Original Article

Association between pelvic floor disorder symptoms and QoL scores with depressive symptoms among pelvic organ prolapse patients

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Background: There is no consensus of the relationship between depressive symptoms (DS) and pelvic organ prolapse (POP) symptoms and quality of life (QoL). Our hypothesis was that women with DS and POP have worse symptoms and QoL than those without DS and POP.

Aim: Our aim was to compare two groups of POP patients, those with depressive symptoms and those without, and evaluate the association of symptoms and QoL.

Materials and methods: This planned report is part of a prospective study evaluating the impact of pessary use among symptomatic POP patients. Patients were evaluated by POP quantification (POP-Q), pelvic ultrasound (US), voiding diaries, stress test, pad test, Pelvic Floor Distress Inventory (PFDI-20), Prolapse QoL (P-QoL) and GHQ-12 (psychological health screening for DS when score ≥5). A sample size of 78 patients was required to demonstrate a 50-point difference in the global PFDI-20 score with 80% power and 95% probability.

Results: Ninety-one women with POP were included. GHQ-12 was positive in 47 (51.6%) patients. No differences were found in POP-Q, pad and stress test between those with a positive GHQ-12 and those without. However, GHQ-12 was associated with higher PFDI-20 scores and higher scores in 7 of 9 P-QoL domains. GHQ-12 persisted as an independent risk factor for worse P-QoL scores after multivariable analysis.

Conclusion: A 'positive' screening for DS was associated with worse PFDI-20 and P-QoL scores despite no difference in objective measurements. It may be that depressed patients interpret their symptoms differently.

Key words: depression, pelvic organ prolapse, quality of life, signs and symptoms.

Background

Pelvic organ prolapse (POP) is the descent of one or more of the anterior vaginal wall, posterior vaginal wall, the uterus (cervix) or the apex of the vagina (vaginal vault or cuff scar after hysterectomy).[1] The POP prevalence rate has been reported to be between 20 and 50%,[2] and it is estimated that 12.6% of women will undergo surgery for POP by the age of 80.[3] Evidence demonstrates that POP has a high impact on quality of life, social relationships and self-image.[4,5]

There is no consensus whether women with prolapse have more depressive symptoms than clinically similar women without prolapse. Some studies report a high prevalence of depressive symptoms within this population. However, there is wide variation depending on study design, the definition of depression and the type of patients included.[6,7] In a report on 306 patients with advanced pelvic floor disorders (PFDs), Zeleke *et al.*[6] found a depression prevalence of 71% with an association with higher stages of POP. On the other hand, in a study of 70 elderly patients with advanced POP, Barber *et al.*[7] found a depression rate of 20–27%. Jelovsek *et al.*[8] found no differences in depressive symptoms among 98 women with either advanced pelvic organ prolapse or not. Nonetheless, in a 140 patient study, Ghetti *et al.*[9] found that women with prolapse were fivefold more likely than

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controls to have depressive symptoms. They also reported that among women with prolapse, those with depressive symptoms had higher prolapse-related life impact than those without depressive symptoms. Besides these conflicting reports, there is a specific lack of information in regard to depressive symptoms in Chilean patients with pelvic floor disorders (PFD) actively seeking treatment.

In this study, we evaluated the prevalence of depressive symptoms in our population of stage II or greater symptomatic POP patients seeking treatment, and its possible association with PFD factors. Our aim was to compare two groups of POP patients, those with depressive symptoms and those without, and evaluate the association of symptoms and QoL. We hypothesised that POP patients with psychological distress and depressive symptoms would have higher PFD symptoms scores and poorer quality of life at baseline.

Materials and methods

Study design

This study is a secondary planned analysis of baseline cross-sectional patient characteristics from an ongoing 12-month prospective pessary study among POP patients seeking treatment at the Urogynecology unit of Sotero Del Rio Hospital, Santiago, Chile. All patients who were enrolled in the prospective pessary study are part of the current study. Some of the patients who failed the pessary trial were dropped from the ongoing pessary study, but their data which were collected at entry were still utilised for the current study. The current study includes 104 patients evaluated at baseline as candidates for the prospective study. The patients for this report were recruited between September 2013 and May 2014. This study was conducted in compliance with established ethical standards and approved by the Institutional Review Board of the Sotero Del Rio Hospital (FONIS SA12I2I53 - NCT02113969).

