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## **An intervention program for women complaining from urinary incontinence at Aga city**

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**Abstract**--Background: Urinary incontinence affect women at any age in which deteriorate their quality of life. Pelvic training to control bladder function at regular time intervals has been demonstrated to be an effective method for treating incontinence. Aim: the study aimed to evaluate the effect of intervention program for women complaining from UI. Study design: A quasi-experimental design was used in this study. Setting: The study was conducted at five outpatient clinics of Aga central hospital, Dakahlia Government, Egypt. Sample: A purposive sample was used to select 354 women divided randomly into study group and control group each of them were 177. Tools: Two tools were used for data collection. 1st tool is a structural interviewing questionnaire: It contained four parts: Part I: Women socio-demographic characteristics. Part II: women's history. Part III: Women's knowledge regarding urinary incontinence and pelvic floor muscle exercises. IV: Women's reported practice regarding pelvic floor muscle exercises. 2nd tool is Urogenital Distress Inventory (UDI) standardized tool to assess urinary system efficiency. Results: The study results revealed that, 70.5% of study group had good level of knowledge post intervention program compared to 24.3% of them pre-program, where 79.1% of control group had poor level of knowledge pre intervention program compared to 41.6% of them post-program. Regarding study group practice about (kigel 61.5%, squat 58.2%,

bridge 51.6%, tabletop 77.6%, bird-dog 55.6%) was satisfactory post intervention program compared to control group satisfied practice about (kigel 45.2.8%, squat 25.6%, bridge 16.9%, tabletop 20.9%, bird-dog 27.7%) post intervention program. Conclusions: About three quarter of study group have good level of knowledge regarding urinary incontinence and pelvic floor muscles exercises post intervention program where, more than half of study group were satisfied regarding pelvic floor muscles exercises reported practice. In addition, there was high statistically significant improvement in women's knowledge, efficiency of urinary system and reported practice post intervention program. Recommendations: This study recommended ongoing application of intervention programs for women about urinary incontinence and pelvic floor muscles exercises related knowledge, practice and efficiency of urinary system.

**Keyword**--intervention program, urinary incontinence.

## **Introduction**

Urinary incontinence (UI) is an extremely common complaint affecting approximately 250 million in the world population. UI affects up to 37% of women of all ages, although the prevalence increases with age. UI is commonly associated with pregnancy and childbirth, in fact approximately 12% of women who have never had children and aged under 30 years had incontinence [1]. Stress Urinary Incontinence (SUI) is the most common and prevalent type of UI among women. This type of UI is defined as involuntary loss of urine during physical exertion, due to a sudden increase in intra-abdominal pressure in the absence of contraction or underactivity. The pelvic floor muscles exercises improve pelvis to prevent unwanted leakage so enhance women abilities to perform activities of daily living [3]. The prevalence of UI among Egyptian women is 54%, but this is underestimated number, it may actually be higher because most Egyptian women are reluctant to seek help for this problem and thus more studies are required to estimate the exact magnitude of the problem, it is more prevalent in Egypt as a result of multi parity, early marriage, less spacing between the pregnancies, low menopausal awareness, and poor perineal hygiene [4].

The most common types of incontinence are stress urinary incontinence, Urge Urinary Incontinence (UUI) is leakage of urine with urgency, Mixed Urinary Incontinence (MUI) is leakage of urine with urgency, as well as exertions. Several studies have shown that physical activity (PA) levels and sedentary behaviour (SB) are independent risk factors for urinary incontinence. However, there is scarce evidence supporting the relationship between SB and urinary incontinence (UI) in older adults [5]. UI diagnosis is thorough subjective history, symptom evaluation, and risk factor assessment. Screening of symptom may be used to determine presence of UI, suggest a provisional diagnosis of UI subtype or a more complicated causes, to assess symptom severity and degree of deterioration. Physical examination to assess potential causes of transient and complicated UI, evaluate congenital, neurological, or metabolic conditions, urinary retention, prolapse, or past pelvic surgeries [6].

Women have a higher risk for developing voiding dysfunctions due to intrinsic risk factors such as pelvis anatomy, pregnancies, deliveries, and the reduction of estrogen after menopause. In addition to, risk factors such as anxiety, depression, and functional constipation are more prevalent in women [7]. Prevention of urinary incontinence focus on renal and urinary function includes assessment, monitoring and education activities for minimizing the potential that exceeds the capacity of the renal strength and the risk reduction associated with the development of incontinence. Women who experience urinary incontinence, most of them limit fluid intake inappropriately to prevent urine leakage or increased urination frequency. Urinary efficiency related intervention and education include managing food and drinks not irritate bladder, teaching and encouraging Kegel's exercise and strategies preventing urinary tract infections [8].

Pelvic Floor Muscles Exercises (PFME) training is related to the pelvic muscle's rehabilitation for strength, resistance, relaxation, stretching, and coordination. This is a first-choice treatment when the UI is due to Pelvic Floor Muscles (PFM) dysfunctions. Pelvic floor muscle exercises are effective treatment for women with urinary incontinence, pelvic organ prolapses, or pelvic floor muscle dysfunction. The exercises may be done at any time and any place. There are several effects of PFME in improving the symptoms of UI, such as decreased leakage, improved pelvic floor muscle strength and the quality of life [9]. Community Health Nurses (CHN) plays a very important role in prevention and treatment of UI. informs women about the dysfunction and changes in lifestyle, technical manuals and the training of the pelvic floor muscles. Nurses use educational approaches to facilitates learning scientific event about the ways to prevent UI, rehabilitation to provides services to women with urinary dysfunctions, and implementation of expert's recommendation by research participation, provision of emotional and social support interventions, sharing experiences and health information related to UI, skilled in pelvic floor muscle training. Nurses should use alternative methods in PFME training as well as improving knowledge about using healthy behavior for reaching the aim of prevention and treatment of UI [10].

