Impact of strength and nature of patient health values on compliance and outcomes for physiotherapy treatment for pelvic floor dysfunction

Phil Reed, D.Phil[1], C. Mair Whittall[2], Lisa A Osborne, Ph.D.[2], & Simon Emery, MD[2]

[1]Department of Psychology, Swansea University, Singleton Park, Swansea, SA2 8PP, UK.;

[2]Women's Health, Singleton Hospital, Sketty Lane, Swansea, SA2 8QA, UK.

Correspondence address: Phil Reed,
Department of Psychology,
Swansea University,
Singleton Park,
Swansea, SA2 8PP, UK.
Tel.: 01792 602047
e-mail: p.reed@swansea.ac.uk

Short title: Patient values and physiotherapy outcomes.

Reed, P., Whittall, C.M., Osborne, L.A., & Emery, S. (2020). Impact of strength and nature of patient health values on compliance and outcomes for physiotherapy treatment for pelvic floor dysfunction. *Urology*.

Abstract

Objective: To determine whether patient values impact on compliance and outcome for physiotherapy treatment for pelvic floor dysfunction. Although studies have related 'health values' to behaviours in the laboratory, or to behaviours such as exercise, there have been no studies of the impact of patient values on actual medical treatments.

Methods: A prospective observational study of the impact of patient values on compliance and outcomes for physiotherapy treatment for pelvic floor dysfunction was conducted in a physiotherapy clinic in the urogynaecological outpatients unit of a hospital. 218 patients were approached and agreed to participate. Prior to treatment, pelvic floor functioning was assessed using the Oxford Grading System, and Queensland Pelvic Floor Questionnaire, and values were assessed using the Personal Values Questionnaire (PVQ-II). Following a 6-month physiotherapy treatment programme, pelvic floor function was re-assessed.

Results: The strength of patient health-related values measured by the PVQ-II significantly predicted compliance with the intervention, but the nature of health value (intrinsically-valued, as opposed to externally-controlled) predicted objective outcome.

Conclusions: Patient values impact on physiotherapy adherence and outcomes, and could be considered as part of future assessment/screening procedures.

Keywords: patient health values; intrinsic value; treatment compliance; treatment outcomes; physiotherapy; pelvic floor dysfunction.

Continence issues impact about 25% of the adult female population, but physiotherapy treatment can be effective[1,2,3], and is regarded as safe, acceptable, and cost-efficient[3,4]. However, its outcomes can be variable[4], and identifying predictors of its success has been a key objective for treatment development and service planning for this condition (as for many others). In several studies of physiotherapy treatment for incontinence, physical dysfunctions have not been found to be primary predictors of outcome[5,6]. This stands in contrast to the role of several psychological variables (e.g., depression and anxiety) that play a key role in the positive prognoses for this and many other conditions[7]. Although the role of psychological factors such as depression and anxiety has been investigated[7], the effect of patient health values on treatment outcomes remains under researched for this, and any other, physical condition.

Health values are a prime candidate for investigation, as they are related to treatment satisfaction across a broad range of urological or urogynaecological problems[8,9]. Indeed, they have also been implicated similarly across a broad range of conditions: for example, cancer patients' quality of life is related their personal values[10], and post-treatment depression and anxiety is increased when there are large discrepancies between desired- and attained life goals[11]. Furthermore, the degree to which patients' place value on health outcomes, in terms of their readiness to change, also has been assessed in a variety of mental health contexts[12].

Measurement of patient values is a relative new area for the assessment of outcome predictors, and one of some controversy in medical treatments[13,14]. A key problem has been the extent to which the nuances of such values can be captured, as they vary not only in strength, but also in their nature, that is in the manner in which they are held[15,16]. However, there has been some advance in the assessment of patient values prior to psychotherapy[16], which may be of help to the current investigation. For example, the Personal Values Questionnaire (PVQ-II)[15] assesses both the strength of the patient's values and the manner in

which the value is held (i.e. whether the value is intrinsically important to the patient themselves, or whether it is held for extrinsic socially-oriented reasons). It may well be that either of these aspects of patient health values could impact on the course of a medical treatment, such as physiotherapy for incontinence, that requires the patient to actively engage with the intervention and change their behaviours[12].

