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Nursing Intervention Protocol to Reduce Urinary Incontinence among Adult Women

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The present study aimed to examine the effect of nursing intervention protocol to reduce urinary incontinence among adult women. A quasi-experimental design with (pre/post-test) was used to conduct this study. The study was conducted at obstetrics and gynecological clinics at selected hospitals at Egypt. A simple random selection of (150) adult women with urinary incontinence was chosen. four instruments were used to collect the data; Structured interviewing questionnaire, Incontinence severity index (ISI), The Incontinence Symptom Severity Index (ISSI) and Physical & psychological assessment questionnaire. The current study revealed that there was statistically significant improvement among the study group than that of the control group at the post test of all items of physical, psychological and social complications after intervention. This study conclude that application of nursing intervention protocol for three months was effective in reducing urinary incontinence among adult women and succeeded in improving symptoms and severity of UI in the study group than that of the control group. Continuous assessment of physical, psychological and social effects of women suffering urinary incontinence is recommended as a part of the nursing care protocol

Keywords: Nursing protocol, Urinary incontinence (UI), Adult women.

INTRODUCTION

Urinary incontinence (UI) or the uncontrolled loss of urine, is a condition that is dominant among women. There are many forms of UI but, the most common forms in adult women are urge, stress and or mixed incontinence (Elbana et al. 2018)(Rett et al. 2016).There is close relation between urinary stress incontinence and BMI. Overweight women have raised intra-abdominal pressure, which affects the pelvic floor adversely and leads to urinary incontinence. Similarly, repeated vaginal delivery leads to weakening muscle, nerves, and connective tissue damage to the pelvic floor. In many cases the resulting trauma can lead to poor pelvic floor support. UI is a silent problem which leads to adverse outcomes in adult female. (Limpawattana et al. 2015) (Pereira et al. 2019)

According to world health organization (WHO), the accurate incidence of UI among women is undetermined. This problem affects both sex but, the prevalence of UI is high among women than men because it affects about 51.1% of women while affect 13.9% of men. It requires large costs for treatment

(Integrated care for older people (ICOPE) 2017). In Egypt, some studies revealed that one in each 10

women under the age of 65 years complained from UI. Also, about 5-15 % of adult women have this problem but the studies about precise prevalence of the problem are rare (El-Azab, Mohamed, and Sabra 2007)

Urinary incontinence can be considered as a symptom not illness which occurs as a consequence of weakened or loss of urinary sphincter voluntary control that make the bladder unable to hold the urine in it. Severity of symptoms of UI vary according to its types and ranges from infrequently leaking urine when the person coughs or sneezes to have an urge to urinate that's so sudden and strong with inability to get a toilet in (Abiola et al. 2016). Additionally, UI has many consequences that can affect women's life. These consequences include physical, psychological, and social consequences that need more attention in managing UI (Biswas et al. 2017)

The nurse has an important role to determine urinary incontinence for women. Proper communications, assessment, culturally sensitive training, and tailor-approaches will help nurses provide treatment and support to reduce the adverse effects of incontinence on the well-women. (Biswas et al. 2017) (El-Azab, Mohamed, and Sabra 2007).

Also, the nurse plays a main role in educating the adult women especially with high parity regarding factors that increase the incidence of UI and management of it through explaining different protocols that can help in improving symptoms and managing problems (Abrams, Smith, and Cotterill 2015).

These nursing protocols or strategies include; containing strategies that include collection of urine using collection device or spongy product, restricting Strategies that mean prevention or limitation to the factors and activities or that may aggravate episodes (as tea, coffee and soft drinks) and concealing strategies that mean prevention others from being alert of incontinence, even it occur in public places. Furthermore, the nurse educates women Kegel exercises, varied physical methods, using of pads, clothing and social activities which improve UI (Hunter and Wagg 2018) (Hälleberg Nyman et al. 2017).

Significance of the study

Urinary incontinence (UI) is a medical disorder that affects 200 million people worldwide. Its occurrence is difficult to be estimated because its different forms among women. It is usually underreported because only 25% of women with UI seek medical consult for their symptoms. Moderate to severe UI affects 7% of women aged 20–39 years of age, 17% of women aged 40–59 years of age, 23% of them 60–79 years of age, and 32% ≥80 years of age places (Hunter and Wagg 2018) (Pereira et al. 2019). In Egypt, low studies revealed the epidemiology of (UI) among women. (UI) arises from that some women feel embarrassed to communicate such problems with any one or seek medical help. So this study focus on examining the effect nursing intervention protocol to reduce UI among adult women and increase their awareness regarding risk factors, symptoms, and important strategies to manage this problem (Newman 2001) (Fritel et al. 2015).

