

Effect of Evidence-Based Nursing Care on Quality of Sexual Life among Women with Stress Urinary Incontinence

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Abstract

Background: Intimate relationships depend heavily on sexual activity, which is an essential component of overall health. Evidence-based nursing care has emerged as a valuable approach to improve the health of patients and enhancing the standard of management. **Purpose:** To investigate the effect of evidence-based nursing care on the quality of sexual life among women with stress urinary incontinence. **Research design:** A pair of groups (which consist of a study group alongside the control group) participated in a quasi-experimental research design. **Setting:** Menoufia University Hospital and Shebin El-Kom Teaching Hospital's obstetrics and gynecological outpatient clinics served as the study's settings. **Sample:** A purposive sample of 88 women was selected. **Instruments:** The Incontinence Severity Index, Female Sexual Function Index, and Sexual Quality of Life-Female were used, along with a structured interview questionnaire. **Results:** The study's findings demonstrated that, prior to the intervention, there was no statistically significant change in the female sexual function index between the study and control groups. However, there was a statistically significant difference in the study and control groups' scores of the female sexual function index after three and six months of the intervention. Furthermore, after three and six months of the intervention, there was a statistically significant difference in the quality of sexual life scores between the study group and the control groups, compared to before the intervention. **Conclusion:** According to the study's findings, women with stress urinary incontinence could have better sexual experiences when they received evidence-based nursing care. **Recommendations:** Provide comprehensive education about stress urinary incontinence, its impact on sexual life, and available treatment options.

Key Words: Evidence-based nursing care; quality of sexual life and stress urinary incontinence

Introduction

According to Arshiya et al. (2018), stress urinary incontinence, or SUI, is a prevalent and distressing illness that affects a significant number of women worldwide. It is characterized by the involuntary leakage of urine during activities that put strain on the urinary tract, like laughing, sneezing, coughing, and exercising. This may significantly affect a woman's sexual health and overall quality of life.

According to McClurg et al. (2018), females suffering from urinary incontinence have various options of treatment, ranging from

conservative treatment to surgical treatment. Meanwhile, they described conservative treatment as comprising cognitive counselling, electrically powered, mechanically operated vaginal cones, strengthening of the bladder and pelvic floor, and behavior modifications. While surgical treatment consists of mid-urethral slinging in a retro-pubic or trans-obturator manner. In contrast, Schanz et al. (2018) demonstrate that this treatment approach demonstrates a successful result. In spite of this, there are major complications such as bleeding, infection, perforation of the bladder, urethral injury, and groin pain.

Moreover, Osman et al. (2019) noted that sexual activity is an essential element of

overall health and plays a vital role in maintaining intimate relationships. However, women with SUI often experience challenges in their sexual lives due to concerns about leakage during sexual activity, decreased sexual desire, and feelings of embarrassment and self-consciousness. In recent years, evidence-based nursing care has emerged as a valuable approach to improving patient outcomes and enhancing the sexual quality of care. Furthermore, **McClurg et al. (2018)** clarified that it involves integrating the most up-to-date evidence from studies with the knowledge of medical experts and the preferences of individual patients. Although evidence-based nursing care has been widely studied and implemented in various healthcare settings, further investigation is still needed to determine how it affects the quality of sexual health for patients who have substantiated sexual unions (SUI).

In addition, **Ackah et al. (2022)** added that understanding the potential effects of evidence-based nursing care on the sexual lives of women with SUI is crucial for healthcare professionals, as it can guide the development of interventions and strategies tailored to address their specific needs. Also, they stated that by identifying effective nursing interventions and approaches, healthcare providers can improve the overall well-being and satisfaction of women with SUI and enhance their sexual experiences.

Furthermore, **Tso & Lee (2018)** demonstrated how nurses should employ therapeutic communication with patients who have urine incontinence in order to make them feel at ease discussing their anxieties, concerns, and shame about the condition and work towards enhancing their quality of life. Additionally, **Hunter & Wagg (2018)** noted that nurses have a significant role to play in teaching patients about bladder control training as a means of treating incontinence. In addition, nurses may be able to offer patients evidence-based guidelines, recommendations, specialized advanced education, and a knowledge base to help patients with urinary incontinence learn how to cope with their condition.

Thus, the purpose of this study is to investigate the hypothesis that women with stress urinary incontinence will have better sexual lives if evidence-based nursing care is implemented. Through an analysis of the possible advantages of evidence-based nursing interventions, we can acquire a better understanding of the approaches that could result in enhanced sexual function and satisfaction within this demographic. The results of this study have the potential to improve clinical practice and aid in the creation of all-encompassing care plans that attend to the holistic needs of women with SUI, hence improving their quality of life in general (**Schanz et al., 2018**).

Significance of the study:

According to **Ackah et al. (2022)**, 2.52 billion people worldwide suffered from urine incontinence in 2020. Also, **Gedefaw & Demis (2020)** illustrated that SUI varied across Africa, from 0.6% to 42.1%, while in Egypt, 14.8% of women suffer from stress urinary incontinence. In spite of this, **Mota (2017)** mentioned that affected women do not seek medical care because of stigma, embarrassment, and shame related to their clinical condition, which has repercussions on their self-esteem and disturbs their personal, social, and sexual lives.

Moreover, **Madhuvu et al. (2017)** argued that up to 68% of women with SUI suffer from sexual dysfunction as a consequence of SUI, which reflects on their sexual quality of life. In addition, **Ko et al. (2016)** added that sexual activity among women with SUI tends to be avoided for reasons such as wetness at night, coital incontinence, embarrassment, and depression. Also, **Åström et al. (2021)** said that only one in four women consults a healthcare professional for treatment. Because of this, urinary incontinence is highly underdiagnosed and undertreated. Therefore, implementing evidence-based nursing care can be helpful to ensure the provision of quality and safe care that reflects a decrease in several sexual problems associated with SUI.

Purpose of the study: To investigate the effect of evidence-based nursing care on the

quality of sexual life among women with stress urinary incontinence.

Research hypothesis:

Women with stress urinary incontinence who receive evidence-based nursing care exhibit a better quality of sexual life than those who do not.

Method

Research design:

In order to accomplish the stated goal, this study used a quasi-experimental research design with two groups (the study and the control). Having two groups makes it easier to compare the pre-, post- and follow-up intervention impacts and results due to the nature of the study topic (Patel, 2021).

Settings:

All of the cases for the study were chosen from the obstetrics and gynecological outpatient clinics at Shebin El-Kom Teaching Hospital and Menoufia University Hospital. The high percentage of female attendance in the adjacent rural and urban areas led to the selection of these hospitals. In addition to family planning services, these hospitals treat women throughout pregnancy and labor, as well as for infertility and gynecological issues. They also provide free and paid services to the general public.

Sampling:

Sample type: Women visiting obstetrics and gynecological outpatient clinics for managing SUI were used as a purposive sample to choose study participants.

Sample size: 88 women (44 from Menoufia University Hospital and 44 from Shebin El-Kom Teaching Hospital) were chosen based on the suggested inclusion criteria.

Sample size calculation:

Reviewing the previous studies, Gouda (2022) examined the same outcomes and found significant differences in women's scores of qualities of sexual wellbeing with a power test of 90%. The average sample size was 44 women per group. The sample size per group was calculated at a 95% level of confidence,

90% power, and a significant level of 5% to detect a significant difference. Based on computation, each group had 44 cases in the sample size, for a total of 88 cases. Using sequentially numbered sealed opaque envelopes, the study participants were randomized to either the study or control groups. This method assisted in preventing bias and sample contamination.

The inclusion criteria: Married women aged less than 40 years who were medically diagnosed with SUI and sexually active, free from other medical problems that affected urinary and sexual function and have no contraindication to use mobile phone application (zoom).