Participants

Setting

All women, regardless of age, with symptomatic POP referred to our urogynecology unit are offered conservative management with a pessary as the first treatment approach. Our hospital has a 1.2 million patient geographic catchment area with a formal urogynecology unit.

Eligibility criteria

All patients who were diagnosed with stage II or greater symptomatic POP were invited to participate. Inclusion criteria were as follows: (i) provision of informed consent; (ii) symptomatic POP, (iii) willingness to use pessaries as the initial treatment and (iv) completion of all required admission assessments (for PFDI-20 and GHQ-12 up to 3 missing items were accepted). Exclusion criteria were incomplete questionnaires (P-QOL or PDFI-20 or GHQ-12) or the lack of POP-Q documentation. Final inclusion into the prospective pessary study was not an inclusion criterion for this study.

Measures

On admission, and prior to the pessary trial, we collected demographic information, clinical variables, including POP staging, POP symptoms, POP-related quality of life, POP sexual impact in sexually active patients, and depressive symptoms, two-hour pad test, bladder stress test with 300 cc, and translabial pelvic floor ultrasound (PFUS).[10–13] We gave a three-day voiding diary to be completed and returned at the next visit. POP staging was assessed by POP-Q.[14] All the POP-Q examinations were performed in lithotomy position at maximum valsalva by one of 5 trained urogynecologists, blinded to all the other measures. Quality of life was assessed by the Chilean validated version of the Prolapse Quality-of-Life Questionnaire (P-QoL).[15] POP symptoms were assessed by the Chilean adapted version of the Pelvic Floor Distress Inventory Questionnaire – Short Form 20 (PFDI-20).[16] Sexually active patients were additionally evaluated by the Chilean adapted version of the 12-item Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12).[17]

Depressive symptoms were assessed by the Chilean validated version[18] of the 12-item Goldberg Health Questionnaire (GHQ-12). This screening questionnaire is a self-reported measure of psychological distress during the past 2 weeks widely used in nonpsychotic population. Each item on the scale has four responses from 'better than usual' to 'much less than usual'.[19] For the purpose of this study, the GHQ-12 scoring method of 0-0-1-1 was chosen over the simple Likert scale of 0-1-2-3, giving a total score from 0 to 12. This scoring method was chosen due to its simplicity and previous good performance in Chilean subpopulations.[20–22] A GHQ-12 score of 5 or more was labelled as 'positive' test.

Data analysis and statistics

The power calculation was based on a preliminary analysis of the first 40 patients (unpublished data). This preliminary information led us to expect a median PFDI-20 score for the GHQ-12 'positive' and 'negative' groups of 100 and 50 points, respectively. With an 80% power, 5% of significance and two-sided test, 78 total patients were required.

We used Student's t-test or Mann–Whitney U test as appropriate for continuous variables and Chi-Square or Fisher's exact test as appropriate for categorical variables. A univariable analysis, including GHQ-12, demographics, POP-Q characteristics and PFUS, was performed to identify whether GHQ-12 was an independent risk factor for worse symptoms (PFDI-20) or quality of life P-QoL

Worse symptoms were defined as having a PFDI-20 and subscales score above the median result of the overall patients analysed. The same definition of subscales scores was used to define worse QoL using the P-QoL questionnaire. Thereafter, a multivariable analysis was planned with both PFDI-20 (and its subscales UDI 6, POPDI 6 and CRADI 8) and the different dimensions of the P-QoL as the dependent variables. This analysis included as independent variables the ones with *P* value <0.1 in the univariable analysis. Methods, definitions and units conform to the standards jointly recommended by the International Urogynecological Association and the International Continence Society,[1] except where specifically noted. Sigma plot (Systat, Inc., San Jose, CA, USA) for Windows version 10.0 was used for data analysis.

