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Effect of Nursing Interventions on Reducing Severity of Stress Urinary Incontinence among Adult Women

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Abstract

Background: Stress urinary incontinence (SUI) considers the most prevalent sort of urine incontinence that reduces quality of life. **Aim:** To evaluate the effect of nursing interventions on reducing severity of stress urinary incontinence among adult women. **Research design:** Quazi experimental research design was utilized to conduct this study. **Setting:** This study was carried out in the urology outpatient clinic in the Urology and Nephrology Assuit University Hospital. **Sample:** A sample of 50 adult women, the mean age of studied patients was (42.22±11.84). **Tools of the study:** Two tools were used by the researcher namely: **Tool I:** A structured interview questionnaire sheet it included two parts, **part i:** Demographic data of patient and **part ii:** Medical& urological data assessment. **Tool II:** Sandvik Incontinence Severity Index (ISI), this tool was used to assess the severity of stress urinary incontinence before and after nursing interventions to assess its effect on reducing severity of stress urinary incontinence. **Results:** Following the implementation of nursing interventions, there was a statistically significant decrease in the severity of stress urinary incontinence episodes (p=0.051). **Conclusion:** Provided nursing interventions are effective in reducing severity of SUI in adult women. **Recommendations:** Using various educational methods in a regular basis for appropriate management of stress urinary incontinence among adult women.

Keywords: Adult women, Nursing interventions & Stress urinary incontinence.

Introduction

Stress urinary incontinence (SUI) defined as a leakage of urine during moments of physical activity that increases abdominal pressure, such as coughing, sneezing, exercise, or laughing. Because stress urinary incontinence (SUI) is the most frequent type of urinary incontinence in women, women have a greater risk than males to have it due to differences in anatomy, social and culture factors, as well as pregnancy and labor methods **(Lukacz et al., 2017)**.

Numerous risk factors for SUI have been discovered in the relevant literature these are as the following, Predisposing factors such as gender, menopause, and genetics. Promoting factors such as smoking, obesity, chronic constipation, and infection. Inciting factors such as many births, prior surgeries, and deterioration of connective tissue **(Herzog & Fultz., 2016).**

Stress urinary incontinence consists of 3 grades as follow; grade 0 which means that incontinence without leakage, grade I: incontinence with only severe stress, coughing, sneezing and jogging, grade II: incontinence with moderate stress, fast walk, going up and down the stairs and grade III: incontinence with mild stress like standing **(Nie et al., 2017)**.

SUI may cause physical problems such as discomfort, dampness, stench, peeling of the skin, pressure ulcers, and urinary tract infections; additionally, it could be linked to psychological problems including low self-esteem, and social isolation brought on by guilt and embarrassment **(Joshi et al., 2016)**.

Non-invasive measures commonly used for managing stress urinary incontinence as it associated with limited expense and low risk. Lifestyle modifications including: (controlling chronic constipation, limited caffeinated, carbonated or diet beverages, avoid heavy lifting, weight loss, and stop drinking fluids three to four hours before sleep). Behavioral therapy including: (bladder training, pelvic floor muscle exercises timed voiding measures and prompted voiding,). Psychological support is also important in managing SUI as women with SUI are prone to social isolation and poor self-esteem (**Lukacz et al., 2017**).

Significant of the study:

Stress urinary incontinence SUI has negatively effect on quality of life of women through both physical and psychological consequences. There is an Outpatient Clinic in the Urology and Nephrology Hospital at Assiut University Hospital for urinary incontinence

opened in Monday and Tuesday from each week and the flow rate of patients to this outpatient clinic about 6-7 women for each day. **Through the researcher view** this study will be conducted to provide patients with nursing instructions in an attempt to improve quality of life in women with stress urinary incontinence as possible.

Aim of the study to:

- Assess patient's medical and urological history.
- Assess the severity of stress urinary incontinence among women.
- Evaluate the effect of designed nursing interventions on stress urinary incontinence severity among women.

Hypothesis:

The severity of stress urinary incontinence among studied group patients after application of suggested nursing interventions will be reduced.

