

Effect of Group Counseling on the Health Promotion of Women with Stress Urinary Incontinence: A Randomized Controlled Trial

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ABSTRACT

Background & aim: Pender's model promotes healthy behaviours by changing one's lifestyle. There have been few studies on using this model to improve the health of women with stress urinary incontinence. This study aimed to determine the effect of group counseling based on the Pender's model on the health promotion of women with stress urinary incontinence.

Methods: This randomized clinical trial comprised two groups, with a total of 70 women, who were selected through convenient sampling and then were randomly allocated into either the control or intervention group using permutation block randomization. The intervention group received a structured program of six group counseling sessions based on Pender's model. Data collection instruments included demographic characteristics questionnaire; the Questionnaire for Urinary Incontinence Diagnosis (QUID); Depression, Anxiety and Stress Scales-21 (DASS-21) and a researcher-developed questionnaire aligned with the constructs of Pender's model. Both groups completed the questionnaires before, immediately following the intervention, and again two months later. Data analyzed by independent t-test, Mann-Whitney, and repeated measure regression using SPSS version 25.

Results: Prior to the intervention, there was no statistically significant difference in the average total scores of the health promotion between the two groups ($P=0.561$). However, following the intervention and at the two-month follow-up, the intervention group exhibited a significant increase in their total scores on the health promotion compared to the control group ($P<0.001$).

Conclusion: Group counseling based on the Pender's model is an effective counselling approach enhancing the health promotion of women suffering from stress urinary incontinence. Therefore, its utilization is recommended in the clinical settings.

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Introduction

Urinary incontinence is categorized under pelvic floor disorders ranges. The International Association of ICS defines urinary incontinence

as a involuntary loss of urine (1-2). Urinary incontinence is a medical and social issue and

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classified into three types: stress, urgency, and mixed urinary incontinence. Its stressful type is more prevalent (2).

Stress incontinence is defined as urinary leakage caused by increased intra-abdominal pressure caused by coughing, sneezing, running, or jumping (3). The prevalence of urinary incontinence in women is ranges from 15-50% , with the affecting approximately 34% (4).

Urinary incontinence significantly impacts many aspects of life, with psychological, physical, and social ramifications. Anxiety (8%), worry (5%), despair (4%), and decreased self-confidence and self-esteem (4%) are among the psychological consequences of urinary incontinence (5). Failure to treat urinary incontinence results in urinary infections, which aggravate urinary incontinence. Physical consequences of urinary incontinence include fungal and microbial infections (20%), humidity (50%), unpleasant odors (30%), and sleep disorders (15%). The embarrassment caused by frequent bathroom visits (50%), creating dampness and the unpleasant odor of urine (30%), affects family and social relationships, resulting in social isolation and separation. It also impairs a woman's ability to engage in sports, recreation, shopping, sexual activities (20%), and daily tasks in general, leading to dependence and, ultimately, negatively impacting the health of those affected (6). Lim and colleagues (2016) demonstrated in a study that stress urinary incontinence affects not only the sexual performance and health of affected women, but also the sexual performance of their sexual partners (7).

Urinary incontinence can be treated medically, surgically, or behaviorally. There are side effects to both medical and surgical treatments. Behavioral and physical therapies are effective for mild to moderate stressful type. Behavioral therapies are associated with the capacity to manage and alleviate the condition (8). The goal of behavior therapy is usually focused on improving the patient's symptoms by teaching them about lifestyle modifications (9). Although behavioral treatments are effective in treating patients with urinary incontinence, they do not require special facilities or equipment and are less expensive than other treatments. However, since these are specialized cases, they receive

less attention from healthcare providers; hence, patients do not receive proper training in this field (8-9).

Most of the interventions performed in urinary incontinence usually focus on the patient's physical problem, emphasizing pelvic floor exercises. While improving the health of people with urinary incontinence necessitates the use of a comprehensive model that incorporates all physical, psychological, and social aspects (10). Using models is one of the most effective ways to improve the efficiency of educational programs, promote health and considering all the relevant factors. Models are beneficial as they provide suggestions for various aspects of educational interventions. The model's correct application determines the effectiveness of counseling programs (11). The initial crucial step in launching an educational and consulting program is the careful selection of an appropriate model (12). Furthermore, the effectiveness of counseling programs depends on the model's correct application. There are numerous theories and models for improving health and performing healthy behaviors. Pender's model is one of the models that explain why people behave the way they do and how to change their behavior (13). Pender's model identifies the factors and their relationships to health-promoting behaviors. Several studies in various fields have shown the efficacy of the Pender model in increasing and promoting health (14-15). According to a study conducted by Radmehr et al. (2013) on the health promotion of OCD patients using the Pender model, the mean and standard deviation of health promotion lifestyle scores increased from 111.37 ± 21 before the intervention to 139.57 ± 14 after the intervention, demonstrating statistical significance ($P=0.012$). The findings of this study indicate that Pender's model is effective in improving the health of OCD patients (16). Furthermore, Eliasi et al. (2019) investigated the effect of the Pender model on improving the general health of employees at the Islamic Azad University of Arak branch, and the findings indicate that it is effective (17). Considering that

a person's attitude towards life is effective in promoting health, group counseling can be used as one of the most significant methods to create a positive attitude, assist in obtaining new skills, and facilitate behavior change (18-19). The Pender model, on the other hand, has been used to teach a healthy lifestyle to people with HIV, OCD, diabetics, and heart patients (10, 20-22). However, no research has been conducted to assess the impact of Pender's model on the health of women suffering from urinary incontinence. Therefore, the present study was conducted to determine the effect of group counseling based on the Pender model in improving the health of women suffering from stress urinary incontinence.