Instruments:

The following four instruments were used to get the necessary data:

Instrument I: To gather information about the demographics of the participating women and their past obstetric experience, the researchers created a structured interview questionnaire based on a survey of relevant literature (Gouda et al., 2021). The following components made up the instrument: Part 1: Data on demographics age, education level, residential location, and occupation were all included.

Part II: Past history of obstetrics; it covered gravity, parity, delivery mechanisms, and delivery-related issues.

Instrument II. Incontinence severity index (ISI): It was adopted from Nyström et al. (2018) to evaluate the level of SUI. There were two questions that ask about the quantity and frequency of urinary leaks. The initial query was, "How frequently does urine leakage occur? The following categories were applied to the responses: Invariably (0), less frequently than once a month (1), once to several times a month (2), once to several times a week (3), every day and/or night (4) The second inquiry was about how much urine is lost every time. This question had the following scores: a few drips (1), a little (2), and more (3). The entire sum

was multiplied by the two to determine the index value.

Incontinence Severity index = (points for frequency) x (points for amount) The result of multiplications then was categorized as the following: Zero No incontinence, 1-2 Slight Severity Levels, 3-6 Moderate Severity Levels, 8-9 Severe Severity Levels and 12 More severe Severity Levels.

Instrument III. Female sexual function index (FSFI): It was adopted from Owiredu and colleagues (2018). There were nineteen elements on the Female Sexual Function Index (FSFI). This self-report questionnaire was used to evaluate female sexual function. It comprised six domains: desire [two items], arousal [four items], lubrication [four items], orgasm [three items], satisfaction [three items], and pain [three items].

Scoring System:

The FSFI consists of a total of 19 questions in 6 domains: 2 questions related to sexual desire, 4 to sexual arousal, another 4 to vaginal lubrication, 3 to orgasm, 3 to satisfaction, and 3 to pain during intercourse. The domain-specific score is multiplied by the weighted value for each factor, and the scores for all 6 domains are added together to calculate the total sexual function score. The range of measured scores showed a distribution from a minimum of 2 to a maximum of 36. Higher scores signify that the perceived sexual function of the subject is higher.

Instrument IV. The Sexual Quality of Life-Female (SQOL-F): It was adopted from Symonds et al. (2018) to evaluate relationship between female sexual dysfunction and quality of life. A particular self-reporting tool that focuses on interpersonal, emotional, and sexual self-esteem is the SQOL-F questionnaire. It consists of 18 items, rated using a six-point scale (completely agree to completely disagree). Each item on the scale is scored between 1 and 6 (1 = I completely agree, 2 = I mostly agree, 3 = I partially agree, 4 = I partially do not agree, 5 = I mostly disagree, 6 = I completely disagree).

Scoring System

The overall result might have a range of 18 to 108 points. A better female sexual quality of life was indicated by higher ratings. A total score of more than 75% indicated good SQOL; a total score between 60 and 75% was regarded as average SQOL; and a total score of less than 60% indicated poor SQOL.

Validity and Reliability: Three qualified experts (one from the obstetrics and gynaecology department and two from the maternity and newborn health nursing department) determined the validity of the instruments. They evaluated the instruments based on their internal validity and substance. They were also asked to rate the items' clarity and completeness. Changes were made, and suggestions were made. Reliability was estimated using test-retest reliability. Cronbach's alpha was used to confirm reliability, and the results showed that every coefficient was acceptable and desirable. With Cronbach's alpha coefficient ratings of 0.82 for the incontinence severity index instrument, 0.86 for the female sexual function index instrument, and 0.90 for the sexual quality of life-female instrument, all of the instruments were found to be internally trustworthy.

Administrative Approvals: The request was granted on May 20, 2022, by the Menoufia University Faculty of Nursing's Committee of Research and Ethics. The directors of Menoufia University Hospital and Shebin El-Kom Teaching Hospital received official letters from the dean of the Nursing Faculty at Menoufia University, which were then forwarded to help with the study. The directors of the aforementioned locations officially granted permission to conduct the study.

Ethical Considerations:

Before recruiting the women for the study, the researchers gave them an introduction and described the nature of the work in an effort to win their cooperation and acceptance of participation. Additionally, strategies to guarantee ethical concerns about informed permission and confidentiality were taken into account in the study. Locked sheets with

participant names substituted with numbers were used to maintain participant confidentiality. Every participant received information guaranteeing that the information they submitted for the study would remain private and be used exclusively for statistical analysis. The results of the study would be presented as group data once it was concluded, with no personal participant information left. Oral informed consent was obtained from all the women after explanation prior to their involvement in the trial. Every lady was made aware that her participation in the study was entirely voluntary and that she might end it at any time. Every lady had the option to voluntarily decline taking part. Every lady was also free to ask any questions she had about the specifics of the study.

Pilot study: A preliminary investigation was carried out to evaluate the instruments' practicality, suitability, and comprehensibility. In accordance with the selection criteria, it was performed on 8 participating women, or 10% of the entire sample. As a result, the study sample did not include the participating women who were chosen for the pilot study.

Procedure: The study was carried out in accordance with the previously stated eligibility requirements and was divided into the following stages: a preparatory phase, an interviewing phase, an implementation phase, an evaluation phase, and a follow-up phase. These stages were implemented at Menoufia University Hospital and Shebin El-Kom Teaching Hospital during a six-month period, starting from January 2022 and ending at June 2022. Data were collected two days per week from the obstetrics and gynecology outpatient clinics (Monday and Wednesday) from 9.30 a.m. to 12 p.m. (5 to 10 women per day), according to the availability of the women who met the inclusion criteria. This protocol of data collection was followed until the needed sample size was reached.

The preparatory phase:

A thorough assessment of accessible books, journals, and an electronic dissertation was done in order to create a knowledge base pertinent to the subject field. Every instrument underwent testing for reliability and validity, as well as preparation. After conducting a pilot study, the appropriate adjustments were made.

The evidence-based nursing care was prepared and formulated to be presented in two forms: a) an evidence-based nursing intervention booklet, and b) an evidence-based nursing care educational session. The booklet was in simple Arabic with colored diagrams and photos to clarify the written information, then revised and modified according to the experts' comments. Many PowerPoint presentations and multimedia materials covering evidence-based nursing care were prepared to be used through the sessions.

In order to determine which study represents a strong and powerful evidence-based intervention, a thorough examination and analysis of all relevant studies was conducted in order to prepare evidence-based nursing care. The subsequent actions were performed: Finding studies, using a continuum to evaluate the research evidence that is currently available, establishing standards to determine the quality of the studies to be included in the planned interventions based on the level of evidence that has been chosen (**), conducting a systematic review of the literature, identifying gaps in the knowledge that has been reviewed, identifying the limitations of the reviewed literature, and ultimately choosing the evidence-based interventions (***) are all steps in the process. The accompanying continuum was used to illustrate several levels of evidence before selecting the strongest level, due to the substantial number of papers addressing the current study concerns.

Table 1: A Framework for Evaluating Research Based on Evidence (McEvvoy & Anderson, 2009)

NOT Evidence-Based Models		Evidence-Based Models		
Anecdotal, popular or recognized by the public, featured in newspapers, articles, etc.	Single pre-/post-evaluation	Controlled study in peer-reviewed journals	Expert consensus in peer-reviewed journals	Multiple replicated studies in peer-reviewed journals
level one	level two	level three	level four	level five

(**) establishing standards to determine the quality of studies to be included in the planned interventions based on the level of evidence that has been chosen

The criteria for detecting the quality of intervention recommendations according to selected evidence levels are illustrated in the following table.