Results

In the study period, 115 patients with stage II or greater symptomatic POP were evaluated in our unit. From those, 104 were recruited for the study – 91 met the inclusion criteria and were included in the final sample size. Twelve patients were excluded because of incomplete PFDI-20 ($n = 8$) or no POP-Q ($n = 4$) documentation. Eighty-nine of the 104 (86%) patients recruited were included in the prospective pessary study.

Mean age ± standard deviation was 64.6 ± 8.5 years, median newborn maximum weight was 3670 (interquartile range [IQR], 3475 to 4000) grams, median parity was 3 (IQR, 2 to 4), and median body mass index (BMI) was 28.8 (IQR, 26.7 to 31.7).

Forty-seven (51.6%) patients had a GHQ-12 positive (score of 5 or more out of possible total of 12). There were no differences in demographic and clinical history between GHQ-12 positive and negative subjects, with the exception of a trend to higher active tobacco use in the GHQ-12 positive group (Table 1). We did not find statistically significant differences in POP-Q (75.8% of patients in stage III/IV), leading edge (anterior 68%, apical 24%, posterior 8% and leading edge beyond the hymen 90%), apical defect (73.6%), and the detailed POP-Q points are shown in Table 1. There were not differences in positive pad test (16.4%), positive 300 cc stress test (29.6%) and postvoid residual between GHQ-12 positive and negative groups. In the 3-day voiding diaries, there were more stress urinary incontinence (SUI) episodes, urgency and urge incontinence episodes in the GHQ-12 positive patients (Table 2). With pelvic floor ultrasound, patients with GHQ-12 positive had a higher rate of rectocele than those with GHQ-12 negative (Table 2). The patients with GHQ-12 positive versus negative had higher scores in Global PFDI-20 with a

Table 1 Demographic and clinical characteristics, including POP-Q, by GHQ-12 results

	GHQ-12 negative ($n = 44$)	GHQ-12 positive ($n = 47$)	*P*-value
Age (years)	65 ± 8	64.1 ± 9	0.59†
Parity	3 (2–4)	3 (3–5)	0.38‡
Body mass index	28 ± 6.2	30 ± 4.6	0.094†
Patients with forceps delivery	11 (25%)	16 (34%)	0.47¶
Newborn max. weight g	3620 (3285–4015)	3790 (3520–3987)	0.64‡
Patients with history of AH/VH	5 (11%)	6 (13%)	0.90¶
Patients with menopause	41 (98%)	42 (93%)	0.61§
Patients with previous POP or SUI surgery	2 (4.5%)	1 (2%)	0.60§
Patients with active tobacco use	5 (11.4%)	14 (30%)	0.05§
Patients sexually active	19 (43.1%)	19 (41.3%)	0.97¶
Depression reported during history	6 (13.6%)	4 (8.5%)	0.43¶
POP-Q			
Aa	1.7 ± 1.8	1.6 ± 1.6	0.90†
Ba	2.7 ± 2.4	3.7 ± 2.8	0.08†
C	−0.5 ± 4.3	0.6 ± 5.1	0.28†
gH	5.4 ± 1.3	5.6 ± 1.1	0.36†
pB	2.8 ± 0.7	3.1 ± 0.9	0.20†
TVL	8.4 ± 1.3	8.6 ± 1.2	0.44†
Ap	−1.5 ± 1.5	−0.9 ± 1.9	0.09†
Bp	−1.4 ± 1.9	−0.7 ± 2.4	0.11†
D	−3.5 ± 2.5	−3.1 ± 2.7	0.49†

GHQ-12, 12-item Goldberg Health Questionnaire; AH/VH, Abdominal or vaginal hysterectomy; POP, Pelvic organ prolapse; SUI, Stress urinary incontinence.
Numbers are expressed as mean ± standard deviation or median (interquartile range) or number (%).
†Student's t-test,
‡Mann–Whitney U,
§Fisher's exact test,
¶ Chi-Square.

