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Continence Self-Efficacy to Increase PFM Exercise Adherence in SUI[1]

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Abstract

Stress urinary incontinence is most common type in urinary incontinence. Most women had been suffering with stress urinary incontinence for more than a year in the community without seeking medical help. Under the assumption that stress urinary incontinence will be treated or improved by keeping PFM exercise with his/her continence confidence, this study was conducted.

This study examined Continence self-efficacy effect on PFM exercise adherence. Subject were in 48 women aged 20 to 75 years with stress urinary incontinence and were recommended by their doctor to attempt PFM exercise as one treatment method..

Data were collected by self-administered report using Continence Self-Efficacy Scale, PFM exercise adherence check sheet. Telephone support was used as a method of CEIP to increase Continence self-efficacy. Continence self-efficacy score was higher in the intervention group than in control group (T=-3.23, P<.01), PFM exercise adherence was better in the intervention group than in control group (T=-4.03, P<.001). Through this research, it was also found that there were three types in attitude toward treatment; those who want to be treated completely, those who want to be relieved, and those who think urine loss is no problem.

It can be concluded that to increase Continence self-efficacy was useful to the PFM exercise adherence of women with stress urinary incontinence.

Key words : Pelvic Floor Muscle exercise, Continence self-efficacy, Adherence Abbreviations
SUI: stress urinary incontinence
PFM: pelvic floor muscle
CEIP: Continence Efficacy Intervention Program
CSES: Continence Self-Efficacy Scale

Introduction

Urinary incontinence (UI) is more prevalent in women than in men. Among the population between 15 and 64 years of age, the prevalence of UI in women is 10 to 30 percent (AHCPR,

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1996). In healthy, middle-aged women in the community, 30.7 percent reported urine loss on a regular basis (Burgio, Matthews, & Engel, 1991). In Japan, the prevalence of female incontinence has been reported to be 7-10 % in women less than 65 years old and 10-15% in women 65 years old and over (Hukui, Okamoto, Nagata, Nukui, Shinata, & Komatsu, 1995).

Especially, stress urinary incontinence (SUI) is most common type in UI. SUI is caused by incompetence of the bladder neck (Macaulay, Stern, Holmes, & Stanton, 1987) and is a symptom to be felt during daily activities such as bathing, walking, running, jumping, etc, so it has had an uncomfortable and serious health problem for women in SUI (Sampselle & DeLancey, 1992).

SUI is conventionally treated by pelvic floor muscle (PFM) exercise and surgery (Macaulay et al.., 1987; Kegel, 1948). Several studies have confirmed the effectiveness of PFM exercise (Flynn, Cell, & Luisi, 1994; Sampselle et al, 1992; Wells, 1990). Most women had been suffering with incontinence for more than a year in the community (O Brien J 1996). According to Kim et al., it was taken 6 years to looking for counseling.

Here, these phenomena have three problems. One is to hesitate to seek medical help. Goldstein et al. reported that more than half of those with problem of UI do not seek treatment (Goldstein, Hawthorne, Engeberg, McDowell, & Burgio, 1992). Instead, they cope with urine loss in the following ways: Some of them are unwilling to go out and go the bathroom earlier than bladder filling sufficiently, others are likely to drink less (Kim, Kanagawa, & Saito, 1998). This coping method might not solve the problem, but make worsen the function of the bladder.

Another problem is to have a tendency to stop PFM exercise. Pelvic muscle was rarely used or trained during daily activities. It makes patients not to understand how to do PFM exercise sufficiently. Bo et al. and Hesse et al.. reported that after thoroughly taught in PFM anatomy and muscle function, about 30% of SUI women are unable to perform a correct voluntary PFM contraction at their first attempt (Hesse, Schussler, & Frimberger 1990). This condition causes patients to stop exercise in a soon. Therefore we need to continuous care for them not to give up this exercise.

Last problem is to take a long time, three months or more to be effective. This might mean that the most important contributor to exercise's effect is "continuity", in other words, "adherence". And we guess the differences of continuity in exercise depend on the patients themselves.