Materials and Methods

This study is a randomized clinical trial with a control group, and it is registered as IRCT20211216053423N1 in the Iranian clinical trial database. The research population was women suffering from stress urinary incontinence who referred to women's clinics in Mashhad from May to August of 2022. After obtaining ethical approval from the university (IR.MUMS.NURSE.REC.1400.092), sampling was carried out at two specialized clinics for pelvic floor disorders. . Everyone who complained of urinary incontinence was identified. The researcher introduced herself to the subjects and explained the study objectives. Subjects who agreed to the entry criteria were then assigned to one of the study groups and required to read and sign a written informed consent form if they wished to participate in the study.

The entry criteria for this study included having informed consent to participate in the research , being Iranian, being over 18 years old, having minimal literacy, having a smartphone to call and follow up to participate in the study, not being pregnant , absence of known diseases related to urinary incontinence (Neurological diseases, diabetes, and cardio-respiratory diseases), not using drugs and diuretic herbs (Furosemide, hydrochlorothiazide, ginger, green tea), not using tobacco and alcohol, not having movement restrictions (Ability to walk on her own feet), ability to communicate verbally, BMI less than 30, absence of urinary tract infection (It is measured by the UA/UC test), suffering

from stress urinary incontinence (based on a score of 4 or higher in the first three QUID questionnaire questions) and the absence of severe stress, anxiety, or depression (A score of 26 or higher for stress, 15 or higher for anxiety, and 21 or higher for depression indicates the severity of each of these problems) (based on the stress, anxiety, and depression questionnaire DASS 21). The withdrawal criteria during the study included failure to participate in more than one counseling session, unwillingness to continue cooperating in the research, and having an unfortunate accident (A family member's or close friend's death or incurable illness, the loss of one's job or spouse, a forced change of residence, a severe financial problem, or the infidelity of one's spouse, ...) during the research.

Based on the study by Khosravan et al. (2014), and taking into account the intervention nature of the study, the ability to use methods with high statistical power, and the possibility of dropping samples, and based on the effect size formula, the sample size of 32 people per group were determined with 5% error, 80% power, and an average effect size of (0.7), a total of 35 people per group were included in the study group were determined with 10% attrition (23). After determining the sample size and selecting the samples, the samples were randomly assigned to the control or intervention groups using permutation blocks.

The demographic information form includes parts a) recording personal information with 10 questions and b) physical status and pregnancy with 8 questions. This form was considered to measure contextual and intervening variables, which was approved by seven members of Mashhad University of Medical Sciences' scientific board based on an extensive review of sources and consultation with respected professors and advisors, its design and arrangement. . the researcher completed information collection for each of the subjects through interview and observation subject.

Questionnaire for Urinary Incontinence Diagnosis (QUID): This questionnaire contains 6 questions, the first three are for the diagnosis of stress urinary incontinence and the other three are for the diagnosis of urgently needed urinary incontinence. A score of four or higher on the

first three questions specifies stress incontinence, and a score of 6 or higher on the second three questions indicates urge urinary incontinence; the presence of both cases indicates mixed-type incontinence (24). In the present study, only people suffering from stressful type were selected. The structure and validation of this questionnaire were confirmed by Mokhlesi et al. (2017) on Iran Validity (25). In this study, the validity and reliability of the content of this questionnaire were confirmed by the calculation of the Cronbach alpha coefficient of 0.86.

Depression, Anxiety and Stress Scales (DASS-21): The questionnaire contains 21 questions on anxiety, depression, and stress. Each of the three scales of depression, anxiety, and stress is examined and measured with seven items, and the subjects' score in each of the three subscales is calculated by adding the expressions belonging to all of the subscale expressions. Each question is scored on a 4-point Likert scale ranging from not at all to very much (0 to 3). The minimum and maximum scores for depression, anxiety, and stress are 0 and 21, respectively. The validity of the Persian version of this tool (21-question form) has been confirmed by Sahibi et al. (2004) in Mashhad (26). Cronbach's alpha coefficients of 0.87 were used in this study to confirm the validity and reliability of content validity.