Given the above, the current study employed a prospective cohort study to assess the impact of patient values (both their strength and their nature) at intake on compliance and outcomes for a physiotherapy treatment for pelvic floor dysfunction. The aim was to illuminate any relationship with treatment compliance or outcome, and to potentially highlight the exact aspects of a value that impact on these facets of medical intervention.

Method

Ethics Statement

Ethical approval was granted to this study by the NRES Committee Region - East Midlands, UK. The trial is registered on clinicaltrials.gov (NCT02549157).

Participants

218 adult female patients consecutively referred to a hospital for outpatient urogynaecological physiotherapy treatment for pelvic floor dysfunction were invited, and all agreed to participate. The patients were referred from a variety of sources, who used a mixture of different techniques with diagnosis (some used urodynamics, and some did not). The mean age of the participants was 51.60 (SD±13·08, range = 21–86) years. Participants were referred for either a single, or a combination, of symptoms: 40 (18%) stress incontinence; 9 (4%) urge incontinence; 74 (34%) mixed incontinence; 4 (2%) faecal incontinence; 41 (19%) prolapse alone; and 50 (23%) prolapse and incontinence. Full

demographic characteristics for the sample, and for the different categories of pelvic floor dysfunction can be seen in Table 1. Patients referred for third and fourth degree perineal tears, post-operative rehabilitation, or urogynaecological indications, were excluded from the study. The analysis plan was to use multiple regression to identify predictors of compliance and outcome. Power calculations suggest that expecting a medium effect size (f'=0·25), with 95% power, using a probability criterion of p<0·05, and with 6 predictors, a minimum sample size of 91 would be needed.

Materials

Modified Oxford Grading[17] is a validated objective measure that quantifies the strength of pelvic floor contraction. Patients are scored a scale of between 0–5; 0 = no pelvic floor contraction, 5 = very strong: elevation of examiner's finger against strong resistance. The technique has been demonstrated to be reliable in this context[17].

Queensland Pelvic Floor Questionnaire[18] is a self-administered female pelvic floor questionnaire. Sections relate to bladder dysfunction, bowel dysfunction, prolapse, and sexual dysfunction, each producing a score from 0–10, the sum gives overall pelvic floor dysfunction (0–40). Greater scores represent worse function. The internal reliability of the scales (Cronbach α) range between 0·72 and 0·95[19], and α for overall scale for the present sample was 0.86 (there were no items that could be deleted to improve this value).

Personal Values Questionnaire[15] is a self-completed measure of patient values, often used in psychotherapy[16]. The health value section was used which asks nine questions, each rated on a five-point scale. There are also three subscales (Intrinsically-held Value Choice, Aversively-controlled Value Choice, and Value-related Behaviour): 'Intrinsic Choice' represents the individual's own commitment to the value; 'Aversive Choice' reflects the degree of external regulation of the value; and 'Behaviour' measures the degree to which the

value is acted upon. The PVQ–II has acceptable internal consistency (α = 0·71–0·80)[16]. In the current sample, the internal consistency (α) of the overall scale was 0.84, and that of the subscales was: Intrinsic Choice=0·84; Aversive Choice=0·90; and Behaviour=0·55. The manner in which the value is held can be calculated by subtracting the mean score for Aversive Choice from the mean score for Intrinsic Choice. The resulting score varies from +3 (intrinsically-held values) to -3 (extrinsically-controlled values).

Intervention

The Pelvic Floor Muscle Training (PFMT) programme consisted of 2 individual appointments, and 6x60min group sessions (7–8 patients per group), over a 6 month period. The programme provided training in pelvic floor exercises and in identifying and isolating correct muscle groups, as well as educating patients about the anatomy and function of the pelvic floor muscles and the lumbosacral spine region.