Research design:

Quazi experimental research design was utilized to fulfill the aim of the study.

Setting:

The study was conducted in the Urology and Nephrology Assuit University Hospital and its affiliate Clinic, an Outpatient Clinic for urinary incontinence in the first floor of the hospital opened in Monday and Tuesday from each week and the flow rate of patients to this outpatient clinic about 6-7 women for each day. The investigator chose this outpatient clinic as it serves many patients from all the centers and villages of Assiut Governorate and other governorates

Sample:

The following formula was used to choose a convenience sample in accordance with **Isaac and Michael., (1995);** (N=nx30/100), N = sampling size, n=total number of population. N=144x30/100=43 patient. N=192x30/100=57 patient, by taking medium of 57+43=100/2=50 patients. 50 women who were submitted with stress urinary incontinence in the outpatient clinic at the Urology and Nephrology Assuit University Hospital. All Patients were study group and received the deigned nursing interventions.

Inclusion criteria:

- Women patient age ranged from 20 - 65 years old.
- Women diagnosed with stress urinary incontinence.
- Independent in performing their daily activity.

Exclusion criteria:

- Patient with major illness that may affect stress urinary incontinence episodes.
- Women with cognitive or psychological disorder affecting on alertness and communication.

Study duration:

A nine-month period was used to gather the data beginning in September 2022 and ending in May 2023.

Study tools:

Two tools were utilized to collect the necessary data for this study. It included the following:

Tool (I): A structured interview questionnaire sheet: was set up by the researcher following the review of recent relevant literature **(Nie et al., 2017),** (**Elserafy et al., 2019), (Yoshida et al., 2017), (Honorio et al., 2018) & (Mourao et al., 2018**) to gather the information required for patients suffering from stress urinary incontinence. The researcher collected it during the first interview. It was divided into two parts:

Part (1): Demographic data of patient: This data used to assess demographic data of patients and explore if there is a relation between demographic data of women with stress urinary incontinence severity levels. It included 5 items (patient age, marital status, Residence, level of education and occupation).

Part (2): Medical& urological data assessment: This data used to assess medical, urological data and risk factors for patients with stress urinary incontinence. It included 8 items (weight, height, body mass index, present patient complains, medications that may affect urination frequency as antidepressant or anticholinergic drugs, urinary tract infection, kidney or bladder stones, prior pelvic surgery, and risk factors such as obesity, caffeinated fluid intake, fluid intake at night, chronic constipation, number of children, and mode of labor).

Tool (II): Sandvik Incontinence Severity Index (ISI):

This tool adapted from **Sandvik et al., (1993),** this tool was used to assess the severity of stress urinary incontinence before and after nursing interventions to evaluate if it reduces the severity of episodes of stress urinary incontinence. The two questions on this scale are as follows:

How often did patients experience urine leakage?

And how much urine did patients lose each time?

Individuals choose one specific response option from the list of pre-defined options for each (ISI) question when responding to it.

Scoring system of (ISI): The ISI score is determined by multiplying the answers to questions 1 and 2, which yields a score range of 0 to 12. A score of 0 denotes no incontinence, while scores between 1 and 12 are entered into the following four severity levels: 1–2 = slight; 3–6 = moderate; 8–9 = severe; 12 = very severe **Sandvik et al., (1993)**.

Tools validity: A jury of 5 experts from related specialties (3 professors in medical surgical nursing and 2 professors in urology and nephrology medicine) were tested this tool for its content validity.

Reliability of tools: The study tools' internal consistency was evaluated using Alpha Cronbach's,

and the resultant value of 0.87 suggested that the instruments were reliable.

Designed nursing interventions:

Designed nursing interventions was formulated by the investigator based on patients' assessment needs after reviewing current national and international literature **(Patricia., 2017),** (**Elserafy et al., 2019), (Yoshida et al., 2017), (Honorio et al., 2018) & (Mourao et al., 2018**) to reduce the severity of women's stress urinary incontinence. Nursing interventions covered the following: **life style modifications** that includes (limited caffeinated beverages, stop drinking fluids three to four hours before sleeping, avoid heavy lifting, weight loss, controlling chronic constipation etc...), **behavioral therapies** as (bladder training, pelvic floor muscle exercise), **biofeedback**, **medications** and **psychological support** .

