



Effect of Continuous Care Model on Self-esteem and Reported practices of postmenopausal Women with Urinary Incontinence

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ABSTRACT

Background: Postmenopausal women usually complain of urinary incontinence which negatively impact self-esteem. **Aim:** This research aimed to evaluate the effect of continuous care model on self-esteem and reported practices of menopausal women with urinary incontinence. **Design:** A quasi-experimental research (pre/posttest design). **Sample:** Sixty-eight postmenopausal women. **Setting:** The present research conducted at obstetric & gynecological outpatient clinic and Urological outpatient clinic at Helwan General Hospital, Egypt. **Tools:** Three tools were used for data collection: A structured interviewing questionnaire, Rosenberg' Self-Esteem Scale, and self-reported practices questionnaire. **Results:** After four weeks of the implementation continuous care model, the postmenopausal women's mean scores of self-esteem were higher than before implementation with a highly statistical difference. In addition, the majority of studied women had satisfactory total self-reported practices score regarding urinary incontinence at post-implementation phases compared to pre-implementation phase. Moreover, a highly statistically-significant positive correlation was found between studied women' total self-esteem score and total knowledge as well as total practices score regarding urinary incontinence before and after continuous care model implementation. **Conclusion:** The implementation of the continuous care model effectively improved self-esteem and self-reported practices among postmenopausal women experiencing with urinary incontinence. The results supported the research hypotheses. **Recommendation:** Postmenopausal women are recommended to be provided with printed booklets and brochures containing comprehensive information about urinary incontinence. These informational materials should be readily available in urological, obstetric, and gynecological units.

Keywords: Continuous Care Model, Self-esteem, Postmenopausal women, Urinary Incontinence.

Introduction

Postmenopausal transition is usually associated with various health problems and reproductive function loss. It occurs after the age of 45 years so women spend about one-third of their life in the postmenopausal period. This period

associated with many symptoms include hot flushes, osteoporosis, urinary tract atrophy, cardiovascular diseases, urinary incontinence and sexual problems (Ali, 2020)

Urinary incontinence (UI) is considered as the most common and distressing health problem

among postmenopausal women. Urine storage and emptying the bladder is a complex process, and this disturbance in the system refers to childbirth, aging, and other medical conditions that can result in urinary incontinence. Estrogen deficiency during postmenopausal period results in atrophic changes, elasticity deficit and cause urinary incontinence **(Russo et al., 2021)**

Urinary incontinence is a socially embarrassing condition, causing withdrawal from social situations and reduced health status of postmenopausal women. The inability to control urine is one of the most unpleasant and distressing problem from which a woman can suffer. Not only can the urinary incontinence causes wetness, odor, discomfort, skin breakdown and urinary tract infection, but can also damage self-esteem as a result of the shame and embarrassment and those afflicted women may become depressed and isolated **(Culligan & Heit, 2019)**.

Voluntary control of the bladder, which starts in childhood as something private and taboo to discuss in public, has an impact on self-esteem. Therefore, inability to control urine passage in postmenopausal women is a condition that affects all dimension of life and cause low self-esteem **(lee et al., 2021)**. Many women who experience urine incontinence feel helpless, ashamed, apologetic, and self-deprecating. Which, in turn, can lead to low self-esteem **(Chien et al., 2022)**

The continuous care model (CCM) establishes interactive, effective, and continuous communication between nurses and postmenopausal with urinary incontinence to

determine their demands and requirements and positively helps them to adopt more healthy practices through customized information and structured instruction. **(Abd El Aliem et al., 2023)**. Application of this model helps women to acquire appropriate correct information regarding diseases and to be the effective operator and actively involved in the solving own health problems. This model encourages the women to share in their plan of care, accepting responsibility for continuous self-control and prevent the occurrence of the complications **(Salehipour et al., 2021)**.

Nurses play an important role in prevention and adaptation of urinary incontinence through providing the women with appropriate information regarding urinary incontinence; develop nursing instructional strategies to cope with urinary incontinence. Also, nurses instruct women to monitor fluid intake and modify the environment to facilitate continence, avoid skin deterioration by giving prompt cleanliness following an incontinence episode and limit dietary bladder irritants **(Kolbadinezhad, 2020)**.

Nurses play a crucial role in offering psychological support to women dealing with urinary incontinence. They advise women to engage in a calming hobby regularly, emphasizing the importance of seeking assistance when needed and recognizing that they are not alone in experiencing urinary incontinence. Additionally, nurses educate women on stress management techniques, ensuring they prioritize sufficient sleep and exercise. Encouraging participation in activities like yoga and providing guidance on learning pelvic floor

muscle exercises are integral components of nursing interventions. (Fu et al., 2020).

Research significance

One of the main health issues that is seen as a dangerous factor that can lead to social disengagement is urinary incontinence. Additionally UI plays important role in reducing health status and associated with low self-esteem and have a negative effect on the women's wellbeing. Additionally, many women have embarrassment for seeking help until they have the symptoms for a long time. (Mohammed et al., 2021). Urinary incontinence prevalence rate in women between 15 and 64 years of age and vary from 15% to 50% worldwide. Due to factors such as anatomical, social, and cultural standing, as well as the consequences of pregnancy, childbirth, and menopause, women are three times more likely than males to experience UI. In addition, between 20-60 % of women in the world experience urinary incontinence during the lifetimes (Alizadeh et al., 2023).

Egypt has greater prevalence rates of UI when compared to other countries. The prevalence rate among Egyptian women from approximately 5% to 70%. Prevalence rate increase with increasing age and in women aged ≥ 50 years more than 40% of women are affected demonstrating the pressing need to give this problem some thought. Despite this high prevalence rate, this condition is widely under-reported because many women don't report this problem (Al Azab, 2021). Therefore, more should be done to implement the needed health interventions for lowering it.

Aim of the research

This research aimed to evaluate the effect of continuous care model on self-esteem and reported practices of postmenopausal women with urinary Incontinence.

Research hypotheses

H1: Postmenopausal women will exhibit higher self-esteem after implementation of continuous care model than before.