The researcher developed a questionnaire for health promotion based on the Pender model's constructs: Based on the structures and substructures of Pender's health promotion model, this questionnaire was designed and adjusted after an extensive review of sources and consultation with respected professors and advisors. The questionnaire contained 73 questions. To measure the structure of individual characteristics and experiences, 11 questions were designed; on the structure of behavior-specific cognitions and affect eight questions, on the substructures of perceived self-efficacy 11 questions, eight questions on perceived benefits to action, six questions on perceived obstacles to action, five questions on interpersonal influences, five questions on

situational influencers, ten questions measuring commitment to plan of action and nine questions concerning behavioral outcomes. The original questionnaire consisted of 80 questions. It was given to seven Mashhad University of Medical Sciences professors to assess the content's validity. The number of items was reduced to 73 based on content validity to examine the necessity of the items in the CVR section and the relevance of the items in the CVI section, and the remaining items were used as the final tool ($I=CVI=1.00$, $I=CVR=0.857$). The test-retest method was used to assess the tool's reliability. Therefore, the basic tool was given to 30 people with urinary incontinence to complete during the preliminary study. After two weeks, the same 30 people completed the questionnaire again, and Dorney's correlation index ($ICC=0.875$, $P<0.001$) was calculated and confirmed. Internal consistency, as measured by Cronbach's alpha (structures of individual characteristics and experiences 0.86, structure of behavior-specific cognitions 0.92, substructures of perceived self-efficacy 0.74, perceived benefits to action substructure 0.84, perceived obstacles to action substructure 0.86, the substructure of interpersonal influencers 0.76, situational influence infrastructure 0.72, the substructure of commitment to plan of action 0.92, and the structure of behavioral outcomes 0.88) was confirmed.

In both the intervention and control groups, a pre-test was conducted by completing the research tools. No dropouts were observed in either group until the end of the intervention (Figure 1). Only the intervention group received the intervention for six weeks, while the control group received the usual care, including a gynecologist visit with a pelvic floor fellowship. Group counseling based on the Pender model was conducted for the intervention group for a total of seven sessions for groups of seven people based on the model structures (Table 1). There were six group sessions and one individual session. The first and last meetings for each group, and the one-on-one sessions, were held in person. Other group counseling sessions were held in person in the sky room for 45-60 minutes each.

Table 1. Program and content of health promotion group counseling sessions based on the Pender model

Session	Subject	Content
First session	-Structure of individual characteristics and experiences - A brief explanation about behaviors related to urinary incontinence	- Familiarizing the members with one another and stating the course objectives - Encouraging group members to share their experiences with urinary incontinence - Inspiring people to learn more about urinary incontinence factors and behaviors - Promoting group members to participate in relevant discussions and express their experiences - Summing up the counseling session, determining the time of the next session
Second session	- Activity-Related affect - Stress management	- Encouraging group members to express their feelings and thoughts about performing urinary incontinence-related behaviors - Discussions on stress management. - Summarizing the counseling session and scheduling the next one - Discussing people's ability to perform urinary incontinence-related behaviors
Third session	- Self-efficacy infrastructure - Pelvic floor and bladder control training	- Pelvic floor and bladder control training - Encouraging people to perform behaviors related to urinary incontinence - Summing up the counseling session and setting the time for the next session
Fourth session	- The sub-constructs of perceived barriers and perceived benefits - Constipation and urinary incontinence - Sexual intercourse and urinary incontinence - The substructures of interpersonal influencers and situational influencers	- Discussion in groups about the challenges and benefits of performing urinary incontinence-related behaviors. - Encouraging group members to participate to provide solutions for removing obstacles and enhancing the benefits of performing the behavior - Encouraging group members to express the solution to reduce urinary incontinence during sexual intercourse - Summarizing the counseling session and scheduling the next session - Encouraging people to provide solutions to improve relationships with others and soliciting their assistance
Fifth session	- Explanation about communicating with others	- Discussion among group members about current facilities and conditions of urinary incontinence behavior, as well as discussion concerning improving conditions through the provision of solutions. -Summing up the counseling session and determining the time of the next session - People should express their intention to engage in urinary incontinence-related behaviors.
Sixth session	- The structure of behavioral outcomes and the substructure of commitment to plan of action	- A brief review of the contents expressed in the past meetings by the group members - Completion of questionnaires by group members - Summary of the counseling session - Gratitude and appreciation to the members of the group