### **Significance of the study**

Urinary incontinence (UI) is the involuntary flow of urine due to a disruption of the normal urination mechanism, causing medical, social, and hygienic problems. Women suffering from this disease have disrupted quality of life as physical discomfort, depression, anxiety and social isolation [11]. In Egypt, a study conducted in Assuit Governorate showed that the prevalence of UI among women was 54.8%. The prevalence of urge, stress and mixed incontinence was 15%, 14.8%, and 25%, respectively. Although UI has become a medical issue with high incidence level, relatively few sufferers seek medical help. In Egypt consultations for UI was (4%). Many studies have suggested possible reasons for the delay to treatment for UI, e.g., viewing UI as a natural outcome of aging and/or childbirth and the fact that it is untreatable, psychosocial barriers (shame, embarrassment, fear of discrimination), fear of invasive treatment, and adequate self-coping strategies as some of the common barriers to seeking treatment [12].

The Egyptian estimation of population are 101.5 million at 2021, women represent 51.6% of population, more than one third of them suffering from

urinary incontinence [13]. Egyptian women don't seek medical advice for urinary incontinence problems due to embarrassment this lead to become triggers that affect the quality of life and generates impact on physical, psychological and social aspects of women. So, this study was done to evaluate the effect of intervention program for improving knowledge and reported practices regarding urinary incontinence and pelvic floor muscles exercises among women complains from urinary incontinence.

### **Aim of the study**

The aim of this study is to evaluate the effect of intervention program for women complaining from urinary incontinence through the following objectives: Assessing women's knowledge and reported practice about urinary incontinence, and pelvic floor muscle exercises. Planning and implementing intervention program for women's according to their needs. Evaluating the effect of intervention program for improving women's knowledge and reported practices.

### **Research hypothesis**

The intervention program will improve women's knowledge and reported practice about urinary incontinence and pelvic floor muscle exercises.

### **Subjects and Methods**

Subjects and methods for this study were portray under four main items as the following:

#### **Research design**

A quasi-experimental design was used in this study.

#### **Research setting**

The study has been carried out in five outpatient clinics of Aga central hospital, Dakahlia Government, Egypt, which compromise (obstetric, chest, medical, surgical, and urology clinic).

#### **Subjects**

A purposive sample was used to select 354 women in this study.

#### **Sampling technique**

Women selected with inclusion criteria as complaining from urinary incontinence due to stress or urge or mixed, and no receiving treatment for urinary incontinence. The study sample consist of 393 women and after exclusion of 10% (39) women as a pilot study, become 354 women which divided into study group and control group each of them were 177 attended to the above-mentioned outpatient clinics.

### Tools for data collection

Two tools were used for data collection to carry out this study: 1st tool is a structural interviewing questionnaire: It was developed by the researcher after reviewing the national and international related literature. It contained the following four parts:

- Part I: Women socio-demographic characteristics as age, place of residence, level of education, occupation, and marital status. It composed of 7 closed ended questions (Q1 – Q7).
- Part II: Concerned with women's present history as: Family, medical, surgical, pharmacological, reproductive history. It composed of 10 closed ended questions and 2 open questions (Q8 – Q19).
- Part III: Women's knowledge regarding:
  - Urinary incontinence as: Meaning, causes, risk factors, symptoms, types, ways of overcoming urinary incontinence, prevention and treatment of urinary incontinence. It composed of 8 closed ended questions.
  - Pelvic floor muscle exercises (PFME) as: Meaning, importance, types, uses, contraindications, suitable times for practicing pelvic floor muscle exercises and source of knowledge about PFME. It composed of 7 closed ended questions.

Scoring system for knowledge items: Complete answer was scored as 2 grades; incomplete answer was scored as 1 grade and wrong answer or don't know was scored zero. Total scores were 30 points for 15 items. The score of each item stumped up and converted into percent score as following:

- Poor knowledge 0- < 50 % (< 15)
- Fair knowledge 50- < 75% (15- 22)
- Good knowledge  $\geq$  75% (23- 30)
- Part IV: Women's reported practice regarding: kegels, squats, bridge, split tabletop, and bird dog pelvic floor muscle exercise as: Before each exercise evacuate bladder, identify the correct muscles of the pelvic floor after urination. For kegles exercises: Assessing women practice regarding: Discover of pelvic floor muscles, stretching and relaxing of pelvic muscles. For squat exercises: Standing straight, flexion and extension of knees. For bridge exercises: Stay in flat position, raising leg with knee at angle 90, arms and foot on floor. For tabletop exercises: Flat position with knee flexed, legs straight and parallel with the back. For bird dog exercise: Sitting on knees and hands, shoulders parallel to legs, right arm forward with left leg back and the opposite is the same. It composed of 40 closed questions. Scoring system for practice items: Score ranged from (Yes= 1, No= 0). Total scores were 40 points for 40 items. The score of each item stumped up and converted into percent score as following:
  - Unsatisfactory practice= < 75% (< 30 grade)
  - Satisfactory practice=  $\geq$  75% (30-40 grade)
- 2nd tool is Urogenital Distress Inventory (UDI) standardized form to assess urinary system efficiency adopted from (Altaweel et al., 2009) and (Sharma et al., 2017): As the frequency of urine leakage involuntary during the day, leakage before reaching toilet, leakage while coughing or sneezing, with

home activities, directly after urination, clothes wetness, leakage interfere with home activities, and intercourse, leakage cause frustration, and low self-esteem. It composed of 11 closed ended questions.