H2: Postmenopausal women will exhibit better self-reported practices regarding urinary incontinence after implementation of continuous care model than before.

Operational definitions

The continuous care model: It is a caring model that considered post-menopausal woman as an effective factor of the process of continuing health care of urinary incontinence through four planned stages: Orientation, sensitization, control, and evaluation stage (Moghaddam et al., 2020).

Self-esteem: is a subjective measure of one's total value or worth that expresses one's degree of confidence in one's own skills and qualities. A positive sense of self-worth can affect one's motivation, emotional health, and general quality of life. It is predicated on an individual's views and convictions about himself. (Lee et al., 2021)

Urinary incontinence: It can be defined as unintentional urine leakage which has a negative impact on a number of a woman's health issues. (Roloff et al., 2022).

Subject and methods

Research design

A quasi-experimental (One group pre/posttest design). A quasi-experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable (Thomas, 2023).

Setting

The study was conducted at obstetric & gynecological outpatient clinic and Urological outpatient clinic at Helwan General Hospital.

Sampling

A purposive sample of 68 postmenopausal women who have reported stoppage of menstruation (amenorrhea) for at least 12 months and complain of urinary incontinence among those attending the pervious mentioned setting for a period of six months with the following inclusion criteria: Postmenopausal women diagnosed with urinary incontinence who possess literacy skills. Women were excluded if they had diabetic nephropathy, previous central nervous system injury, bladder malignancy, urinary tract infection, or any other substantial neurological conditions.

Data Collection tools

Three tools were used for data collection:

Scoring system for knowledge:

Response	Score	knowledge levels	Total knowledge score
Completely correct	2	Good	75% to 100%. (15-20) degree
Incompletely correct	1	Average	50% to less than 75 % (10-15 degree)
Don't known	0	Poor	Less than 50%. (<10 degree)

First tool: - A Structured Interviewing Questionnaire

The researchers developed it after reading relevant literature. It was presented as a series of both closed- and open-ended questions and was written in Arabic. Three main sections were included in this tool:

First section: It was concerned with personnel characteristics of the studied women. It included five items (age, educational level, occupation, residence and marital status).

Second section: It was concerned with history of UI among studied women. It included five questions (duration of urinary incontinence, causes of urine leakage, frequency of UI per day, waking up at night for urination and amount of urine leakage).

Third section: It included women's knowledge questionnaire regarding urinary incontinence. It was adapted from Suchithra et al., (2020) and included ten questions about meaning, types of UI, causes of temporary incontinence, causes of permanent UI, risk factors, manifestation, complication, prevention, treatment of UI and source of knowledge.

Second Tool: - Rosenberg' Self-Esteem Scale

It was adapted from **García et al., (2019)**. It consists of ten items that gauge an individual's overall sense of worth by assessing both positive and negative self-perceptions. The scale has a range of 0 to 30. Scores were calculated as follows:

Response for items (1, 2, 4, 6, 7)	Response for items (3, 5, 8, 9, 10) Inverse items.	Score	Self-esteem levels	Total self-esteem score
Strongly agree	Strongly disagree	3	High	More than 25
Agree	Disagree	2		
Disagree	Agree	1	Normal	Scores between 15 and 25
Strongly disagree	Strongly agree	0	Low	Below 15

Third Tool: Self-Reported Practices Questionnaire

It was adapted from **Fu et al., 2020** and was concerned with self-reported practices of studied women regarding urinary incontinence. It included 5 main areas, healthy nutrition, and physical exercise, maintains the surrounding environment, deal with urinary incontinence and committed with other precautions regarding urinary incontinence.

Scoring system of women's self-reported practices:

Response	Score	Self-reported practices levels	Total self-reported practices score
Done	1	Satisfactory	More than 60% (>26 degree)
Not done	0	Unsatisfactory	less than 60% (<26 degree)

Methods

The following steps were followed in carrying out the research:

Administrative Approval

A written letter was obtained from the Faculty of nursing Dean, and then directed to Helwan General Hospital director. This research was conducted under the approval of the Faculty of Nursing Ethical Committee, Helwan University. The directors of the previously stated settings formally granted permission to carry it out after outlining the goal of the study. During the data collection phase, each woman in the study was

requested to provide informed consent after receiving a thorough and appropriate explanation of the study.

Validity

Three nursing specialists in obstetrics and gynecological nursing critically reviewed the data collection tools to assess the validity of the content. The tools were revised based on the panel's feedback, addressing recommendations concerning sentence clarity and material relevance.

Reliability

The Cronbach's Alpha coefficient test was used to determine dependability. Rosenberg's Self-

Esteem Scale had a correlation coefficient of 0.904, knowledge was 0.861, and self-reported behaviors were 0.833.

Ethical considerations

The Scientific Research Ethical Committee of Helwan University's Faculty of Nursing granted study approval so that this research could be completed. Before each woman filled out the questionnaires, the purpose of the research was explained in order to earn trust and cooperation. Consent to participate in the research was signed by each woman. After statistical analysis, all data gathering equipment were burnt to protect study confidentiality. The research instruments were designed to guarantee that the data gathering process did not inflict any harm onto participants, nor did they violate their cultural, traditional, or religious characteristics. The women might stop participating in the study at any time.

A Pilot Study

The pilot study was carried out on 10% of the total sample (7 women) to confirm sequence, clarity and applicability of tool and detect any problem of the tool statements as well as estimation the amount of time needed to complete the questionnaire. Women involved in the pilot study were included in the sample as there weren't any modifications.