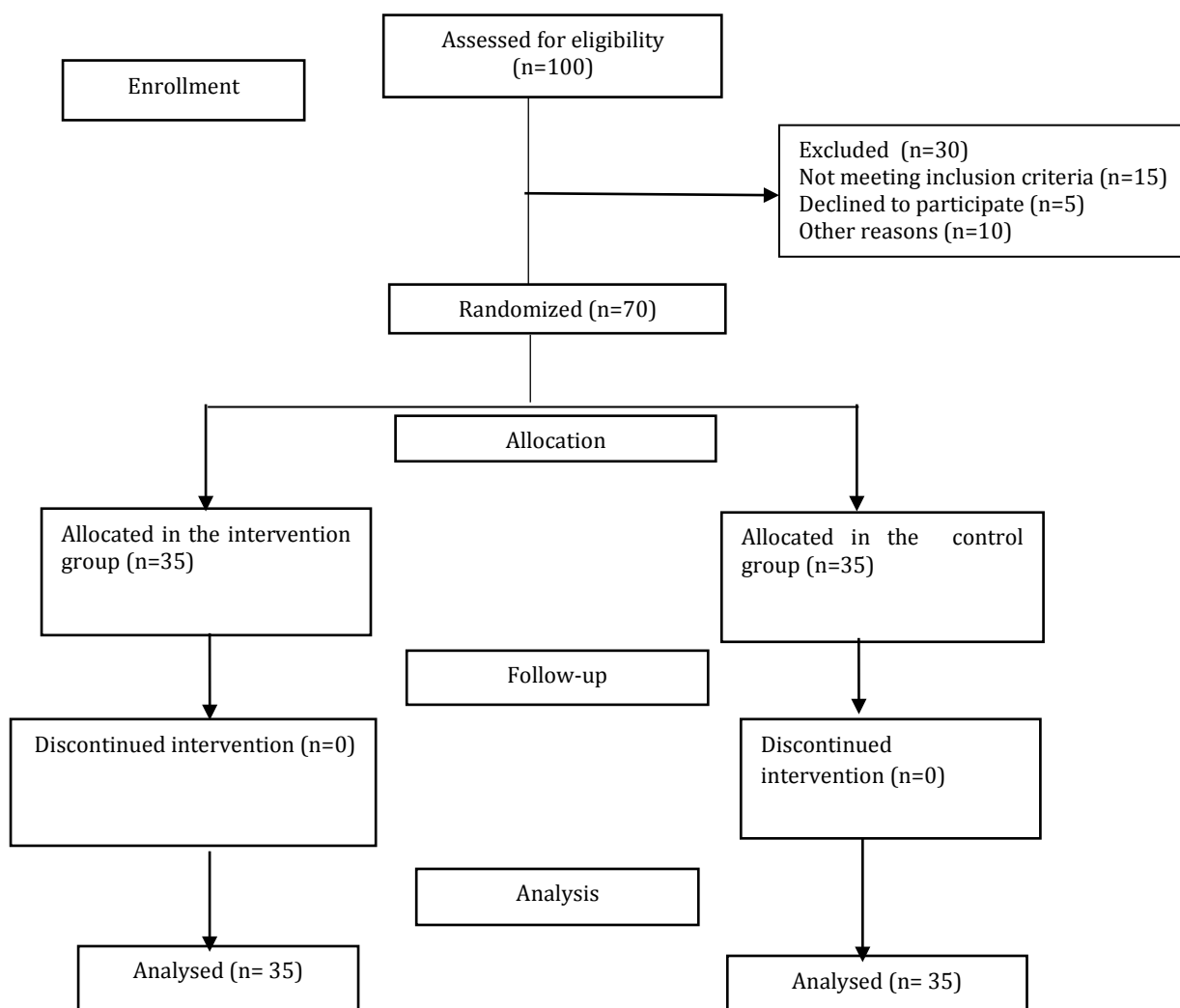


Figure 1. The CONSORT flow diagram of intervention in the two groups

Immediately and two months after the end of the intervention, questionnaires were completed again by the two groups. The data was analyzed using SPSS software version 25 with statistical tests such as Kolmogorov-Smirnov, independent t, Mann-Whitney, and repeated measure regression.

Results

The study findings revealed that the intervention and control groups were homogeneous in terms of variables such as body mass index, Gravida, para, abortions, number of natural births, number of cesarean deliveries, fetal weight, marital status, occupation, spouse's

occupation, spouse's education level, housing status, income level, skin color, history of the disease, and abdominal surgery ($p > 0.05$). However, they were not homogeneous in terms of age variables ($p = 0.004$), education level ($p = 0.025$), and menopause status ($p = 0.009$) (Tables 2 and 3). A repeated size regression test was used to control for the effect of these confounders (Table 5).

The results of the independent t-test in the intergroup comparison revealed that before the intervention, in terms of the mean and standard deviation of the health promotion score of the studied women in the intervention group, the

score was 201.09 ± 13.87 , while in the control group, it was 203.03 ± 13.91 , which was not statistically significant ($P = 0.561$). Immediately after the intervention, the independent t-test results indicate that the mean and standard

deviation of the health promotion score in women in the intervention group was 250.89 ± 15.15 , and it was 190.4 ± 14.18 in the control group, with a significant difference between the two groups ($P < 0.001$).