Table 2 Three-day voiding diary and pelvic floor ultrasound details by GHQ-12 results

	GHQ-12 negative (n = 44)	GHQ-12 positive (n = 47)	*P-value*
Three-day voiding diary≠			
SUI with or without urgency	0 (0–1.5)	1 (0–8.7)	0.005†
Urgency	0 (0–2.4)	1.3 (0–4.7)	0.029†
Urgency incontinence	0 (0–1)	0.7 (0–4)	0.012†
Pelvic floor ultrasound			
Bladder descent	39 (88.6%)	38 (80.8%)	0.46‡
Uterus descent	33 (75%)	31 (66%)	0.47‡
Rectum descent	7 (16%)	16 (34%)	0.081‡
Rectocele	5 (11.3%)	16 (34%)	0.02‡
Enterocele	2 (4.5%)	5 (10.6%)	0.43§
Puborectal avulsion#	13 (29.5%)	12 (25.5%)	0.846‡
Ballooning$	33 (75%)	30 (63.8%)	0.35§

GHQ-12, 12-item Goldberg Health Questionnaire; SUI, Stress urinary incontinence.
Numbers are expressed as median (interquartile range) or number (%).
†Mann–Whitney *U*-test,
‡Chi-Square,
§Fisher's exact test.
≠The daily registered episodes during 72 hrs of SUI (including those associated with urge incontinence), urgency and urgeincontinence separately where average giving an estimate of the occurrence of those variables per day,
#Avulsion was defined as present if it was unilateral or bilateral on US,
$Ballooning was defined as present if it was mild, moderate or severe on PFUS.

Table 3 PFDI-20, P-QoL and PISQ-12 results by GHQ-12 results

	GHQ-12 negative (n = 44)	GHQ-12 positive (n = 47)	*P*-value
PFDI-20 Global	62 (0–125)	100 (56–168)	0.005‡
UDI 6	25 (0–50)	50 (25–75)	0.008‡
POPDI 6	25 (0–50)	50 (25–75)	0.003‡
CRADI 8	0 (0–25)	0 (0–50)	0.209‡
P-QoL (score)			
General health perception	50 (25–75)	75 (50–75)	0.009‡
Prolapse impact	66.6 (33–100)	100 (66.6–100)	0.009‡
Role limitations	50 (8–83)	100 (50–100)	<0.001‡
Physical limitations	11 (0–50)	55 (11–89)	0.002‡
Social limitations	11 (0–50)	55 (11–89)	<0.001‡
Personal limitations	0 (0–50)	0 (0–66)	0.37‡
Emotions	39 (11–67)	89 (55–100)	<0.00‡
Sleep/energy	25 (16–58)	83 (50–100)	<0.001‡
Severity measures	37 (20–67)	58 (27–73)	0.18‡
PISQ-12	n = 19	n = 16	
	30 ± 5	25 ± 9	0.072†

PFDI-20, Pelvic Floor Distress Inventory Questionnaire – Short Form 20; P-QoL, Prolapse Quality of Life Questionnaire; PISQ-12, Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire – 12; GHQ-12, 12-item Goldberg Health Questionnaire; UDI 6, Urinary Distress Inventory-6; POPDI 6, Pelvic Organ Prolapse Distress Inventory 6; CRADI 8, Colorectal Anal Distress Inventory 8.
Numbers are expressed as median (interquartile range).
†Student's t-test;
‡Mann–Whitney U.

median (IQR) of 100 (56–168) versus 62 (0–125) (P = 0.005). Similar results were obtained in the subscales UDI-6 and POPDI (Table 3). Patients with positive GHQ-12 had statistically significant higher scores than those with negative GHQ-12 in all P-QoL domains except 'personal limitations'. There was no statistically difference in PISQ-12 in the 38 sexually active patients (Table 3).