Field Work

The study took place over six months' period from the beginning of November 2022 and ending at the end of April 2023. The study setting was visited by researchers until the predetermined sample

size was reached three days a week from 9:00 am to 12:00 pm

In order to prepare the necessary tools for data collection. They were given to three experts in the field of obstetrics & gynecology to test their appropriateness, clarity and applicability. Additionally, the researchers read local and international related literatures about the various aspects of the research problem. This helped the researchers understand the magnitude and implications of the problem. Then the researchers went to obstetrics & gynecological outpatient clinic and Urological outpatient clinic then women were greeted and informed of the overall purpose of the research and provided with all information about the research. Then the researchers started to apply the phases of the continuous care model:

Orientation phase

This stage began with orienting the postmenopausal women with the stages of the continuous care model and explaining the importance of continuing care contact between the researchers and the studied postmenopausal women, determining the times of personal/phone meetings and identified the required phone calls schedules. Both the researchers and women expressed their expectations and emphasized on not cutting the connections. In this phase, Women were asked to complete a structured interviewing questionnaire which include personnel data, medical history and women's knowledge questionnaire. Then, Women were asked to answer self-reported practices questionnaire regarding urinary incontinence and complete Rosenberg' Self-

Esteem Scale in the presence of the researchers to answer any questions. They were informed that data would be collected to establish a baseline data (pretest). The researchers also oriented women about the coming stages of model and schedule of four sessions.

Sensitization Stage

This stage was performed to involve the postmenopausal women in the continuous care process and examine their basic needs. It consisted of holding four sessions (each session lasted about 30 to 45 minutes) using discussion, role-playing and PowerPoint presentations in a separate room in the pre-mentioned setting. At the start of the next session, feedback on the previous one was gathered, and as a result, the prepared educational material was thoroughly reviewed again. At the conclusion of the session, each woman was given information concerning the timing of the following ones. Feedback on the previous session and the new session's goals kicked off the following one.

The first session included providing women knowledge about UI (meaning, types of urinary incontinence, and causes of both temporary and permanent urinary incontinence, risk factors, manifestation, complication, prevention and treatment of urinary incontinence). Then the researcher started to learn the postmenopausal women with practices regarding urinary incontinence (Healthy nutrition) by encouraging women to eat foods that contain magnesium such as (broccoli - nuts - bananas - potatoes - corn – grains), eat food rich with vitamins such as (vitamin C) that found in fruits and vegetables, eat

foods rich in vitamin D such as (eggs - milk – fish and direct exposure to sunlight), eat foods rich in high fibers such as whole grains and vegetables, leafy greens and lettuce), avoid dairy products such as butter and cheese because they increase the bladder contraction, reduce the intake of spices such as curry and spicy foods, avoid high acidic foods such as oranges and tomatoes, avoid artificial sweeteners such as chocolate, honey and sugar, avoid consuming soft drinks, drinking adequate amount of water per the day (8-10 cups per day), avoid drinking alcohol or caffeine and instructing the woman regarding quit smoking.

The second session was related to healthy practices regarding (Physical exercise & maintaining the surrounding environment). Physical exercise by encouraging each woman to exercises for the pelvic muscle (Kegel exercises), exercises for the bladder muscle, trains the bladder to hold urine day and night, get up at night regularly. Maintaining the surrounding environment by encouraging women to avoid use high bathroom, avoid far bathroom away from the bed whenever possible, avoid placing carpets to avoid falling at night, maintain of enough furniture to lean on and facilitate movement, select the right position during urination (sitting position) and maintain enough lighting in the house and bathroom.

The third session concerned with healthy practices to deal with urinary incontinence. It involved putting pads and underwear which easy absorbable and not bulky pads, use cotton pads that absorb urine, wear appropriate underwear carefully, use clothes that are easy to take off and do not tight,

use pads sufficient and changing them frequently, pay attention to personal hygiene and change underwear frequently, use of urethral patches and tampons (wash hands before using urethral patches, use small sticky patches and use only once), skin care to prevent skin infections(use paper or cotton towels for adequate cleansing), dry the skin well, avoid continuous washing and rinsing because it affects the natural mechanism of attacking microbes causing urinary tract infection, use a protective cream and ask the doctor to prescribe special cleanser to protect the skin dryness.

The fourth session concerned with other precaution regarding urinary incontinence included (empty of the bladder every two hours, avoid drinking excessive juices or liquids especially when going outside the home or work and at frequent intervals, maintain regular and good sleep during the night hours, treat constipation that stimulate the activity of the bladder). Then, the researchers concluded a brief summary about the content of previous sessions. Finally, women were also encouraged to discuss any problems encountered.

Control stage

During this stage, the researcher kept continuous communication with the post-menopausal women and follow up them through weekly phone calls for eight weeks for each woman which included (8 calls) according to the women's preferred time for making phone calls (morning or afternoon). The time of phone call varied depending on a woman's educational needs and questions with average time of 10 minutes apart to help women promote healthy practices. Also, any educational

needs or health problems were determined and resolved. Lastly, for collection of posttest data, the researchers reminded the women for the time of posttest data collection (posttest).

Evaluation phase

After eight weeks following continuous care model implementation, the women were contacted by the researchers by telephone to confirm their attendance at outpatient clinics to meet with the participants individually to answer the post-test questionnaire to evaluate the effectiveness of the continuous care model on women's self-reported practices and Self-Esteem.

Statistical Design

Data were verified before being automatically entered. The statistical package for social sciences, or SPSS version 25, was used for data tabulation and analysis. Descriptive statistics, such as means, standard deviations, frequencies, and percentages, were employed. Chi-square tests, the Paired Samples T test, and Pearson correlation coefficients were used. Every statistical test that was conducted yielded a p-value: > 0.05 meant that there was no statistically significant difference, <0.05 meant that there was, and ≤ 0.001 meant that there was a highly significant difference.

Results of the research

Table (1): Shows that 42.6% of studied women were in the age group of ≥ 55 years old with mean age 52.89 ± 4.42 years, 48.5% of studied women had secondary education, 60.3% of the studied women were housewife, 64.7% of them

were living at rural area and 72.1% of them were married.

Table (2): Shows that 55.9% of studied women had urinary incontinence from 3 to 5 years. 75.0% of studied women showed that the causes of making urine leakage was coughing, laughing, doing things that require effort, 66.2% of the studied women entered the toilet (3-4) times a day, 63.2% of the studied women waked up usually 3-4 times at night for urination. Finally 42.7% of the studied women leaked large quantity of urine that wet the under wears and external clothes.