Table 2. Demographic characteristics of intervention and control groups

Variable	Total N (%)	Intervention group N (%)	Control group N (%)	Test result
Marital status				$X^2=2.84$
Married	65(92.9)	33(94.3)	32(91.4)	$p>0.99$
Widow-divorced	5(7.1)	2(5.7)	3(8.6)	Fisher's exact
Educational level				$X^2=8.61$
Reading and writing literacy	12(17.1)	4(11.4)	8(22.85)	$P=0.025$
Elementary	27(38.6)	10(28.6)	17(48.6)	Fisher's exact
high school	28(40.0)	20(57.1)	8(22.85)	
University	3(4.3)	1(2.9)	2(5.7)	
Occupation				$X^2=8.61$
Housewife	61(87.1)	31(88.6)	30(85.7)	$p>0.99$
Employed	9(12.9)	4(11.4)	5(14.3)	Fisher's exact
Spouse's occupation				$X^2=3.33$
Free	47(72.3)	25(75.75)	22(68.8)	$P=0.263$
Employee	2(3.1)	2(6.05)	0(0.0)	Fisher's exact
Retired	1(1.5)	0(0.0)	1(3.1)	
Others	15(23.1)	6(18.2)	9(28.1)	
Spouse's education level				$X^2=6.61$
Reading and writing literacy	9(13.8)	4(12.1)	5(15.6)	$P=0.06$
Elementary	30(46.2)	11(33.4)	19(59.4)	Fisher's exact
high school	24(36.9)	17(51.5)	7(21.9)	
University	2(3.1)	1(3.0)	1(3.1)	
Housing status				$X^2=3.73$
Rental	11(15.7)	8(22.85)	3(8.6)	$P=0.11$
Personal	58(82.9)	26(74.3)	32(91.4)	Fisher's exact
Others	1(1.4)	1(2.85)	0(0.0)	
Income level				$X^2=0.38$
less than enough	36(51.4)	19(54.3)	17(48.6)	$P=0.925$
Enough	30(42.9)	14(40.0)	16(45.7)	Fisher's exact
More than enough	4(5.7)	2(5.7)	2(5.7)	
Skin color				$X^2=2.84$
Bright	27(38.6)	11(31.4)	16(45.7)	$P=0.243$
Dark	8(11.4)	6(17.2)	2(5.7)	Fisher's exact
Wheatish	35(50.0)	18(51.4)	17(48.6)	
History of the disease				$X^2=0$
No	54(77.1)	27(77.1)	27(77.1)	$p>0.99$
Yes	16(22.9)	8(22.9)	8(22.9)	chi-square
Abdominal surgery				$X^2=1.5$
No	43(61.4)	24(68.6)	19(54.3)	$P=0.22$
Yes	27(38.6)	11(31.4)	16(45.7)	chi-square
Menopause status				$X^2=6.91$
No	35(50.0)	23(65.7)	12(34.3)	$P=0.009$
Yes	35(50.0)	12(34.3)	23(65.7)	chi-square

Table 3. Mean and standard deviation of demographic and obstetric characteristics of women with stress urinary incontinence in two intervention and control groups

Variable	Total mean \pm SD	Intervention group mean \pm SD	Control group mean \pm SD	Test result
Age (year)	49.81 \pm 12.21	45.71 \pm 11.17	53.91 \pm 11.97	T=2.96 P=0.004 Independent t-test
BMI (kg/m ²)	25.94 \pm 2.76	25.65 \pm 2.64	26.24 \pm 2.9	Z=1.08 P=0.28 Mann-Whitney
Gravidity	4.51 \pm 2.36	4.11 \pm 1.84	4.91 \pm 2.76	Z=1.09 P=0.27 Mann-Whitney
Parity	4.07 \pm 2.17	3.63 \pm 1.8	4.51 \pm 2.44	Z=1.4 P=0.16 Mann-Whitney
Abortions	0.44 \pm 0.71	0.49 \pm 0.7	0.4 \pm 0.74	Z=0.83 P=0.402 Mann-Whitney
Number of natural births	3.64 \pm 2.49	3.31 \pm 1.84	3.97 \pm 2.99	Z=0.801 P=0.423 Mann-Whitney
Number of cesarean deliveries	0.43 \pm 0.94	0.31 \pm 0.63	0.54 \pm 1.17	Z=0.224 P=0.823 Mann-Whitney
Fetal weight (g)	3163.24 \pm 153.77	3145.15 \pm 138.76	3181.33 \pm 167.5	Z=0.87 P=0.384 Mann-Whitney

Table 4. Comparison of the average total score of the Pender health promotion model questionnaire between the two intervention and control groups

Variable	Intervention group	Control group	Independent t-test result
Before intervention (A)	201.09 \pm 13.87	203.03 \pm 13.91	T = 0.58 p=0.561
Immediately after the intervention (B)	250.89 \pm 15.15	190.4 \pm 14.18	T=17/24 P<0.001
Changes immediately after the intervention compared to before	49.8 \pm 7.48	-12.63 \pm 5.56	T=39.58 P<0.001
Two months after the intervention (C)	252.43 \pm 14.6	190.89 \pm 13.51	T=18.68 P<0.001
Changes two months later than before the intervention	51.34 \pm 8.54	-12.14 \pm 5.69	T=36.56 P<0.001
The result of the intragroup test	F=875.88 P<0.001 repeated size A vs. B<0.001 A vs. C<0.001 B vs. C = 0.902	F=89.56 P<0.001 repeated size A vs. B<0.001 A vs. C<0.001 B vs. C>0/999	

Two months after the intervention, the average health promotion score in the intervention group was 252.43 ± 14.6 , while the average in the control group was 190.89 ± 13.51 , indicating a significant difference between the two groups ($P < 0.001$). The Changes immediately after the intervention compared to before, in the intervention group were 49.8 ± 7.48 , and in the control group were -12.63 ± 5.56 , with a significant difference between the two groups ($P < 0.001$).

Two months after the intervention compared to before, the intervention group's changes were 51.34 ± 8.54 , while the control group's changes were -12.14 ± 5.69 , with a statistically significant difference between the two groups ($P < 0/001$). To compare the group before, immediately after, and two months after the intervention, the results of the repeated size test revealed a significant difference in the intervention group ($P < 0.001$) and the control group ($P < 0.001$) (Table 4).