After a multiple logistic regression analysis was performed, GHQ-12 positive did not persist as an independent risk factor for worse PFDI-20, UDI-6 or POPDI scores (P values of 0.05, 0.32 and 0.05, respectively), but did persist as an independent risk factor for all subscales of the P-QoL except general health perception. The OR with 95% CI of the different variables for having scores above the median in P-QoL subscale dimensions is shown in Table 4.

Discussion

In this study, while depressive symptoms did not correlate with objective POP measurements, they were an independent risk factor for how patients experience the symptoms of POP. Depressed patients had worse scores on multiple QoL measurements.

Our study reports the prevalence of psychological distress and depressive symptoms in our population of stage II or greater symptomatic Chilean POP patients actively seeking treatment. We demonstrate that worse psychological distress and depressive symptoms in this study sample were associated with worse scores in PFD quality of life. PFD symptom scores, SUI episodes, urgency and urge incontinence episodes were also associated with positive GHQ-12 scores, but this association did not remain significant after controlling for confounding variables. Our results suggest that the depressive symptoms, instead of the anatomical abnormalities or objective clinical findings, affect the POP subjective experience in these patients. We can hypothesise that the association of POP and SUI correlates with higher depressive symptoms scores. However these differences also disappear after controlling for confounding factors. Thus, two patients with the same objective findings may perceive these symptoms very differently and thus be impacted differently depending on their underlying psychological make-up.

Table 4 Odds ratios and 95% CI of multiple logistic regression analysis for scores above the median in P-QoL subscale dimensions

	P-QoL dimensions					
	Prolapse impact	Role limitations	Physical limitations	Social limitations	Emotions	Sleep/energy
Patients with active tobacco use	***6 (1.3-27.8) 0.020***	***9.7 (2-45) 0.004***	n/s	***4.9 (1.08-22) 0.039***	n/s	n/s
Patients with forceps delivery	n/s	***0.3 (0.08-0.8) 0.027***	***0.3 (0.09-0.8) 0.021***	***0.2 (0.04-0.6) 0.007***	***0.2 (0.03-0.7) 0.012***	n/s
US bladder descent	***0.06 (0.008-0.4) 0.007***	n/s	n/s	n/s	n/s	n/s
US Rectocele	n/s	n/s	n/s	***0.09 (0.01-0.7) 0.019***	n/s	n/s
US Ballooning	n/s	n/s	n/s	***6.1 (1.7-22) 0.006***	n/s	n/s
One or more SUI episodes with or without urgency	n/s	n/s	n/s	n/s	n/s	n/s
Two or more urgency episodes with or without SUI	n/s	n/s	n/s	n/s	n/s	n/s
GHQ-12 Positive	***3.9 (1.3-11.9) 0.017***	***5.7 (1.8-17.7) 0.003***	***3.2 (1.1-9.6) 0.031***	***9.6 (2.6-35.6) <0.001***	***20 (4.7-85.6) <0.001***	***7.3 (2.4-22.5) <0.001***

n/s, Not significant; P-QoL, Prolapse Quality of Life Questionnaire; US Bladder descent, bladder descent on translabial pelvic floor ultrasound; US Rectocele, rectocele on translabial pelvic floor ultrasound; US Ballooning, ballooning on translabial pelvic floor ultrasound; SUI, Stress urinary incontinence; GHQ-12, 12-item Goldberg Health Questionnaire. Numbers are expressed as OR (95% CI) and *P*-values in the second row. Significant variables are in italic bolded fonts and grey shaded.

We found that the prevalence of depressive symptoms in this sample (51%) is higher than the prevalence reported for the female population in Chile (25.7% CI 95% 23–28.8).[23] This finding accounts for the importance of mental health screening among this clinical population. It may be important to do depression screening in POP patients, given that it may be an important modifiable risk factor that may alter the outcomes of POP interventions, both surgical and nonsurgical. Our study prevalence is also higher than the prevalence for US women seeking treatment for advanced POP (22%),[9] but a bit lower than the 67% prevalence of depressive symptoms reported in Ethiopia.[6] This discordance is probably explained by differences in healthcare access between countries, and/or the use of different depressive symptom questionnaires in each study.