Table 1. Continence Efficacy Intervention Program-Short form

Guidelines of How to do PFM Exercise [c]
Telephone Interview and Counseling Items
Audio-visual Tape
Calendar
Schedule Guideline
Pamphlet [c]

[C] : Common to intervention group and control group

To solve the first problem, social changes are needed to say their worry freely. But other two problems will be remained to us as our role. Continence Efficacy Intervention Program (CEIP) was developed to solve two problems mentioned above (Table 1). The CEIP means providing an accurate information and action to improve subject's confidence that continence can be achieved. This was designed to circumvent many of the obstacles common to stopping PFM exercise. Because this CEIP was introduced at another paper, I introduced the short form here. In this study, the CEIP was given to the intervention group, while conventional care was given to control group.

This study is focused to evaluate the effects of Continence self-efficacy on PFM exercise adherence through randomized controlled study under the following assumption; The higher the perceived continence self-efficacy, the greater the adherence to the performance of PFM exercise.

Literature Review

The literature review was organized around the four variables of stress urinary incontinence, PFM exercise, Continence Self-efficacy and Adherence.

Stress Urinary Incontinence

It has been said that incontinence is a common to old people. Old people do become subjects to be more than young people. But, urinary incontinence is a common problem in the general population (Thomas et al., 1980). International Continence Society (ICS) defined incontinence is a condition in which involuntary loss is a social or hygienic problem and is objectively demonstrable (ICS, 1997). The types of urinary incontinence observed most commonly are stress, urge, overflow, and functional incontinence. Among them, stress urinary incontinence (SUI) is the type most frequently affecting women.

SUI defined by the ICS is as the involuntary loss of urine during coughing, laughing, sneezing, or other physical activities that cause an increase of abdominal pressure (Rebecca, 1996; AHCPR, 1996). Genuine stress incontinence is caused by incompetence of the bladder neck and is conventionally treated by PFM exercise and surgery (Macaulay et al., 1987)

Urine loss is a symptom to be experienced during daily activities such as bathing, walking, running, jumping, etc. Most people with incontinence cope with urine loss in the following ways: Some of them are unwilling to go out and go the bathroom earlier than bladder filling sufficiently, others are likely to drink less (Kim et al., 1998). This coping method might not solve the problem, but does worsen the function of the bladder.

PFM Exercise

Functional pelvic floor musculature is a key element in women's health because it provides foundational support for the pelvic organs. Pelvic muscle strength is important in the maintenance of urinary continence (Wells, 1990). However, these muscles are vulnerable to loosening following pregnancy and parturition. Thus it has been said that women have a greater tendency to be incontinent, especially to SUI. Generally mild SUI or urgency can be treated or improved by pelvic floor exercise that Kegel popularized in the late 1940s (Kegel, 1948).

PFM exercise is a learned technique of perivaginal muscle contraction and relaxation. The dominant theory underlying the modern exercise is muscle reeducation. A muscle can be made strong through regular contraction and relaxation practice. Forceful muscle activity, that is, muscle contraction to at least 75% of its maximum tension, can cause a muscle to increase in size (Guyton, 1996).

Once one knows accurately how to do it, PFM exercise itself is simple to do. But it may be difficult to explain to somebody and difficult for the exerciser to know and feel accurately. "How-to" information should therefore be tailored to meet the needs of the individual.

It has been reported that SUI can be cured or improved by PFM exercise. Depending on the reports, however, cure rates range from 21% to 93%: 21% (Kujansuu, 1985), 32% (Benvenuti et al., 1987), 93% (Harrison, 1979). This discrepancy might be explained by how-to information and Continence self-efficacy.

Continence Self - Efficacy

There are two widely used conceptualizations of personal behavior control. One is health locus of control and another is self-efficacy, the belief in one's ability to successfully perform a behavior to achieve a desired outcome. According to Bandura who advanced the construct of perceived self-efficacy, the higher one s self-efficacy, the greater the accomplishment: the expectation of self-efficacy is subjective and situation-specific (Bandura, 1986; Bandura, 1982). Bandura defined self-efficacy as the judgment of personal capability to organize and execute a particular course of action (Bandura, 1986). He also states that one's perception of one's abilities affects one's behavior, level of motivation, thought patterns, and emotional reactions in taxing situations. Self-efficacy is more than just knowing what to do: it is one's perception of one's own ability to organize cognitive, social and behavioral sub-skills that enable one to have confidence and to carry out the action successfully (Bandura, 1982; Bandura, 1977).