The individual appointments were taken by one of the clinical physiotherapists, and were held at the start and end of the PFMT programme. These individual appointments involved vaginal examination to assess vaginal muscles and tissues and pelvic floor strength, in order to assess the patient's pelvic floor exercise technique quality.

The group sessions were led by a clinical physiotherapy specialist, a senior physiotherapist in women's health, a surgical nurse specialist, or a psycho-sexual counsellor, as appropriate, who each saw all groups, and were not assigned to one particular group. The sessions also were structured to provide information and enhance awareness regarding: (1) the anatomy and function of the pelvic floor muscles; (2) back and spinal care, as well as posture; (3) medical and surgical management of pelvic floor conditions; (4) psycho-sexual issues; (5) the anatomy of the intestines and bowel, and colorectal problems; and (6) physiotherapy management of Pelvic Floor Dysfunction (PFD) and available aids. In

addition, each session provided training in pelvic floor exercises and advice about the behavioural management of continence, such as fluid intake, bladder drill, how to contract pelvic floor muscles before and during increases in abdominal pressure (‘the knack’), double voiding (urinating, altering position, then urinating again), and helpful activities.

Patients were directed to practice the exercises at home, on a daily basis (mornings and evenings), between the hospital sessions. At the start of the programme, the patients were advised to start with 5 rapid squeezes of their pelvic floor muscles, holding each squeeze between 1–3s, if possible, and then releasing. Patients were encouraged to progressively increase the number and duration of squeezes over the course of the programme, but to primarily focus on the quality of their technique. The goal was to accomplish 10 long squeezes, holding for up to 10s, followed by 10 short squeezes, at least two to three times a day.

Procedure

On admittance to the programme, the participants underwent an objective assessment of their pelvic floor strength (Modified Oxford Grading), and also provided subjective assessments of their condition (Queensland Pelvic Floor Questionnaire). Additionally, the participants gave data regarding other demographic characteristics (e.g., age, BMI, medical co-morbidities), and completed a questionnaire to assess their values (PVQ-II). The participants then progressed through the physiotherapy programme, attending one session every month for six months. On completion of the programme, the objective- and subjective-measures of pelvic floor function were repeated.

Results

Table 1 shows the outcomes (attendance, and change in objective and subjective scores) for the sample as a whole, and also broken down by category of pelvic floor dysfunction. As the categories had widely differing numbers of patients, some of which were small, only the sample as a whole was analysed. Table 2 shows the mean (standard deviation and range) for the strength and type of health values (PVQ), and the Pearson correlations with objective (Oxford) and subjective (Queensland) measures of pelvic floor function, as well as with age and BMI. These data show that the strength of the held health value was not associated with any of the other variables. The type of value held (intrinsic or extrinsic) was similarly unrelated to the other variables, except for a weak association with BMI: the higher the BMI the more extrinsically held the health values.

The attendance of the participants at the sessions was monitored, and it was found that 101 (46·33%) of the participants attended all of the sessions, and 117 (53·67%) did not complete the course of PFMT sessions. A logistic regression was conducted to see if any of the variables (values strength, values type, symptom severity – objective and subjective, age, and BMI) predicted attendance. This analysis revealed a significant model -*2LL*=21·77, $p<0·01$, with higher values strength (β=0·341, $p<0·05$, *odds ratio*=1·406), fewer objective symptoms (β=5·107, $p<0·05$, *odds ratio*=165·221), fewer subjective symptoms (β=-0·362, $p<0·05$, *odds ratio*=0·696), older age (β=-0·240, $p<0·05$, *odds ratio*=0·786), and lower BMI (β=-0·347, $p<0·01$, *odds ratio*=0·688), all independently predicting attendance, but the type of values (β=-1·827, $p>0·80$, *odds ratio*=0·161) not being related to attendance.

