coded, tabulated and analyzed using the Statistical Package for social sciences (SPSS). Data were presented and tables and charts using numbers, percentages, means, and standard deviation. Correlation between variables (Pearson correlation) and chi-square test was used statistical significance was considered at P-value ≤ 0.05 .

Results:**Table (1): Distribution of studied sample according to their personnel characteristics n= (380):**

Personnel characteristics	N=380	%
Age in years		
20- less than30	154	40.5
30-39	226	59.5
Mean \pmSD	34.20\pm.78251	
Educational level		
Illiterate &read and write	55	14.4
Basic education	85	22.5
Secondary education	169	44.4
University or higher	71	18.7
Occupation		
Housewife	294	77.4
Employed	86	22.6
Residence		
Urban	148	38.9
Rural	232	61.1
Marital status		
Single	41	10.8
Married	318	83.7
Widow	12	3.1
Divorced	9	2.4
Total	380	100.0

Table (2): Distribution of studied sample according to their obstetrics history and gynecological data, n= (380):

Obstetrics history and gynecological data	Number	%
Gravidity		
Non	71	18.7
Primigravida	83	21.8
Multigravida	226	59.5
Parity		
Non	82	21.6
Primipara	75	19.7
Multipara	223	58.7
Abortion		
Non	361	95.0
One abortion	12	3.2
Two or more	7	1.8
Previous genital infection		
Yes	202	53.2
No	178	46.8
Total	380	100.0

Obstetrics history and gynecological data	Number	%
If yes, occurrence of recurrence infection		
One	105	52.0
Two times	68	33.7
More than two	29	14.3
Total	202	100.0

Table (3): Distribution of studied sample according to mean score of total knowledge about RTIs in pre and post intervention, n= (380):

Total knowledge about RTIs	Pre intervention	Post intervention	P-value
	Mean± SD	Mean± SD	
▪ General knowledge	1.042±0.722	4.639±0.599	<0.001**
▪ Causes of RTIs	0.595±0.65	2.2157±0.57	<0.001**
▪ Types of RTIs	0.395±0.56	3.247±0.54	<0.001**
▪ Signs and Symptoms of RTIs	5.042±0.84	9.837±2.14	<0.001**
▪ Risk factors for RTIs	1.321±0.77	6.342±1.098	<0.001**
▪ Complications of RTIs	1.603±0.81	6.476±1.19	<0.001**
▪ Preventive measures of RTIs.	1.895±0.91	5.437±5.43	<0.001**
Total knowledge Mean about RTIs	11.89±4.76	38.194±6.20	<0.001**

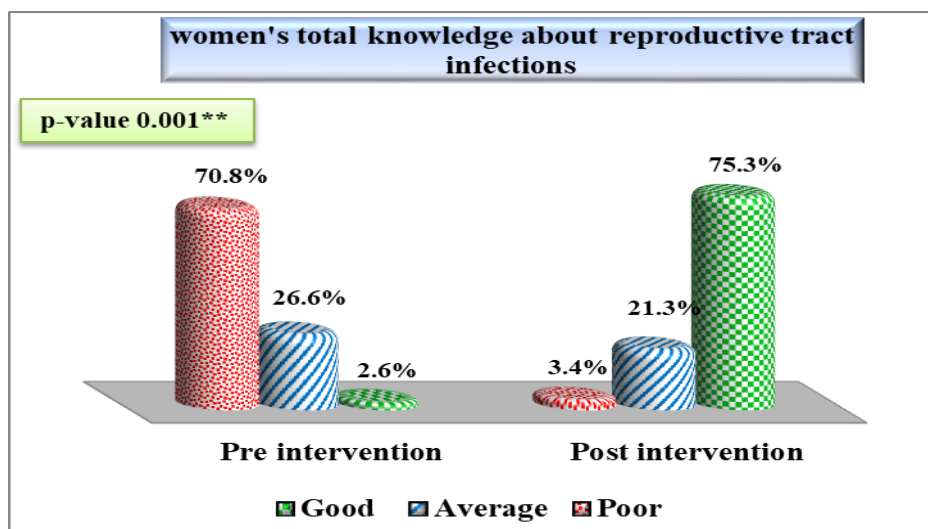


Figure (1): Women's total knowledge score about reproductive tract infections:

Table (4): Relationship between total knowledge about RTIs and personal characteristics of studied women:

Personnel characteristics	Total knowledge in pre intervention			P-value	Total knowledge in post intervention			P-value
	Good	Average	Poor		Good	Average	Poor	
	N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	
Age in years								
20- less than30	3 (1.9)	39(25.4)	112(72.7)	0.804	95(61.7)	51(33.1)	8(5.2)	0.001**
30-39	7(3.1)	62(27.4)	157(69.5)		191(84.5)	30(13.3)	5(2.2)	
Educational level								
Illiterate or read & write	0 (0.0)	7 (12.7)	48(87.3)	0.001**	29(52.7)	21 (38.2)	5 (9.1)	0.001**
Basic education	1 (1.2)	11(12.9)	73 (85.9)		66 (77.6)	16 (18.9)	3 (3.5)	
Secondary education	2 (1.2)	42(24.9)	125(73.9)		132(78.1)	35 (20.7)	2 (1.2)	
University or higher	7 (9.9)	41(57.7)	23 (32.4)		59 (83.1)	9 (12.7)	3 (4.2)	

Personnel characteristics	Total knowledge in pre intervention			P-value	Total knowledge in post intervention			P-value
	Good	Average	Poor		Good	Average	Poor	
	N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	
Occupation								
Housewife	4 (1.4)	66(22.4)	224(76.2)	0.001**	223(75.9)	61 (20.7)	10(3.4)	0.905
Employed	6 (6.9)	35(40.7)	45 (52.4)		63 (73.3)	20 (23.3)	3(3.4)	
Residence								
Urban	4 (2.7)	47(31.8)	97 (65.5)	0.397	89 (60.1)	52 (35.2)	7 (4.7)	0.003**
Rural	6 (2.6)	54(23.3)	172(74.1)		197(84.9)	29 (12.5)	6(2.6)	
Marital status								
Single	1 (2.4)	8 (19.5)	32 (78.1)	0.001**	23 (56.1)	14 (34.1)	4 (9.8)	0.001**
Married	5 (1.6)	87(27.3)	226(71.1)		254(79.9)	62 (19.5)	2 (0.6)	
Widow	2 (16.7)	4 (33.3)	6 (50.0)		5(41.7)	3(25.0)	4 (33.3)	
Divorced	2 (22.2)	2(22.2)	5(55.6)		4 (44.5)	2 (22.2)	3(33.3)	
Total	10(2.6)	101(26.6)	269(70.8)		286(75.3)	81(21.3)	13(3.4)	

Table (5): Relationship between total knowledge about RTIs and obstetrics history and gynecological data of studied women:

Obstetrics history and gynecological data	Total knowledge in pre intervention			P-value	Total knowledge in post intervention			P-value
	Good	Average	Poor		Good	Average	Poor	
	N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	
Gravidity								
Non	1 (1.4)	18(25.4)	52(73.2)	0.943	56(78.8)	11(15.6)	4(5.6)	0.254
Primigravida	2(2.4)	22(26.5)	59 (71.1)		64(77.1)	14(16.9)	5(6.0)	
Multigravida	7 (3.1)	61(27.0)	158(69.9)		166(73.5)	56 (24.8)	4 (1.7)	
Parity								
Non	2 (2.4)	10 (12.2)	70 (85.4)	0.008**	61 (74.4)	16 (19.5)	5 (6.1)	0.499
Primipara	3 (4.0)	24 (32.0)	48 (64.0)		58 (77.4)	13 (17.3)	4 (5.3)	
Multipara	5 (2.2)	67 (30.1)	151 (67.7)		67 (74.9)	52 (23.3)	4 (1.8)	
Abortion								
Non	5 (1.4)	96 (26.6)	260(72.0)	0.001**	74 (75.9)	78 (21.6)	9 (2.5)	0.002**
One abortion	2 (16.7)	3(25.0)	7(58.3)		7 (58.3)	2 (16.7)	3 (25.0)	
Two or more	3 (42.8)	2 (28.6)	2 (28.6)		5 (71.4)	1 (14.3)	1 (14.3)	
Previous genital infections								
Yes	7 (3.5)	78 (38.6)	117 (57.9)	0.008**	153(75.7)	45(22.3)	4(2.0)	0.481
No	3 (1.7)	23 (12.9)	152 (85.4)		33 (74.7)	36 (20.2)	9 (5.1)	

Table (1): Illustrates personnel characteristics of studied sample and reports that 59.5% of studied women have an age group from 30-39 years with a mean age of (34.20±.78251). About 44.4% of them have a secondary level of education, 77.4 and 61.1 of studied women are house wives and live in rural areas respectively. About 83.7% of them are married.