Many studies have approved this theory and assumption. That is, perceived self-efficacy predicts performance successes at the level of individual tasks during and after treatment (Shannon, Ammerman, Keyserling, Kelsey,

DeVellis, & Simpson, 1997; Schwarzer, 1992). Greater self-efficacy was positively related to maintenance of health-promoting behaviors in their longitudinal study (McAvay, Seeman, & Rodin, 1996).

Upon consideration of the facts above, continuity of PFM exercise can be explained by this self-efficacy theory. Continence self-efficacy means self-confidence to be continence condition and measured by CSES.

Adherence

Compliance is a willingness to follow or consent to the wishes of another person, whereas adherence is the action of sticking to, supporting, or following a person or an idea. As such, compliance and adherence will be treated inter-changeably based on the assumption that human action/behavior(adherence) is linked to human cognition/thought (compliance) (Buchmann, 1997). Here the term "adherence" will be used and defined as the extent to which an individual chooses behaviors that coincide with a clinical prescription.

Until now, health educators have not been much interested in compliance. In a sense, they believe that patients must follow the treatment order. But a few studies have reported that patients don't follow well the instructions of their physician or health educator. According to Ley, 40% and 50% do not follow advice on taking medication or other health-related matters (Ley, 1982).

How can we increase subject's compliance? Kaplan et al. reported that compliance with medical regimens was improved after patients suffering from chronic obstructive pulmonary diseases received self-efficacy training (Kaplan, 1984).

In the case of urinary incontinence, continuous performance of PFM exercises and observance of recommended behaviors in daily life are also can be thought of as adherence.

Methods

Study Design

The study was conducted at two university hospitals in Japan that have outpatient clinics for urinary incontinence and have professional nurses trained in incontinence treatment. The primary care doctor explained about the study and informed consent was taken at the beginning stage. The design of this study was a randomized controlled trial to assess the effect of Continence self-efficacy on PFM exercise adherence. There are two control groups (control group A and control group B). Control group A was designed to test whether there was bias in the control group B.

Subject

Subjects were outpatients who first visited the hospital from January 28 to June 10, 1998. They were selected on the following criteria: aged 20 to 75 years, SUI or mixed type. Some of them were excluded if they opted initially for treatment by drugs or operation. After subjects were diagnosed, they were assigned randomly to either the intervention or to control group B according to the order in which they came to the hospital. The staff was not informed of this classification. Each patient received treatment three times over about three months in the outpatient clinic if doesn't quit to visit. Another control group (group A) was selected from among people who had commuted for three months from their first visit to the outpatient clinic. They also had diagnosed with SUI at the outpatient clinic from November 1997 to April 1998.

The pamphlet of continence guidelines was given to all subjects at first visit. At 2 weeks after the diagnostic phase, all patients were trained how to do PFM exercise and asked to do it at home. Registered nurse provided this teaching. From 2 weeks after the first visit, further intervention was not offered to control group during 12 weeks. The CEIP was administered only to the intervention group.

Survey Instruments

A questionnaire inquiring about disease history and UI was used. Chart review was used to find diagnosis, disease history, and other related data. Outcome variables were measured with Continence self-efficacy, PFM exercise adherence.

Subjective Evaluation Sheet

The degree for improvement of symptom was evaluated as followed: completely cured; very improved; slightly improved; not changed; get worst. Also for considering severity they think about their symptom, subjective evaluation was conducted before and after intervention. This answering score is ranged from 0 to 100 point.

Continence Self-Efficacy Scale

This scale consists of 16 items (scored 1 to 10 with a potential range of 16 to 160). Reliability and validity were reported. In this study, reliability coefficient as Cronbach's Alpha was 0.92 at baseline among all subjects (N=48). The higher the continence self-efficacy score, the greater the evaluated patients' perceived self-efficacy toward continence.