Figure (1): Illustrates that 66.1%, 57.4%, 52.9%, and 47.0% of studied women acquired their knowledge about urinary incontinence from mass media, health team members, friends and family members respectively.

Table (3) clears that there was a highly statistical significant difference between the results before and after continuous care model implementation in favor of post- implementation regarding all items of studied women' knowledge regarding urinary incontinence with $p \leq 0.001$.

Figure (2) Displays that, 17.6% and 67.6% of studied women had good total knowledge score regarding urinary incontinence at pre-implementation and post-implementation phases respectively. While, it was revealed that 69.1% and 13.2% of studied women had poor total knowledge score regarding urinary incontinence at pre-implementation and post-implementation phases respectively.

Table (4) illustrated that the total self-esteem of the studied women significantly increased from 11.01 ± 8.50 before continuous care model implementation, to 19.17 ± 8.50 after the implementation with a highly statistically significant difference at $p \leq 0.001$.

Table (5): Clears that there was a highly statistical significant difference between the results before and after continuous care model implementation in favor of post- implementation toward all items of studied women' self-reported practices regarding urinary incontinence with $p \leq 0.001$.

Figure (3) Displays that, 42.6% and 79.4% of studied women had satisfactory practices score regarding urinary incontinence at pre-implementation and post-implementation phases respectively. While, it was revealed that 57.4% and 20.6% of studied women had unsatisfactory practices score regarding urinary incontinence at pre-implementation and post-implementation phases respectively.

Table (6) clarifies that; there was a highly statistically-significant positive correlation between studied women' total knowledge score and total practices score regarding urinary incontinence before and after continuous care model implementation ($P \leq 0.001$). Moreover, there was a highly statistically-significant positive correlation between studied women' total self-esteem score and total knowledge as well as total practices score regarding urinary incontinence before and after continuous care model implementation ($P \leq 0.001$).

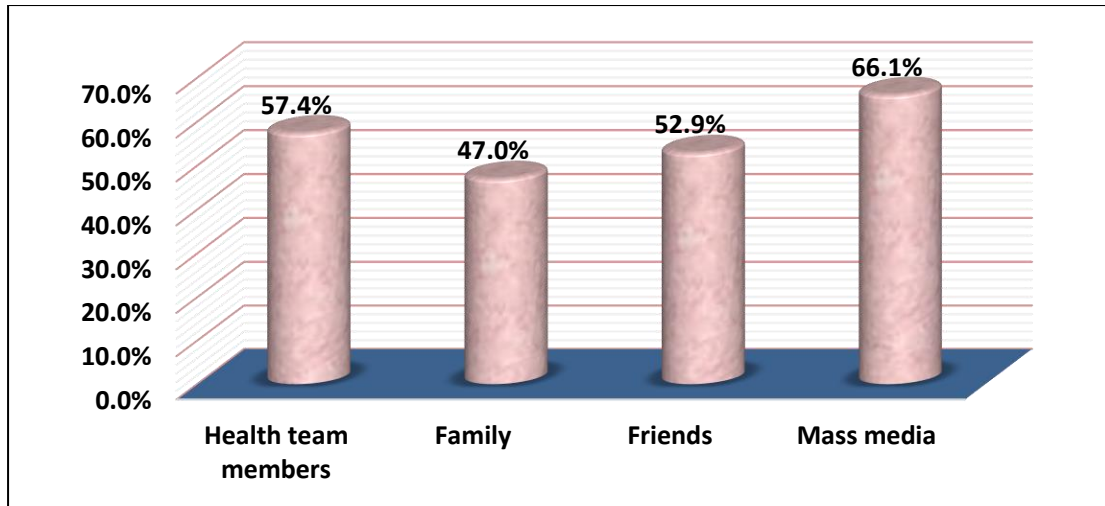
Table 1 Distribution of the Studied Women regarding personnel characteristics (n=68).

Personnel characteristics	No.	%
Age in years		
45-<50 years	18	26.5
50-<55 years	21	30.9
≥55 years	29	42.6
Mean ±SD	52.89±4.42	
Educational qualification		
Read and write	8	11.8
Primary education	17	25.0
Secondary education	33	48.5
University education	10	14.7
Occupation		
Housewife	41	60.3
Employee	27	39.7
Residence		
Rural	44	64.7
Urban	24	35.3
Marital status		
Single	2	2.9
Married	49	72.1
Divorced	6	8.8
Widow	11	16.2

Table 2 Distribution of the studied women regarding their history of urinary incontinence (n=68).

Items	No.	%
Duration of urinary incontinence		
<1years	6	8.8
1-3 years	11	16.2
3-5 years	38	55.9
≥5 years	13	19.1
* Causes of urine leakage		
Coughing, laughing or doing things that require effort	51	75.0
Unable to control urine once feel urge to urinate	32	47.1
Feeling stress and worry increase feeling urge to urinate	23	33.8
Frequency of urinary incontinence per day		
(1-2) times a day	4	5.9
(3-4) times a day	45	66.2
(5) times or more per day	19	27.9
Waking up at night for urination		
Not occur	4	5.9
(1-2) times a day	14	20.6
(3-4) times a day	43	63.2
(5) times or more per day	7	10.3
Amount of urine leakage		
Few drops	20	29.4
Medium quantity	19	27.9
Large quantity that wet the under wears and external clothes.	29	42.7

* Answers are not mutual exclusive



*Answers are not mutually exclusive

Figure 1 Distribution of studied women regarding their source of knowledge about urinary incontinence (n=68).

Table 3 Distribution of studied women according to knowledge regarding urinary incontinence at pre and post implementation phases of continuous care model (n=68).