Methods

Administrative design:

An official permission and approval were obtained from the head of the urology department to gather the required data. Each patient was informed with the purpose of the study to secure their cooperation. The researcher emphasized that there were no risks, confidentiality was guaranteed, and participation was entirely voluntary. Every patient gave her verbal agreement to participate in the current study.

Pilot study:

A pilot study on (10%) 5 adult women was conducted in August 2022. Its purpose was to examine the feasibility of the study and clarity of the data collection tools. It also helped to estimate the time needed for filling the questionnaire. Analysis was done on the pilot study's data. The actual study sample included pilot study sample because no modifications taken.

Procedure: Data gathered throughout three sessions. Every session lasted about 50 minutes. Explanations of subjects based on the patients' educational background.

The first session:

It was conducted at outpatient clinic or in waiting area of the outpatient clinic in the Urology and Nephrology Assuit University Hospital that opened in Tuesday from each week at the morning and afternoon from 9:00 am to 1:00 pm. The researcher conducted individual interviews with each patient. In the first session, the researcher introduced herself to the patients, clarified the nature and the purpose of this study. The researcher collected demographic, medical and urological data of patient using part 1, 2 of (**tool I)**. Patients were evaluated by using the study (**tool II**) to assess the severity of stress incontinence episodes of patients.

Literally the researcher made a demonstration about designed nursing interventions that includes: life style modification (limited caffeinated beverages, stop drinking fluids three to four hours before go to bed, avoid heavy lifting, weight loss, controlling chronic constipation etc...), behavioral therapies such as (pelvic floor muscle exercise, bladder training and biofeedback), medications such as (Duloxetine, Imipramine that strengthen urinary sphincter contractions) and psychological support that can improve self-esteem, and enhance patient satisfaction with the treatment.

After demonstrating the designed nursing interventions, the researcher gave patients (a booklet) prepared in Arabic language covered all items regarding designed nursing interventions and photos. This session took about 50 minutes. As the meeting comes to a conclusion, the researcher arranged with patients time of the second session and place if in the outpatient clinic or in phone and a summary was given to patients by the researcher and emphasizing the most important points.

The second session:

It was conducted in the outpatient clinic if possible or done by phone if the patient couldn't come to the clinic by arrangement with them in the first session, this session was after 6 weeks from the first session and took about 50 minutes.

Before starting this session, patients were evaluated about the designed nursing interventions discussed in the previous session. Patients were evaluated by using the study (**tool II**) to evaluate the effect of provided nursing interventions on severity of stress incontinence episodes of patients from in the first session.

According to the third session; it also was done in the outpatient clinic if possible or done by phone if the patient couldn't come to the clinic and took about 50 minutes. Patients were also evaluated after 3 months by using the study **(tool II**) to check about effect of provided interventions on severity of stress incontinence episodes of patients from the second session. The implementation of nursing interventions took 9 months from the beginning of October 2022 to the end of June 2023.

Methods of teaching used in sessions: Lectures, discussion, demonstration.

Ethical considerations:

- Ethical Committee in the Faculty of Nursing approved the research proposal with approved ethical number (332).
- The study considered common ethical principles found in the clinical research.
- During application of the research there was no risk for study group of patients.
- Confidentiality and anonymity was assured.

- After describing the nature and goal of the study, patients or guidance who is interested to participate gave their oral consent.
- The study subject was free to decline participation or to leave the study at any time, for any reason.

Statistical analysis:

Data analyses were done by using the statistical package for social science (SPSS) version 20. The means and standard deviations were used to express numerical data. Frequency and percentage were used to display quantitative facts. Quantitative data; the t-test was used to compare two variables, and the ANOVA test paired t-test was used to compare more than two variables. Pearson correlation was used to measure the relationships between various numerical variables. A P value of less than 0.05 was deemed significant in terms of probability.

