

The Effect of Pelvic Floor Muscle Exercises on Genuine Stress Incontinence among Korean Women

—Focusing on Its Effects on the Quality of Life—

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Abstract

This study's purpose was to compare the treatment efficacy and the effects on the patients' quality of life of the pelvic floor muscle (PFM) exercise and the functional electrical stimulation (FES)-biofeedback method. Ninety female incontinence patients were randomly selected and evenly divided into three groups: control, intensive PFM exercise, and FES-biofeedback groups. They were treated for 6 weeks. The subjective changes in the severity of incontinence and discomfort in daily and social life were measured using a translated version of Jackson's Bristol female urinary symptom questionnaire. Objective changes of pelvic muscle contraction force were measured by perineometer. Pre and post-treatment maximal pelvic floor muscle contractile pressure (PMC pressure) among the three groups showed statistically significant differences ($p < 0.001$). Especially the FES-biofeedback group showed significantly increased maximal PMC pressure compared with other groups ($p < 0.001$). From the questionnaire, pre and post-treatment changes in the severity of urinary incontinence and discomfort due to incontinence showed significant differences among the three groups ($p < 0.001$). The level of discomfort in daily life, social activity, physical activity, personal relations and discomfort due to urinary symptoms had largely changed and the FES-biofeedback group, in particular, showed a significant decrease after treatment. In conclusion, when PFM exercise and FES-biofeedback were compared in terms of their effects on the patients' quality of life, FES-biofeedback proved to be more effective than verbal explanation or simple PFM exercise.

Key Words: Female stress urinary incontinence, pelvic floor muscle exercise, biofeedback

INTRODUCTION

Nowadays, profound changes in the socioeconomic structure have led women to join more actively in the economy and society. As a result, women's well-being and health has taken on greater importance, and female urinary incontinence has become a health problem that has to be properly addressed.¹

In Korea, public awareness about urinary incontinence has also changed. Namely, urinary inconti-

nence is not something that inevitably comes with childbirth and aging, but it is a rather a disease that can be- and should be- treated. Moreover, the annual number of anti-incontinence operations reported to the Korean Urological Association has rapidly increased: 22 cases in 1984, 101 cases in 1988, and 951 cases in 1998.² In other words, the number of patients requiring treatment for incontinence is increasing.

Among the various treatment methods for female urinary incontinence, pelvic floor muscle (PFM) exercise, which was initially developed by Kegel³ to strengthen the pelvic floor muscle and which proved effective as a physiotherapy, has been recommended as a first-line treatment in other reports. The most important element in PFM exercise is accurate and continuous exercise. Therefore, many physicians have proposed various methods for effective exercises. Clinically, biofeedback therapy, in which patients can see their PFM contractility and accuracy of muscle contraction by watching monitors while they are doing

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PFM exercises, is most widely used these days and many authors have reported variable research results.⁴⁻⁹ We aimed to compare the efficacy of the two major physiotherapies, namely, PFM exercise and FES-biofeedback, as well as the changes in the level of inconvenience patients felt after the treatment and to determine the most effective conservative treatment in terms of efficacy and quality of life.

MATERIALS AND METHODS

Subjects

We randomly selected and prospectively analyzed married female patients who visited Ewha Womans University Mokdong Hospital from September 1997 to September 1998 due to female urinary incontinence and obtained informed consent to join this study. After history taking, voiding diary, physical examination, urinalysis, and checking residual urine, we randomly selected 90 female stress urinary incontinence patients and divided them into three groups with 30 patients in each: control group,

intensive PFM exercise treatment group, and FES-biofeedback treatment group (Table 1).