Table 3 shows the mean (standard deviation) for pelvic floor function measured objectively and subjectively for patients who completed the PFMT programme at baseline and end of treatment, as well as the statistical significance of the change. These data show

large-sized significant improvements for the objective pelvic floor function, and moderate-sized significant improvements for the subjectively assessed pelvic floor function.

A multiple regression was conducted to see if any of the variables (values strength, values type, initial symptom severity – objective and subjective, age, and BMI) predicted improvement in the objectively measured pelvic floor function. This analysis revealed a significant model, R^2=0·762, p<0·01; with greater intrinsic health values (β=0·543, p<0·05), and lower initial objective severity (β=5·107, p<0·05, *odds ratio*=165·221), both independently predicting objective improvement. However, strength of values (β=0·011, p>0·80), initial subjective symptoms (β=-0·034, p>0·50), age (β=0·004, p>0·80), and BMI (β=0·007, p>0·80), were not related to objective improvement. A similar multiple regression was conducted to see if any of these variables predicted improvement in the subjectively assessed pelvic floor function. However, this analysis revealed that, although the effect was moderate in size, the model was not significant, R^2=0·476, p>0·20.

Discussion

The current study aimed to determine whether patient values, in the light of their growing importance in medical decision making[20,21], would impact on treatment compliance and outcomes in a physiotherapy intervention for pelvic floor dysfunction. Such treatment requires active patient participation, and is potentially highly subject to influence from the psychological characteristics of the patient[6,7], as are many other interventions[10], so seemed a strong candidate for such a values influence. The key results were that the strength of the patients' health-related values predicted patients' ability to fully comply with the treatment. However, the strength of values did not predict the outcome of the intervention in those who fully complied. Rather, it was the manner in which the values were held, that is as

intrinsically-valued (as opposed to being held for the sake of others), that predicted improvement in pelvic floor function.

That the strength of patients' health values was found to predict adherence to a treatment regime corresponds to a number of previous findings in the literature. It has been suggested that a patients' readiness to change is a key predictor of whether a therapy will be successful[1]. Although this concept is 'motivational' in nature, rather than about specific values, it certainly suggests that the patient values are important to assess. In addition, a number of reports have noted that patient values impact on compliance with treatment of gastro-intestinal cancer[9,11]. However, the current study is the first to show a link between health values and compliance in physiotherapy interventions. The nature of the relationship between health values and other values, such as work, education, recreation, and social values, also warrants further exploration, as the correlational analyses suggests associations between all of these domains.

Beyond demonstrating that the strength of a held health-related value is associated with greater treatment adherence, was the finding that the strength of the value did not subsequently predict outcome. In contrast, it was the reason why the health-value was held that made the difference to how much improvement in pelvic floor function was observed. Those patients who held health-values because they personally-valued them, as opposed to holding them for social reasons, fared better. The current findings are consistent with others that have noted personally-related values (as opposed to status-striving values) are better associated with outcomes for cancer treatment.[3] One explanation of this dissociation between strength and type of health-value is that compliance could be facilitated by holding health-values for either personal or social reasons, but full-engagement with, and benefit from, treatment only results if the health-value is personally-held by the patient[9]. The importance of patient health-values in predicting objective-outcome, contrasts with initial subjective

symptoms, which were not good predictors of objective-improvement. Similarly, subjective-outcomes were not predictable by these variables. This suggests that, while subjective-outcomes are key to the patient, their idiosyncratic nature makes them difficult to predict without fuller knowledge of the patient's psychology, as these are self-reported symptoms based on the particular perception of each individual about her condition.

As noted above, the concept of patient values is novel in a medical context, even though its importance is recognised[20-21]. These data suggest that additional psychological support to bolster health values[7] may also be helpful in supporting patients when undergoing such forms of treatment. In addition, the current study also identified a number of other predictors of treatment compliance – such as the initial severity of the symptoms, as well as the patients' age and BMI. These findings could also be useful in helping to decide the type of treatment that a patient should be offered, if a patient displays characteristics that predict they are unlikely to be able to comply with a long-term treatment, at that time. This might involve developing strategies aimed at changing intrinsic values prior to PFMT, or considering surgery earlier, if the physical situation demands.