- Scoring system for efficiency items: score ranged as using Likert scale (never=1, rarely=2 sometimes=3, often=4, always=5). 1, 2 refer to higher or excellent efficiency, 3 refers to moderate, and 4,5 refer to fewer. Total score were 11 points for 11 items.
- The score of each item stumped up and converted into percent score as following:
  - Fewer efficiency (Inefficient)= < 50% (< 5 grade)
  - Moderate efficiency= (50 - 75%) (5-8 grade)
  - Higher efficiency (Efficient)= >75% (8- 11 grade)

### **Validity**

The validity of the tool was tested through a panel of 5 experts of Community Health Nursing staff from Faculty of Nursing at Helwan University to review relevance of the tool for comprehensiveness, understanding, and applicability.

### **Reliability**

Reliability of the tools was tested to determine the extent to which the questionnaire item related to each other. Answer from the repeated testing compared (test- re- test reliability for knowledge was 0.82) Cronbach's Alpha for reported practice and efficiency of urinary system reliability was 0.890.

### **Pilot study**

The pilot study has been conducted to test the clarity, applicability, and understandability of the tools. It has been conducted on 10% (39) women. women had been selected from settings similar to those chosen for the study. The result of the pilot helped in refining the interview questionnaire and to schedule the time framework. Based on these results, simple modifications were done so subjects included in the pilot study were excluded from the main study sample.

### **Filed work**

Before conducting the study, permission was obtained from the director of Aga central hospital to carry out the study. The researcher met the women, and the aim of the study was explained. Their verbal and written consent were disclosed before collecting data. All studied women took pretest. Then divided into two groups: The study group had taken the intervention program, while the control group hadn't received the intervention program, then effect of the intervention program has been assessed after the end of the program one time only by using the same study tools. The control group took the same post-test as the study group at the same time. The program was conducted through three phases, these phases were carried out in 6 months from the beginning of August 2020 till the end of January 2021. The evaluation phase begun immediately after the intervention program to assess effect.

### **Preparatory phase**

It was included reviewing of past, current, national and international related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection. The intervention program about urinary incontinence and pelvic floor muscles exercises.

### **Assessment phase**

The study tool was applied to assess the women's actual level of knowledge and reported practice regarding urinary incontinence and pelvic floor muscles exercises by using pretesting questionnaire. The data obtained during this phase were considered the basis to identify the women needs. Planning and implementation phase: After identifying the needs of women in the assessment phase, the researcher developed the intervention program contents. The intervention program was designed by the researcher and based on the result obtained, the study pre-test tools; also review of recent, current, national and international related literature in different aspect of the intervention program about urinary incontinence and pelvic floor muscles exercises. Two days/ week (Monday and Wednesday) (10.00 a.m. to 1 p.m.) were allocated for data collection (pre-test), which carried out through 3 weeks, the average time to fill tools 20- 30 minutes.

The intervention program contents were revised and validated by experts in Community Health Nursing department. The intervention program general objectives are to improve the women's knowledge and reported practice regarding urinary incontinence and pelvic floor muscles exercises. According to the result of the pretest questionnaire the researcher utilized multiple sessions ranged from 3 theoretical and 2 practical sessions each session will take from 30- 40 minutes. The booklet contain knowledge about urinary incontinence as: Meaning, causes, risk factors, types, signs & symptoms, prevention and treatment of urinary incontinence, pelvic floor muscle exercises as: Meaning, source of knowledge about PFME, importance, types, uses and contraindications, and suitable times for practicing pelvic floor muscle exercises.

The intervention program will be developed based on the results that will be obtained from the pre-test. The plan of the intervention program will be prepared, implemented, and evaluated by assessing the degree of improvement in the women's knowledge, and reported practice. Program implementation based on conducting session plan using various educational methods and media in addition to guiding booklet specifically designed and developed based on women's assessment needs. During theoretical session study group of women divided into 11 group each group consist of 16-17 women. From the result of pre-test represent that there was lack of knowledge in most items and there was a need to improve their practice.

### **Program session**

At the beginning of the first session, an overview about the intervention program and its purpose was provided. From the second session and so on each session started with a brief summary about the previous session and the objectives of the next session were told using simple and clear Arabic language. By the end of each session women were giving choice of asking questions and giving answer. Teaching methods used were: Lecture, group discussion, brain storming, and role play. The media were pictures, a booklet and CD, videos on laptop as educational aids. The booklet included all content of the intervention program to provide the women with an educational content as a reference during the program implementation so guiding them for accurate knowledge and standardized practice about urinary incontinence and pelvic floor muscles exercises.

### **Evaluation phase**

This phase aimed to evaluate the effect of intervention program on women's knowledge, reported practice regarding urinary incontinence and pelvic floor muscles exercises through the implementation of post-test has been done immediately after implementing of the intervention program to identify differences, similarities, area of improvement and defects as indicators of the program success.

### **Ethical considerations**

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Helwan University. Participation in the study was voluntary and subjects had been given complete full information about the study and their role before signing the informed consent. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information was maintained. Ethics, values, culture and beliefs were respected.