Table (2): Displays obstetrics and gynecological history of studied sample, and shows that 59.5%, 58.7% and only 5% of them are multigravida, multipara and have previous abortion. About 53.2% of studied women had previous genital infection, 52% of previous infected women had one previous infection only.

Table (3): Reports mean score of total knowledge of studied sample about RTIs, and clarifies that there is statistical significant difference between pre and post intervention regarding mean knowledge regarding general knowledge, causes, types, signs& symptoms, risk factors, complications and preventive measures of RTIs p-value for all 0.0001.

Figure (1): Demonstrates women's total knowledge about RTIs, and finds that in pre intervention 2.5%, 26.6% and 70.8% of studied women have good, average and poor knowledge respectively. In post intervention 75.3%, 21.3 and 3.4% of studied women have good, average and poor knowledge respectively

with statistical significant difference between pre and post intervention p-value 0.0001.

Table (4): Shows relationship between total knowledge about RTIs and personal characteristics of studied women, and clarifies that in pre intervention there is relation between total knowledge and education level, occupation and marital status p-value 0.001 for all, and there is no relation between total knowledge and age and residence p-value 0.804 and 0.397 respectively. In post intervention there is relation between total knowledge and age, education level, residence and marital status p-value 0.001, 0.001, 0.003 and 0.001 and there is no relation between total knowledge and occupation p-value 0.905.

Table (5): Clarifies relationship between total knowledge about RTIs and obstetrics & gynecological history and reports that in pre intervention there is relation between total knowledge and parity, abortion and previous genital infections p-value 0.008, 0.001 and 0.008 respectively and there is no relation between total knowledge and gravidity p-value 0.943. . In post intervention there is relation between total knowledge and abortion p-value 0.002 and no relation between total knowledge and gravidity, parity and previous genital infections p-value 0.254, 0.499 and 0.481 respectively.

Discussion:

Reproductive tract infections (RTIs), generally seen as a silent epidemic, it is one of the major public health problems causing a considerable proportion of gynecological morbidity and maternal mortality in the developing countries (Youness & Omar, 2017). Early identification of genital infections, initiating appropriate treatment and taking necessary precautions are essential in protecting and enhancing women's health. Nurses have the responsibility to educate patients related to various aspects about vaginal infection and keep themselves free from it (Abdelnaem et al., 2019).

Concerning total knowledge about RTIs in pre and post intervention, current study reveals that less than three quarters of studied women have a poor knowledge about RTIs in pre intervention and more than quarters of them have a good knowledge about RTIs with statistical significant difference between pre and post intervention p-value 0.001.

On the same line (Shelke & Tilak, 2016), who applied their study in India to assess effect of health education program on knowledge and practices related to common RTIs among married women, and found that there was significant improvement of the knowledge score after giving educational program about RTIs. And (Youness & Omar, 2017), who carried out their study in Egypt to identify the effect

of educational program about vaginitis and its preventive measures on adolescent female nursing student's knowledge, and clarified that the majority of studied sample in pretest had a poor knowledge about vaginitis and its preventive measures, but in posttest the vast majority of them had a good knowledge with statistical significant difference between pre and posttest p-value 0.001.

Also (Abdelnaem et al., 2019), who carried out their study in Egypt to evaluate the effect of self-care guidelines on knowledge, quality of life and practices, among faculty of nursing students with vaginal infection, and showed that less than two thirds of studied sample in pretest had a poor knowledge about vaginal infection and in posttest less than two thirds of them had a good knowledge with statistical significant difference between pre and posttest p-value 0.001. and (Said et al., 2019), who carried out their study in Egypt to evaluate effect of education intervention guideline on knowledge and self-care practice for women with vulvovaginitis, and clarified that the great majority of studied sample had a poor knowledge about vulvovaginitis in pretest and had a good knowledge in posttest. This impact the importance of educational program in improving knowledge about RTIs and so enhance its prevention.

On the other hand (Mahanta et al., 2020), who achieved their study in India to assess the prevalence and knowledge of RTIs among the adolescent girls in a selected school of Guwahati, Assam, and clarified that one half of studied sample had a good knowledge about RTIs without any intervention. This difference back to dissimilarity in sample type between both studies and different in cultures.