PFM Exercise Adherence Check List

PFM exercise adherence was measured in two ways. One was by frequency of PFM exercise; each time, subjects were asked to evaluate their assiduity: a few times per week, 10 to 20 times per day, 30 to 40 times per day, 50 to 60 times per day, and 100 times per day. Another was by adherence, evaluated using a five-item question, with scores ranging from 0 to 10. The items comprised bladder training, sufficient fluid intake, weight control, and diet to prevent constipation, and regular PFM exercise, it is thought to be related incontinence improvement indirectly.

Statistical Methods

Simple calculation and ANOVA were used to examine whether there were differences in demographic and urologic characteristics among the three groups. To test the effect of CSE and PFM exercise adherence, t-test and simple regression were used.

Continence Self-Efficacy Intervention Program (CEIP)

The CEIP based on conventional care is composed of a common PFM exercise education and theory based intervention designed to enhance perceived continence efficacy. This program included a pamphlet, a lent audio-visual tape, calendar, schedule guideline, and phone call support for counseling, encouraging, teaching accurate performance, self-care methods to confirm (Table 1. in detail, PHN Vol.18, No1). The intervention for PFM education consisted of 3 sessions. Detailed field notes of each phone conversation were made during the call.

Results

Demographic Characteristics

There were no significant differences in demographic characteristics among the single intervention group and the two control groups at baseline. Subjects were mean age of 53.5, mean weight of 56.6Kg, and mean delivery of 1.9. Educational level was also similar among the three groups. Half of subjects were high school graduates or had a higher education. Half the subjects had jobs, full time or part time. As for obesity, half of them had a tendency to be overweight.

The patients have lived for a long time with incontinence symptoms, an average of 6.5 years and have other physical problems, an average of 1.52 diseases in this study.

Urologic Characteristics

There were no differences in urologic characteristics at baseline among the three groups. The conditions such as walking, light running, sneezing & coughing, and exercise triggering their incontinence. Frequency of incontinence varied, from daily to a few times per month or year; 14 of 48 people answered that they stopped doing exercise because of urine loss. Incidence age of incontinence varied from 20 to 70, the mean age of incidence was 47.8 years (Table 2).

The Evaluation of the CEIP

In the intervention group, 14 persons received telephone support. On average, 4.06 calls (3 to 6) and 2.75 hospital visits were made. Almost every

Table 2. Urologic Characteristics at baseline

Baseline Variables	Intervention Group N=16	Control Group A N=15	Control Group B N=17	Total (%) N=48
Urine loss when				
Walking	10	7	11	28(21.4)
Light running	13	8	12	33(25.2)
Sneezing &coughing	16	13	15	44(33.6)
Exercise	12	4	10	26(19.8)
Frequency of Wet episodes				
One & more / Day	10	4	10	24(50.0)
One & more / Week	2	4	1	7(14.6)
One & more / Month	1	4	1	6(12.5)
Irregular	3	3	5	11(22.9)
Due to incontinence				
Care for	11	12	14	37(36.3)
Go to earlier	14	14	15	43(42.2)
Drink less	7	4	9	21(20.6)
Don't care	0	1	0	1(0.9)
Prevalence Year (Mean±SD)	7.3±5.3	6.3±4.2	5.9±7.9	6.5±5.8
Onset Age of Urine Loss (Mean±SD)	44.9±9.9	48.9±13.4	49.1±13.8	47.8±10.2

subject in the intervention group stated that the encouragement and telephone support were very helpful for them to continue PFM exercise and to relieve symptoms. The degree for improvement of symptom was larger in intervention group than that in control group (F=3. 37, P<0.05).

Continence self-efficacy

At 12th weeks, there was significant difference in Continence self-efficacy after intervention between control group B and the intervention group (T=-3.23, P<0.01): the mean was 140.2 (SD: 14.6) in the intervention group, 107.7(SD: 34.7) in control group B (Figure 1).