### **Statistical analysis**

Data collected from the studied women was revised, coded, and entered using Personal Computer (PC). Computerized data entry and Statistical Package for the Social Science (SPSS), version 24. Data were represented using descriptive statistics in the form of frequencies, percentage, mean  $\pm$  standard deviation ( $\pm$  SD), chi-square test ( $\chi^2$ ) was used for comparison between qualitative variables. Paired (t) test used to determined strength and direction of association between ranked variables. The p-value is the degree of significant and the probability that an observed difference is due to chance and not a true difference. When p-value  $\leq$  0.05 it considered statistically significant level, and when p-value was  $\leq$  0.001 it considered highly statistically significant.

### **Results**

Table (1) shows that the mean age of the study group was  $18.932 \pm .88135$  where control group mean age was  $21.921 \pm .83757$  years. 79.1% of study group their



place of residence was rural where control group were 94.9%. Regarding level of education 46.3% of study group have preparatory education where 27.6% of control group have secondary education. 53.7% of study group were non-occupied where control group were 74.0%. According to marital status 52.0% of study group were married where control group were 58.8%. On the other hand, 53.1% of study group reported that their monthly income was enough while 67.8% of control group didn't have enough income.

- Figure (1): Reflects that 45.8%, 27.7% of control and study group was attended in urology clinic and 11.1%, 10.2% of control and study group attended chest clinic, where 46.3% of study group was attended obstetric clinic in which 6.8% of them attended surgical clinic.
- Table (2) represents that 79.1%, 92.7% of study and control group had family history of urinary incontinence. According to medical history 50.8%, 45.2% of study and control group complain from chronic diseases, diabetic affects 32.2% of study group, and 24.2% of the control group. 31.1%, 27.7% of control group and study group respectively had cesarian section. Regarding to drug intake 26.6% of study group took estrogen, where 46.3% of study group took other drugs as diuretics, insulin, or anti-hypertensive drugs.
- Table (3): The mean age of marriage of study and control group were  $15.729 \pm 0.353$  for study and  $18.323 \pm 2.676$  for control group. 45.2%, and 32.8% of study and control group were pregnant. Regarding gestational age 22.0% of study group were in first trimester while 5.3% of control group were at 3rd trimester. According to number of previous births 35.6% of study group stated that they had one to three births where 42.9% of control group had seven to ten births. Regarding to type of delivery 41.2% of study group had cesarian section, where 38.4% of control group had normal child birth.
- Figure (2): Displays study and control group total knowledge regarding urinary incontinence pre & post the intervention program, 70.5% of study group have good level of knowledge post intervention program compared to 24.3% of them pre- program, where 79.1% of control group have poor level of knowledge pre intervention program compared to 41.6% of them post-program.
- Figure (3): Shows study and control group knowledge regarding pelvic floor exercises pre and post the program, there was 59.3% have good level of knowledge of study group post intervention program compared to 0.00% pre- program, where there was 1.3% have poor knowledge of control group pre intervention program compared to 39.4% post program.
- Figure (4): Shows that 67.3%, 11.8% and 20.5%, 19% of study and control group scored never and rarely, which reflect highly efficiency level of urinary system of study group post intervention program, compared to 26.6%, 5.1%, and, 19.7% 15.8% pre intervention program study and control group.
- Figure (5): Represents total score of study group reported practice regarding pelvic floor muscles exercises pre & post the intervention program, there were improvement in satisfactory practice score level at post intervention program for all exercises (kigel 61.5%, squat 58.2%, bridge 51.6%, tabletop 77.6%, bird-dog 55.6%) compared to satisfactory practice pre intervention

program (kigel 39.8%, squat 22.6%, bridge 28.7%, tabletop 18.9%, bird-dog 33.3%).

- Table (4): Shows that there is a negative association between study group total knowledge, total reported practice and efficiency of urinary system pre intervention program, on the other hand there is a positive association between study group total knowledge, total reported practice and efficiency of urinary system post intervention program. This mean when knowledge and practice improved post intervention program the efficiency of urinary system improved.
- Table (5): Reflects that there was highly statistically significant relation between total knowledge, efficiency of urinary system, and total reported practice of studied women and their socio-demographic characteristics pre & post intervention program.

Table 1  
Distribution of studied women regarding socio-demographic characteristics  
(n=354)

Characteristics	Study group N=177		Control group N=177		$\chi^2$	P value
	No	%	No	%		
Age (year)					51.881	<0.001**
18-35	119	67.2	48	27.1		
36-53	11	6.2	47	26.6		
54 and more	47	26.6	82	46.3		
Mean± SD	18.932±.88135		21.921±.83757			
Place of residence					193.909	<0.001**
Rural	140	79.1	168	94.9		
Urban	37	20.9	9	5.1		
Level of education					243.153	<0.001**
No read and write	28	15.8	35	19.8		
Read and write	46	26.0	1	.6		
Primary	48	27.1	1	.6		
Preparatory	32	46.3	47	26.5		
Secondary	13	7.3	49	27.6		
University	10	5.6	44	24.9		
Occupation					27.130	<0.001**
Worked	82	46.3	46	26.0		
Housewife	95	53.7	131	74.0		
Marital status					24.960	<0.001**
Married	92	52.0	104	58.8		
Widow	38	21.5	37	20.9		
Single	30	16.9	22	12.4		
Divorced	17	9.6	14	7.9		
Family monthly income	94	53.1	8	4.5	127.746	<0.001**

Enough	37	20.9	120	67.8		
Not enough	46	26.0	49	27.7		
Enough and save						
Crowding index	111	62.7	100	56.5	66.994	<0.001**
< 1	56	31.6	54	30.5		
1-2	10	5.6	23	13.0		
>2						

\*\*highly statistically significant.