Knowledge	Pre-implementation N=68						Post-implementation N=68						X ²	P-value
	Complete correct answer		Incomplete correct answer		Don't know answer		Complete correct answer		Incomplete correct answer		Don't know answer			
	No	%	No	%	No	%	No	%	No	%	No	%		
Meaning of urinary incontinence	15	22.1	21	30.8	32	47.1	47	69.1	15	22.1	6	8.8	35.3	0.000**
Types of urinary incontinence	5	7.3	11	16.2	52	76.5	46	67.6	17	25.0	5	7.4	73.0	0.000**
Causes of temporary incontinence	7	10.3	17	25.0	44	64.7	43	63.2	16	23.6	9	13.2	49.0	0.000**
Causes of permanent urinary incontinence	6	8.8	20	29.4	42	61.8	43	63.2	18	26.5	7	10.3	53.0	0.000**
Risk factors of urinary incontinence	9	13.2	24	35.3	35	51.5	39	57.4	20	29.4	9	13.2	34.4	0.000**
Manifestation of urinary incontinence	12	17.6	31	45.6	25	36.8	45	66.2	16	23.5	7	10.3	34.0	0.000**
Complication of urinary incontinence	14	20.6	28	41.2	26	38.2	36	52.9	21	30.9	11	16.2	16.7	0.000**
Prevention of urinary incontinence	21	30.9	26	38.2	21	30.9	44	64.7	16	23.5	8	11.8	13.3	0.001**
Treatment of urinary incontinence	15	22.1	28	41.2	25	36.7	37	54.4	31	30.9	10	14.7	16.6	0.000**

** Highly statistically significant ($P \leq 0.001$)

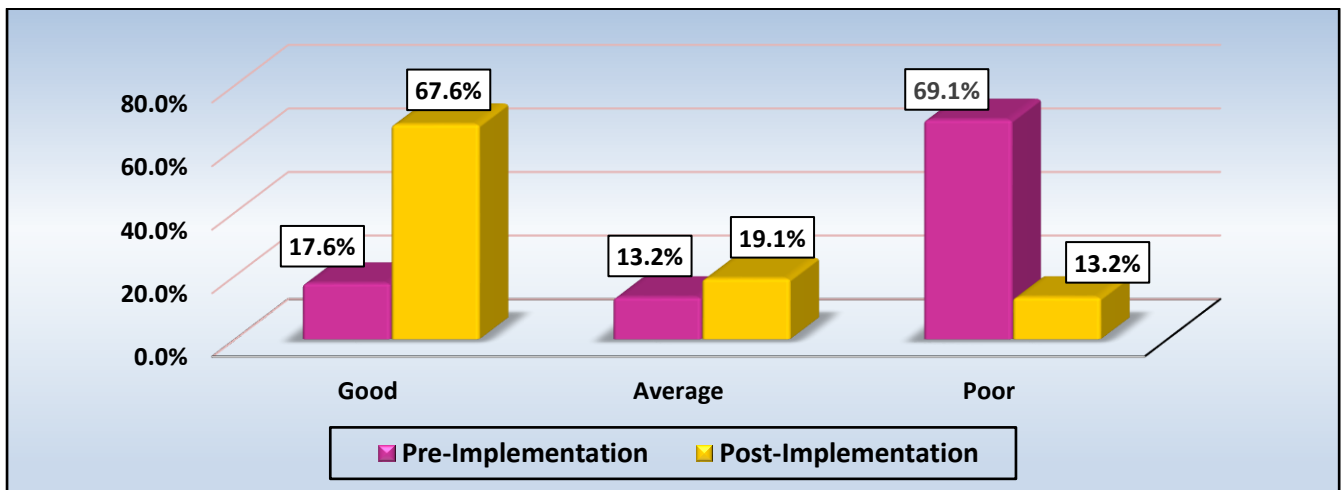


Figure 2 Distribution of studied women regarding the total knowledge score about urinary incontinence at pre and post implementation of continuous care model (n=68)

Table 4 Mean, and SD of studied women related Rosenberg self-esteem scale at pre and post implementation phases (n=68)

Items	Pre-implementation	Post-implementation	T	p-value
	Mean ± SD	Mean ± SD		
As a whole, I feel satisfied with myself.	0.94±0.99	1.79±0.85	13.3	0.000**
Sometimes I believe I am no good at all.	1.22±0.99	1.92±0.83	12.6	0.000**
I believe that I have several of good qualities.	1.01±0.76	1.95±1.02	14.2	0.000**
I am able to do things as the majority of individuals.	1.00±0.99	1.77±0.87	12.5	0.000**
I feel I do not have much to be proud of.	0.98±0.80	1.61±1.05	10.7	0.000**
I often experience feelings of worthlessness.	1.11±0.87	2.00±0.69	22.4	0.000**
I believe that I'm a person of worth.	1.08±0.95	2.01±0.76	16.3	0.000**
I desire to possess more respect for myself.	1.27±0.92	2.08±0.89	16.8	0.000**
Overall, I am of the opinion that I am unsuccessful.	1.26±0.82	2.04±0.92	15.3	0.000**
I have a positive outlook on myself	1.10±0.79	1.95±0.99	16.2	0.000**
Total self-esteem	11.01 ± 8.50	19.17 ± 8.50	23.5	0.000**

T (Paired Samples T test)

** Highly Significant (P≤0.001)

Table 5 Distribution of studied women according to self-reported practices regarding urinary incontinence at pre and post implementation phases of continuous care model (n=68).