Table 2: Quality of Intervention Recommendations Detection Criteria (Woolf et al., 2004)

Level of evidence	Classification of recommendations
I: Evidence from one or more appropriately planned randomized controlled trials.	A. The suggestion for a diagnostic test, therapy, or intervention is well supported by the available data.
II-1: Evidence from carefully planned, non-randomized controlled studies.	B. The suggestion that a diagnostic test, therapy, or intervention be used is supported by a fair amount of evidence.
II-2: Evidence from carefully planned case-control or cohort (retrospective or prospective) studies, ideally originating from multiple research groups or centers.	C. The advice to use a diagnostic test, therapy, or intervention is not well supported by the available data.
II-3: Evidence derived from contrasting locations or times with and without the intervention. striking outcomes from unsupervised research.	D. The advice for a diagnostic test, course of treatment, or intervention is not supported by sufficient evidence.
III: Views of reputable experts, supported by reports from expert panels, descriptive investigations, and clinical experience.	E. The advice for the use of a diagnostic test, therapy, or intervention is not supported by strong evidence.

(***) choosing the evidence-based interventions

The recommended evidence-based nursing care, according to the reviewed articles, was as follows:

(1) Lifestyle modification interventions include regular aerobic exercises, promoting weight loss, counselling about reducing caffeine intake, dietary modifications, increasing protein intake, counseling about sleep hygiene, and effective perineal care to prevent infection. (Level II-1)

(2) Pelvic floor muscle training: both types of Kegel exercises were instructed. Kegel

exercise type A and Kegel exercise type B (Level II-2)

(3) Adjunctive therapies (mindfulness meditation technique), which are a form of brain training, teach patients that they could use their brains to regain control over their attention, their minds, and ultimately their bladders. (Level II-3).

(4) Regular voiding schedules are a significant and successful management strategy. It has been categorized as bladder training,

timed voiding, habit training, and prompted voiding. (III Level)

Interviewing phase: Selecting eligible women and evaluating their level of knowledge about SUI were the main goals of this phase. The researchers gave a brief introduction and outline of their study at the first visit. Participating women who met the inclusion criteria were asked for their informed consent before being interviewed to gather information about their sociodemographic, past obstetric history, and educational needs (using instrument I). Instruments II, III, and IV were used to conduct an initial assessment. For each participant, the interview took about fifteen to twenty minutes to complete. After obtaining contact details, a timetable for the upcoming training sessions was established.

Planning phase: The intervention scheme was planned as follows: For the study group: A WhatsApp group was organized to facilitate contact with women, send messages to ensure adherence to exercises and send recorded sound for the mindfulness sessions and its redemonstration. A schedule for conducting the educational sessions was set, and the sessions were conducted online through the Zoom application. Women were instructed to download the Zoom application to attend the sessions. Four sessions were scheduled, each lasted about 30-45 minutes. The researcher met the study group participants again during their follow-up visits to the obstetrics and gynecological outpatient clinics for handing out the evidence-based nursing care educational booklet and then for evaluation after 3 and 6 months.

For the control group; women were assessed for their sociodemographic data, severity of stress urinary incontinence, female sexual function, and quality of life at the visit using instruments I, II, III, and IV. Their contact information was recorded. A WhatsApp group was organized to follow up with these women during their visits to the obstetrics and gynecological outpatient clinics. Women did not receive any care except the medical care and follow-up regimen prescribed by the gynecologist at the outpatient clinics.

The implementation phase:

It got underway right after the planning phase. The researchers gave the study group guidelines outlining evidence-based nursing care. Over the course of two weeks, four 30- to 45-minute; evidence-based nursing care sessions were used to carry out the intervention. A subgroup of five to ten women was included in the sessions in order to demonstrate and then re-apply the mindfulness approach and exercises.

The first teaching session was devoted to provide a general overview and information about stress urinary incontinence and lifestyle modification interventions, including regular aerobic exercises, their types and benefits. Promoting weight loss for overweight or obese women, available healthy regimens, and calculating BMI. Counselling about reducing caffeine intake and replacing it with other healthy choices. Dietary modifications in the form of reducing salt intake, normal sources of salt in food and how to replace them. Increasing protein intake to strengthen muscle tone, protein sources and plant substitutes. Counseling about sleep hygiene, like stopping fluid intake 2 hours before bedtime, especially caffeinated beverages, and taking a glass of warm milk. Effective perineal care to prevent infection including using cotton underwear and daily sanitary perineal pads to absorb wetness from urine leakage.

The second session was for training women on pelvic floor muscle exercises; both types of Kegel exercises were instructed. Type A Kegel exercise: Tighten the pelvic floor muscles to a count of five, then release them to the same count. Do this thirty times a day (3 sets of ten or 2 sets of fifteen). As the pelvic floor strength increases, squeeze for ten counts, then release the contraction for ten counts. Excessive exertion too soon might lead to muscle exhaustion and reduced performance. Type B Kegel exercise: quickly alternate between tightening and relaxing the pelvic floor muscles. 20–50 repetitions per day, divided into 2–5 sets of 10.

The third session focused on adjunctive therapies in the form of mindfulness meditation technique. The session worked like this: women were asked to sit with their eyes closed for 15 minutes, breathing deeply, and the researchers guided them through a series of relaxation and visualization techniques, focus attention on breathing, observe the inhalation and exhalation without trying to control or manipulate it and prompting women to picture the physical connection between their bladder and brain. After this session, the researchers sent a recording of their voices so women could practice alone. They kept it up twice a day, every day, for at least eight weeks. The mindfulness meditation technique may help to calm the mind so the emotional area of the brain is not activated, thus allowing the person to learn to reframe the normal urge sensations from their bladder. This helped reduce the frequency and urgency of urinary incontinence and improve incontinence-related sexual quality of life.

The fourth session centered on scheduled voiding regimens, including bladder training, timed voiding, habit training, and prompted voiding. Bladder retraining consists of a program of patient education along with a scheduled voiding regimen with gradually adjusted voiding intervals. Timed voiding: It is a fixed voiding schedule. Habit training consists of a toileting schedule matched to the individual's voiding patterns based on their voiding diary. Prompted voiding is used to teach people to initiate their own toileting through requests for help and positive reinforcement from carers.

4. Phase of evaluation and follow-up:

In this phase, both groups were evaluated during follow-up visits to the aforementioned clinics, which took place three and six months after the initial appointment. Both groups were then assessed using the study instruments (II, III, and IV). Results were compared. Women were thanked for their participation and informed that the social media group of contact would be available to call for help at any time.

Results:

Part (I): Study participant descriptions (Tables 1, 2, and 3)

The demographic details of the research participants are displayed in Table 3. It indicates that 43.2% and 45.5% of the women in both groups were between the ages of 30 and 40. About half of the women in both groups had only completed secondary school (34.1% and 38.6%), according to the data on women's education. In both groups, housewives made up the majority of the women (86.4% and 79.5%). Regarding place of residence, 68.2% and 72.7%, respectively, of the women in both groups were village residents.

Table 4 presents the past medical and obstetric histories. Between 47.8% and 43.1% of the women in both groups had given birth more than three times. Additionally, 59.1% of the control group and 63.6% of the study group were multiparous. About the mode of prior delivery, 81.8% and 75.0% of participants in both groups reported lacerations from previous deliveries, while 88.6% and 84.1% of participants delivered vaginally.

The distribution of research participants based on their incontinence severity index is displayed in Table 5. SUI rates were around 43.2% in the study group and 36.4% in the control group. In terms of frequency, 40.9% of the study group had urine leakage from one to multiple times per week, in contrast to 36.4% of the control group. Regarding urine leakage, the majority of women in both groups (72.7 and 68.1%) experienced "more" urine leakage.

Section II: Results pertaining to the Female Sexual Function Index, or "FSFI," prior to, three and six months following the intervention (Table 4, 5, 6, figures 1 and 2)

According to Table 6, there was no statistically significant difference in the FSFI before the intervention between the study participants and the control group. Furthermore, the lowest categories of female sexual functioning are represented by desire, arousal, lubrication, orgasm, and satisfaction.

Table 7 shows the evaluation of the Female Sexual FSFI Function Index ("FSFI") three months following the intervention. Three months following the intervention, the female sexual function index score differed significantly between the study group and the control group. Participants in the study and control groups differed significantly in their levels of desire, arousal, lubrication, orgasm and satisfaction (p values of 0.001, 0.001, 0.0001, 0.0001, and 0.0001, respectively).