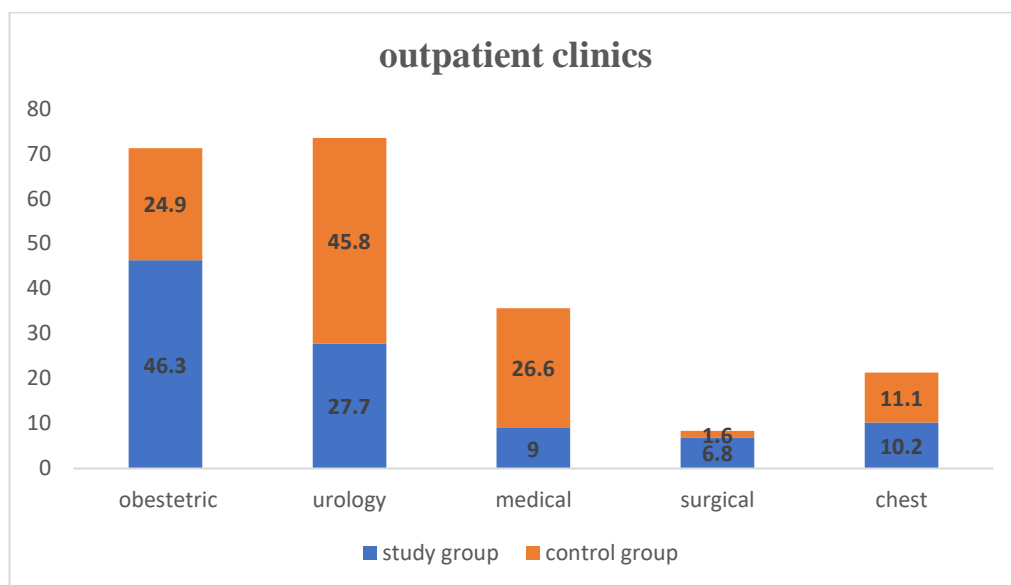


Figure 1. Distribution of studied women in the selected clinics

Table 2

Distribution of studied women regarding family and medical history (n=354)

History	Study group N=177		Control group N=177		$\chi^2$	P value
	No	%	No	%		
<b>Family history</b>						
Any member in the family complains of urinary incontinence?					182.249	<0.001**
Yes	37	20.9	13	7.3		
No	140	79.1	164	92.7		
Member complains of chronic disease					322.723	<0.001**
Yes	50	28.2	75	42.4		
No	127	71.8	102	57.6		
<b>Medical history</b>						

Complain chronic disease?	90	50.8	80	45.2	315.130	<0.001**
Yes	87	49.2	97	54.8		
No						
Type of chronic disease	57	32.2	43	24.2	233.825	<0.001**
Diabetic	38	21.5	47	26.6		
Chest disease	52	29.4	40	22.6		
Heart disease	30	16.9	47	26.6		
Uterus prolapse						
Surgical history						
Previous operation:						<0.001**
Yes	94	46.9	68	38.4	205.932	
No	83	53.1	109	61.6		
Operation type						<0.001**
Cesarian section	49	27.7	55	31.1	388.475	
Appendectomy	12	6.8	-	-		
Bone fixation	7	4.0	-	-		
Oophorectomy	11	6.2	-	-		
Partial hysterectomy	15	8.5	13	7.3		
Pharmacological history						
Drug intake	47	26.6	-	-		<0.001**
Estrogen	-	-	100	56.5		
No response					116.486	
Other (diuretics, insulin, anti-hypertensive drugs	82	46.3	37	0.9		

Other (diuretics, insulin, anti-hypertensive drugs 82 46.3 37 0.9

\*\* highly statistically significant

Table 3  
Distribution of studied women regarding their gynecological history (n=354)

Gynecological history	Study group N=177		Control group N=177		$\chi^2$	P value
	No	%	No	%		
Age of marriage(N=302)					323.424	<0.001**
13-16	57	32.2	65	36.7		
17-20	38	21.5	43	24.3		
21-23	52	29.4	47	26.6		
Mean± SD	15.729±.353		18.323± 2.676			
Pregnant					23.910	<0.001**
Yes	80	45.2	58	32.8		
No	97	54.8	119	67.2		
Gestational age for pregnant only (N=138)					1277.130	<0.001**
1-3	39	22.0	17	9.6		
4-6	26	14.7	14	7.9		
7-9	15	8.5	27	15.3		
Number of previous					322.299	<0.001**

births	63	35.6	28	15.8		
1-3	37	20.9	41	23.2		
4-6	47	26.6	76	42.9		
7-10						
Type of delivery					175.237	<0.001**
Normal	58	32.8	68	38.4		
Cesarian	73	41.2	42	23.7		
Both together	39	22.0	45	25.4		