Results:

Table (1): Frequency and percentage distribution of studied women according to their demographic characteristics (n=50).

Characteristic	(n= 50)	%
Age:		
20<40years	18	36
40<65years	32	64
Mean ± SD	42.22±11.84	
Marital status:		
Single	12	24
Married	38	76
Residence		
Urban	23	46
Rural	27	54
Educational level:		
Non educated	23	46
Educated	27	54
Occupation		
Working	18	36
House wife	32	64

Table (2): Frequency and percentage distribution of studied women according to risk factors of stress urinary incontinence (n=50).

Characteristic	(n= 50)	%
Obesity		
Yes	39	78
No	11	22
Caffeine fluid intake		
More caffeine intake	30	60
Less caffeine intake	20	40
Fluid intake at night		
More fluid intake	33	66
Less fluid intake	17	34
Chronic constipation		
Yes	29	58
No	21	42
Number of children		
No children	13	26
Two children	7	14
Three children	20	40
Four children	7	14
Five children	3	6
Mode of labor		
Normal labor	26	52
Cesarean section	12	24
No labor	12	24

Table (3): Frequency and percentage distribution of studied women according to their medical and urological data (n=50).

Characteristic	(n= 50)	%
Body mass index		
• < 18.5 under weight	1	2
• 18.5-24.9 normal weight	10	20
• 25-29.9 over weight	14	28
• 30 -34.9 obesity class I	16	32
• 35 - 39.9 obesity class II	8	16
• > 40 Extreme obesity	1	2
Present patient complains		
• Leaking urine when coughing, sneezing, laughing	25	50
• Lower abdominal pain	7	14
• Frequent nocturnal leakage	6	12
• Post void residual volume	7	14
• Usually worse standing than supine	5	10
Medications that may affect urination frequency as antidepressant or anticholinergic drugs:		
Yes	15	30
No	35	70
Urinary tract infection		
Yes	16	32
No	34	68
Kidney or bladder stones		
Yes	4	8
No	46	92
Proir pelvic surgery		
Yes	5	10
No	45	90

Table (4): Comparison between studied women before and after the implementation of nursing interventions regarding stress urinary incontinence severity levels (Sandvik Incontinence Severity Index) (n=50).

Variables	Urinary Incontinence Severity levels								P. value
	Slight		Moderate		Severe		More severe		
	n.	%	n.	%	n.	%	n.	%	
First visit	0	0	19	38	10	20	21	42	0.051*
After 6 weeks	0	0	24	48	6	12	20	40	
After 3 months	0	0	33	66	7	14	10	20	

** p≤0.05 (significant)*

Table (5): Relation between demographic data and Sandvik incontinence severity index after implementation of nursing instructions (n=50)

Demographic data	Sandvik incontinence severity scale								P.value
	Slight		Moderate		Severe		More severe		
	n.	%	n.	%	n.	%	n.	%	
Age									
20<40 years	0	0	9	18	6	12	3	6	0.040*
40<65 years	0	0	18	36	8	16	6	12	
Marital status									
Single	0	0	8	16	0	0	4	8	0.032*
Married	0	0	11	22	10	20	17	34	
Residence									
Urban	0	0	23	46	0	0	0	0	0.001*
Rural	0	0	13	26	10	20	4	8	
Educational level									
Non educated	0	0	10	20	6	12	7	14	0.289 ns
Educated	0	0	9	1	4	8	14	28	
Occupation									
Work	0	0	4	8	1	2	13	26	0.004*
House wife	0	0	15	30	9	18	8	16	

** p≤0.05 (significant)*

Table (1): Reflects demographic patient information regarding stress urinary incontinence; it clears that 64% of women aged 40-65 years. Concerning marital status; 76% of them were married, also the table revealed that 54% from rural areas and were educated. Moreover; 64% of patients were housewives.

Table (2): Clears risk factors of stress urinary incontinence of studied sample; it shows that among the study group, the most significant risk factors for stress urinary incontinence are (obesity, fluid intake at night, caffeine intake, chronic constipation, vaginal delivery, children more than three) with percentages of (78%, 66%, 60%, 58%, 52% & 40%) respectively.