As with any investigation, there are limitations to the current study. The sample was moderate and replication would be sensible. Such further research might include a longer follow-up period (although, it should be mentioned that one of the foci of the present research was current attendance). It is not known if different forms of pelvic floor dysfunction are associated with different values and different relationships to attendance. Similarly, it is not known which of the aspects of the PFMT the values impacted – the pelvic floor exercises, the behavioural management, or both. The manner in which values were measured is new to this area, and validity will need to be further established. Importantly, it should be noted that, in medical decision-making, 'patient values' should be applied with caution, and not as the sole determinant of a treatment decision.

The current research is among the first has identified that patient values, both strength and type, may play a role in treatment compliance and outcomes. This finding suggests that a fuller assessment of not only the physical, but the psychological functioning and characteristics of patients would facilitate treatment regimes in the field of physiotherapy and pelvic floor functioning.

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Table 1: Patient characteristics at intake for the overall sample, and specific categories of pelvic floor dysfunction, along with the outcome variables, percentage completing, change in objective and subjective measures.

	Sample	Stress	Urge	Mixed	Faecal	Prolapse	Prolapse + Mixed
N	218	40	9	74	4	41	50
Age	51.60 (13.08)	48.90 (15.72)	59.20 (9.81)	54.78 (12.35)	58.20 (4.95)	52.43 (11.58)	50.38 (13.32)
BMI	30.07 (6.93)	29.42 (5.35)	32.78 (6.00)	30.43 (8.16)	30.50 (11.17)	30.33 (6.29)	28.37 (6.54)
Objective Intake	2.43 (0.91)	2.65 (0.67)	2.87 (0.85)	2.75 (0.87)	2.25 (0.36)	2.41 (0.89)	2.60 (0.88)
Subjective Intake	32.93 (15.40)	34.20 (10.49)	43.75 (8.13)	26.08 (12.30)	20.50 (11.23)	27.36 (8.53)	23.50 (11.85)
Completion %	53.7	55.6	25.0	64.4	25.0	45.7	44.4
Change Objective	0.64 (0.90)	0.55 (1.09)	0.13 (1.18)	0.58 (0.95)	0 (0)	0.68 (0.71)	0.80 (1.01)
Change Subjective	-4.11 (0.64)	-7.10 (10.64)	-6.50 (7.77)	-0.83 (9.57)	4.67 (16.17)	-2.36 (11.56)	-4.80 (4.91)

Table 2: Mean (standard deviation; range) for the strength and type of health values (PVQ), and the Pearson correlations with objective (Oxford) and subjective (Queensland) measures of pelvic floor function, as well as with age and BMI.

	PVQ Strength 28.38 (6.90; 3.00 – 40.00)	PVQ Type 0.93 (1.16; -1.75 – 4.00)
Oxford	-0·012	0·010
Queensland	-0·098	0·051
Age	-0·071	-0·036
BMI	0·090	-0·228*

* = $p < 0{\cdot}05$, ** = $p < 0{\cdot}01$, *** = $p < 0{\cdot}001$

Table 3: Mean (standard deviation) for pelvic floor function measured objectively (Oxford Grading) and subjectively (Queensland – total score) for patients who completed the PFMT programme at baseline and end of treatment, as well as the statistical significance of the change.

	Intake	Follow-up	Change	*t*	*d*
Oxford	2·51 (0.78)	3·15 (0.79)	0·79 (0.89)	6·37***	0·90
Queensland	10·59 (5.28)	8·91 (5.05)	-1·68 (4.64)	3·26**	0·36

* = $p < 0{\cdot}05$, ** = $p < 0{\cdot}01$, *** = $p < 0{\cdot}001$