Six months following the intervention, Table 8 displays the evaluation of the Female Sexual FSFI Function Index ("FSFI"). The table demonstrates that, three months after the intervention, there was a highly statistically significant difference in the female sexual function index score between the study group and the control group. Regarding desire, arousal, lubrication, orgasm, and pleasure, there was a statistically significant difference between study and control group participants (p value 0.0001, 0.0001, 0.0001, 0.0001, 0.0001, 0.0001, respectively).

Section III: Results pertaining to the Sexual Quality of Life-Female (SQOL-F) prior to, three and six months following the intervention (Tables 7, 8, 9, figures 3 and 4)

Table 9 demonstrates that, prior to the intervention, there was no statistically significant difference in the sexual quality of life between the study group and the control group.

As can be seen from Table 10, there was a substantial statistical difference in the study participants' sexual quality of life three months after the intervention compared to those in the control group.

Six months following the intervention, Table 11 demonstrates that there was a highly statistically significant difference in the participants' sexual quality of life between the study group and the control group.

Table 3 Demographic details of the study participants (N = 88)

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
Age / years						
< 20	3	6.8%	4	9.1%	0.502	0.918
20 – < 30	15	34.1%	15	34.1%		
30 – 40	19	43.2%	20	45.5%		
> 40	7	15.9%	5	11.3%		
Educational level						
Illiterate	8	18.2%	8	18.2%	0.854	0.836
Basic education	13	29.5%	14	31.8%		
Secondary	15	34.1%	17	38.6%		
University	8	18.2%	5	11.4%		
Occupation						
Housewife	38	86.4%	35	79.5%	0.395	0.395
Working	6	13.6%	9	20.5%		
Place of residence						
Village	30	68.2%	32	72.7%	0.640	0.816
Town	14	31.8%	12	27.3%		

Table 4: Medical and obstetric histories of the 88 study participants

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
The quantity of births (gravidity)						
One	3	6.8%	5	11.4%	0.725	0.867
Just twice	6	13.6%	5	11.4%		
Three times.	14	31.8%	15	34.1%		
In excess of three times	21	47.8%	19	43.1%		
Number of deliveries (parity)						
Two	13	29.5%	15	34.1%	0.217	0.897
Three	28	63.6%	26	59.1%		
No one	3	6.9%	3	6.8%		
Previous delivery method						
Vaginal childbirth	39	88.6%	37	84.1%	0.534	0.757
Caesarian section	5	11.4%	7	15.9%		
Problems associated with delivery						
Precipitate labor	3	6.8%	5	11.4%	0.721	0.697
Prolonged labor	5	11.4%	6	13.6%		
Laceration	36	81.8%	33	75.0%		

Table 5: Study participant distribution based on the incontinence severity index (N = 88)

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
Duration of SUI						
Less than one year	15	34.1%	13	29.5%	1.400	0.706
One year	19	43.2%	16	36.4%		
Two years	6	13.6%	9	20.5%		
More than three years	4	9.1%	6	13.6%		
Frequency of urine leakage?						
Once a month or less	5	11.4%	6	13.6%	0.452	0.929
Occasionally, many times a month	12	27.3%	11	25.0%		
One to many times per week	18	40.9%	16	36.4%		
Each and every day or night	9	20.4%	11	25.0%		
Urine leaking amount?						
Few drops	6	13.6%	5	11.4%	0.755	0.685
A little	6	13.6%	9	20.5%		
More	32	72.8%	30	68.1%		

Table 6: Comparison of the Female Sexual FSFI Function Index "FSFI" before the intervention (pre) (N = 88) between the study group and control group

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
Sexual desire						
Yes	5	11.4%	4	9.1%	0.124	1.000
No	39	88.6%	40	90.9%		
Sexual arousal						
Yes	8	18.2%	6	13.6%	0.340	0.560
No	36	81.8%	38	86.4%		
Lubrication						
Yes	7	15.9%	5	11.4%	0.386	0.534
No	37	84.1%	39	88.6%		
Sexual orgasm						
Yes	7	15.9%	8	18.2%	0.080	0.777
No	37	84.1%	36	81.8%		
Sexual satisfaction						
Yes	6	13.6%	9	20.5%	0.723	0.395
No	38	86.4%	35	79.5%		
Pain						
Yes	33	75.0%	32	72.7%	0.059	0.808
No	11	25.0%	12	27.3%		

Table 7: Comparison of the Female Sexual FSFI Function Index ("FSFI") three months post-intervention between the study and control group (N = 88)

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
Sexual desire						
Yes	17	38.6%	4	9.1%	10.570	0.001
No	27	61.4%	40	90.9%		
Sexual arousal						
Yes	20	45.5%	6	13.6%	10.700	0.001
No	24	54.5%	38	86.4%		
Lubrication						
Yes	26	59.1%	6	13.6%	19.643	0.0001
No	18	40.9%	38	86.4%		
Sexual orgasm						
Yes	28	63.6%	7	15.9%	20.921	0.0001
No	16	36.4%	37	84.1%		
Sexual satisfaction						
Yes	37	84.1%	5	11.4%	46.642	0.0001
No	7	15.9%	39	88.6%		
Pain						
Yes	4	9.1%	16	36.4%	9.318	.002
No	40	90.9%	28	63.6%		

Table 8: Follow-up data at 6 months after the intervention (N = 88) comparing the Female Sexual FSFI Function Index ("FSFI") between the study and control groups

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
Sexual desire						
Yes	27	61.4%	4	9.1%	26.354	0.0001
No	17	38.6%	40	90.9%		
Sexual arousal						
Yes	29	65.9%	6	13.6%	25.095	0.0001
No	15	34.1%	38	86.4%		
Lubrication						
Yes	38	86.4%	6	13.6%	46.545	0.0001
No	6	13.6%	38	86.4%		
Sexual orgasm						
Yes	37	84.1%	7	15.9%	40.909	0.0001
No	7	15.9%	37	84.1%		
Sexual satisfaction						
Yes	37	84.1%	5	11.4%	46.642	0.0001
No	7	15.9%	39	88.6%		
Pain						
Yes	3	6.8%	16	36.4%	11.344	0.001
No	41	93.2%	28	63.6%		

Figure 1 shows the Female Sexual FSFI Function Index (FSFI before, 3- and 6-months post-intervention) for the study group's participants (N = 44).

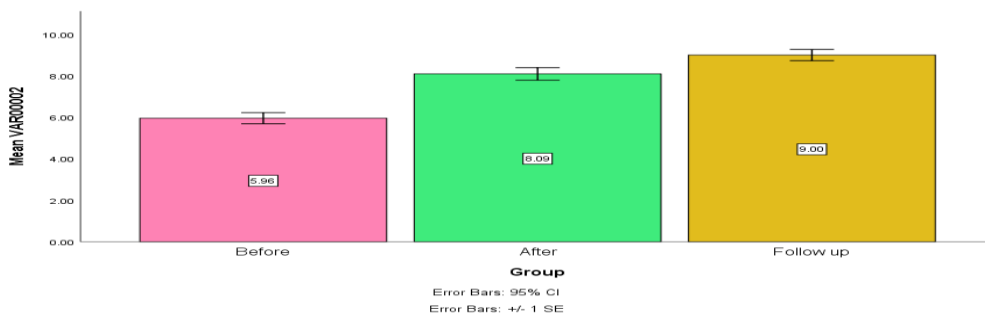


Figure 2 compares the mean of the Female Sexual FSFI Function Index (FSFI) before, three, and six months after the intervention (N = 88) for the study group and the control group.