The aim of the Study

The current study aimed to examine the effect of nursing intervention protocol to reduce urinary incontinence among adult women.

Research Hypothesis

H1. It was hypothesized that Women, who will receive the nursing intervention protocol, will relieve from symptoms of urinary incontinence than those who don't.

H2. It was hypothesized that Women, who will receive the nursing intervention protocol, will have improved physical, psychological and social effects than those who don't.

MATERIALS AND METHODS

Operational definitions:

1. Adult woman: WHO define an adult woman is a person older than 19 years of age unless national law defines a person as being an adult at an earlier age
2. Urinary incontinence (UI): Inability to hold urine in the bladder due to loss of voluntary control over the urinary sphincters resulting in the involuntary passage of urine.
3. Nursing intervention protocol: it is a nursing action that prescribed for specific complain or situation. A protocol may describe mandatory nursing assessments, behaviours, and documentation for establishing and maintaining invasive appliances; methods of administering specific drugs; special-care modalities for patients with certain disorders.

Research design:

A quasi-experimental design with a pre/post-test was used to conduct this study.

Study setting:

The study was conducted at obstetric and gynecological clinics, at selected hospitals in Menoufia governorate in Egypt.

Subjects: -

The study subjects consisted of 150 adult women diagnosed with UI were recruited in this study. Women who met the criteria were selected in this study. Then it was randomly assigned into two equal groups (75) for each. the researchers used simple random technique divide the groups by asking each woman to pick a folded piece of paper containing a letter (A or B), the woman who picked the paper carrying letter (A) assigned to control group and who picked the piece of paper carrying letter (B) assigned to intervention group. They were chosen according the following criteria:

Inclusion criteria*:*

Adult women diagnosed with UI, married & have children, and agree to participate in this study.

Exclusion criteria*:*

Women who had gynecological problems as uterine prolapse, or women who were receiving chemotherapy or radiotherapy, didn't have children, and young age (less than 20 years).

Sample size:

A total of (150) adult women diagnosed with UI were selected according to the following statistical formula

$n = Z2p\ (1-p)/d2,$

Where z = level of confidence according to the standard normal distribution (for a level of confidence of 95%, z = 1.96). p = estimated proportion of the population that presents the characteristic (when unknown we use p = 0.5), d = (d is considered 0.05).

Tools of data collection:

four instruments were used to collect the data:

Instrument I.

Structured interviewing questionnaire was designed by the researchers. It contained three parts as the following:

Part one:

sociodemographic characteristics (5 questions) such as; women age, level of education, occupation, residence, and body mass indexes (BMI) of the subjects.

Part two:

Included medical history and obstetrical history. Medical one involving (2 questions) personal chronic diseases of the women, and its types. Obstetrical history contained (6 questions); gravidity, parity, number of abortions, no of children, types of previous delivery and its complications

Part three:

Included (6 questions about causes of disease); high parity, obesity, chronic cough, chronic constipation, cystitis, and DM. Also, it included 5 questions about chronic types of UI (e.g. stress, urge, overflow, functional, and transient types)

Instrument II. Incontinence severity index (ISI):

It was adopted from Harvie et al. *(2014).* It was used to assess the severity of urinary incontinence problem. The index contained two questions (frequency and amount of urine leakage). The first question "how often is urine leakage experienced? The responses were categorized in the following Likert scale: never (0), less than once month (1), one to several times per month**,** one to several times per week (2), every day and/or night (3). The second question "how much urine is lost each time? It scored as follow: a few drops (1), a little (2) and lastly more (3). The index value is obtained by multiplying the total amount in the two parameters (i.e. Severity index=points for frequency x points for amount). ISI has good levels of validity, reliability, and responsiveness. It was able to distinguish between women with or without incontinence. The score was calculated as following slight range from (1-2), moderate (3-6), severe (7-9) and very severe (10-12).

Instrument III: The Incontinence Symptom Severity Index (ISSI):

It assesses the severity of female urinary storage and voiding symptoms. It observes 8 inquire; including emptying, urgency, urge incontinence, nocturnal, daytime frequency, stress incontinence, leakage with physical activity and pad use***).*** It has 5 categories of Likert scale; (no= zero, 1= rare, 2=usually, 3= sometimes, and 4= most time.). It demonstrated good reliability and validity (Twiss et al. 2009).