Methods

In the control group, an urologist explained to the patients about the etiology and symptoms of urinary incontinence, but did not apply any treatment modality for stress urinary incontinence. The intensive PFM exercise group was trained to do the intensively programmed PFM exercise, which was developed by Bø.¹⁰ Patients received special training from a therapist expert in PFM exercise and were told to follow the direction's of the exercise videotape. They were also instructed to do the same exercises at home everyday and to visit the incontinence clinic once a week to check the accuracy and intensity of PFM contractions. The intensive treatment group received feedback concerning their PFM exercises once a week in our incontinence clinic and practiced their exercise posture by watching and following the videotape instructions for 6 weeks. The FES-biofeedback therapy group received FES-biofeedback treatment for 20 minutes per session, 2 sessions a week, over a total

Table 1. Patients' Characteristics

| Group | | FES-Biofeedback | Intensive PFM exercise | Control | Total |
|--|----------------|-----------------|------------------------|-----------|-----------|
| Categories | | N (%) | N (%) | N (%) | N (%) |
| Age (years old) | 18-39 | 12 (40.0) | 12 (40.0) | 12 (40.0) | 36 (40.0) |
| | 40-59 | 16 (53.3) | 16 (53.3) | 16 (53.3) | 48 (53.3) |
| | ≥60 | 2 (6.7) | 2 (6.7) | 2 (6.7) | 6 (6.7) |
| Weight (kgs) | 40-50 | 9 (30.0) | 10 (33.3) | 6 (20.0) | 25 (27.8) |
| | 51-60 | 14 (46.7) | 14 (46.7) | 14 (46.7) | 42 (46.7) |
| | 61-70 | 5 (16.6) | 6 (20.0) | 10 (33.3) | 21 (23.3) |
| | ≥71 | 2 (0.7) | 0 (0.0) | 0 (0.0) | 2 (2.2) |
| Vaginal delivery (times) | 0 | 0 (0.0) | 5 (16.7) | 5 (16.7) | 10 (11.1) |
| | 1 | 5 (16.7) | 5 (16.7) | 5 (16.7) | 15 (16.7) |
| | 2 | 18 (60.0) | 11 (36.6) | 16 (53.3) | 45 (50.0) |
| | 3 | 5 (16.7) | 6 (20.0) | 1 (3.3) | 12 (13.3) |
| | 4 | 1 (3.3) | 3 (10.0) | 2 (6.7) | 6 (6.7) |
| | ≥5 | 1 (3.3) | 0 (0.0) | 1 (3.3) | 2 (2.2) |
| Duration after delivery (years) | 1-9 | 14 (46.7) | 14 (46.7) | 11 (36.7) | 39 (43.4) |
| | 10-19 | 7 (23.3) | 9 (30.0) | 10 (33.3) | 26 (28.9) |
| | 20-29 | 8 (26.7) | 5 (16.6) | 6 (20.0) | 19 (21.1) |
| | ≥30 | 1 (3.3) | 2 (6.7) | 3 (10.0) | 6 (6.6) |
| Menstrual Status | premenopausal | 23 (76.7) | 22 (73.3) | 20 (66.7) | 65 (72.2) |
| | postmenopausal | 7 (23.3) | 8 (26.7) | 10 (33.3) | 25 (27.8) |

period of 6 weeks. They were also asked to visit the incontinence clinic to check the accuracy of their PFM contractions periodically. The FES-biofeedback group was programmed to conduct electrical stimulation and biofeedback alternatively for 20 minutes; periodic electrical stimulation which is given for 24 seconds at double electrical stimulation of 35 Hz & 50 Hz is followed by biofeedback, which is comprised of 3 phases of contraction and lasts for a total of 32 seconds (Elite compact[®] model, ECL electromedical Ltd., Ligon, France).

For subjective evaluation of pre and post-treatment changes in the severity of incontinence, the quantity of urinary leakage and discomfort caused by urinary incontinence, we used Jackson's "Bristol Female Urinary Symptoms Questionnaire"¹¹ after translating it into Korean. For the comparison between pre and post-treatment efficacy, answers to the questions were given scores from one to five (1: not a problem, 2; a bit of a problem, 3; quite a problem, 4; serious problem, 5; very serious problem). Afterwards, the mean score of each question was compared among the three groups. Objective changes in incontinence before and after treatment were evaluated by vaginal perineometer, measuring maximal pelvic floor muscle contractile pressure (PMC pressure) and the duration of pelvic floor muscle contraction (PMC).