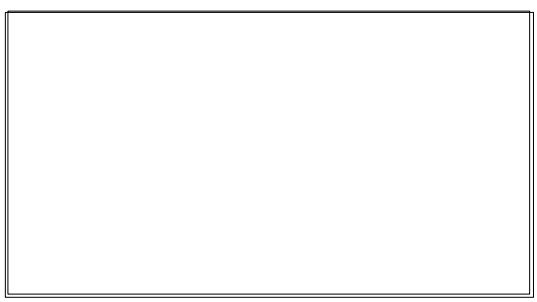

Fig 1. Changes of Continence Efficacy Pre & Post Intervention

PFM exercise Adherence

There were no significant differences in PFM exercise adherence at baseline. At 12 weeks after intervention, inter-group difference between the intervention group and control group became prominent; frequency of PFM exercise at 12 weeks was very significant (F=-3.30, P<.001).

Table 3. Frequency of PFM exercise at 12 weeks

Frequency	Intervention group N=14	Control group A N=15	Control group B N=14	Total N= 43
2 times/week	1	0	4	5
10-20/Day	0	4	0	4
30-40/Day	0	6	4	10
50-60/Day	5	4	5	14
70-80/Day	1	0	0	1
90-100/Day	7	1	1	9

Table 4. Simple Regression of Continence Efficacy to Each Variable over Time

	Baseline		2nd weeks		8th weeks		12th weeks	
	F	P	F	P	F	P	F	P
Frequency of Exercise	1.22	0.29	0.34	0.57	1.9	0.18	11.5	0.005*
Adherence	0.91	0.36	3.85	0.07	7.3	0.02*	17.4	0.0013*

* P<0.01

Many people in both control groups have exercised about 30-40 times per day, while 50% of intervention group exercise 90-100 times per day (Table 3). Inter-group difference in PFM exercise adherence was also very significant (T=-2.75, P<0.01). Simple regression result shows that Continence Self-efficacy effects significantly on PFM exercise frequency (F=11.5, P<0.005) and PFM exercise adherence (F=17.4, P<0.005) at 12 weeks (Table 4).

Discussion & Conclusion

Subjects were diagnosed as SUI or mixed type and were recommended by their doctor to attempt PFM exercise as one treatment method. The CEIP was provided to the intervention group. This program should: provide accurate knowledge and techniques of how to do the PFM exercises, encourage PFM exercise regularly and continuously for 12 weeks, increase continence self-efficacy of patients through adherence enhancing strategies.

In this study, the people who exercised 90-100 times per day for 3 months showed better improve than those who exercised 30-40 times per day. Also some of them begin to report effectiveness of PFM exercise 2 months, other people report it nearly 3 months after beginning the exercise. Some people didn't feel any effect at 2 months begin to feel improvement at 12 weeks after continuous PFM exercise. This result is consistent with Benvenuti et al's report (1987); PFM exercise needs to be continued for 3 months or more.

Like other exercise, PFM exercise is simple to do. But to continue this exercise is not so easy. Similar to "physical exercise", people find it not so easy to exercise regularly, even when they were recommended by Dr. to do PFM exercise for their continence. The audio-visual method by videotape was not so effective to continue the exercise. Important thing is to keep PFM exercise without giving up, not to just have good instrument.

Through the intervention, it was found that there are three types in attitudes toward treatment with incontinent patient as follows, can be thought it relate to their adherence:

Those who want to be treated completely (Type 1); those who want to be relieved to the extent that they can walk without loss of urine (Type 2); and those who think that incontinence is no problem, because they can go out and be active with the help of a pad or absorbent (Type 3).

Among these types, we have to consider the type 3 as a group to be provided some intervention. It will make an intervention more effective.

An understanding of how health behaviors are affected will be considered when we make intervention programs that help patients maintain and adhere to their own self-care and ultimately enable them to continue PFM exercise. Therefore, the subject's knowledge also needs to be examined for the evaluation of the intervention.

In conclusion, this study presents the effectiveness of Continence self-efficacy on PFM exercise adherence through randomized controlled study. It can be suggested that to increase Continence self-efficacy was useful to the PFM exercise adherence of women with SUI and also to do PFM exercise regularly and accurately.

This study was conducted as one part of serial research from development of the CSES to development of CEIP and application. This makes discussion difficult sufficiently about this research and further study needs to be conducted.

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