\*\* Highly statistically significant

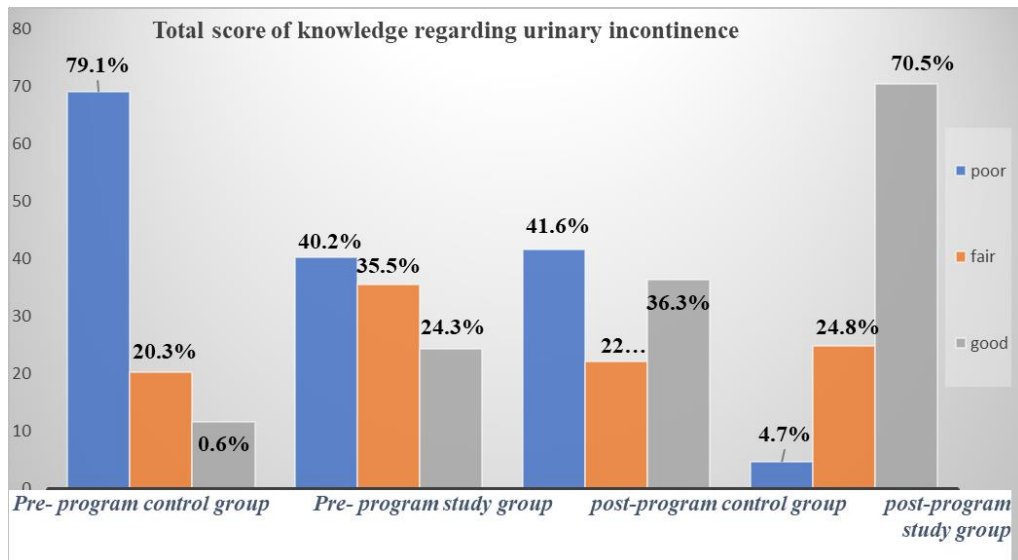


Figure 2. Distribution of total score of women's knowledges about urinary incontinence pre & post intervention program (N=354)

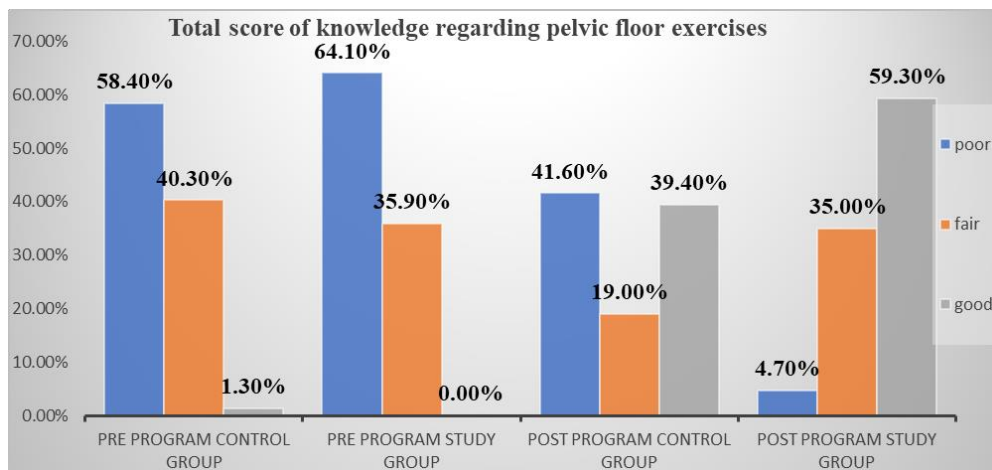


Figure 3. Distribution of total score of knowledge about pelvic floor muscles exercises of studied women pre & post intervention program (No= 354)

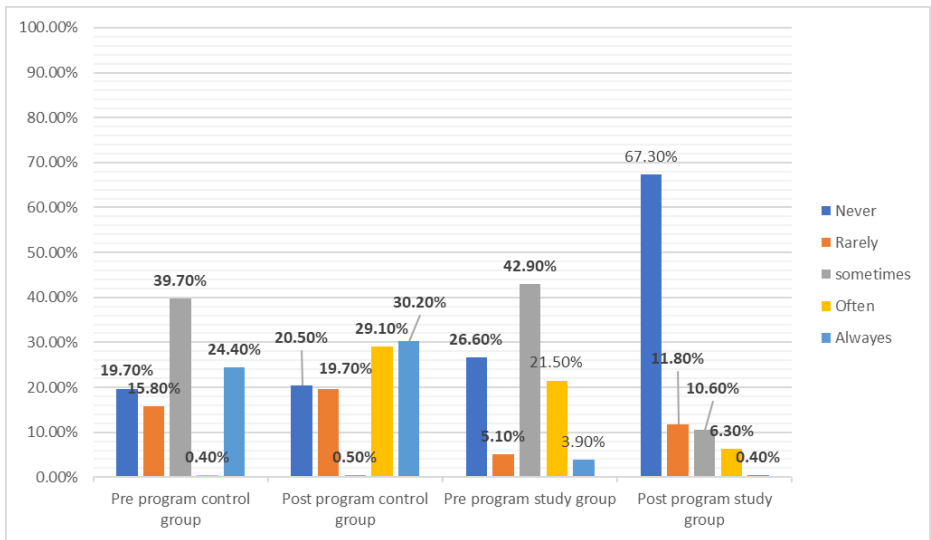


Figure 4. Distribution of studied women efficiency total score of urinary system pre & post intervention program

