

## Effects of pelvic floor muscle exercises on quality of life outcomes in women with stress urinary incontinence

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### Absract

**Background:** Stress urinary incontinence is a common problem in the middle-aged women and can affect their quality of life. This study evaluated the effects of pelvic floor muscle exercise on quality of life outcomes in women with stress urinary incontinence.

**Methods:** After baseline evaluation, 50 women were assigned for this clinical trial. Participants were instructed to do pelvic floor muscle exercises for 3 months and their quality of life measured before and 3 months after intervention.

**Results:** forty-six women completed the trial. Significant difference in the quality of life scores ( $P < 0.0001$ ) were noted in women with stress urinary incontinence, after 12 weeks.

**Conclusion:** 12 weeks of pelvic floor muscle exercises significantly improved quality of life outcomes in women with stress urinary incontinence.

**Keywords:** Quality Of Life, I\_QOL questionnaire, pelvic floor muscle exercises, stress urinary incontinence.

### Introduction

Stress urinary incontinence (SUI) is the involuntary loss of urine that occurs with physical exertion and a rise in abdominal pressure [1]. Coughing, sneezing, straining, jumping, and running are events commonly associated with SUI [2]. Stress urinary incontinence is the most common type of urinary incontinence that occurs frequently from middle age on wards and associated with a reduced quality of life [3]. Adverse affects of SUI on quality of life include social isolation, loneliness and sadness, psychiatric illness including depression and embarrassment that affects the activities of daily liv-

ing, stigmatization, effects on sexual relationships and disturbed sleep. Practical inconveniences associated with the leakage of urine, such as frequent changes of clothes and bed linen and the need to bath more often, will have adverse affect on quality of life [4]. Because of importance and prevalence of incontinence among women and the effect of stress urinary incontinence on the quality of life, there is increasing interest in the development and use of well-constructed questionnaires studying quality of life [5]. The incontinence quality of life (IQOL) questionnaire is most frequently used measure of incontinence, IQOL is a 22 item questionnaire designed to assess the quality of life of patients with urinary incontinence. Reli-

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Table 1. Demographic characteristics before treatment (Mean  $\pm$  SD).

|                             | Mean $\pm$ SD    | N (%)    |
|-----------------------------|------------------|----------|
| Age                         | 41.56 $\pm$ 6.18 |          |
| Education                   |                  |          |
| Illiterate                  | ----             | 11(23.9) |
| Primary school              | ----             | 17(37)   |
| Secondary school            | ----             | 12(26.1) |
| High school                 | ----             | 6(13)    |
| BMI                         | 27.31 $\pm$ 2.46 |          |
| Parity                      | 3.91 $\pm$ 2.15  |          |
| Duration of symptoms (year) | 3.04 $\pm$ 3.33  |          |
| Delivery                    |                  |          |
| C/s                         | ----             | 7 (15.2) |
| Vaginal                     | ----             | 33(71.7) |
| C/s & Vaginal               | ----             | 6(13)    |

ability and validity have been demonstrated, and this instrument has been translated in to more than 31 languages [6]. Nojomi et al. translated and validated IQOL questionnaire into the Persian language [7]. Although, several trials have demonstrated that pelvic floor muscle (PFM) training is effective for treatment of stress urinary incontinence [8-10], only few studies have investigated the effects of PFM exercises on health related quality of life. Sari and khorshid (2009) reported that 8 week trial of PFM training improved quality of life and reduced the frequency of urinary incontinence episodes [10] and Castro et al. (2008) found that PFM exercises were effective on health related quality of life in women with stress urinary incontinence [11]. The aim of this study was to evaluate the effects of PFM exercises on quality of life outcomes in women diagnosed with stress urinary incontinence.

## Methods

This study was conducted in Akbar abadi hospital located in Tehran (Iran) between April 2009 and January 2010. Fifty women with proven stress urinary incontinence (patient who had positive cough stress test, and had symptoms of SUI with an average of at least 3 stress incontinence episodes per week proven by a

voiding diary recording) were successively enrolled in this survey study. Convenience sampling was used as sample selection. Women were eligible for the study if they were not pregnant, menopause or in postpartum period and excluded from participation if they had medical history that included pelvic cancer, severe endometriosis, neurologic or metabolic disorders with bladder or sphincter dysfunction; medical or surgical treatment for stress urinary incontinence or vaginal wall prolapse, atrophic vaginitis, vulvovaginitis or urinary tract infection diagnosed via urinalysis and urine culture. Subjects were provided with informed consent prior to initiation of the clinical examination. At an initial visit, all subjects underwent a complete medical history and physical examination including voiding diary recording the number of incontinence episodes for 7 days with lab tests consisted of urinalysis and urine culture.