Statistical analysis

Data were analyzed by SAS PC program. Comparison of similarity among the three groups was analyzed by Chi-square test and F-test. Severity of

incontinence, mean vaginal contractile pressure, and maximal vaginal contractile pressure of the three groups were compared by Schaffe's multiple comparative method and ANOVA.

RESULTS

Pelvic floor muscle contraction

Maximal PMC pressure was significantly different among the control group, intensive PFM exercise group, and FES-biofeedback group ($p < 0.001$). Scheffe's multiple comparison showed a significant increase in maximal PMC pressure between the FES-biofeedback group and intensive PFM exercise group compared with the control group, respectively ($p < 0.001$). By contrast, maximal PMC pressure was decreased after 6 weeks in the control group. Meanwhile, the duration of PMC was significantly different among the FES-biofeedback group, intensive PFM exercise group, and control group ($p < 0.001$). Duration of PMC in the FES-biofeedback group was much higher than in the other two groups ($p < 0.001$) (Table 2).

Inconvenience due to urinary incontinence

Tables 3 and 4 show the severity of incontinence, inconvenience, and their changes after treatment among the three groups. With respect to the quantity and frequency of urine leakage, the FES-biofeedback group showed a statistically significant decrease after

Table 2. Effect of PFM Exercise among Three Groups on Maximal Pelvic Muscle Contractile Pressure, Duration of Pelvic Muscle Contraction

| Group | | FES-Biofeedback | Intensive PFM exercise | Control | p value |
|-------------------------------|-------------|-----------------|------------------------|----------|---------|
| PMC [†] | | | | | |
| Peak pressure (mmHg) | initial | 35.4±8.5 | 37.7±7.2 | 37.6±9.8 | 0.001* |
| | 6 wks later | 41.5±9.8 | 38.7±7.8 | 33.0±7.3 | |
| | difference | 6.2±4.9 | 1.0±2.4 | -4.5±6.2 | |
| Duration of contraction (sec) | initial | 1.6±1.1 | 1.5±0.5 | 1.7±0.5 | 0.001* |
| | 6 wks later | 2.3±1.2 | 2.2±0.5 | 1.6±0.6 | |
| | difference | 0.7±1.2 | 0.6±0.6 | 0.1±0.6 | |

Data are Mean±SD, * $p < 0.001$.

[†]PMC, pelvic floor muscle contraction.

Table 3. Effect of PFM Exercise on Severity and Quantity of Incontinence among Three Groups