Self-reported practices	Pre-implementation N=68				Post-implementation N=68				X ²	P-value
	Done		Not done		Done		Not done			
	No	%	No	%	No	%	No	%		
Healthy nutrition (12 items)										
Eating foods that contain magnesium,	21	30.9	47	69.1	42	61.8	26	38.2	13.0	0.000**
Eat food rich with vitamins as (vitamin C)	32	47.1	36	52.9	53	77.9	15	22.1	13.8	0.000**
Eat foods rich in vitamin D	29	42.6	39	57.4	50	73.5	18	26.5	13.3	0.000**
Eat foods rich in high fibers.	35	51.5	33	48.5	53	77.9	15	22.1	12.6	0.000**
Avoid dairy products as butter and cheese.	24	35.3	44	64.7	45	66.2	23	33.8	12.9	0.000**
Reduce the intake of spices.	27	39.7	41	60.3	56	82.4	12	17.6	26.0	0.000**
Avoid high acidic foods.	25	36.8	43	63.2	49	72.1	19	27.9	17.0	0.000**
Avoid artificial sweeteners such as chocolate.	30	44.1	38	55.9	52	76.5	16	23.5	14.8	0.000**
Avoid consuming soft drinks	28	41.2	40	58.8	50	73.5	18	26.5	14.5	0.000**
Drink adequate amount of water per day	25	36.8	43	63.2	51	75.0	17	25.0	12.9	0.000**
Avoid drinking alcohol or caffeine	22	32.4	46	67.6	43	63.2	25	36.8	24.8	0.000**
Avoid passive smoking	25	36.8	43	63.2	46	61.8	22	38.2	12.8	0.000**
Physical exercise(4 items)										
Do pelvic muscle (Kegel exercises)	14	20.6	54	79.4	43	63.2	25	36.8	25.4	0.000**
Exercises for the bladder muscle,	12	17.6	56	82.4	41	60.3	27	39.7	26.0	0.000**
Train the bladder to hold urine day and night,	21	30.9	47	69.1	49	72.1	19	27.9	23.0	0.000**

Get up at night regularly.	11	16.2	57	83.8	46	67.6	22	32.4	36.9	0.000**
Maintain the surrounding environment(6 items)										
Avoid use high bathroom.	28	41.2	40	58.8	49	72.1	19	27.9	13.2	0.000**
Avoid far bathroom away from the bed	29	42.6	39	57.4	51	75.0	17	25.0	14.6	0.000**
Avoid placing carpets to avoid falling at night.	31	45.6	37	54.4	50	73.5	18	26.5	11.0	0.001**
Maintain of enough furniture for easy mobility.	30	44.1	38	55.9	52	76.5	16	23.5	14.8	0.000**
Select the sitting position during urination	24	35.3	44	64.7	46	67.6	22	32.4	14.2	0.000**
Maintain good lighting in house and bathroom.	28	41.2	40	58.8	51	75.0	17	25.0	15.9	0.000**
Deal with urinary incontinence(13 items)										
Put absorbable pads and underwear.	23	33.8	45	66.2	49	72.1	19	27.9	19.9	0.000**
Use cotton pads that absorb urine.	29	42.6	39	57.4	51	75.0	47	69.1	14.6	0.000**
Wear appropriate underwear carefully.	32	47.1	36	52.9	55	80.9	13	19.1	16.8	0.000**
Use clothes that are easy to take off	28	41.2	40	58.8	54	79.4	14	20.6	20.7	0.000**
Use pads sufficient and change them frequently.	30	44.1	38	55.9	50	73.5	18	26.5	12.1	0.000**
Change underwear frequently.	38	55.9	30	44.1	57	83.8	11	16.2	12.6	0.000**
Use of urethral patches and tampons.	11	16.2	57	83.8	48	70.6	20	29.4	40.9	0.000**
Use small sticky patches and using only once.	14	20.6	54	79.4	47	69.1	21	30.9	32.3	0.000**
Skin care to prevent skin infections.	26	38.2	42	61.8	54	79.4	14	20.6	23.8	0.000**
Dry the skin well.	25	36.8	43	63.2	58	85.3	10	14.7	33.6	0.000**
Avoid continuous washing and rinsing,	30	44.1	38	55.9	53	77.9	15	22.1	16.3	0.000**
Use a protective cream	18	26.5	50	73.5	49	72.1	19	27.9	28.2	0.000**
Use special cleanser to protect the skin dryness.	34	50.0	34	50.0	54	79.4	14	20.6	12.8	0.000**
Other precaution regarding urinary incontinence(4 items)										
Empty the bladder every two hours.	13	19.1	55	80.9	46	67.6	22	32.4	32.6	0.000**
Avoid drinking excessive juices or liquids, especially when going outside the home	18	26.5	50	73.5	56	82.4	12	17.6	42.8	0.000**
Maintain regular and good sleep during night.	27	39.7	41	60.3	53	77.9	15	22.1	20.5	0.000**
Treat constipation that stimulates the bladder.	35	51.5	33	48.5	53	77.9	15	22.1	12.6	0.000**

** Highly statistically significant ($P \leq 0.001$)

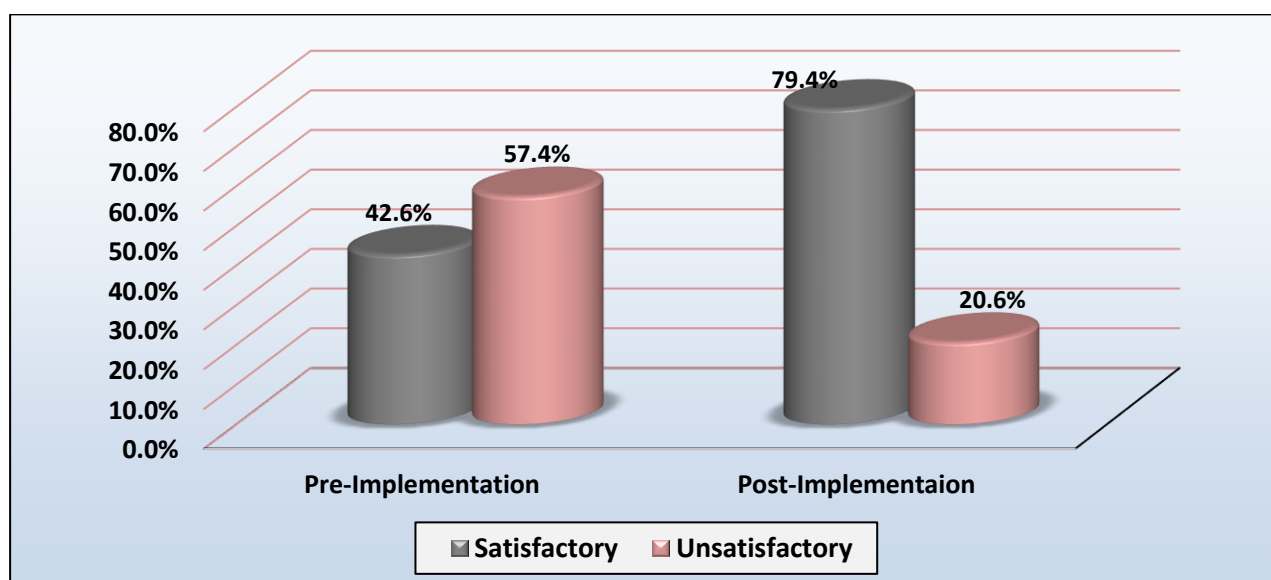


Figure 3 Distribution of studied women regarding the total practices score about urinary incontinence at pre-implementation and post- implementation phases (n=68)