Table 5. Repetitive size regression to check Pender's model score between two groups with control of confounders

group	The regression coefficient	The standard error	Test result
Immediately after the intervention			
Intervention	62.63	1.75	t=35.61 p<0.001
Control	Ref*	-	-
Two months after the intervention			
Intervention	62.56	1.87	t=33.35 p<0.001
Control	Ref*	-	-

* The control group serves as a point of reference.

By controlling the confounders (age, education, and menopause status), the total score of the Pender model immediately after the intervention increased by 62.63 units in the intervention group compared to the control group, which was statistically significant ($p < 0.001$). The Pender health promotion model

score in the intervention group increased by 62.56 points compared to the control group two months after the intervention, which was significant ($p < 0.001$) (Table 5).

The results of the constructs and sub-constructs of Pender's health promotion model are as follows (Table 6).

Table 6. Comparison of the average score of constructs and sub-constructs of the Pender model questionnaire in two groups

Variable	Before the intervention	Immediately after the intervention	changes immediately after the intervention compared to	Two months after the intervention	Changes two months later compared to before the	the result of the intragroup test
Structure of individual characteristics and experiences						
Intervention	30.86 ± 4.89	41.23 ± 4.14	10.37 ± 3.85	41 ± 3.56	10.14 ± 4.03	F=163.01 P<0.001* repeated size
Control	33 ± 5.36	30.31 ± 6.13	-2.69 ± 2.77	30.86 ± 6.39	-2.14 ± 2.41	F=18.54 P<0.001 repeated size
Test result	T=1.74 P=0.085	T=8.72 P<0.001	T=16.27 P<0.001	T=8.19 P<0.001	T=15.47 P<0.001	

	Independent t-test	Independent t-test	Independent t-test	Independent t-test	Independent t-test	
Activity-Related affects						
Intervention	27.63 ±4.12	31.03 ± 4.28	3.4 ± 1.94	32 ± 3.48	4.37 ± 3.06	F=48.75 P<0.001 repeated size
Control	27.09 ±4.39	25.43 ± 4.95	-1.66 ± 2.19	24.14 ± 5	2.65 ± 2.94	F=18.7 P<0.001 repeated size
Test result	T=0.53 P=0.596 Independent t-test	T=5.06 P<0.001 Independent t-test	T=1.02 P<0.001 Independent t-test	T=7.62 P<0.001 Independent t-test	T=10.6 P<0.001 Independent t-test	
The substructures of perceived Self-efficacy						
Intervention	35.6 ± 4.65	44 ± 5.47	8.4 ± 3.02	40.4 ± 5.63	4.8 ± 3.26	F=110.8 P<0.001 repeated size
Control	36.46 ± 5.65	6.66 ± 32.14	-4.31±3.06	35.03 ± 5.67	-1.43±2.46	F=33.95 P<0.001 repeated size
Test result	T=1.74 P=0.08 Independent t-test	T=8.72 P<0.001 Independent t-test	T=17.45 P<0.001 Independent t-test	T=3.97 P<0.001 Independent t-test	Z=6.64 P<0.001 Mann- Whitney	
The substructures of perceived benefits						
Intervention	23.49 ± 3.83	28.23 ± 4.49	4.74 ± 2.62	30.71 ± 4.07	7.23 ± 4.23	F=65.7 P<0.001 repeated size
Control	23.8 ± 4.15	22.2 ± 4.27	-1.6 ± 2.003	21.57 ± 3.43	-2/23 ± 2/05	F=17.49 P<0.001 repeated size
Test result	T=0.32 P=0.743 Independent t-test	T=5.74 P<0.001 Independent t-test	T=11.35 P<0.001 Independent t-test	T=10.63 P<0.001 Independent t-test	Z=7.07 P<0.001 Mann- Whitney	
The substructures of perceived barriers						
Intervention	16.49 ± 3.03	20.17 ± 3.89	3.69 ± 2.47	20.06 ± 2.48	3.57 ± 3.61	F=24.89 P<0.001 repeated size
Control	15.86 ± 4.51	14.43 ± 5.37	-1.43 ± 2.38	14.31 ± 3.77	-1.54 ± 1.97	F=7.28 P=0.005 repeated size
Test result	T=0.68 P=0.49 Independent t-test	T=5.11 P<0.001 Independent t-test	T=8.82 P<0.001 Independent t-test	T=7.52 P<0.001 Independent t-test	T=7.43 P<0.001 Independent t-test	
The substructures of interpersonal influencers						
Intervention	10.91 ± 3.84	12.74 ± 2.99	1.83 ± 1.9	12.46 ± 3.09	1.54 ± 1.68	F=18.33 P<0.001