Scoring system was as the following, total score was 32 scores categorized as Mild symptoms were taking percent ≤ 60% (less than 20 score), Moderate symptoms were 61% - 80 % (20- 26 score) and Severe one ≥ 80% (≥27 score).
Instrument IV: Physical, psychological and social assessment sheet developed by the researchers after reviewing the pertinent literature. It consisted of:

Physical problems:
It included 6 questions about rashes of skin, cystitis, and effect on the following (work performance, general appearance, walking, and general hygiene).

Psychological complications:
It included 7 inquires; as severe tension and anxiety, depression, no desire to go out the home, embarrassment, feeling of no self-confidence, doubt of personal hygiene, and sometimes don't pray because of doubt in cleanness.

Social complications:
it included 4 inquires such as; avoid going to general places, avoid going to social events, ashamed from others and marital problems with the husband.

Validity and reliability of the tool
Instrument I and IV were developed by the researchers after extensive literature review and tested for content validity by a jury of five experts in obstetric & maternity nursing and community nursing to reach agreement of the best form to be implemented. Modifications were carried out according to the panel judgment on clarity of sentences and appropriateness of the content. Tools were assessed by applying the questionnaire using test–retest reliability. Cronbach's alpha coefficient was 0.82. regarding Tool II (ISI) and III (ISSI) were valid and reliable.

Ethical considerations: The proposal of study submitted to the research ethical committee of Nursing College, Menoufia university for approval. official letters were taken from Dean of Faculty of nursing, Menoufia University and submitted to the heads of obstetrics and gynaecology department of selected hospitals to carry out the study. The agreement for participation of the women were taken after full explanation of the aim of the study to get their approval for participation in the study. Moreover, they were assured that the information was confidential and used only for the research purpose also they can withdraw from the study at any time without giving rational.

Pilot study:
The tools applied on 10% of the total sample to assess the feasibility and clarity of them and determine the needed time to answer the questions. Based on results of pilot, rephrasing of some questions was performed to ensure clarity of them and to understand easily by the participants

Date collection procedure
This study was carried out through three uninterrupted phases: interviewing & assessment phase, implementation phase and evaluation phase. The data collection period was done for 8 months from the start of January2019 to the end of August 2019.

1- The interviewing and assessment phase:
During this phase, the researchers clarified the purposes of the study, instruments components, the plan of the research; the chosen women were divided into two groups (intervention group and control group) each group included 75 women. Each woman was assessed by determining her demographic data, history, BMI and performing a physical examination to assess the causes and degree of UI. The interview was ranged from 30 - 45 minutes for each woman.

2- The implementation phase:
The selected women were randomly assigned into two equal groups. The first group (75) women were the control group called group (A), they left to the hospital routine care. The second group (75) women called group (B) was the study group received nursing intervention protocol regarding UI and how to relieve symptoms. The researchers used illustrating pictures, power point presentations pictures, and (videos) in teaching the women about intervention protocol which focus on behavioural intervention as:

Bladder training/ bladder re-education and prompt voiding):
regular emptying of bladder every 2hrs, Bladder re-education; Re-training to urinate after long period gradually (after 3-4 hours). Bladder training is recommended for management of stress and mixed UI

Pelvic floor muscles exercises:

It strengthens the voluntary per urethral and pelvic floor muscles, the contraction of which exerts a closing force on the urethra. The woman has been taught to Sustain a contraction of the peri-vaginal muscles or anal sphincter for at least 10 seconds followed by equal periods of relaxation. Perform 30 to 80 times a day for at least 12 weeks

Dietary and fluid intervention;

Reducing diuretics fluids; as tea coffee, cola, especially in the evening, reducing soft drinks & processed juices, hot spices, chili and chocolate. Avoid constipation by taking fresh vegetables, and finally more exposure to Vitamin D by absorb useful sunlight for 10 minutes a day as possible.

Self-care:

using sanitary & absorbing pads and disposable protective clothing. Stick to a specific schedule for urination, Full emptying of bladder, Take the time after finish of voiding, relax for some time, use a barrier cream (Vaseline or Cocoa Butter) to protect the skin, using some powders for skin care. or using the air freshener can help soften the smell.