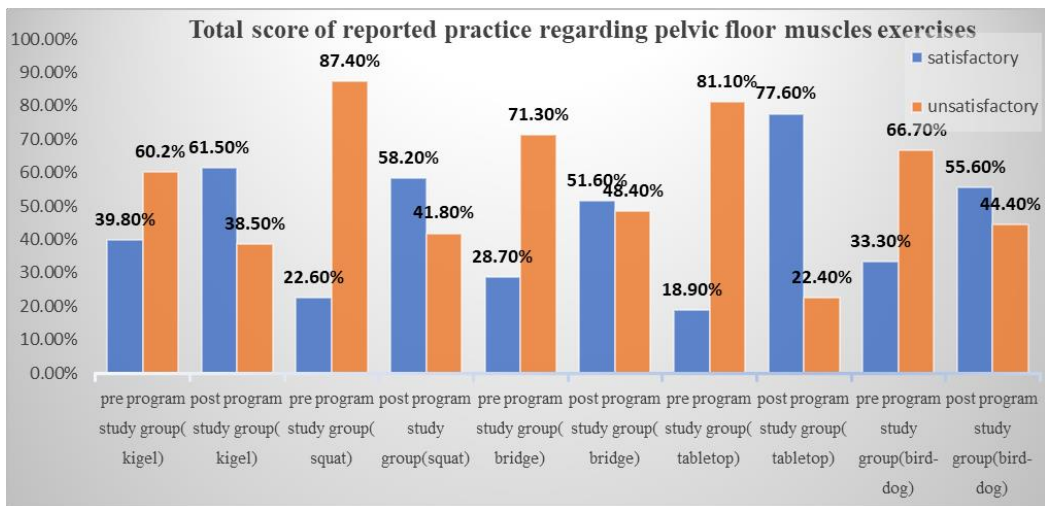


Figure 5. Distribution of studied women reported practice total score of pelvic floor exercises muscles pre & post intervention program (No= 354)

Table 4

Correlation between study group total knowledge, total reported practice and efficiency of urinary system pre & post intervention program (n= 354)

Item	Efficiency of urinary system			
	Pre-program		Post-program	
	r	P value	r	P value
Total knowledge	-0.100	0.047	0.581	<0.001**
Total reported practice	-0.298	0.030	0.109	<0.001**

\*\* Correlation is highly significant at the 0.01 level (2-tailed)

Table 5  
Mean and standard deviation of study group total knowledge, reported practice, efficiency of urinary system and sociodemographic data pre & post intervention program (n= 354)

Item	Sociodemographic characteristics		Paired t test	P value
	Pre-program Mean± SD	Post-program Mean± SD		
Total knowledge regarding urinary incontinence and pelvic floor exercise	38.738±4.780	55.3715±7.08580	77.355	<0.001**
Efficiency of urinary system	33.623±9.001	48.494±9.304	30.282	<0.001**
Total reported practice regarding pelvic floor exercise	56.809±8.005	85.458±17.217	41.225	<0.001**

\*\*Highly statistically significant

## Discussion

Urinary incontinence (UI) is the involuntary flow of urine due to a disruption of the normal urination mechanism, causing medical, social, and hygienic problems. For a woman suffering from this disease, the quality of life deteriorates very sharply (Manso et al., 2020). Urinary incontinence during sexual intercourse is an under reported disorder among women with UI in which adversely affects sexually-active women. Pelvic floor muscles exercises training considered as first-line conservative management to SUI and all other types of UI (Ileana et al., 2021). Primary outcomes of (Barbosa et al., 2020) study were improvement or cure of pregnancy specific urinary incontinence, where secondary outcomes were improvement of pelvic floor muscle strength, improved quality of life, presence or absence of postpartum urinary incontinence and adverse effects.

Regarding to demographic characteristics of the present study the mean age of study group was 18.932± 0.881 while control group mean age was 21.921± 0.837. This is in the same line with a study kubo et al., (2019) in Tokyo, Japan about "Effects of squat training with different depths on lower limb muscle volumes" who found that mean age long 20.7± 0.4 for training group, 20.9 ± 0.8 for half training group. From the researcher point of view, this age reflect most commonly urinary incontinence among studied women may be due to early marriage, early pregnancy, child birth and mode of delivery. Concerning place of residence, the current study reflected that more than three quarter of study groups their place of residence was rural and majority of control group, this is in the same line with Nystrom, (2018) in Sewed about "Self-Management of Urinary Incontinence using eHealth" who stated that 63.8% of women were from rural or sparsely populated area. This from the researcher point of view explained why women in rural area suffered from UI neglect medical seeking. According to level of education the current study stated that about half of study group have preparatory education where more than quarter of control group have secondary education, this is in disagreement with Soliman et al., (2020) in AlKharaga, New Valley Governorate about "Urinary Incontinence among Women Attending Primary Health Center at

El-Kharaga City, New Valley, Egypt” who revealed that 50% of the studied women had university education. From the researcher point of view, low levels of education, this is related to increase number of the studied sample who aged more than 50 years.

According to marital status the current study stated that more than half of the study and control group were married, this is in agreement with Alves et al., (2021) in Brazil about “Clinical profile of women with stress urinary incontinence in a reference center” who revealed that 52% of the studied women were married. Concerning studied women family history, the current study stated that majority of study and control group had family history of urinary incontinence, about third of them were diabetic where more than quarter of them were hypertensive this is in agreement with Soliman et al., (2020) who study which revealed that 27.7% of women have a history of incontinence, 19% of the studied women had a history of hypertension and the equal percentage of women had a history of diabetes. This from the researcher point of view reflect increased prevalence of UI among study group pre the intervention program, in which diabetes and hypertension are risk factors.

Regarding medical history half of studied women complained from two or more disease, more than three quarter of them used two or more drugs, this is in agreement with Ribeiro, (2019) in Brazil about “Double incontinence: Associated factors and impact on the quality of life of women attended at a health referral service” who revealed that 58.1% women had two or more comorbidities, while 25.6% of them used more than four medications. Regarding the current findings surgical history more than one tenth numbers of studied women had partial hysterectomy this is in agreement with Aniulis et al., (2021) in Lithuania about “Association of gene polymorphisms with women urinary incontinence” who stated that 14.3% of studied group had hysterectomies.