Control	12.2 ± 3.56	12.09 ± 3.5	-0.11 ± 0.32	12.23 ± 3.38	0.03 ± 0.74	repeated size F=7.91 P=0.367 repeated size
Test result	T=1.45 P=0.15 Independent t-test	T=0.84 P=0.402 Independent t-test	Z=5.43 P<0.001 Mann-Whitney	T=0.29 P=0.769 Independent t-test	Z=4.65 P<0.001 Mann-Whitney	
The substructures of situational influencers						
Intervention	5.77 ± 2.11	8.2 ± 2.36	2.43 ± 1.26	9.89 ± 2.05	4.11 ± 0.67	F=62.54 P<0.001 Friedman F=18 P<0.001 Friedman
Control	5.31 ± 0.75	5.66 ± 0.9	0.34 ± 0.68	5.31 ± 0.75	0 ± 0	
Test result	Z=0.761 P=0.539 Mann-Whitney	Z=5.96 P<0.001 Mann-Whitney	Z=6.53 P<0.001 Mann-Whitney	Z=7.51 P<0.001 Mann-Whitney	Z=7.83 P<0.001 Mann-Whitney	
the substructure of commitment to plan of actions						
Intervention	26.69 ± 4.31	33.6 ± 4.98	6.91 ± 3.51	34.26 ± 3.6	7.57 ± 3.34	F=92.97 P<0.001 repeated size F=12.12 P<0.001 repeated size
Control	25.26 ± 3.09	24.66 ± 2.91	-0.6 ± 0.88	24.29 ± 2.7	-0.97 ± 1.33	
Test result	T=1.59 P=0.116 Independent t-test	T=9.16 P<0.001 Independent t-test	Z=7.31 P<0.001 Mann-Whitney	T=13.07 P<0.001 Independent t-test	Z=7.26 P<0.001 Mann-Whitney	
The structure of behavioral outcomes						
Intervention	23.66 ± 3.36	31.69 ± 4.41	8.03 ± 3.4	33.66 ± 3.25	8 ± 3.05	F=107.2 P<0.001 repeated size F=10.34 P<0.001 repeated size
Control	24.06 ± 3.62	23.49 ± 3.39	-0.57 ± 1.008	23.14 ± 3.46	-0.91 ± 1.14	
Test result	T=0.47 P=0.634 Independent t-test	T=8.72 P<0.001 Independent t-test	Z=7.24 P<0.001 Mann-Whitney	T=10.48 P<0.001 Independent t-test	Z=7.24 P<0.001 Mann-Whitney	

Discussion

This study aimed to determine how group counseling based on the Pender model affected the quality of life of women with stress urinary incontinence. The findings demonstrated that this intervention had a positive effect on the health of this group of women. The study findings revealed the poor health condition of

women with stress urinary incontinence and that their health could be improved by providing group counseling based on the Pender model.

According to the study findings, despite random allocation, the variables of age, education status, and menopause status were heterogeneous in the two groups. Menopause is

not associated with stress urinary incontinence, according to studies (27). But urinary incontinence worsens with age and education affects learning and improves people's health (28). The repeated size regression statistical test was used to control these confounding variables in this study, and the model was processed with these items in mind.

The current study found that the average score of the structure of individual characteristics and experiences of women with stress urinary incontinence in the intervention group was significantly higher than the control group immediately after the intervention and two months later. In the intra-group comparison, the average score of the structure of individual characteristics and experiences in women with stress urinary incontinence was significantly higher in the post-intervention stage than before the intervention. However, this difference was not significant in the control group.

According to the findings of a study conducted by Ho et al. (2010) aimed at empowering diabetic patients in conjunction with the health promotion model indicated that paying attention to individual experiences and characteristics and their modification can positively change people's lifestyles and improve their health to empower diabetic patients in connection with the health promotion model (29). This study findings are consistent with the findings of the current study. According to the results, group counseling was efficient in the intervention group, increasing the average score of the structure of individual experiences and characteristics. This increase, however, did not occur in the control group. The results of study by Timuri et al. (2009) aimed at the effect of a school-based intervention based on the Pender health promotion model to increase the physical activity of female students in Sanandaj showed that the educational intervention is effective in increasing the average score of experiences and individual characteristics (30). This study findings are consistent with those of the current study. Furthermore, Norouzi et al. (2011) indicated that educational interventions can improve behavior (31).

Because group counseling was used in the current study, the impact on the structure of experiences and individual characteristics may be due to this issue, namely that people in the group shared their experiences and used the experiences of others. The average score of the structure of experiences and individual characteristics in the intervention group increased immediately after the intervention and also two months later compared to before the intervention. This is one of the features of group counseling. According to Keri² (2015), group counseling encourages people to contribute to the development and growth of other members by sharing their experiences in the group (32). Furthermore, according to Pender's health promotion model, paying attention to other effective fields in performing health behaviors has contributed to an increase in the average score of the structure of individual characteristics and experiences (33). This is even though other health promotion models, such as Pender's model, have not thoroughly investigated the factors influencing health behaviors.

Before the intervention, there was no significant difference in the mean and standard deviation of the scores of Activity-Related affect in the studied women between the intervention and control groups. The average score of Activity-Related affect in the intervention group was significantly different from the control group immediately after the intervention and two months later. According to Bahmanpour (2011), there was a significant difference in the two groups' emotional scores before and after the intervention (34).

The results are consistent across self-efficacy substructures, perceived benefits, perceived barriers, interpersonal influencers, and situational influencers. In the intragroup comparison of interpersonal and situational influences, the intervention group showed a significant difference immediately after the intervention and two months later; however, this difference was not significant in the control group. Karimi et al. (2012) on the effect of education based on Pender's health promotion

model on physical activity in students found a significant difference in the average self-efficacy score before and after the intervention in the test and control groups (35).