3- The evaluation phase:

During this stage the studied groups were followed by the researches for re-assessment and reporting the effect of intervention protocols and answering any concern from the women. All women were followed-up by the researchers at Obstetric and gynaecological units and outpatient clinics one time /month and at any time by telephone if needed to assess the compliance of women to the used protocol. After 3 months of applying the nursing intervention protocol the researchers met the studied women to report the improvement of symptom. Both groups were asked about the symptom's severity indexes, and physical, psychological, & social effects.

Statistical analysis:

The collected data were scored, tabulated and analysed using (SPSS) version 20. It was presented in tables and graphs using the actual numbers and percentages. Appropriate statistical tests were used to analyse the data as, chi-square test (X2), the level of significance was set at $p < 0.05$.

RESULTS

Table (1) shows demographic data of the studied women. The mean age of the women in control and study group was (49.1 ± 8.5 & 48.1 ± 8.9) years old respectively. More than one half of the sample had middle educational level (56.0%) in both groups, also more than half of the women (60%) were housewives. Majority of studied women (85.3%) were lived in rural area. Concerning BMI Categories, more than one third of the sample (40.7%) were overweight, while near to one third (28%) of women were obese.

Table (2) illustrates distribution of medical data of the studied women. More than half of the sample (62.7%) complained from chronic disease. Urinary disease is the most common one (46.7%) followed by hypertension (22.7%) among the women.

Table (3) explains distribution of obstetric history among the studied women. More than one half of women (62.7%), & (58.0%) had gravida and para more than three times. Also, more than three quarters of them did not have abortion (80.7%). Concerning to types of pervious labor, the majority of the women (70.7%) had normal vaginal delivery (NVD), and the puerperal sepsis was the most common complications among women with UI (30.6%) followed by perineal tear (24.7%) and then urethral tear (20%).

Table (4) shows distribution of the causes of urinary incontinence among the studied women. Chronic constipation and high parity were the most common causes of urinary incontinence in control and study group (29.3%,24%) & (37.3% & 29.3%) respectively.

Fig (1) represents types of urinary incontinence among the studied women. Near to one half in both groups (46 %) complained from stress UI, and one quarter in both groups (25%) complained from urge UI and over flow UI (19%) . while (10%) of the studied women had transient type of UI .

Table (5) illustrates pre/post index severity of Urinary Incontinence (ISI) among the studied women. There was highly statistically significant difference among the study group when compared to the control group at the post test of UI categories ($p<0.001^*$).

Table (6) represents pre/post Incontinence symptoms severity index (ISSI) among the studied women. There was statistically significant improvement among the study group than that of the control group at the post test of symptoms of UI especially in moderate and severe degree of symptoms of UI. ($P=.000^*$), & ($p<0.001^*$).

Table (7) shows the pre/post effect of nursing intervention protocol on physical & general

complications among the studied women. There were highly statistically significant differences among the study group than that of the control group at the post test of presence of physical& general complications, and its types after applying nursing intervention protocol ($p<0.000^{**}$).

Table (8) shows the pre/post effect of nursing intervention protocol on psychological & social complications among the studied women. There was statistically significant improvement among the study group as compared to the control group at the post test of all items of psychological and social complications after application of nursing intervention protocol ($p<0.001^{*}$).

Table 1: Distribution of Demographic Data among the Studied women (n=150).

Demographic Data	Control group (N=75). (G A)		Study group (N=75). (G B)		Total (N=150)	
	No	%	No	%	No	%
Age:						
Mean ± SD.	49.1 ± 8.5		48.1 ± 8.9			
Level of Education:						
Illiterate.	11	14.7%	10	13.3%	21	14.0
Read and write.	16	21.3%	15	20 %	31	20.7
Middle education	42	56.0%	42	56 **%**	84	56.0
High education	6	8.0%	8	10.7%	14	9.3
Occupation:						
Working.	28	37.3%	32	42.6%	60	40.0
Housewife.	47	62.7%	43	57.3%	90	60.0
Residence:						
Rural	65	86.7%	63	84%	128	85.3
Urban	10	13.3%	12	16%	22	14.7
BMI Categories:						
Normal weight.	7	9.3%	5	6.7%	12	8.0
Overweight.	30	40%	31	41.3%	61	40.7
Obese.	21	28%	21	28%	42	28.0
Morbid obese.	8 17	22.7%	18	24 %	25	23.3

Table 2: Distribution of Medical Data among the Studied women (n=150).