We did not find statistically significant differences on any of the clinician-rated measures such as POP-Q, leading edge and pelvic floor ultrasound by GHQ-12 group. However, we did find an association between the patient-reported measures such as POP-related symptoms and quality of life, and depressive symptoms. We know that depressive symptoms affect the behavioural, cognitive and psychological experiences of individuals; the sufferer views things through a negative prism[24] which leads them to perceive bothersome symptoms differently than patients without depressive symptoms. A recently published cross-sectional paper showed that POP patients with fibromyalgia had worse symptoms scores than nonfibromyalgia patients, without differences in anatomical measurements.[25] These findings are consistent with our report. Even though there were not statistically significant differences in the POP-Q measurements (Table 1), there was a trend towards worse Ba point in GHQ-12 positive group. This could potentially explain the differences. However, our study is underpowered for this specific outcome.

Another hypothesis is that the symptomatic POP could be related to a negative impact on the patient emotions. Thus, it may be that patients susceptible to depressive symptomatology may report more bothersome symptoms. In this scenario, changes in depressive symptoms might be another outcome to evaluate POP repair surgery as theoretically if the depressive symptoms are influenced by the POP bother then when the POP bother decreases the depressive symptoms should as well.

These results could be relevant to encourage physicians to perform a more extensive interview for depressive symptoms and eventually to refer the patients to a mental health specialist if necessary. Another possibility is that treatment of their POP -surgical or otherwise– could improve their depression symptoms when present at baseline.

The limitations of our report are those intrinsic to a cross-sectional study. The current design only allowed us to address the question of the prevalence of depressive symptoms in patients with stage II or greater symptomatic POP seeking treatment. However, did not give us any input of causality. The other major limitations are the lack of a non-POP control group or a nonpessary control group. In the study design of the prospective pessary trial, those control groups are not needed, based on the hypothesis and objectives of that research protocol. Our current hypothesis aims to understand the correlation of

the presence of DS and QoL within symptomatic POP patients. In that light, a non-POP group is not needed. However, in this study, our primary aim was to address differences within symptomatic POP stratified by depression status, which is highly relevant for the real-life practice in an urogynecology outpatient clinic. In terms of the lack of a nonpessary group, our sample represents 79% of the patients with stage II or greater symptomatic POP during the study period. For that reason, our results cannot be extrapolated to the all symptomatic POP patients. It is possible that DS could be more prevalent in this subgroup of patients.

The lack of a diagnostic interview for depressive symptoms is also a limitation of our study, with the aim of increasing the external validity of our results we wanted to use a realistic tool in a nonpsychiatric setting. At the same time, it could be suggested that the patients who want to use pessaries could be significantly different from those not seeking treatment or those selecting surgical treatment as a first option. However, our sample includes 90.4% of all the patients with stage II or greater symptomatic POP seen at our clinic (the vast majority are willing to trial a pessary as the initial treatment). In addition, the patients were included regardless of the results of the fitting session, and this implies that our sample is very representative of the index urogynaecological patient. In that light, it is highly probable that our results could be generalized to all patients with stage III or greater symptomatic POP (75.8% of the sample were in this stage). Probably to generalized our results to patients with stage II would require a larger sample size. For the above reasons, this is a highly selected sample that must be taken into consideration when comparing our results to other studies or other populations.

Among the strengths of our study is the relatively large sample size with adequate power giving us the opportunity to reject our null hypothesis. Another important strength is the similarity to the 'real patient' found in a pelvic floor disorders unit who is actively seeking treatment. Based on these, we can at least partially extrapolate our results to routine clinical practice.

This is the first study carried out in Chile reporting the association between POP symptoms and both quality of life and depressive symptoms. Additionally, this study contributes to the limited evidence related to POP symptoms and mental health currently available. In addition, our results may suggest that when performing trials investigating prolapse interventions, assessment of depression should be considered.

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Conflict of interest

None.

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