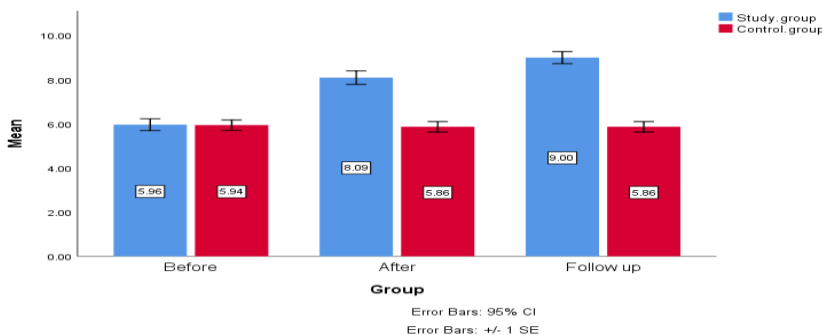


Table 9 compares the Sexual Quality of Life-Female (SQOL-F) before the intervention (N = 80) for the study group and the control group.

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
I feel frustrated.						
Yes	42	95.5%	43	97.7%	0.345	1.000
No	2	4.5%	1	2.3%		
I feel depressed.						
Yes	32	72.7%	31	70.5%	0.056	1.000
No	12	27.3%	13	29.5%		
I don't feel like the same woman.						
Yes	34	77.3%	33	75.0%	0.063	0.803
No	10	22.7%	11	25.0%		
I'm depressed about myself.						
Yes	34	77.3%	33	75.0%	0.063	0.803
No	10	22.7%	11	25.0%		
I have anxiety.						
Yes	32	72.7%	31	70.5%	0.056	1.000
No	12	27.3%	13	29.5%		
My self-confidence as a sexual partner has diminished.						
Yes	35	79.5%	34	77.3%	0.067	0.796
No	9	20.5%	10	22.7%		
I feel anger.						
Yes	32	72.7%	31	70.5%	0.056	0.813
No	12	27.3%	13	29.5%		
I feel far from my partner.						
Yes	34	77.3%	33	75.0%	0.063	0.803
No	10	22.7%	11	25.0%		
The idea of my sexual life worries me.						
Yes	33	75.0%	34	77.3%	0.063	0.803
No	11	25.0%	10	22.7%		
I no longer find joy in having sex.						
Yes	43	97.7%	44	100.0%	1.011	1.000
No	1	2.3%	0	0.0%		
I feel embarrassed.						
Yes	42	95.5%	43	97.7%	0.345	1.000
No	2	4.5%	1	2.3%		
I cannot talk to my partner about sexual matters.						
Yes	33	75.0%	34	77.3%	0.063	0.803
No	11	25.0%	10	22.7%		
I try to avoid sexual activity						
Yes	32	72.7%	33	75.0%	0.059	0.808
No	12	27.3%	11	25.0%		
I feel guilty.						
Yes	43	97.7%	41	93.2%	1.048	0.616
No	1	2.3%	3	6.8%		
I'm afraid my partner may feel abandoned or wounded.						
Yes	32	72.7%	31	70.5%	0.056	1.000
No	12	27.3%	13	29.5%		
I sense that something is missing from me.						
Yes	42	95.5%	43	97.7%	0.345	1.000
No	2	4.5%	1	2.3%		

Table 10 compares the Sexual Quality of Life-Female (SQOL-F) three months after the intervention (N = 80) between the study group and the control group.

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
I feel frustrated.						
Yes	12	27.3%	42	95.5%	43.137	0.0001
No	32	72.7%	2	4.5%		
I feel depressed.						
Yes	13	29.5%	30	68.2%	13.143	0.0001
No	31	70.5%	14	31.8%		
I don't feel like the same woman.						
Yes	14	31.8%	32	72.7%	14.758	0.0001
No	30	68.2%	12	27.3%		
I'm depressed about myself.						
Yes	14	31.8%	32	72.7%	14.758	0.0001
No	30	68.2%	12	27.3%		
I have anxiety.						
Yes	11	25.0%	30	68.2%	16.486	0.0001
No	33	75.0%	14	31.8%		
My self-confidence as a sexual partner has diminished.						
Yes	10	22.7%	33	75.0%	24.058	0.0001
No	34	77.3%	11	25.0%		
I feel anger.						
Yes	12	27.3%	30	68.2%	14.758	0.0001
No	32	72.7%	14	31.8%		
I feel far from my partner.						
Yes	14	31.8%	32	72.7%	14.758	0.0001
No	30	68.2%	12	27.3%		
The idea of my sexual life worries me.						
Yes	23	52.3%	33	75.0%	4.911	0.027
No	21	47.7%	11	25.0%		
I have lost pleasure in sexual activity.						
Yes	21	47.7%	43	97.7%	27.729	0.0001
No	23	52.3%	1	2.3%		
I feel embarrassed.						
Yes	12	27.3%	42	95.5%	43.137	0.0001
No	32	72.7%	2	4.5%		
I cannot talk to my partner about sexual matters.						
Yes	13	29.5%	33	75.0%	18.219	0.0001
No	31	70.5%	11	25.0%		
I try to avoid sexual activity.						
Yes	7	15.9%	32	72.7%	28.781	0.0001
No	37	84.1%	12	27.3%		
I feel guilty.						
Yes	13	29.5%	40	90.9%	34.583	0.0001
No	31	70.5%	4	9.1%		
I'm afraid my partner may feel abandoned or wounded.						
Yes	8	18.2%	30	68.2%	22.417	0.0001
No	36	81.8%	14	31.8%		
I sense that something is missing from me.						
Yes	9	20.5%	42	95.5%	50.785	0.0001
No	35	79.5%	2	4.5%		

Table (11): Comparing the Sexual Quality of Life-Female (SQOL-F) six months after the intervention (N = 80) between the study group and the control group

Variables	Study group (N=44)		Control group (N=44)		X ²	P value
	No.	%	No.	%		
I feel frustrated.						
Yes	6	13.6%	40	90.9%	52.654	0.0001
No	38	86.4%	4	9.1%		
I feel depressed.						
Yes	7	15.9%	28	63.6%	20.921	0.0001
No	37	84.1%	16	36.4%		
I don't feel like the same woman.						
Yes	7	15.9%	30	68.2%	24.670	0.0001
No	37	84.1%	14	31.8%		
I feel sad about myself.						
Yes	8	18.2%	30	68.2%	22.417	0.0001
No	36	81.8%	14	31.8%		
I feel anxious.						
Yes	5	11.4%	28	63.6%	25.648	0.0001
No	39	88.6%	16	36.4%		
My self-confidence as a sexual partner has diminished.						
Yes	4	9.1%	31	70.5%	34.583	0.0001
No	40	90.9%	13	29.5%		
I feel anger.						
Yes	7	15.9%	28	63.6%	20.921	0.0001
No	37	84.1%	16	36.4%		
I feel far from my partner.						
Yes	9	20.5%	30	68.2%	20.308	0.0001
No	35	79.5%	14	31.8%		
The idea of my sexual life worries me.						
Yes	10	22.7%	31	70.5%	20.139	0.0001
No	34	77.3%	13	29.5%		
I no longer find joy in having sex.						
Yes	11	25.0%	41	93.2%	42.308	0.0001
No	33	75.0%	3	6.8%		
I feel embarrassed.						
Yes	4	9.1%	40	90.9%	58.909	0.0001
No	40	90.9%	4	9.1%		
I cannot talk to my partner about sexual matters.						
Yes	5	11.4%	31	70.5%	31.778	0.0001
No	39	88.6%	13	29.5%		
I try to stay away from having sex.						
Yes	2	4.5%	30	68.2%	38.500	0.0001
No	42	95.5%	14	31.8%		
I feel guilty.						
Yes	6	13.6%	38	86.4%	46.545	0.0001
No	38	86.4%	6	13.6%		
I'm afraid my partner may feel abandoned or wounded.						
Yes	4	9.1%	28	63.6%	28.286	0.0001
No	40	90.9%	16	36.4%		
I sense that something is missing from me.						
Yes	3	6.8%	40	90.9%	62.259	0.0001
No	41	93.2%	4	9.1%		

Figure 3: Sexual Quality of Life-Female (SQOL-F) assessments before, three, and six months following the intervention (N = 88) for the study and control group.