Table 6 Correlation between studied women' total self-esteem score and their total knowledge as well as total practices score regarding urinary incontinence (n=68).

Variables	Total self-esteem				Total knowledge			
	Pre-intervention		Post-intervention		Pre-intervention		Post-intervention	
	r	p-value	r	p-value	r	p-value	r	p-value
Total knowledge	0.767	0.000**	0.806	0.000**				
Total practices	0.689	0.000**	0.785	0.000**	0.665	0.000**	0.783	0.000**

Pearson's r

** Highly Significant ($P \leq 0.001$)

Discussion

Urinary incontinence is described as the inadvertent release of urine to such an extent that it causes social and hygienic issues for older individuals and those who care for them. It is a common clinical condition and one of the most distressing and debilitating conditions worldwide. It affects women of all ages across different cultures and races. It impacts women from various cultural and tends to worsen with age. Rather than being a disease itself, urinary incontinence is a symptom

that arises from bladder or sphincter dysfunction. Although urinary incontinence does not pose a life-threatening risk, it significantly compromises one's quality of life (**Dmochowski et al., 2020**).

The current research aimed to evaluate the effectiveness of continuous care model on self-esteem and reported practices of postmenopausal women with urinary Incontinence. The results of this study strongly endorsed the research hypotheses, which confirm the importance of utilizing the continuous care model and the

instructional booklet for improving menopausal women's knowledge, self-esteem and practices regarding urinary incontinence.

Regarding the personal characteristics of the studied women, the present research results revealed that, more than two fifth of studied women were in the age group of more than or equal fifty five years old with mean age 52.89 ± 4.42 years, less than half of studied women had secondary education, less than two thirds of the studied women were housewife and were living at rural area. Regarding marital status, the results showed that less than three quarters of the studied women were married. From the researcher's point of view, this may be due to when women getting older the muscles in the bladder and urethra lose some of the strength which exposed them to urinary incontinence. Also, the average of educational level may contribute to their lack of knowledge and unhealthy practices regarding urinary incontinence.

The results of the current study agreed with **Abd El-Hamed et al., (2022)** who reported that, approximately more than half of studied women their age was more than 50 years with mean 51.74 ± 8.92 , about two thirds of studied women were married, more than one third of them had secondary education and more than three quarters of them were house wives.

Concerning history of the studied women regarding urinary incontinence the present research results revealed that, more than half of studied women had urinary incontinence from 3to 5 years. Three quarters of the studied women showed that the causes of making urine leakage was coughing, laughing, doing things that require effort About

three thirds of the studied women entered the toilet (3-4) times a day and waked up usually 3-4 times at night for urination. These findings agreed with **Javanmardifard et al., (2022)**, who reported that more than two thirds of their women mentioned that cough, sneezing and straining are the most precipitating factors for incontinence. This might be due to coughing, laughing or doing things that require effort are risk factors for causing urinary incontinence due to weak pelvic floor muscle.

As well as, the results of the current agreed with **Yenisehir et al., (2019)**, who reported that nearly half of studied patients wake up 2- 4 times at night for urination. This might be due to feel urge to urinate and fear from wetting clothes and bed.

Regarding the amount of urine leakage more than two fifth of the studied women leaked large quantity of urine that wet the under wears and external clothes. This finding agreed with **Grant et al., (2019)**, who reported that more than one third of their participants had a total incontinence that wet all internal and external clothes.

Regarding source of information about urinary incontinence; the results of the current study illustrated that, about two thirds, less than three fifth, more than half and less than half of studied women acquired their knowledge about urinary incontinence from mass media, health team members, friends and family members respectively. The percentage in favor of social media is due to the fact that the problem of urinary incontinence is a shameful problem for Egyptian women by virtue of customs and traditions, as women are ashamed to talk about this problem with anyone, and then they resort to searching for it through mass media.

Concerning studied women's knowledge, the findings of the current research indicated that there was a highly statistical significant difference between the results before and after continuous care model implementation in favor of post-implementation regarding all items of studied women' knowledge regarding urinary incontinence. Where, it was displayed that, less than one fifth and more than two thirds of studied women had good total knowledge score regarding urinary incontinence at pre-implementation and post-implementation phases respectively. While, it was revealed that less than three fifth and more than one tenth of studied women had poor total knowledge score regarding urinary incontinence at pre-implementation and post-implementation phases respectively.

The reason for this outcome could be attributed to the favorable influence of the consistent care approach and its efficiently structured sessions. The material included in the program was viewed as crucial and specific to the women being studied, thus leading to high levels of engagement and contentment among them during the educational sessions. Moreover, the women had an instructional booklet to follow in order to reduce the complications of incontinence that may befall the woman.

The results of the current study agreed with **Shaker et al., (2019)**, who reported that more than three quarters of women had unsatisfactory knowledge regarding urinary incontinence. As well as, the current findings matched with **Suchithra et al., (2020)**, who reported that before the test, 88% of the women had insufficient knowledge about

urinary incontinence, while 12% had average knowledge. After the test, the knowledge of 87% of the women had improved, but 13% remained in the poor knowledge category. The average score for knowledge before the test was 5.38, and this significantly increased to 11.73 in the post-test ($p < 0.001$).