| Symptom | | FES-Biofeedback | | Intensive PFM exercise | | Control | | p value [§] |
|---|-------------|-----------------|--------------------|------------------------|--------------------|----------------|--------------------|----------------------|
| | | Mean \pm SD | t value p value | Mean \pm SD | t value p value | Mean \pm SD | t value p value | |
| Frequency of Incontinence | initial | 2.7 \pm 1.3 | -4.455 | 2.2 \pm 0.4 | -2.262 | 2.3 \pm 0.7 | -0.254 | 0.000 [†] |
| | 6 wks later | 1.7 \pm 1.0 | 0.000 [†] | 2.0 \pm 0.5 | 0.03* | 2.2 \pm 0.4 | 0.80 | |
| | difference | -0.97 \pm 1.2 | | -0.2 \pm 0.5 | | -0.0 \pm 0.7 | | |
| Quantity of urine leakage | initial | 2.5 \pm 1.1 | -5.117 | 2.3 \pm 0.4 | -2.408 | 2.2 \pm 0.5 | 0.00 | 0.000 [†] |
| | 6 wks later | 1.8 \pm 0.9 | 0.000 [†] | 2.1 \pm 0.5 | 0.02* | 2.2 \pm 0.5 | 1.00 | |
| | difference | -0.7 \pm 0.8 | | -0.2 \pm 0.4 | | 0.0 \pm 0.4 | | |
| Severity of incontinence | initial | 3.0 \pm 1.0 | -7.413 | 2.4 \pm 0.7 | -2.804 | 2.3 \pm 0.7 | 0.000 | 0.000 [†] |
| | 6 wks later | 1.8 \pm 0.8 | 0.000 [†] | 2.1 \pm 0.7 | 0.008 [†] | 2.3 \pm 0.5 | 1.000 | |
| | difference | -1.2 \pm 0.9 | | -0.3 \pm 0.5 | | 0.0 \pm 0.7 | | |
| Discomfort due to incontinence | initial | 2.7 \pm 0.8 | -6.496 | 2.1 \pm 0.7 | -0.494 | 2.2 \pm 0.6 | 0.273 | 0.000 [†] |
| | 6 wks later | 1.8 \pm 0.8 | 0.000 [†] | 2.0 \pm 0.7 | 0.625 | 2.2 \pm 0.6 | 0.787 | |
| | difference | -0.9 \pm 0.8 | | -0.1 \pm 0.7 | | 0.0 \pm 0.7 | | |
| Wearing of protection | initial | 2.1 \pm 1 | -2.091 | 1.3 \pm 0.6 | 1.139 | 1.4 \pm 0.6 | 1.361 | 0.008 [†] |
| | 6wks later | 1.6 \pm 1.1 | 0.04 | 1.4 \pm 0.6 | 0.264 | 1.5 \pm 0.6 | 0.184 | |
| | difference | -0.5 \pm 1.1 | | 0.1 \pm 0.5 | | 0.1 \pm 0.4 | | |
| Discomfort due to wearing of protection | initial | 1.9 \pm 0.9 | -3.396 | 1.1 \pm 0.3 | 0.812 | 1.3 \pm 0.5 | -0.372 | 0.000 [†] |
| | 6wks later | 1.3 \pm 0.6 | 0.002 [†] | 1.2 \pm 0.4 | 0.424 | 1.3 \pm 0.5 | 0.712 | |
| | difference | -0.6 \pm 0.9 | | 0.1 \pm 0.5 | | 0.0 \pm 0.5 | | |

Data are scores marked to each answers of the questionnaire.

[§] p values are the significance in comparing with three groups.

* p<0.05, [†] p<0.01, [‡] p<0.001.

treatment compared with the control and intensive PFM exercise groups (p<0.001). The severity of incontinence also changed after treatment, and the FES-biofeedback group showed a significant decrease compared with the other two groups (p<0.001).

Discomfort due to incontinence did not change much after treatment in the control and intensive PFM exercise groups, but in the FES-biofeedback group we found a significant decrease in severity of discomfort after 6 weeks of treatment (p<0.001).

Answers to the question as to whether or not they wear any kind of protection, such as pads, to prevent the wetting of underwear due to incontinence, the thickness or changing frequency of pads were significantly decreased after treatment only in the FES-biofeedback group, from 2.0 points to 1.6 (p<0.05).

Inconvenience in daily life, such as restriction in fluid intake, difficulties in daily life, social life, physical activity, and personal relations, as well as dissatisfaction due to voiding symptoms were significantly different among the three groups.

In terms of fluid restriction, the intensive PFM exercise group and control group showed no differences even after 6 weeks. However, the FES-biofeedback group showed a significant decrease after treatment (p<0.01). Difficulties in daily lives were reduced only in the FES-biofeedback group (p<0.01). On the other hand, in the control group, inconvenience caused by the disease worsened. Answered scores in difficulties in social life decreased significantly in the FES-biofeedback group compared with the control group or intensive PFM exercise group (p<0.01). Regarding physical activities, scores decreased in all three groups, but the FES-biofeedback group was most significantly decreased (p<0.001). PFM exercise failed to reduce the scores in the questions concerning personal relations in the control group and intensive PFM exercise group, and scores went higher in the control group. On the contrary, scores in relation to personal relations significantly improved after treatment in the FES-biofeedback group (p<0.001). The intensive PFM exer-