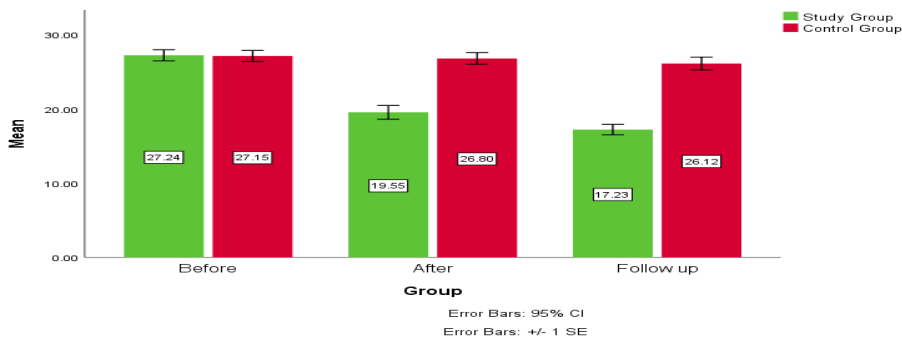
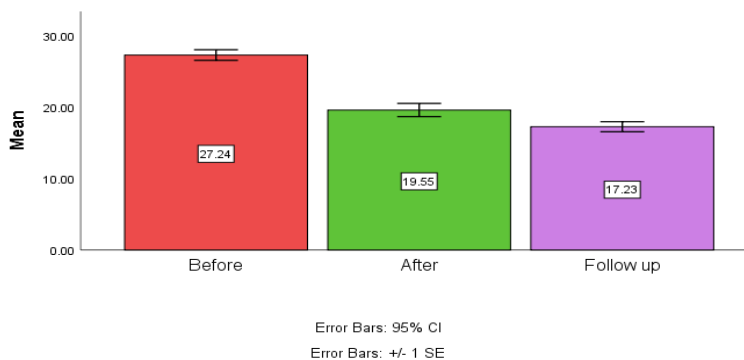


Figure 4 shows the Sexual Quality of Life-Female (SQOL-F) scores of the study group's members before, three and six months after the intervention (N = 44).



Discussion

Concerning women's demographic characteristics, the participants in both groups were women of reproductive age. This age range was chosen because of its suitability for studying the main study variables. This age group and multiple gestations experience weakness in pelvic floor muscles that produce urine leakage and an instantaneous squirt of urine with coughing, sneezing, bending over, climbing stairs, or any type of physical stress that causes the abdominal muscles to contract and put pressure on the bladder. This finding was supported by Curillo-Aguirre and Gea-Izquierdo (2023), who reported that the prevalence of SUI increased in middle-aged women ranging from forty-one to forty-five years in a study entitled "The effect of pelvic floor exercises and lifestyle modification on

quality of life among women with urinary incontinence in Egypt".

Disagreement could be found with **Kim and Kim (2019)**, who studied "lower urinary tract symptoms, sexual function, and the quality of life of married elderly women with urinary incontinence," and **Mohammed et al. (2021)** in a study entitled "Effect of educational interventions on reducing stress urinary incontinence episodes among elderly women." They found that the mean age of women with SUI was fifty-three years. From the researcher's point of view, the contradiction in results might be due to the difference in sample size of both aforementioned studies, which were elderly women. Elderly women differ from their younger counterparts by the presence of several physiologic changes in the urinary tract muscle tone and capacity, hormonal changes associated with menopause, and the presence of chronic

diseases. These are interrelated factors that can increase the incidence of SUI among them. Moreover, older women are more likely to have vaginal atrophy and are more likely to suffer from sexual dysfunctions as a result of vaginal dryness and dyspareunia.

As for education, nearly half of the study participants in both groups were secondary educators. This could be a reason why women with SUI do not think that they are in need of medical advice. This finding was in accordance with **Gouda et al. (2021)**, who studied "effectiveness of nursing guidelines on marital outcomes of women with urinary incontinence" and **Ghfour et al. (2018)**, who examined "urinary incontinence in Qatar: a study of the prevalence, risk factors, and impact on quality of life." Both studies reported studying women with similar educational levels.

As for occupation and residence, the results of the current study showed that the majority of women were housewives and lived in rural areas. Most women who are housewives and live in rural areas might be working on the farm, carrying heavy objects, and delivering more children because of the cultural considerations and problems evident between them, and they were feeling embarrassed by urine leakage. This finding was similar to that of **Ng et al. (2020)**, who studied "risk factors and prevalence of urinary incontinence in mid-life Singaporean women: the integrated women's health program" and pointed out that the highest percentage of stress urinary incontinence was among housewives.

As for the obstetric history, the results of the current study showed that the majority of the study participants were multipara. This might cause pelvic muscle impairment, urinary incontinence, and advanced prolapse in the long term. This was supported by **Mostafa Abd El-Aty, & EL-Ghareap Hassan (2021)** in a study entitled "Effect of the Kegel exercise training program on improving quality of life among women with urinary incontinence in Egypt". The aforementioned study reported a similar obstetric history and, moreover, linked the number of previous deliveries to the degree of SUI.

As regard mode of delivery, the majority of women in both groups had vaginal delivery, which directly affected females' pelvic floor muscles. This finding was in the same line as **El-Alshenqeti et al.'s (2019)**, who studied the "impact of urinary incontinence on quality of life among women of childbearing age in al Madinah al Munawara, Saudi Arabia." They reported that the highest rate of urinary incontinence was among menopause, higher parity more than three times, vaginal delivery, obesity, multiparity, and chronic constipation. This result was also supported by **Sadiq & John (2020)**, who published an article titled "Effects of mode of delivery and perineal injury on the prevalence of urinary and fecal incontinence in Pakistan" and found that mode of delivery has a significant impact on women's lives as there is an increased likelihood of urinary and fecal incontinence in women undergoing vaginal delivery.

Regarding problems associated with previous deliveries, the results of the current study showed that the majority of women in both groups had lacerations during previous deliveries. Such an injury directly affects the integrity and strength of pelvic floor muscles. This finding was supported by **Gouda(2019)**, who investigated " Effectiveness of Nursing Guidelines on Marital Outcomes of Women with Urinary Incontinence in Egypt" and reported that more than half of the study participants had laceration as a problem associated with delivery that affected pelvic floor muscles. At the same time, **Mahmoud (2019)** found that the majority of the studied subjects were multiparous, had obstructed labor, and experienced complications in a study entitled "Effect of Overactive Bladder Syndrome on Female Sexual Function."

As for SUI history and the frequency of urine leakage, the present study showed that nearly half of the studied participants had SUI for one year and had leakage of urine from one to several times per week. As regard the amount of urine leakage, less than three-fourths of women in both groups had more urine leakage. This was in accordance with the findings of **Mohammed et al. (2020)**, who reported that the majority of the participants had a medical history of SUI, and most incontinent women

reported moderate to large amounts of urinary loss several times per day before the educational sessions, and this reflected the magnetism of the problem in a study entitled “Effect of selective behavioral therapy on stress urinary incontinence and self-esteem among institutionalized elderly women.”

This finding was also supported by that of **Jerez et al. (2018)**, who found a higher frequency and amount of urinary loss among Brazilian elderly women in geriatric homes in a study called “Prevalence of fecal incontinence (FI) and associated factors in institutionalized older adults”. The result was also in harmony with **Grzybowska & Wydra (2017)**, who conducted a cross-sectional study to describe the sexual function of women with mild to moderate stress urinary incontinence and examine correlations with symptoms and quality of life among one hundred and eighty-seven women and reported that most women had leakage frequency of “once a week or more,” with over half of the women reporting a “moderate to large amount” of leakage in a study called “Coital incontinence: a factor for deteriorated health-related quality of life and sexual function in women with urodynamic stress urinary incontinence”.