Variables	Control group (N=75). (G A)		Study group (N=75). (G A)		Total (N=150).	
	No	%	No	%	No	*%*
Chronic diseases:						
Yes.	46	61.3	48	64.0	94	62.7
Types of chronic diseases:						
D.M.	9	12.0	11	14.7	20	13.3
Hypertension.	16	21.3	18	24 .0	34	22.7
Cardiac disease	14	18.7	12	16.0	26	17.3
Urinary disease.	36	48.0	34	45.3	70	46.7

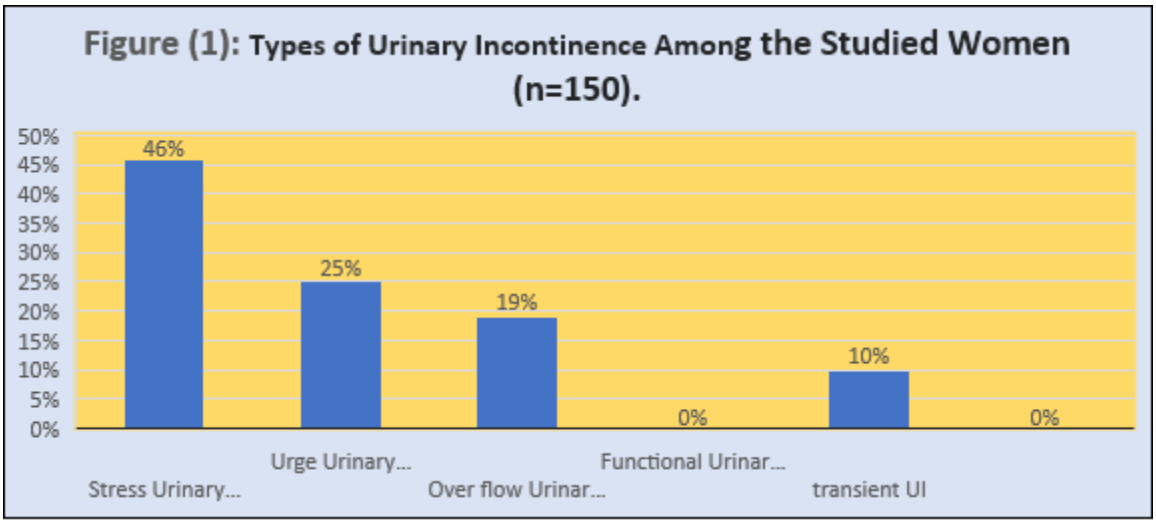

Fig (1) represents types of urinary incontinence among the studied women. Near to one half in both groups (46 %) complained from stress UI, and one quarter in both groups (25%) complained from urge UI and over flow UI (19%) . while (10%) of the studied women had transient type of UI .

Table 3: Distribution of Obstetric History among the Studied women (n=150).

Variables	*Control group (N=75).* (G A)		*Study group (N=75).* (G B)		*Total*	
	No	*%*	*No*	*%*	*No*	*%*
Gravida:						
-1-3 times	*29*	*50.7*	*27*	*36.0*	*56*	*43.3*
>3 times	*46*	*61.3*	*48*	*64.0*	*94*	***62.7***
Para:						
-1-3 times	*30*	*40.0*	*33*	*44.0*	*63*	*42.0*
- >3 times	*45*	*60.0*	*42*	*56.0*	*87*	***58.0***
Abortion:						
-yes	*17*	*22.7*	*12*	*16.0*	*29*	*19.3*
-no	*58*	*77.3*	*63*	*84.0*	*121*	***80.7***
Type of previous labour:						
NVD.	*51*	*68*	*55*	*77.3*	*106*	***70.7***
CS.	*7*	*9.3*	*5*	*7.6*	*12*	*8.0*
Both.	*17*	*22.7*	*15*	*20.0*	*32*	*21.3*
Complications of previous delivery:						
Vaginal delivery.	*10*	*13.3*	*9*	*12.0*	*19*	*12.7*
Perineal tear.	*17*	*22.7*	*20*	*26.7*	*37*	***24.7***
Puerperal sepsis.	*25*	*33.3*	*21*	*28.0*	*46*	***30.6***
Urethral tear.	*15*	*20.0*	*15*	*20.0*	*30*	***20.0***
Urinary Incontinence.	*8*	*10.7*	*10*	*13.3.0*	*18*	*12.0*

Table 4: Distribution of the Causes of Urinary Incontinence among the Studied women (n=150).