Table 4. Effect of PFM Exercise on Quality of Life among Three Groups

| Symptom | | FES-Biofeedback | | Intensive PFM exercise | | Control | | p value [§] |
|--|-------------|-----------------|------------------------------|------------------------|--------------------|----------------|--------------------|----------------------|
| | | Mean \pm SD | t value p value | Mean \pm SD | t value p value | Mean \pm SD | t value p value | |
| Fluid intake restriction | initial | 2.2 \pm 0.9 | -2.983 0.005 [†] | 1.9 \pm 0.3 | 0.000 1.000 | 1.9 \pm 0.4 | 1.439 0.160 | 0.008 [†] |
| | 6 wks later | 2.0 \pm 0.5 | | 1.9 \pm 0.3 | | 1.9 \pm 0.4 | | |
| | difference | -0.2 \pm 0.6 | | 0.0 \pm 0.0 | | 0.0 \pm 0.0 | | |
| Discomfort due to fluid intake restriction | initial | 1.8 \pm 1.0 | -2.693 0.01 [†] | 1.1 \pm 0.3 | 0.000 1.000 | 1.0 \pm 0.3 | 1.000 0.326 | 0.000 [†] |
| | 6 wks later | 1.4 \pm 0.7 | | 1.1 \pm 0.3 | | 1.1 \pm 0.3 | | |
| | difference | -0.6 \pm 0.8 | | 0.0 \pm 0.3 | | 0.1 \pm 0.2 | | |
| Problems on daily tasks | initial | 1.8 \pm 1.0 | -3.525 0.001 [†] | 1.1 \pm 0.3 | -0.571 0.573 | 1.1 \pm 0.3 | 0.000 1.000 | 0.002 [†] |
| | 6 wks later | 1.4 \pm 0.7 | | 1.1 \pm 0.3 | | 1.1 \pm 0.3 | | |
| | difference | -0.6 \pm 0.8 | | 0.0 \pm 0.0 | | 0.0 \pm 0.2 | | |
| Avoidance of places & situations | initial | 2.0 \pm 1.3 | -2.599 0.014 [†] | 1.4 \pm 0.8 | -0.372 0.712 | 1.5 \pm 0.6 | 0.328 0.745 | 0.009 [†] |
| | 6wks later | 1.4 \pm 0.9 | | 1.4 \pm 0.7 | | 1.5 \pm 0.8 | | |
| | difference | -0.6 \pm 1.2 | | -0.0 \pm 0.5 | | 0.0 \pm 0.6 | | |
| Discomfort due to avoidance of places & situations | initial | 1.8 \pm 1.1 | -3.002 0.005 [†] | 1.2 \pm 0.4 | 1.440 0.161 | 1.4 \pm 0.6 | -0.441 0.662 | 0.009 [†] |
| | 6 wks later | 1.3 \pm 0.7 | | 1.2 \pm 0.4 | | 1.4 \pm 0.6 | | |
| | difference | -0.5 \pm 1.0 | | 0.0 \pm 0.3 | | -0.0 \pm 0.4 | | |
| Interference in physical activity | initial | 2.1 \pm 1.1 | -3.764 0.000 [†] | 1.3 \pm 0.5 | -1.000 0.326 | 1.6 \pm 0.7 | -1.360 0.184 | 0.001 [†] |
| | 6 wks later | 1.6 \pm 0.8 | | 1.3 \pm 0.4 | | 1.5 \pm 0.6 | | |
| | difference | -0.5 \pm 0.8 | | -0.0 \pm 0.2 | | -0.1 \pm 0.4 | | |
| Interference in relations with other people | initial | 1.7 \pm 1.1 | -2.841 0.008 [†] | 1.1 \pm 0.3 | 0.000 1.000 | 1.2 \pm 0.5 | 1.361 0.184 | 0.001 [†] |
| | 6 wks later | 1.2 \pm 0.7 | | 1.1 \pm 0.3 | | 1.3 \pm 0.7 | | |
| | difference | -0.5 \pm 0.9 | | 0.0 \pm 0.0 | | 0.1 \pm 0.4 | | |

Data are scores marked to each answers of the questionnaire.