Table (3): Clears medical and urological data of studied sample; it clears that approximately more than two thirds (70 %) of the studied patients were suffering from stress urinary incontinence and (28%, 32%, 16%, 2%) were overweight, obesity class I, obesity class II, and extreme obesity respectively. Regarding to present patient complains first reported, it was observed that (50%) of them experienced leaking urine when coughing, sneezing, and laughing. Also the table displays that only (30%, 32%, 8% and 10%) took medications as antidepressants, exposed to urinary tract infection, kidney or bladder stones and prior pelvic surgery respectively.

Table (4): Reflects that; before providing the studied patients with selected nursing interventions in the first visit, the urinary incontinence severity levels were (38%, 20%, and 42%) for moderate, severe, more severe levels of stress urinary incontinence respectively. Then after 6 weeks from providing the selected nursing interventions, the urinary incontinence severity levels were (48%, 12%, and 40%) for moderate, severe, more severe levels of stress urinary incontinence respectively and finally after 3 months from providing the selected nursing

interventions, the urinary incontinence severity levels were (66%, 14%, and 20%) for moderate, severe, more severe levels of stress urinary incontinence respectively. This illustrates that the stress urinary incontinence levels were reduced after implementation of nursing interventions with statistically significant differences (p=0.051).

Table (5): Clears that, there were a statistically significant differences among (age, marital status, residence and occupation) and the incontinence severity index (ISI) after implementing nursing interventions, whereby patients between the ages of 20 and 40 years old have a decrease in the severity of stress urine incontinence., single women, those living in urban areas and among worked women with p value (0.004, 0.032, 0.001, and 0.004) respectively. Concerning to relationship between urinary incontinence severity index and patient education level it was presented that there was no statistical significant statistical significant difference between the two variables P =0.289.

Discussion:

Stress urinary incontinence (SUI) is regarded as a highly prevalent and upsetting health issue that affects people of all ages. It also has a significant detrimental influence on each aspect of quality of life and primarily affects women due to the impacts of menopause, pregnancy, and delivery **National Association for Continence, (2017)**.

As regarding to the demographic characteristics of the studied sample:

Regarding the age in this study, it was discovered that almost two thirds of the studied sample their age ranged from 40 to 65 years. This followed in the same with **Agarwal & Agarwal., (2017)** who reported that in their study about half cases of stress urinary incontinence were in the age group of beyond 50 years. However, this finding disagreed with **Elserafya et al., (2019)** they stated that the majority of the studied sample age ranged between 60 to 75 years old.

The present study showed, about two thirds of the studied sample was married, this may be related to previous number of pregnancies and labor .These results were matching with **Elserafya et al., (2019)** who stated that the majority of their studied women were married.

In relation to the residence, the present study findings reported that more than half of the studied sample was from rural areas. This result concurred with **Kramer et al., (2020)** they stated that highest percentage of their studied women were from a rural area. While this finding was mismatching with **Engberg., (2018)** who reported that the majority of the studied group were from urban area.

Regarding educational level; the current study clears that more than half of studied sample were educated and has various levels of education. This agreed with **Ibrahim et al., (2020)** who discover that, educated women (read and write) made additional trips to outpatient clinics than do the non-educated women. These results were mismatching with **Lapitan et al., (2017**) who stated that the majority of women in studies lacked literacy. From the researcher point of view; educated women with (SUI) pressed for a cure and maintain their lives more than the uneducated women do.

Concerning to occupation of the studied women, housewives made up almost two thirds of the female population. **Shaker et al., (2019)** is congruent with such result, who mentioned that around two thirds of their studied patients were housewives. **Kim & Kwak**, **(2017)** were mismatching with the results of the present study they stated that SUI was more common in working women than in unemployed women, and that this might be caused by a variety of occupational settings, including an unhygienic and uncomfortable workplace and feeling under pressure at work.