Causes of Urinary Incontinence:	**Control group (N=75). (G A)**		**Study group (N=75). (G B)**	
	No	%	No	%
High parity.	18	24	22	29.3
Overweight.	11	14.6	10	13.3
Chronic cough.	9	12.0	5	6.6

Chronic constipation	22	29.3	28	37.3
Cystitis.	9	11.9	10	13.3
Dietary causes (tea, coffee, &spicy food)	6	8.0	0.0	0.0

Table 5: Pre/post Index Severity of Urinary Incontinence (ISI) among the Studied Women (n=150).

UI. Categories according to (ISI):	Control group (n= 75) (G A)		Study group (n= 75) (G A)	
	Pre. F (%)	Post F (%)	Pre F (%)	Post F (%)
Slight.	53 (70.7%)	54 (72%)	52 (69.3%	70 (93.3%
Moderate.	18 (24%)	18 (24%)	18 (24%)	5 (6.7%)
Severe.	3 (4%)	2 (2.7%)	4 (5.3%)	0.0 (0.0%)
Very Severe.	1 (1.3 %)	1 (1.3 %)	1 (1.3 %)	0.0 (0.0%)
Test P value	X^2 =92.627[a] P=.000**		X^2 =87.400[a] P=.000**	

Table 6: Pre/post Incontinence Symptoms Severity Index (ISSI) among the Studied women (n=150)

Symptoms Severity of UI:	Control group (n= 75) (G A)		Study group (n= 75) (G B)	
	Pre. F (%)	Post F (%)	Pre. F (%)	Post F (%)
Mild degree:	11 (14.9%)	31 (41.3%)	33 (44%)	59 (68.7%
Moderate degree:	27 (36%)	36 (48%)	21 (28%	15 (20%)
Severe degree:	37 (49.3%)	8 (10.7%	21 (28%	1 (1.3%)
Test P value	X^2 =17.840[a] P= .001*		X^2 = 73.280a P=.000*	

Table (7): Pre/post Effect of Nursing Intervention Protocol on Physical and General Complications among the Studied Women (n=150).

Variables	Control group (n= 75) (G A)		Study group (n= 75) (G B)		Test P. value
	Pre	Post	Pre	Post	
	F (%)	F (%)	F (%)	F (%)	X^2
Physical complications of Urinary Incontinence:					
Yes.	61(81.3%)	61(81.3%)	62 (82.7%)	22(29.3%)	**X^2 =**30.60 **P= 0.000***
Types of Physical and General complications.					
Rash of skin.	31 (41.3 %)	31 (41.3%)	31 (41.3%)	4 (5.3%)	**X^2 =**52.78 **P= 0.000***
Cystitis.	58 (77.3%)	58(77.3%)	60 (80%)	22 (29.3%)	**X^2 =**41.20 **P= 0.000***
Effect on the work performance.	55 (73.3%)	55(73.3%)	58(77.3%)	6 (8.0%)	**X^2 =**33.66 **P= 0.000***
Effect on general appearance.	32 (42.7%)	32(42.7%)	29(38.7%)	3 (4.0%)	**X^2 =**54.39 **P= 0.000***
Effect on walking.	25 (33.3%)	25(33.3%)	23(30.7%)	1 (1.3 %)	**X^2 =**59.48 **P= 0.000***
Effect on general hygiene (Bad odour).	12 (16.0 %)	12(16.0 %)	7(9.3%)	0.0 (0.0%)	**X^2 =**89.93 **P= 0.000***

Table (8): Pre/post Effect of Nursing Intervention Protocol on Psychological & Social Complications among the studied women (n=150).