Also, the current results agreed with **Gnanajothi et al., (2020)**, who found that, mean and standard deviation of pretest knowledge of patients was 11.6 ± 3.16 . But after undergoing the structured teaching program, the mean and standard deviation of post-test knowledge of patients was enhanced to 22.6 ± 4.0 . Moreover, the current results agreed with **Roloff et al., (2021)** who studied "Effect of Provider Education on Urinary Incontinence Knowledge and Assessment " and indicated that, primary care providers who are educated about urinary incontinence in women demonstrate improved knowledge and assessment of the prevalent problem.

As regards self-esteem, the results of the current study illustrated that, the total self-esteem of the studied women significantly increased from 11.01 ± 8.50 (low self-esteem) before continuous care model implementation, to 19.17 ± 8.50 (normal self-esteem) after the implementation with a highly statistically significant difference at $p \leq 0.001$. The increase in self-confidence may be due to the effect of the continuous care model on increasing women's knowledge about urinary incontinence, and providing women with healthy practices that reduce the severity of incontinence symptoms, such as eating healthy diet, practicing Physical exercise and maintain personal hygiene and others.

The findings of the present research align with **Stickley et al., (2017)**, assertion that urinary incontinence develops slowly over time and frequently intensifies to the extent that it leads women to discontinue various routine tasks due to issues like moisture, odor, discomfort, and skin irritation. Additionally, it can negatively impact self-esteem due to feelings of shame and embarrassment. Urinary incontinence was associated with significantly higher odds for loneliness. The results also consistent with **Elbana et al., (2018)**, who mentioned that, more than one third of the studied women had low self-esteem.

Furthermore, according to **Lee and colleagues, (2021)**, it was found that women suffering from urinary incontinence experienced elevated levels of depression and stress, as well as decreased self-esteem compared to those without the condition. Additionally, the findings of the present study align with the research conducted by **Moradinasab et al., (2023)**, where they observed a significant difference in self-esteem and sexual function scores between the intervention group and the control group immediately after the intervention and at the end of 4 weeks ($p < 0.001$).

Concerning studied women's self-reported practices, the findings of the current research indicated that there was a highly statistical significant difference between the results before and after continuous care model implementation in favor of post- implementation toward all items (health nutrition, physical exercise, maintain the surrounding environment, deal with urinary incontinence, precaution regarding urinary incontinence) of studied women' self-reported

practices regarding urinary incontinence. Where, it was displayed that, more than two fifth and more than three quarters of studied women had satisfactory practices score regarding urinary incontinence at pre-implementation and post-implementation phases respectively. While, it was revealed that less than three fifth and one fifth of studied women had unsatisfactory practices score regarding urinary incontinence at pre-implementation and post-implementation phases respectively.

This improvement in women's health practices could be attributed to the fact that they were given the opportunity to discuss and communicate effectively during educational sessions with researchers who provided them with knowledge on health practices. Besides the instructional booklet, which significantly contributed to women adopting healthy practices and using it as a reference in the future.

The findings of the current study were incongruent with **Howard et al., (2020)**, who reported that the majority of their women had unhealthy nutritional habits such as eating sweaty and spicy food pre-program implementation. Also the study result was consistent with **Kolbadinezhad et al., (2020)** who mentioned that the total score of self-care behaviors after intervention was 55.90 in the intervention group and 42.75 in the control group. The independent t-test showed a significant difference after intervention between the two groups ($P = 0.001$).

As well as, the current results parallel with the study published by **Debbarma, (2021)** who discovered a significant statistical distinction

between the pretest and posttest scores in the experimental group. Conversely, the difference in scores between the pretest and posttest in the control group was comparatively smaller than the difference observed in the experimental group. Moreover, the current findings matched with **Helmy et al., (2022)**, who mentioned that, there were highly significant improvements in premenopausal women's knowledge and self-reported implementation of pelvic floor muscle exercises after participating in a video-assisted instructional program.

The results of the current study showed that, there was a highly statistically-significant positive correlation between studied women' total knowledge score and total practices score regarding urinary incontinence before and after continuous care model implementation. From the researcher's point of view, this association is explained by that improvement in knowledge is reflected in the improvement in practice level. Also, mean when the studied women had sufficient knowledge they can practice well and this reflected the success of the instructional sessions and their positive effect. These findings agreed with **Azizi et al., (2019)**, reported that there was significant relation between their studied women knowledge and their self-care practices.

Finally the current study results reported that, there was a highly statistically-significant positive correlation between studied women' total self-esteem score and total knowledge as well as total practices score regarding urinary incontinence before and after continuous care model implementation. This may be due to when women

had enough knowledge, acquired appropriate information and healthy strategies to deal with urinary incontinence, this helped women deal with this problem and reduce severity of the symptoms, which led to increased self-esteem.

Conclusion

The findings of current research conclude that the implementation of continuous care model regarding urinary incontinence was effective in enhancing the self-esteem and self-reported practices of postmenopausal women. Four weeks after the implementation of continuous care model, there were statistically significant differences in the total self-esteem of the studied women at pre and post implementation phases. In addition, the majority of studied women had satisfactory total self-reported practices score regarding urinary incontinence at post-implementation phases compared to pre-implementation phase. Additionally, there was a highly statistically-significant positive correlation between studied women' total knowledge score and total practices score regarding urinary incontinence before and after continuous care model implementation ($P \leq 0.001$). Moreover, there was a highly statistically-significant positive correlation between studied women' total self-esteem score and total knowledge as well as total practices score regarding urinary incontinence before and after continuous care model implementation. As a result, both the study aim and the hypotheses were realized.

Recommendations

Based on research findings it was recommended that:

1. All postmenopausal women should receive printed booklets and brochures containing sufficient information about urinary incontinence. These booklets should be kept in the urological & obstetrics and gynecological units.

2. Developing special training program for women to help them to do pelvic floor muscle exercise.

Further researches

Replication of the study on large representative probability sample is recommended in to get more generalization of the results.

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