As regarding to the risk factors of stress urinary incontinence among studied sample:

According to the current study, among the women under study, the most frequent risk factors for stress urinary incontinence are (Fluid intake at night, caffeine intake, choric constipation, obesity, vaginal delivery, children more than three). This agree with **El Badawy et al., (2013)** who reported that women who drink caffeinated beverages experienced more episodes of (SUI).

According to risk factors of stress urinary incontinence among the current study revealed that over half of the group under study experienced persistent constipation. This agreed with **Shaker et al., (2019)** who demonstrated that more than half of the studied sample suffering from chronic constipation.

As regards to mode of labor (delivery) this study clears that (SUI) was more prevalent among women who were delivered vaginally than those delivered by cesarean section. This also consistent with **Joshi et al., (2016)** who mentioned that SUI increased among American women after vaginal delivery.

As regarding to the medical and urological data of the studied sample:

As regard to the body mass index (BMI) of women in the current study, it was found that about one third of the studied women fall in category of overweight their body mass index was between (25-30 kg/m^2) and about another one third fall in category of obesity class I where their body mass index was between (30-35 kg/m^2). **Mohamed et al., (2021)** were consistent

with the results of the current study they reported that the prevalence of stress urinary incontinence increased with obesity and the BMI value. **Agarwal & Agarwal., (2017)** were inconsistent with the results of the present study they reported that more than two thirds of the studied women fall in category of normal weight their body mass index was between (18-25 kg/m).

As regard to present patient complain of stress urinary incontinence reported by studied women, it was found that around one half of the studied women suffered from leaking urine when coughing, sneezing and laughing this finding matching with **Mohamed et al., (2018)** who stated that the most severe incident of incontinence was occurred with coughing, laughing or sneezing.

In relation to medications that may affect frequency of urine among the studied women, the current study revealed only one fifth of the studied women were took these medications. **Shaker et al., (2019)** were mismatching with the current study they mentioned that more than two thirds of their studied sample took these medications.

The outcomes as of right now show that, about less than one third of the studied sample suffered from urinary tract infection and prior pelvic surgery. This matching with **Ibrahim et al., (2020)** who reported that about one fourth of their studied sample suffered from urinary tract infection**. Agarwal & Agarwal., (2017)** were mismatching with the results of the current study they reported that about two thirds of the studied sample suffered from urinary tract infection and prior pelvic surgery.

As regarding to urinary incontinence severity levels of the studied patients:

The current results reflected that the severity of stress urinary incontinence episodes were declined with a statistical significant difference before and after implementation of selected nursing interventions. These results were supported by **Marques et al., (2018**) said that performing Kegel exercises on a regular basis for four to six weeks strengthened the pelvic floor muscle and improved UI. Performing Kegel exercises on a regular basis for four to six weeks strengthened the pelvic floor muscle and improved UI. Also **Mohammed et al., (2021)** stated that the severity of stress urinary incontinence episodes decreased with a highly statistically significant difference at the pre- and post-tests, and there was a significant increase in the mean average score of the revised urinary incontinence scale following the implementation of chosen behavioral therapy compared to before.

Regarding the relationship between the studied sample's stress urinary incontinence severity levels and personal data:

The results of this study showed that people in the age range of 20 to 40 years old see a drop in the intensity of stress incontinence episodes. Single women, those living in urban areas and among worked women. These results were matching with **Agarwal & Agarwal, (2017**) who stated that occurrences of urinary incontinence were significantly correlated with advancing age. On other hand this result was incongruent with **Mohammed et al., (2021)** who reported that people with higher levels of education and age range (60:64) had less severe episodes of stress urinary incontinence.

Conclusion:

Designed nursing Interventions as life style modification, behavioral therapies (pelvic floor muscle exercise, bladder training, and biofeedback), and psychological support are significantly reduce severity of stress urinary incontinence in adult women.

Recommendation:

Based on the findings of the present study the following recommendations are suggested:

1. A continuous education should be introduced for women in various health care settings, to reduce severity of stress urinary incontinence.
2. Patients who are illiterate should have access to basic illustration pamphlets that explain stress urinary incontinence symptoms in an understandable manner.

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