Variables	Control group (n= 75) (G A)		Study group (n= 75) (G B)		Test P value
	Pre	Post	Pre	Post	
	F (%)	F (%)	F (%)	F (%)	X^2
Types of psychological complications of Urinary Incontinence:					
Severe tension & anxiety.	31(41.3%)	31(41.3%)	26(34.7%)	0.0(0.0%)	X^2= 63.75 P= 0.000*
Depression.	8 (10.7%)	8 (10.7%)	7(9.3%)	0.0(0.0%)	X^2=76.05 P= 0.000*
No desire to go out of home.	15 (20%	15(20.0%)	11(14.7%)	0.0(0.0%)	X^2=79.48 P= 0.000*
Embarrassment.	10(13.3%)	10(13.3%)	10(13.3%)	0.0(0.0%)	X^2=72.91 P= 0.000*
Feeling of no self-confidence.	24(32%)	24(32.0%)	25(33.3%)	2 (2.7%)	X^2= 57.63 P= 0.000*
Doubt of self-hygiene.	19(25.3%)	19(25.3%)	15(20%)	0.0(0.0%)	X^2=61.83 P= 0.000*
Sometimes don't pray because of doubt in no cleanness.	25(33.3%)	25(33.3%)	24 (32%)	0.0(0.0%)	X^2=74.22 P= 0.000*
Social complications of Urinary Incontinence:					
Avoid going to general places.	15 (20%)	15 (20%)	9 (12.0%)	0.0(0.0%)	X^2=87.50 P= 0.000*
Avoid going to private occasions (events).	14(18.7%)	14(18.7%)	9 (12.0%)	0.0(0.0%)	X^2=85.26 P= 0.000*
Fear (ashamed) from any person know).	11(14.7%)	10(13.3%)	10(13.3%)	0.0(0.0%)	X^2= 69.643[a] P= 0.000*
Marital problems with the husbands.	6 (8.0%)	6 (8.0%)	5(6.7%)	0.0(0.0%)	X^2=78.97 P= 0.000*

DISCUSSION

UI is a problem that affecting women physically, psychologically, and socially. In addition, it can cause many complications as skin irritation, rashes, and urinary tract infections if not treated well (Abrams, Smith, and Cotterill, 2015). The current study revealed that the mean age of sample was 49.1 ± 8.5, 48.1 ± 8.9 and range of age was 26-64 years. This was in the same line with studies that carried by Kumar Agarwal and Agarwal, 2017& Saboia et al. 2017.The current study revealed that more than half of the sample have middle education women and most of the sample live in rural area. These findings are supported by a study was done by Elbana et al. 2018, they reported that about two thirds of the samples have middle education and low socioeconomic status. This finding is inconsistent with a study done by Khan et al, 2017 & Zohreh and jahromi, 2015, they reported that majority of the study sample having UI were illiterate. In contrast of that a study carried by Mazur-Bialy Agnieszka, 2017, who reported that nearly two thirds of the study sample are highly educated.

Regarding occupation & body mass index, the present study revealed that the highest percentages of UI were among house wives and women who were overweight and obese. This findings are congruent with study done by Shohani et al, 2015, they represented that majority of the sample were housewives. Also, it supported by study done by Mazur-Bialy Agnieszka, 2017 who stated that most of the study sample were housewives and obese. The present study illustrated that nearly two thirds of the sample complaint from chronic diseases. Urinary disease is the most common chronic disease among women who complain from other organic disease. These findings are supported by a study was done by El-mowafy, El-Ezaby, and Elalem, 2015 & Markland et al, 2018, they

reported that more than half of the women had chronic disease but the most common complaint was urinary disease as recurrent urinary tract infection and diabetes.

Regarding to parity; the present study reported that nearly two thirds of the studied women had more than three previous pregnancies and deliveries, and more than three quarters of them had no abortions. Also, it represented that more than half of the study sample (55.3%) had more than three children. These findings are supported by a study was done by Kumar Agarwal and Agarwal, 2017 & Elbana et al, 2018, they reported that more than two thirds of the women with UI had 1-3 numbers of deliveries. Most of the sample had given birth to four children or more and most of the sample had no abortion. Regarding the previous labor, it showed that the highest percentage of the studied women had normal labor. This supported by a study was carried by Aoki et al, 2017, who reported that more than two thirds of the women with UI had normal delivery. This agreement might be due to that high numbers of normal delivery decrease pelvic muscle tone that increase risk for UI than caesarean section.

Regarding complication during previous labour, the current study showed that more than half of the adult women with UI had complications during previous labour as puerperal sepsis, perineal tear and urethral tear. This result is supported by Balci et al. 2012, who reported that three quarter of study sample with UI had complications during delivery.

Concerning the causes of urinary incontinence among the studied women; the current study illustrated that chronic constipation, high parity, and overweight &cystitis were the main causes of UI. In addition to dietary cause (more tea, & coffee, and spicy food). In the same line of this study done by Li et al. 2019, who reported that the causes of UI were a history of prolonged labor or gynecological operation, diabetes mellitus, chronic cough, constipation, and then more tea and coffee. Additionally, Biswas et al, 2017, who demonstrated that main causes of UI among women were a history of gynecological operation, high parity , and chronic cough. The dis agreement may be due to difference of culture of the study sample and changing in eating habits.