[§] p values are the significance in comparing with three groups.

* p < 0.05, [†] p < 0.01, [‡] p < 0.001.

cise group and FES-biofeedback group said that they were satisfied with the improvement in their voiding symptoms after treatment, but the majority of the control group was displeased with the voiding symptoms, as the symptoms worsened as time passed by (p < 0.001).

DISCUSSION

Incontinence is a social disease in that it affects women's quality of life directly and indirectly. As a result, the improvement in living standards has created an increasing number of patients seeking treatment, as well as renewed interest among clinical physicians concerning effective treatment and preven-

tive methods. The first step in the search for an effective treatment should be the selection of a treatment method which saves the greatest medical costs in both social and economic terms, and which is non-invasive.

Since PFM exercise is the least non-invasive and the safest method and causes relatively fewer side effects, it is recommended as a first step in the treatment of stress urinary incontinence.¹² PFM exercise strengthens the levator ani muscle and external urethral sphincter muscle related to continence, and contraction of the levator ani muscle and external urethral sphincter muscle prevents incontinence. Many researchers have reported a success rate of 16–17% by using PFM exercise and have acknowledged its effectiveness.⁴⁻⁷ In order to successfully treat

incontinence by using this method, patients have to clearly understand what PFM exercise is, how it works and where the pelvic floor muscle is. In addition, patients' trust in the effects of the method is the key to success. Bump et al. found that 25% of 47 women using the Kegel technique exercised in a way which in effect aggravated incontinence, and only 49% did it the right way.¹³ Bø et al. argued that 70% of patients on PFM exercise treatment practiced the wrong way.¹⁴ Taking these statistics into account, in 1990, Bø et al. developed a physical exercise method as part of an intensive program for PFM exercise and the prevention of incontinence which is easy to follow and makes patients repeat PFM exercise in simple and various postures.¹⁰ The biofeedback method, which recently gained popularity among clinical physicians, includes PFM exercises and at the same time allows patients to recognize how to contract their pelvic floor muscle. As a result, it treats incontinence more effectively than the PFM exercise alone.^{8,9,15}

In this study, among the two groups apart from the control group, one was subject to Bø's intensive program and learned the PFM exercise, and the other was the FES-biofeedback method. Objective changes in the force of pelvic floor muscle contraction after treatment measured by using a perineometer were represented by a significant increase in maximal PMC pressure and PMC duration in both Bø's PFM exercise group and the FES-biofeedback group. This suggests that repetitive contraction of the pelvic muscle in both conscious and unconscious states induces hypertrophy of the pelvic floor muscle and enhances neuromuscular performance activity, which in return gradually increases the average PMC pressure and duration of PMC. Since the patients could see from monitors whether or not they contracted the correct muscle, the FES-biofeedback showed a more useful increase in PFM contractility than the PFM exercise-alone group. This result corresponded with earlier research which showed that pelvic floor exercise's cure/improvement rate is 20–52%, while biofeedback's cure/improvement rate is 54–87%.^{8,9,16-19} We applied electrical stimulation to the pelvic floor muscle on a regular basis in addition to the biofeedback treatment. To determine whether or not this enhances the effects of the biofeedback method will require further study.