All study subjects were also asked to complete the IQOL questionnaire before and 3 months after trial. The IQOL questionnaire consists of 22 items evaluating concerns specifically relating to incontinence. Subjects assign a value on a 5point scale from 1 (extremely) to 5 (not at all) for each item. For all items, higher scores indicated better incontinence related IQOL. At the end a mean score for each sub

Table 2. Episodes of urine loss before and after treatment.

|                              | Before<br>intervention N<br>(%) | Post<br>intervention N<br>(%) |
|------------------------------|---------------------------------|-------------------------------|
| Not at all in the last month | 0(0)                            | 17(37)                        |
| 1-2 times in the last month  | 16(34.8)                        | 16(34.8)                      |
| 4 times in the last month    | 9(19.6)                         | 6(13.0)                       |
| 2-3 times per week           | 7(15.2)                         | 3(6.5)                        |
| 1 time a day                 | 2(4.3)                          | 4(8.7)                        |
| 2 times a day                | 3(6.5)                          | 0(0)                          |
| 3-4 times a day              | 5(10.9)                         | 0(0)                          |
| 5 or more times a day        | 4(8.7)                          | 0(0)                          |

scale was calculated, as well as a total score for all 22 items. The scores were then transformed to a 0 to 100 scale. A score of 100 represented the best possible quality of life and 0 represented the worst. After base line evaluation, participants were educated to conduct pelvic floor muscle exercises for 15 minute twice a day (6-8 seconds contraction with 5 seconds of recovery time) for 3 months in sitting, standing, and supine positions.

Pelvic floor muscle strength was assessed during the base line, 1, 2 and 3 months after pelvic floor muscle training. The outcome measures included changes in the validated quality of life questionnaire, number of leakage in the voiding diary recording, strength of muscle based on the modified Oxford Grading Scale, and the severity of SUI based on the patient description as mild, moderate or severe as a question in the IQOL questionnaire. (Participants were contacted by telephone monthly to encourage adherence to muscle training regimen and they were visited in the hospital at the third month.)

The SPSS, version 11.0, statistical software package was used for data analysis. P value <0.05 were considered statistically significant. Paired T test and wilcaxon test were used to detect differences between pre intervention and post intervention quality of life scores and

severity of SUI.

## Results

Fifty women were eligible for participation in this study but only 46 women completed the trial. The mean age of the participants was  $41.56 \pm 6.18$  (mean  $\pm$  SD) and the mean body mass index (BMI) at the base line  $27.31 \pm 2.47$  (mean  $\pm$  SD). Base line demographic characteristics of the participants are shown in Table 1.

Before intervention 19.6 percent of participants described their problem's severity as mild, 45.7 percent described it as moderate and 34.8 percent reported that as severe and 12 weeks after intervention 71.7 percent described it as mild, 26.1 percent described it as moderate and only 2.2 percent described it as severe. There are significant differences in severity of SUI before and after intervention ( $P < 0.0001$ ).

All patient at base line lost urine when they had a cough, sneeze, and run or walked but only 63 percent of participants lost urine during these activities, 12 weeks after the trial.

The percentage of urine lost before and after pelvic floor muscle training shown in table 2.

After 12 weeks, significant differences in quality of life scores were noted ( $53.15 \pm 23.77$ ) versus ( $77.82 \pm 16.20$ ) ( $P < 0.0001$ ).

## Discussion

This clinical trial were designed to investigated the effects of pelvic floor muscle training on health related quality of life in women with stress urinary incontinence. We concluded that 12 weeks trial of pelvic floor muscle training significantly improved quality of life. Our findings were similar to Sari and colleagues (2009) results in which they found that 8 weeks trial of pelvic floor muscle training could significantly increase pelvic floor muscle strength, improved IQOL score and reduced the frequency of urinary incontinence episodes, in Turkish women with Urinary incontinence [10].

Similarly, in the study conducted by Castro and co workers (2008), patients in the pelvic floor muscle exercise group (n=31), compared to the no treatment group, were found to have a significant improvement in their I\_QOL score [11].

Our study did not include women with urge or mixed incontinence, so future investigations are recommended to examine whether pelvic floor muscle exercises are effective on quality of life of women with this kinds of incontinence.

Another major limitation of this study was that it did not include women who were pregnant or in postpartum period or menopause. Therefore, future studies are needed to investigate the effects of pelvic floor muscle training on quality of life of these women. At the end, further researches are recommended to establish and compare the effectiveness of pelvic floor muscle exercises with electrical stimulation, vaginal cones or biofeedback in women with stress urinary incontinence.

## Conclusion

This study provides evidence that pelvic floor muscle training should be offered as the first option of treatment in women with stress urinary incontinence.

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