In relation to distribution of types of urinary incontinence among the studied women with urinary incontinence; the current study illustrated that near to one half in both groups (46 %) complained from stress UI, and one quarter of both groups (25%) complained from urge UI and over flow UI (19%). This finding is supported by a studies carried by Biswas et al, 2017 & Kirss et al,2013. They showed that higher percentages of the sample had stress incontinence and then urge incontinence. Furthermore, the study which carried by Kumar Agarwal and Agarwal, 2017,they reported that about one third of studied women had mixed type of continence & urge incontinence and only 22% of women complain from stress urinary incontinence. Also, this finding is incongruent with a study was carried by El-mowafy, El-Ezaby, and Elalem, 2015. Who reported that more than half of the sample had mixed incontinence, nearly one quarter of them had urge incontinence and the minority of them had stress incontinence. This disagreement might be due to the differences in sample characteristics.

Regarding pre/ post effect of nursing intervention protocol on diagnosis and Index of Severity of Urinary Incontinence (ISI). The present study showed that there was statistically significant improvement among the study group when compared by the control group at the post test of category of symptoms of UI especially in middle diagnosed UI and also in the category of ISI ($p<0.001$). These findings were supported by the studies done by (Diokno et al. 2018) (Fu, Nelson, and Mcgowan 2019), they reported that after intervention there was a statistically significant difference in UI symptoms among study group than in the control group. Additionally these findings were supported by a study was carried by Pereira et al. 2019, who reported that after a six months of UI intervention the study group experienced significant decrease in the severity of UI than in the control group ($p<0.005$).

Regarding of pre-post effect of nursing intervention protocol on physical, psychological & social complications among the studied women with UI (study and control groups). The current study showed that there was statistically significant improvement among the study group than that of the control group at the post test of all items of physical, psychological and social complications after intervention ($p<0.001$). These findings were supported by study was carried by (Ghodsbin et al, 2012) who reported that after two months of intervention there was statically significant improvement in the physical, psychological and social effect of UI among adult women ($P<0.005$).

Additionally, this finding was supported by

the study which was done by Mazur-Bialy Agnieszka, 2017, who reported that there was a significant increase in mean score of quality of life dimensions especially physical, psychological , social impact in intervention group than in the control group. Furthermore it was supported by study were carried by Ghodsbin et al. 2012 & Stewart, 2018 who reported a significant improvement in the physical, psychological and social outcomes in elderly women with UI after intervention. In addition, the results is supported by a study was done by Pereira et al. 2019, who reported that After six months of UI treatment, the intervention group experienced significant decrease in the physical, psychological and social complications of UI versus control group. These agreements might be due to the importance of nursing intervention protocol in decreasing UI effects among women.

CONCLUSION

In the light of the current study finding, it can be concluded that application of nursing intervention protocol for three months which emphasized on educating the study group about; bladder training/ bladder re-education and prompt voiding, pelvic floor muscles exercises, dietary and fluid intervention, and Self-care were very effective in reducing urinary incontinence among adult women. Additionally, this protocol was effective in relieving symptoms and severity of UI in the study group than the control group. In addition to strong evidence of positive effects on physical, psychological and social sides among the women in study group than in the control group.

Recommendations

Based on the finding of the study, the following recommendations are proposed:

1-Continuous assessment for symptoms, physical, psychological, and social effect in incontinent women should be a part of the nursing care.

2-Media orientation and health education programs should be used to increase the awareness of women about risk factors of UI, prevention and how to manage it.

3-Effective strategy should be used by ministry of health in maternal and child health care centers to identify, facilitate, prevent, and treat adult women who have risk factors of UI.

4-Further researches is required to expand understanding of physical, psychological and social effects of this health condition.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

TEEA suggested the research idea, prepared the tools for data collection, performed the experiments, wrote the methodology also analyzed the data, and designed the tables of results.

AEFA wrote the introduction, entered the data on SPSS program, Shared in writing the results and discussion section and communicated with the journal for publishing.

HFAE Shared in writing the methodology, wrote results, discussion section, references and collected manuscript and final revision of the manuscript.

All authors read the final version of the manuscript, checked the Plagiarism and editing, and approved the final version of the manuscript.

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