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HIGH EXPECTATIONS FOR PELVIC FLOOR MUSCLE TRAINING WITH MOBILE APPLICATION PREDICTS SUCCESSFUL TREATMENT IN WOMEN WITH STRESS URINARY INCONTINENCE

Hypothesis / aims of study

Pelvic floor muscle training (PFMT) is part of the first-line treatment for all types of urinary incontinence in women, along with recommendations for lifestyle changes. However, there is no gold standard for how to provide treatment with PFMT, and different individuals may benefit from different regimens. We developed a Smartphone application for women with stress urinary incontinence (SUI) in order to improve availability and adherence to this simple but efficient treatment. To evaluate this treatment, this study aimed to find factors associated with a successful treatment outcome among women who performed PFMT using the Smartphone application.

Study design, materials and methods

This study is an analysis of data collected in and alongside a randomised controlled trial (RCT) evaluating the effect of PFMT via a Smartphone application compared to postponed treatment in women with SUI. The application included a training programme, information on SUI, lifestyle advice, and reminder and statistics functions. The effect was evaluated at follow-up after 3 months of treatment using self-assessment questionnaires for symptoms (International Consultation on Incontinence Modular Questionnaire - Urinary Incontinence Short Form, ICIQ-UI SF) [1], impact on quality of life (International Consultation on Incontinence Modular Questionnaire – Lower Urinary Tract Symptoms Quality of Life, ICIQ-LUTSqol) [1], impression of improvement (Patient Impression of Improvement, PGI-I) [2], incontinence episode frequency (IEF), and treatment satisfaction. Information on demographic, gynaecological, and lifestyle factors was collected at baseline, and information on adherence to treatment was collected and analysed at follow-up. Treatment with the application resulted in significant improvements in the outcome measures compared to the postponed treatment group, which are reported elsewhere.

Only participants in the active treatment group were included in this study. A successful outcome was determined by patients assessing themselves as “much better” or “very much better”. Factors possibly associated with a positive treatment outcome were analysed first by univariate regression and if the association was significant or near significant ($p<0.20$), the variable entered into the multivariate model. Multiple logistic regression was performed to determine the ability of the variable to predict a successful outcome.

Results

After randomisation, 62 women with at least weekly SUI received the treatment application. One participant was lost to follow-up and the remaining participants were included in this analysis (n=61). The mean age (range) was 45 (27-72) years and 8.1% were nulliparous. For other baseline data see Table 1. A total of 55.7% of the women found themselves to be “much” or “very much better” and treatment was considered successful in these cases.

The univariate analyses identified four significant ($p<0.05$) predictors of success according to PGI-I: baseline expectations of treatment, baseline daily tea consumption, weight loss during the treatment period, and improved self-assessed pelvic floor muscle strength after treatment (Table 1). Two other factors in the univariate analyses had a p-value <0.20 and were included in the multivariate analyses: baseline pad use and level of physical activity. To adjust for possible confounding, age was also included in the model.

The seven variables in the multivariate model were removed stepwise, one at a time according to significance level until only age and significant variables ($p<0.05$) remained. In line with the univariate analysis, expectations for treatment effect (OR 11.38, CI 2.02-64.19), weight loss (OR 2.28 per kg, CI 1.27-4.09), and improved self-assessed ability to contract the pelvic floor muscles (OR 35.54, CI 4.96 – 254.61) had a significant impact on success in the multivariate analysis. Together these variables explained 61.4% (Nagelkerke R square) of the variability in success.

Interpretation of results

High expectations for treatment were significantly associated with a successful treatment outcome, as it may have caused the participants to be more motivated to complete the programme. Improvement in the self-assessed ability to contract the pelvic floor muscles may reflect that the training was done correctly. Weight loss was associated with success and was previously implemented in treatment recommendations [3]. The association in this population of mostly normal-weight women may indicate that it is more important to treatment success to not gain weight than to actually lose weight, as the mean weight gain in the group in which the treatment was not successful was larger than the mean weight loss in the successful group.

Concluding message

High expectations for treatment predict success among women with SUI who underwent a PFMT programme via a mobile application. Known factors, such as weight reduction and improved pelvic floor muscle strength, were also associated with success.

Table I. Characteristics of Participants with Successful/Not Successful Treatment (n=61)

Factors possibly associated with success (reference category)	**Successful**	**Not Successful**	**P***
Baseline demographics			
Mean age in years	43.79 (SD 9.68)	45.93 (SD 9.85)	0.395
Smoking	1 (2.9%)	1 (3.7%)	0.868
Tea consumption (≥3 cups/day)			
<3 cups/day	32 (94.1%)	19 (70.4%)	0.023
Body mass index	23.99 (SD 3.65)	24.03 (SD 4.73)	0.974
Weight reduction	0.29 (SD 1.70)	-1.22 (SD 2.72)	0.020
Physical activity (Regular exercise ≥3 times/week)			
Sedentary lifestyle or modest exercise <3 times/week	23 (67.6%)	13 (48.1%)	0.127
Baseline incontinence characteristics			
ICIQ-UI SF total score at baseline	11.09 (SD 3.15)	11.11 (SD 2.89)	0.976
Pad use (Daily)			
Weekly	17 (50.0%)	13 (48.1%)	0.277
More seldom	12 (35.3%)	6 (22.2%)	0.125
Expectations on treatment (To be much improved)			
To be very much improved/completely free of leakage	27 (79.4%)	13 (48.1%)	0.013
Treatment factors at follow up			
PFMT frequency last treatment month (never/sporadic)			
Weekly	14 (41.2%)	12 (44.4%)	0.459
Daily	16 (47.1%)	9 (33.3%)	0.202
Self-assessed pelvic floor strength (unchanged/a little better)			
Much better	24 (70.6 %)	5 (18.5%)	<0.001

Means (SD) are presented if the variable has been analysed as a continuous variable and numbers (%) if categorised or dichotomised. PGI-I: Patient Global Impression of Improvement, OR: odds ratio, ICIQ-UI SF: International Consultation on Incontinence Modular Questionnaire, PFMT: pelvic floor muscle training

*The p-value is based on the univariate regression.

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