Considering the female sexual function index, the current study results revealed that there was no statistically significant difference between the study and control groups regarding the score of the female sexual function index before implementing evidence-based nursing care. Three and six months after the implementation of evidence-based nursing care, there were significant improvements in women's total scores on the female sexual function index, and these findings could be used to accept the study hypothesis and show the effectiveness of the current study intervention.

This finding was in accordance with many other studies, like that of **Frigerio et al. (2022)**, who studied quality of life, psychological wellbeing, and sexuality in women with urinary incontinence; **Lim et al. (2019)**, who studied the effect of stress urinary incontinence on the sexual function of couples and the quality of life of patients; and Curillo-

Aguirre and Gea-Izquierdo (2023), who conducted a study about the effectiveness of pelvic floor muscle training on the quality of sexual life in women with urinary incontinence.

The three aforementioned studies reported lower scores of FSFI in incontinent women compared to control subjects. Moreover, the same studies reported a negative impact on sexual desire and/or sexual satisfaction resulting from insufficient vaginal lubrication, unsatisfying partner relationships, difficulties in reaching orgasm, and worries about urinary leakage during sexual activity in the SUI group before applying the proposed intervention and a notable improvement at the post-intervention phases.

Moreover, and with more details, significant improvements were shown in women's total scores of the female sexual function index after three and six months after the interventions in terms of desire, arousal, lubrication, orgasm, and satisfaction, which represent the highest domains of female sexual function. This improvement reflects the effect of the evidence-based nursing care and teaching sessions given, which resulted in improving female sexual function. This finding was in agreement with **Burzyński et al. (2021)**, who measured the impact of stress urinary incontinence on female sexual activity and reported that severe SUI has been found to be significantly associated with decreased libido and vaginal dryness, decreased interest, and decreased satisfaction with sexual intercourse, including orgasmic dysfunction at the pre-test stage compared to the post-test stage.

This finding was also in accordance with **Gouda. (2019)**, who studied “Effectiveness of Nursing Guidelines on Marital Outcomes of Women with Urinary Incontinence” and reported that there was a statistically significant difference between women in the control and intervention groups regarding the subtotal and total scores of the female sexual function index after implementing the evidence-based nursing guidelines. Moreover, desire, arousal, lubrication, orgasm, and satisfaction represent the highest domains among female sexual functions.

This finding was contradicted by **Bø et al. (2017)**, who found that there was a significant reduction in sex life, social life, and physical activity-related issues after six months of PFMT compared to controls in a study entitled "a randomized controlled trial on the effect of pelvic floor muscle training on quality of life and sexual problems in genuine stress-insensitive women". This difference was seen to be related to the fact that the studied sample had surgical management for SUI before the study, which is the best treatment because it had a positive impact on sexual function, according to reports.

Concerning the Sexual Quality of Life-Female (SQOL) for women with SUI, the current study indicated that there was no statistically significant difference between the study and control groups regarding the score of the Sexual Quality of Life-Female (SQOL-F) before the intervention. Moreover, there was a highly statistically significant difference between groups regarding sexual quality of life after three and six months of the intervention. Such findings could be used to accept the study hypothesis. Before the intervention, women perceived SUI as a negative, unpleasant, and stressful experience that caused feelings of shame, lack of control, malaise, insecurity, suffering, and guilt. These feelings can result in isolation, social exclusion, low female self-esteem, depression, anxiety, and delay in seeking treatment, directly influencing several dimensions of sexual QoL, which can cause psycho-emotional changes and limitations such as physical, social, and sexual, as well as daily activities. But after the intervention, the evidence-based nursing care was effective in improving the quality of sexual life for the study group.

This finding was agreed upon by **Ctinkaya et al. (2019)**, who studied "an evaluation of the quality of life and sexual functions of females with urinary incontinence," and **Mostafa Abd El-Aty & EL-Ghareap Hassan. (2021)**, who studied "the effect of the Kegel exercise training program on improving quality of life among women with urinary incontinence." Both studies reported that urinary incontinence has significant effects on the physical, psychological, and socioeconomic

aspects of life. The mean score of women on Wagner's sexual QOL scale was forty-one, and the women were found to have moderate impairment. It influences their total sexual QOL by restricting their public interaction, their dress, travel distance, and many other everyday life factors that healthy women do not care about. Both studies also showed a negative impact of urinary incontinence on quality of life at the pre-program phase compared to post-program.

Meanwhile, this finding was also in line with **Kim (2019)**, who studied "lower urinary tract symptoms, sexual function, and the quality of life of married women with urinary incontinence." **Al Ateeq et al. (2022)**, in a study entitled "quality of life of Saudi women with chronic lower urinary tract symptoms," and **Chu et al. (2018)**, in a study entitled "impact of urinary incontinence on female sexual health in women during midlife." These three studies showed that interventions targeting improving the SUI state directly improved the sexual quality of life of the studied women. In addition, there was a significant correlation between increased symptom severity and a negative impact on sexual QoL.

Conclusion:

The study findings concluded that women with stress urinary incontinence reported an improvement in their sexual life when evidence-based nursing care was implemented. Therefore, the research hypothesis could be accepted in light of the results.

The present study's conclusions lead to the following recommendations being put forth:

- Provide comprehensive information about SUI, its impact on sexual life, and available treatment options.
- Address common misconceptions and concerns related to SUI and sexual activity.

- Offer counseling sessions to discuss the emotional and psychological aspects of SUI and its impact on sexual well-being.

- Provide information about the advantages of strengthening the pelvic floor muscle for sexual function.

- Address any sexual pain or discomfort related to SUI and explore appropriate interventions or referrals to specialists if needed.

Further studies

- The current investigation should be repeated with a larger probability sample and in different healthcare environments.

References:

- Ackah, M., Ameyaw, L., Salifu, M. G., Osei Yeboah, C., Serwaa Ampomaa Agyemang, A., Acquah, K., & Opare-Appiah, A. (2022). Estimated burden, and associated factors of Urinary Incontinence among Sub-Saharan African women aged 15–100 years: A systematic review and meta-analysis. *PLOS Global Public Health*, 2(6), e0000562.
- Al Ateeq, Mohammed, Saeed Al Sary, Joud Al Baraki, Manar Al Mutairi, Noura Al Enazi, Shadin Al Dhalaan, Someiah Al Yahya, "Quality of Life of Saudi Women with Chronic Lower Urinary Tract Symptoms." *Cureus* 14(12).
- Alshenqeti, A. M., Almutairi, R. E., Keram, A. M., Almutairi II, R. E., & Keram, A. (2022). Impact of Urinary Incontinence on Quality of Life Among Women of Childbearing Age in Al Madinah Al Munawara, Saudi Arabia. *Cureus*, 14(5)
- Arshiya, S., Noor, L., Rangaswamy, P. A., & Sundari, T. (2018). Etiology, risk factors and pathophysiology of stress urinary incontinence: a review. *International Research Journal of Biological Sciences*, 4(6), 75-82.
- Åström, Y., Asklund, I., Lindam, A., & Sjöström, M. (2021). Quality of life in women with urinary incontinence seeking care using e-health. *BMC Women's Health*, 21(1), 1-9.
- Avery, J. C., Gill, T. K., Taylor, A. W., & Stocks, N. P. (2018). Urinary incontinence: severity, perceptions and population prevalence in Australian women. *Australian and New Zealand Continence Journal*, The, 20(1), 7-13.
- Bø, K., Talseth, T., & Vinsnes, A. (2017). Randomized controlled trial on the effect of pelvic floor muscle training on quality of life and sexual problems in genuine stress incontinent women. *Acta obstetrica et gynecologica Scandinavica*, 79(7), 598-603
- Burzyński, B., Kwiatkowska, K., Soltysiak-Gibala, Z., Bryniarski, P., Przymuszała, P., Wlazlak, E., & Przymiski, P. (2021). Impact of stress urinary incontinence on female sexual activity. *European Review for Medical and Pharmacological Sciences*, 25(2)
- Çetinkaya, F., Karabulut, N., & Tuncer, S. K. (2019). An evaluation of the quality of life and sexual status functions of females with urinary incontinence
- Chu, C. M., Arya, L. A., & Andy, U. U. (2018). Impact of urinary incontinence on female sexual health in women during midlife. *Women's midlife health*, 1, 1-12
- Curillo-Aguirre, C. A., & Gea-Izquierdo, E. (2023). Effectiveness of Pelvic Floor Muscle Training on Quality of Life in Women with Urinary Incontinence: A Systematic Review and Meta-Analysis. *Medicine*, 59(6), 1004
- El adyed, S. A., El-kholy, G. A., Ramadan, S. A., & Emam, A. M. (2018). Effect of Overactive bladder syndrome on female sexual function. *Menoufia Nursing Journal*, 3(1), 141-147
- Engberg, S. (2018). Management of Urinary Incontinence in the Presence of Fecal Incontinence. *Management of Fecal Incontinence for the Advanced Practice Nurse: Under the auspices of the International Continence Society*, 291-305
- Fitz, F. F., Paladini, L. M., Ferreira, L. D. A., Gimenez, M. M., Bortolini, M. A. T., & Castro, R. A. (2020). Ability to contract the pelvic floor muscles and association with muscle
- Frigerio, M., Barba, M., Cola, A., Braga, A., Celardo, A., Munno, G. M., ... & Torella, M. (2022). Quality of Life, Psychological Wellbeing, and Sexuality in Women with Urinary Incontinence—Where Are We Now: A Narrative Review. *Medicina*, 58(4), 525.
- Gedefaw, G., & Demis, A. (2020). Burden of pelvic organ prolapse in Ethiopia: a systematic review and meta-analysis. *BMC women's health*, 20(1), 1-9.
- Ghafouri, A., Alnaimi, A. R., Alhothi, H. M., Alroubi, I., Alrayashi, M., Molhim, N. A., & Shokeir, A. A. (2018). Urinary incontinence in Qatar: A study of the prevalence, risk factors and impact on quality of life. *Arab journal of urology*, 12(4), 269-274
- Gouda, S. G., Fahmy, N. M., Mahjoub, H. A., & Allah, N. A. A. (2022). Effectiveness of Nursing Guidelines on Marital Outcomes of Women with Urinary Incontinence. *Evidence-Based Nursing Research*, 4 (2), 29-38.

- Grzybowska, M. E., & Wydra, D. G. (2017).** Coital incontinence: a factor for deteriorated health-related quality of life and sexual function in women with urodynamic stress urinary incontinence. *International Urogynecology Journal*, 28, 697-704.
- Hunter, K. F., & Wagg, A. S. (2018).** Improving nurse engagement in continence care. *Nursing: Research and Reviews*, 8, 1.
- Jerez-Roig, J., Souza, D. L., Amaral, F. L., & Lima, K. C. (2018).** Prevalence of fecal incontinence (FI) and associated factors in institutionalized older adults. *Archives of gerontology and geriatrics*, 60(3), 425-430
- Kim, S. H., & Kim, H. Y. (2019).** Lower Urinary Tract Symptoms, Sexual Function, and the Quality of Life of Married Women with Urinary Incontinence. *J Comp Nurs Res Care*, 4(1), 134.
- Lim, R., Liong, M. L., Leong, W. S., Khan, N. A. K., & Yuen, K. H. (2016).** Effect of stress urinary incontinence on the sexual function of couples and the quality of life of patients. *The Journal of urology*, 196(1), 153-158
- Madhuvu, A. (2017).** Nursing care: Urinary elimination and continence. In *Tabbner's Nursing Care Theory and Practice: Theory and Practice* (pp. 885-914). Elsevier.
- McAvoy, Th., g Zhou, M., Greengard, P., and Nairn, A. C. (2009).** Phosphorylation of Rap1GAP, a striatally enriched protein, by protein kinase A controls Rap1 activity and dendritic spine morphology. *Biological Sciences*, 106 (9) 3531-3536
<https://doi.org/10.1073/pnas.0813263106>
- McClurg, D., Pollock, A., Campbell, P., Hazelton, C., Elders, A., Hagen, S., & Hill, D. C. (2018).** Conservative interventions for urinary incontinence in women: an Overview of Cochrane systematic reviews. *The Cochrane Database of Systematic Reviews*, 2016(9).
- Mohamad Al-Ali, B., Shamloul, R., Hutterer, G. C., Puchwein, E., Pummer, K., Avian, A., & Primus, G. (2018).** Sexual function in women with stress urinary incontinence treated with the SPARC sling system. *BioMed Research International*.
- Mohammed, R. F., Taha, S. H., Abd-Elaziz, N. M., & Omar, E. Z. A. E. (2021).** Effect of Selective Behavioral Therapy on Stress Urinary Incontinence and Self-esteem among Institutionalized Elderly Women. *Assiut Scientific Nursing Journal*, 9(25.0), 45-55
- Mostafa Abd El-Aty, E., & EL-Ghareap Hassan, M. (2021).** Effect of Kegel Exercise Training Program on Improving Quality of Life Among Women with Urinary Incontinence. *Egyptian Journal of Health Care*, 12(2), 946-964
- Mota, R. L. (2017).** Female urinary incontinence and sexuality. *International braz j urol*, 43, 20-28.
- Ng, K. L., Ng, K. R., Thu, W. P. P., Kramer, M. S., Logan, S., & Yong, E. L. (2020).** Risk factors and prevalence of urinary incontinence in mid-life Singaporean women: The Integrated Women's Health Program. *International urogynecology journal*, 31, 1829-1837
- Nyström, E., Asklund, I., Sjöström, M., Stenlund, H., & Samuelsson, E. (2018).** Treatment of stress urinary incontinence with a mobile app: factors associated with success. *International urogynecology journal*, 29, 1325-1333
- Osman, N. I., Marzi, V. L., Cornu, J. N., & Drake, M. J. (2019).** Evaluation and classification of stress urinary incontinence: current concepts and future directions. *European urology focus*, 2(3), 238-244.
- Owiredu, W. K., Owusu, A. O., Amidu, N., Quaye, L., Gyasi-Sarpong, C. K., Dapare, P. P., & Alidu, H. (2018).** Sexual dysfunction and sexual quality of life among the physically challenged in the Kumasi metropolis, Ghana. *Health and quality of life outcomes*, 13, 1-8.
- Patel, K., Long, J. B., Boyd, S. S., & Kjerulff, K. H. (2021).** Natural history of urinary incontinence from first childbirth to 30-months postpartum. *Archives of Gynecology and Obstetrics*, 304, 713-724.
- Sadiq, G., & John, S. (2020).** Effects of Mode of Delivery and Perineal Injury on the Prevalence of Urinary and Fecal Incontinence. *Journal of The Society of Obstetricians and Gynaecologists of Pakistan*, 10(1), 56-61
- Schanz, J. P., Dalnez, V. S., & Almiron, I. O. (2018).** Treatment of female stress urinary incontinence with hybrid fractional laser, preliminary study. *Journal of Gynecology and Womens Health*, 11(3).
- Symonds, T., Boolell, M., & Quirk, F. (2018).** Development of a questionnaire on sexual quality of life in women. *Journal of sex & marital therapy*, 31(5), 385-397.
- Tso, C., & Lee, W. (2018).** Postmenopausal women and urinary incontinence: Proper diagnosis and treatment can improve a patient's quality of life. *American Nurse Today*, 13(1), 18-23.
- Woolf, C. J., American College of Physicians, & American Physiological Society (2004).** Pain: moving from symptom control toward mechanism-specific pharmacologic management. *Annals of internal medicine*, 140(6), 441-451.
<https://doi.org/10.7326/0003-4819-140-8-200404200-00010>