In subjective evaluation, the intensive PFM exercise

treatment group and the FES-biofeedback group showed a meaningful difference in the expression of symptoms of incontinence after treatment compared with the control group. However, only the FES-biofeedback group indicated that the symptoms were significantly relieved and said they felt more comfortable. Since the level of inconvenience each patient feels due to incontinence and the relief they get as a result of PFM exercise therapy differs from person to person, and since they experience differing levels of stress from their social activities and daily lives, the relief of symptoms does not always lead to a decrease in the discomfort each patient feels. However, if the decrease in the level of discomfort is directly connected to the quality of life, the fact that only the FES-biofeedback group felt more comfortable after treatment suggests that FES-biofeedback treatment is more effective in enhancing the quality of life which has been adversely affected by incontinence.

PFM exercise produces handsome results with few side effects and it is easy to practice. However, what determines the success of the treatment is whether patients actively follow the directions of physicians. In addition, when applying the treatment, the state of the disease has to be taken into account and a combination of PFM exercise and the biofeedback method is more effective than verbal explanation of the method or simple PFM exercise treatment. When selecting a treatment method, doctors should consider the level of discomfort the treatment can cause, as well as its effectiveness in relieving or eliminating symptoms since incontinence causes not only displeasure and discomfort, but also difficulties in the performance of daily activities.

Various factors affect the results of PFM exercise: severity of incontinence; communication with patients; understanding of the pelvic floor muscle; and continuance of exercise.⁶ So, it is essential to fully educate patients and encourage their interests in the treatment. The results of our study show that both Bø's PFM exercise and FES-biofeedback helped patients to correctly learn the PFM exercise method and led them to practice continuously, even at home. However, in considering both the objective and subjective indicators of each treatment method, the biofeedback method proved most effective, since it allowed patients to monitor their PFM contractions and check whether or not they contracted the right muscles, as well as motivating them to continue their

exercises.

In conclusion, when PFM exercise and FES-biofeedback were compared in terms of their effects on the patients' quality of life, FES-biofeedback proved more effective than the verbal explanation of PFM exercise or simple PFM exercise. Therefore, we suggest that results will be even better if women who are highly likely to develop incontinence learn intensive PFM exercises and the biofeedback method, because this eventually help to prevent incontinence by motivating them to practice on a continual basis.

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Appendix

Urinary Symptoms questionnaire

We are trying to determine how much of a problem your urinary symptoms are to you.

We would be grateful if you could help us by filling out this questionnaire

When answering the questions, think about the symptoms you have experienced in the past month.

You will see that some questions ask if you have a problem occasionally, sometimes or most of the time.

Occasionally = less than one-third of the time

Sometimes = between one-third and two-thirds of the time

Most of the time = more than two-thirds of the time

Please tick one box for each question

1. During the day, how many times do you urinate on average?

- ☐ 1 to 6 times
☐ 7 to 8 times
☐ 9 to 10 times
☐ 11 to 12 times
☐ 13 or more times

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

2. During the night, how many times do you get up to urinate, on average?

- ☐ none
☐ 1
☐ 2
☐ 3
☐ 4 or more

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

3. Do you have to rush to the toilet to urinate?

- ☐ never
☐ occasionally (less than one-third of the time)
☐ sometimes (between one and two-thirds of the time)
☐ most of the time (more than two-thirds of the time)
☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

4. Does urine leak before you can get to the toilet?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

5. Do you have pain in your bladder?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

6. Does urine leak when you are physically active, exert yourself, cough or sneeze?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

7. Do you ever leak urine for no obvious reason and without feeling that you want to go?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

8. Do you leak urine when you are asleep?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

9. How often do you leak urine?

- ☐ never
- ☐ once or less per week
- ☐ 2-3 times per week
- ☐ once per day
- ☐ several times per day

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

10. How much urinary leakage occurs?

- ☐ No leakage
- ☐ Drops / pants damp
- ☐ Dribble / pants wet
- ☐ Flood, soaking through to outer clothing
- ☐ Flood, running down legs or onto floor

11A. Do you wear some type of protection for your leakage? YES / NO

If NO, please go to question 12

If YES, please answer below

- ☐ Change underclothes
- ☐ Panty liners / mini pads
- ☐ Maxi / super sanitary towels
- ☐ Nappies / Incontinence products

Other; please specify

11B. How many times a day do you change the above items because of leakage?