The findings of study by Asadi Zandi et al. (2013) on the effect of anger management training on high-risk conflict behavior in soldiers revealed that the conflict score and all model constructs (self-efficacy, perceived benefits, perceived obstacles, and influencers between individual and situational influencers) improved in the intervention group compared to the control group (36). The findings of these two studies are consistent with the current study. However, it contradicts the findings of Ghafari et al.'s research (2007) because the average score of perceived benefits in the intervention group did not increase significantly after the intervention (37). Perhaps one of the reasons for the non-significance of the average perceived benefit score of the studied group (high school male students) in this study. Because of their age and circumstances, this group finds it more difficult to accept the perceived benefits. Another reason that can be mentioned is the various methods used to carry out the study.

Zaidi et al. (2009) used Pender's model (38) to predict the stages of physical activity behavior change in Qazvin University of Medical Sciences students, which is inconsistent with the current study. One of the reasons for the current study's non-alignment with Zaidi et al.'s study is the difference in tools, the method of conducting the study, and the lack of use of all Pender model constructs. Zaidi's study focused solely on self-efficacy substructures, perceived obstacles, and perceived benefits, with no mention of other structures.

According to Pender's model, the cognitive and emotional structures associated with the behavior are at the heart of the influencing factors in performing health behaviors and considering that the relevant sub-structures in the current study were significantly higher in the intervention group compared to the control group, so it is concluded that in the group counseling had the required effect on improving the health of women with urinary incontinence. This result has been obtained from the fact that group counseling based on Pender's model has strengthened positive feelings and perceived

benefits and reduced negative feelings and perceived obstacles by creating a suitable environment for self-efficacy. Perhaps this is due to the positive influence of the group members on each other, who have improved by participating in the group and being influenced by each other in urinary incontinence behaviors (32).

Kim (2001) also designed an educational intervention program for urinary control based on Bandura's self-efficacy theory to overcome common barriers to performing exercises effectively in strengthening the pelvic floor muscles in her study. She considered providing training, teaching and learning the relevant techniques, encouraging exercise, promoting self-efficacy, controlling and monitoring the method of implementation, and planning behavioral changes to be necessary components of program implementation. According to the findings of her study, the intervention group had higher self-efficacy than the control group, which only received the educational pamphlet. Furthermore, the intervention group's method and the number of repetitions differed significantly from the control group. She concluded that improving and treating urinary incontinence necessitates patient follow-up and participation (39). Although self-efficacy is taken into consideration in this model, as in the Pender model, however, in addition to self-efficacy, other influential factors on the continuation of behavior and performing behavior should be taken into account, which the Pender's model considers factors affecting behavior are considered comprehensively.

Hitner et al. (2011) concluded in a study titled the effectiveness of "special nurse" intervention for patients with urinary incontinence concluded that affected people who have a low level of health, which is accompanied by stress and anxiety (40). Stress, anxiety, and depression were investigated in our study of people with urinary incontinence. These people were excluded from the study due to the need for additional measures and treatment in cases of severe disease. Stress and anxiety impair health, and managing stress and anxiety improves health (41).

Influential people were studied as a substructure of interpersonal influencers in

Pender's model. The current study findings revealed a significant increase in the score of this substructure immediately after the study, as well as two months later when compared to before the study in the intervention group. According to Rafiei et al.(2010), the patient's family is the best source for transferring information between the health team and the patient (42). The current study findings also revealed that family and spouses were influential people in the substructure of interpersonal influencers.

The findings of a study conducted by Karno³ et al. (2006) to determine the impact of the Pender care model on the health and lifestyle of church women revealed that the intervention group's lifestyle and health level improved when compared to the control group, indicating that the Pender model is effective in improving people's health (43). This study findings are consistent with those of the current study.

The final point in Pender's model is behavioral outcomes. In this study, urinary incontinence behavior in women with stress urinary incontinence was improved through group counseling. Considering that people are involved in decision-making in the counseling process, it causes the behavior to be done internally and through one's own decision. Also, when the obstacles to performing the behavior are known or removed, as well as the positive factors, people perform the related behavior better. This will be possible in group counseling, where the counselor will serve as a facilitator (44). Although researchers did not find interventions based on Pender's model on patients with urinary incontinence, the results of other interventions based on Pender's model, similar to this research, improved health (10, 20-22). This finding supports Pender's model's emphasis on behavior modification and health promotion.

The limitations of this study include individual differences in learning, self-reported data collection, and the long duration of the intervention. Which was examined and controlled through repeated size regression test.

Conclusion

Urinary incontinence significantly affects patients' health, necessitating regular examinations and comprehensive interventions. Pender's health promotion model proves effective in improving the health of women with stress urinary incontinence. By educating women about contributing factors and encouraging appropriate behaviors, this model enhances their well-being. Its cost-effectiveness makes it suitable for implementation in women's clinics, benefiting midwives and gynecologists. Officials are advised to utilize this model to improve women's health and empower them, considering available resources and consulting services..

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Conflicts of interest

The authors declared no conflicts of interest.

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