As regard mean score of total knowledge about RTIs, actual study reports that there is statistical significant difference between pre and post intervention regarding mean score of general knowledge, causes, risk factors, signs & symptoms, complications and prevention of RTIs p-value 0.001 for all.

In agreement with previous results (Yarmohammadi et al., 2015), who implemented their study in Iran to evaluate the effect of education on knowledge, attitude and practice of patients with vaginitis, and revealed that there was statistical significant difference between pre and posttest regarding mean score of total knowledge about vaginal infection p-value 0.001. and (Malfasari et al., 2019), who carried out their study in Egypt to assess the knowledge of female university students about Vulvovaginal Candidiasis (VVC) and examine the effect of instructional program on their knowledge regarding VVC, and illustrated that studied sample had a mean score of 18.87 ± 7.83 in pretest and 81.57 ± 5.01 in posttest with statistical significant difference between pre and posttest p-value 0.001.

Also (Shelke & Tilak, 2016) and (Youness & Omar, 2017) agreed with previous results. This reflects the vital role of educational program on improvement of women's knowledge regarding reproductive infections.

Regarding relationship between total knowledge and personal characteristics, present study demonstrates that in pre intervention there is relation between total knowledge and education level, occupation and marital status p- value 0.001 for all, and there is no relation between total knowledge and age and residence p- value 0.804 and 0.397 respectively. In post intervention there is relation between total knowledge and age, education level, residence and marital status p- value 0.001, 0.001, 0.003 and 0.001 and there is no relation between total knowledge and occupation p- value 0.905.

In congruent with previous results (Simarjeet et al., 2017), who applied their study in India to assess the knowledge and expressed practices of women regarding RTIs, and reported that there was relation between total knowledge about RTIs and education level and marital status p- value <0.05 and no relation between total knowledge and age p- value 0.204 in pretest. And in posttest there was relation between total knowledge and age and education level p- value <0.05 for both.

Also (Ahmed & Mohamed, 2019), who implemented their study in Egypt to evaluate the effect of nursing intervention on knowledge about genital hygienic practices regarding vaginal infection among intrauterine device users and non-user, and found that there was relation between total knowledge about vaginal infection and education level and occupation in pretest p- value 0.001. And in posttest there was relation between total knowledge and age and education level p- value 0.001 for both. This reflects that progress in educational level and employment can help in improving women's knowledge regarding genital infections.

Difference opinion was reported by (Abdelnaem et al., 2019), who showed that there was relation between total knowledge about vaginal infection in pretest and age and residence, and in posttest there was relation between total knowledge and age, education level and marital status p- value 0.227, 0.193 and 0.350 respectively.

According to relation between total knowledge about RTIs and obstetrics & gynecological history, current study reports that in pre intervention there is relation between total knowledge and parity, abortion and previous genital infections p-value 0.008, 0.001 and 0.008 respectively and there is no relation between total knowledge and gravidity p- value 0.943. In post intervention there is relation between total knowledge and abortion p-value 0.002 and no relation between

total knowledge and gravidity, parity and previous genital infections p-value 0.254, 0.499 and 0.481 respectively.

The same point of view reported by (Simarjeet et al., 2017), who displayed that there was relation between total knowledge about RTIs and parity, abortion and previous genital infections p-value 0.024, 0.016 and 0.009 respectively.

According to personal characteristics of studied sample, present study reveals that more than half of studied women have an age group from 30-39 years with a mean age of (34.20±.78251). Less than half of them have a secondary level of education and the majorities of studied women are married, house wives. Similar to previous results, (Said et al., 2019), who displayed that less than half of studied women had age group from 20-30 years, more than half had a secondary level of education and the majority of them were housewives. Also (Shethwala & Mulla, 2014), who completed their study in India to know the socio-demographic profile of female patients attending the gynecology outpatients clinics with complaints of RTIs and to find out the sensitivity and specificity of various diagnostic tests used for diagnosing RTIs, and showed that more than half of studied women had age more than 25 years and the majority of them are married and housewives.

Conclusions:

There was an improvement in the women's total knowledge about RTIs after implementation educational program about RTIs.

Recommendations:

Planning and implementing educational program about RTIs as a routine hospital care to all childbearing women. Providing instructional booklet about RTIs and its preventive measures to reduce rate of RTIs among women. Further studies regarding RTIs need to be performed to improve women's health and avoid their exposure to genital infections.

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