- ☐ No change required
- ☐ 1
- ☐ 2-3
- ☐ 4-5
- ☐ More than 5 times

12. Do you need to change your outer clothing during the day because of urine leakage?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

13. Is there a delay before you can start to urinate?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

14. Do you have to strain to urinate?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

15. Do you stop and start more than once while you urinate?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

16. Would you say that the strength of your urinary stream is ...

- ☐ normal
- ☐ weak
- ☐ strong

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

17. Have you ever been unable to pass urine and required a catheter?

- ☐ no
- ☐ yes, once
- ☐ yes, twice
- ☐ yes, more than twice

18. Do you have a burning feeling when you urinate?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem

- ☐ quite a problem
☐ a serious problem
19. How often do you feel that your bladder has not emptied completely after you have urinated?
- ☐ never
☐ occasionally
☐ sometimes
☐ most of the time
☐ all of the time
- How much of a problem is this for you?
- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem
20. Can you stop the flow of urine if you try?
- ☐ yes, easily
☐ yes, with difficulty
☐ no, cannot stop it flowing

Sexual Matters

Please think about the past month

21. Do you have pain or discomfort because of a dry vagina?
- ☐ not at all
☐ a little
☐ somewhat
☐ a lot
- How much of a problem is this for you?
- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem
22. To what extent do you feel that your sex life has been spoiled by your urinary symptoms?
- ☐ I am not sexually active
☐ not at all
☐ a little
☐ somewhat
☐ a lot
- How much of a problem is this for you?
- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem
23. Do you have pain when you have sexual intercourse?
- ☐ I am not sexually active
☐ not at all
☐ a little
☐ somewhat
☐ a lot

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

24. Do you leak urine when you have sexual intercourse?

- ☐ I am not sexually active
- ☐ not at all
- ☐ a little
- ☐ somewhat
- ☐ a lot

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

Life Style

Please think about the past month

25. Do you cut down on the amount of fluid you drink so that your urinary symptoms improve?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time
- ☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

26. To what extent have your urinary symptoms affected your ability to perform daily tasks (e.g., cooking, cleaning, laundry)?

- ☐ not at all
- ☐ a little
- ☐ somewhat
- ☐ a lot

How much of a problem is this for you?

- ☐ not a problem
- ☐ a bit of a problem
- ☐ quite a problem
- ☐ a serious problem

27. Do you avoid places and situations where you know a toilet is not nearby (e.g., shopping, travelling, theater, church)?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ most of the time

☐ all of the time

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

28. Does urinary incontinence interfere with physical activity (e.g., walking, dancing, swimming)?

- ☐ not at all
☐ a little
☐ somewhat
☐ a lot

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

29. Overall, do your urinary symptoms interfere with your relationships with other people?

- ☐ not at all
☐ a little
☐ somewhat
☐ a lot

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

30. Do your urinary symptoms interfere with your relationships with your husband/companion?

- ☐ I do not have a partner
☐ not at all
☐ a little
☐ somewhat
☐ a lot

How much of a problem is this for you?

- ☐ not a problem
☐ a bit of a problem
☐ quite a problem
☐ a serious problem

31. How long have you had urinary symptoms that bother you?

- ☐ less than 1 year
☐ 1-2 years
☐ 2-3 years
☐ more than 3 years

32. If you had to spend the rest of your life with your urinary symptoms as they are now, how would you feel?

- ☐ Perfectly happy
☐ Pleased
☐ Mostly satisfied
☐ Mixed feelings
☐ Mostly dissatisfied

☐ Very unhappy

☐ Desperate

33. Which of your urinary symptoms bother you most at the moment?

(Please list the symptoms that bother you most below. Please describe the symptoms in your own words, or write the number of the question that comes closest to describing them)