Regarding gynecological history the mode of delivery about half of study group had cesarian section, where more than third of control group had normal child birth this is in agreement with Ribeiro., (2019) who found that (38.8%) had experienced both a vaginal and cesarean delivery. The following results confirm research hypothesis “The intervention program will improve women’s knowledge and reported practice about urinary incontinence and pelvic floor muscle exercises”. Regarding knowledge about urinary incontinence, there was about three quarter of study group have good level of knowledge post intervention program compared to quarter of them pre- program, where quarter of control group have poor level of knowledge pre intervention program compared to more than one third of them post-program, which reflect highly statistically significant improvement in all items of women’s knowledge about urinary incontinence post intervention program ( $p$  value $<0.001$ ), this is in agreement with Vasconcelos et al., (2019) whose study conducted in Brazil about “women’s knowledge, attitude and practice related to urinary incontinence” who found that the knowledge scores were significantly higher immediately after the workshop ( $p <0.01$ ) compared with the pre-workshop knowledge scores. From the researcher point of view, this result may be due to the effect of intervention program that play a vital role in improving women's knowledge about urinary incontinence.



Regarding efficiency of urinary system, the current study revealed that three quarter of study group never leak urine during the day post the intervention program, this is in disagreement with Zago et al. (2017) study, which reported that all of women 100% reported losses of small amount, either once a week or on a daily basis. From the researcher point of view, this unimproved efficiency of urinary system may be due to no application of the intervention program for control women. From the researcher point of view, this improved efficiency of urinary system due to application of the intervention program for the study group.

Regarding leakage after urination, the current study revealed that minority of study group post the intervention program always leak urine immediately after urination, this is in agreement with Almeida et al. (2020) in Federal district about "Urinary incontinence in female road runners from the Brazilian occurrence and associated risk factors" who found that 13.3% of studied women experienced leakage after urinating, when already dressed. Regarding leak with cough, the current study mentioned that about half of study and control group pre intervention program leak urine during coughing this is in agreement with Shrestha et al. (2021) in Nepal India about "Clinical profile of female urinary incontinence" who reported that 63.6% of study group leak urine during coughing and 18.2% of them during sneezing. Regarding leakage with exertion more than half of control group post intervention program always leak urine with exertion, this is in agreement with Alves, (2021) study which conducted in Salvador, Brazil about "Clinical profile of women with stress urinary incontinence in a reference center" who found that loss of urine on exertion always reported in 57.1% of cases.

Regarding effect of leakage the current study showed that about three quarter of study group rarely feel low self-esteem due to leakage, this reflects high efficiency level post intervention program compared to nearly quarter of control group. There was highly statistically significant improvement in all efficiency items of urinary incontinence post intervention program, ( $p$  value  $< 0.001$ ), this is in agreement with Ribeiro, (2019) who revealed that 1.0% of the women reported low self-esteem associated with leakage. Regarding reported practice the present study stated that majority of study and control group total score of reported practice regarding pelvic floor muscles exercises pre intervention program were unsatisfied though majority of study group score post the intervention program this were improved as satisfied practice compared to majority of control group were unsatisfied practice post intervention program, ( $r = 0.109$ ,  $p$  value  $< 0.05$ ) this is in agreement with Nystrom, 2018 study reported that 92% of the app group reported improvements, while only 20% of the control group reported improvements. The app group reported greater improvements than the control group reflected as ( $r = 0.534$ ,  $p < 0.001$ ). Those who performed pelvic floor muscle training and those had higher improvement. From the researcher point of view, this result may be due to the effect of intervention program for study group which provided them with standardized pelvic floor muscles exercises related practice.

Regarding correlation between knowledge, reported practice and efficiency, there is a negative association between study group total knowledge, total reported practice and efficiency of urinary system pre intervention program, on the other

hand there is a positive association between study group total knowledge, total reported practice and efficiency of urinary system post intervention program. This mean when knowledge and practice improved post intervention program the efficiency of urinary system improved, this is in agreement with Mohammed et al., (2021) study which conducted in Minia, Egypt about “Effect of Selective Behavioral Therapy on Stress Urinary Incontinence and Self-esteem among Institutionalized Elderly Women” who stated that after 12 weeks of compliance to pelvic floor muscles exercise, there was a significant decrease in the severity of stress urinary incontinence to 16% compared to 40% before, with a highly statistically significant difference ( $p=.000$ ).

### **Conclusion**

Based on the present study and research design it can be concluded that: The current study represented that about three quarter of study group have good level of knowledge regarding urinary incontinence and pelvic floor exercises post intervention program. Also, more than half of study group reported practice regarding pelvic floor muscles exercises post the intervention program there were improved as satisfactory practice for (kigel, squat, bridge, tabletop, and bird-dog) exercises. In addition, there was high statistically significant improvement in all items of women’s knowledge, efficiency of urinary system and reported practice post intervention program.

### **Recommendations**

In the light of the finding of this study, the following points are recommended:

- Ongoing intervention programs for women about urinary incontinence and pelvic floor muscles exercises related knowledge, practice and efficiency of urinary system.
- Educational programs for women about different types of pelvic floor muscles exercises to alleviate pelvic floor disorders and decrease urinary incontinence.
- Recommendation for future research:
- Highlight Community Health Nurse role for improving of urinary system through continuing training and conducting research in this filed.
- Ongoing research is required to relieve the neglected behavior toward urinary incontinence which affect women quality of life.
- Disseminating health education booklet to promote women awareness about urinary incontinence and importance of pelvic floor muscles exercises.

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