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ORIGINAL ARTICLE

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Propiedades psicométricas del instrumento Pelvic Organ Prolapse/*Urinary Incontinence Sexual Questionnaire (PISQ-12)* en mujeres chilenas

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Psicometría; salud sexual; trastornos del suelo pélvico; prolapso de órganos pélvicos; incontinencia urinaria; disfunción sexual; genitales; suelo pélvico.

Abstract

Introducción:

Las disfunciones del piso pélvico impactan la función sexual de mujeres que la padecen. En un estudio chileno un 74% de las mujeres presentó disfunción sexual sin tener un instrumento validado para esta población.

Objetivo:

Evaluar las propiedades psicométricas del Pelvic Organ Prolapse Urinary Incontinence Sexual Questionnaire (PISQ-12) para medir la función sexual en mujeres chilenas con disfunciones del piso pélvico.

Métodos:

Estudio transversal psicométrico de 217 mujeres con disfunción del piso pélvico, igual /mayor a 18 años, sexualmente activas (últimos 6 meses). Muestreo no probabilístico de conveniencia. Cuestionario: PISQ-12. Se realizó juicio de expertos para validez de contenido, análisis factorial confirmatorio para validez de constructo y el α de Cronbach para confiabilidad y capacidad discriminativa con Pearson y ω de McDonald.

Resultados:

Población principalmente perimenopáusica, alta escolaridad sin ingresos y con Incontinencia Urinaria (89.4%). El análisis psicométrico apoyó una estructura de tres factores: respuesta sexual, limitaciones sexuales femeninas y limitaciones sexuales masculinas, con confiabilidad buena (α= 0.85) aceptable (α= 0.73) y pobre (α= 0.63), respectivamente, aunque el ω de McDonald mostró valores aceptables para los tres. Éstos se relacionaron con edad (rs: -0.33), escolaridad (0.36), número de embarazos (-0.18) y partos vaginales (-0.25).

Conflicts of interest:
This manuscript will be one of the articles in the first author's thesis for the Doctoral Program in Health Sciences of the University of Alicante, Spain. Besides this, those signing the manuscript have no other conflicts of interest.

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Conclusiones:

El PISQ-12 es válido y confiable, midiendo la dimensión sexual y limitaciones sexuales. La edad, escolaridad, número de embarazos y partos vaginales se correlaciona con la respuesta sexual en intensidad moderada.

Resumen

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Las disfunciones del piso pélvico impactan la función sexual de mujeres que la padecen. En un estudio chileno un 74% de las mujeres presentó disfunción sexual sin tener un instrumento validado para esta población.

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Remark

1) Why was this study conducted?

There is no validated study for assessing sexual function in women with pelvic floor dysfunctions in Chile.

2) What were the most relevant results of the study?

Psychometric analysis supported a three-factor structure: sexual response, female sexual problems, and male sexual problems, with a good, acceptable, and poor reliability, respectively.

3) What do these results contribute?

To make available a valid and reliable tool (Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire-12) for measuring the sexual dimension and problems in Chilean women with pelvic floor dysfunctions.

Introduction

Pelvic floor dysfunctions (PFDs) affect one third of adult women[1]. International statistics show that 25-50% of women will suffer a pelvic floor dysfunction in their lives[2]. Although these pathologies are not lethal, their symptoms can alter daily life, including physical, social, and sexual functioning [3]. Sexual function is an important quality of life indicator and is influenced by several physical, psychological, and social factors [2-4].

It has been proved that the more symptoms of a pelvic floor dysfunction a woman shows, the more problems she will have in her sexual response [5]; therefore, gynecological care should include an analysis of sexual function that covers both the woman's and her partner's characteristics [6].

The Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-31), created by Rogers et al., assesses the sexual function of women with pelvic floor dysfunctions [7], and was initially designed as a specific, reliable, valid, self-administered tool for sexually active women with pelvic organ prolapse (POP), urinary (UI), or fecal incontinence (FI). Items in this tool were developed by asking experts in sexual functioning and considering previously validated tools that had evaluated sexual functioning in general population. The tools used as standardization criteria when creating PISQ-31 were the Incontinence Impact Questionnaire (IIQ-7), which assesses the impact of incontinence on the user's social functioning; the Sexual History Form-12 (SHF-12), a non-specific questionnaire that evaluates sexual functioning, and other scales for assessing depression, somatization, anxiety, and hostility [7,8]. The 31 questions evaluate three domains (behavioral/emotional, physical, and partner-related factors) by answering a Likert-type scale (0= always, and 4= never) - except for Question 5, whose score goes from 0 to 5 (0= no masturbation, and 5= always). Assessment comes from adding up the score for each question, and so, higher scores reflect a better sexual functioning [7].

Later, the same author and her team reduced the original questionnaire to 12 items (PISQ-12) [9], with a validated translation to Spanish in 2008 by Espuña et al [8]. This questionnaire focuses in heterosexual women, sexually active and with a sexual partner, who suffer from genital prolapse and/or urinary incontinence [8)] and covers three domains: sexual response (items 1-4, 12), female sexual problems (items 5-9), and male sexual problems (items 10-11) [8]. Scores follow a Likert-type scale, where 0 is always and 4 is never, with this reversed for items assessing behaviors and emotions during sexual response (items 1-4), and then all scores

are added up. The final score goes from 0 to 48, and the highest the score, the better sexual function, with answering 0 or 1 to any question being regarded as a faulty sexual response - that is, a female sexual dysfunction [2].

The psychometric analysis needed to assess the validity and reliability of PISQ-12 has yet to be done in Latin America and the Caribbean. Therefore, we propose to assess its psychometric properties for use in pelvic floor dysfunction patients of a hospital in the south of Chile.

Materials and method

Cross-sectional study of psychometrics in women getting treated by the Pelvic Floor Unit of a tertiary hospital in the south of Chile (June 2014 - May 2015). Inclusion criteria: be an 18 years old or older woman, with sexual activity in the last six months, suffer from UI or POP, and be a patient of the unit. Non-probability, convenience sampling.

Socio-demographic (age, marital status, education, employment) and health (weight and height, number of pregnancies, types of birth, history of urine leakage, POP stage, urinary infection) variables, being quantitative and qualitative variables, were included in the study. Variables covering the sexual function of women with pelvic floor dysfunction were assessed with PISQ-12, assessing the domains of emotional behavior, physical aspects, and partner-related factors. Recruiting was done by the unit's healthcare team (medical specialists and midwives). Women were scheduled for a 45-minute semi-structured interview, made to coincide with their medical appointment, in a private room prepared for such purpose.

Univariate analysis of the quantitative (mean, standard deviation, minimum and maximum) and qualitative (absolute and percentage frequency) variables was done. In order to conduct the psychometric tests, items 1, 2, 3, and 4 of PISQ-12 had to be recodified by reversing their values, just as suggested by Rogers et al. [7] and Espuña et al. [8]

- Content validity was checked by experts with an ad hoc guideline, evaluating semantic equivalence, cultural congruence with Chilean population, and the relevance of its content, with 4 indicators in a Likert-type scale (from *strongly agree* to *strongly disagree*). Coincidence percentage and items with minimum and maximum scores were analyzed (Table 1).

- Construct validity was assessed with a confirmatory factor analysis (CFA), evaluating the adjustment of its theoretical proposal to data. Due to the scale of the questionnaire, consisting of five alternatives, the weighted least square mean and variance adjusted (WLSMV) estimator was chosen for its evaluation, as it gives more precise estimates for ordinal data [10]. To estimate the fit, the indexes used were the comparative fit index (CFI); the Tucker-Lewis index (TLI); the root mean square error of approximation (RMSEA), with a 90% confidence interval, and the standardized root mean-square residual (SRMR). For cut-off scores, CFI and TLI over 0.90 were considered acceptable, and good if over 0.95. In the case of RMSEA and SRMR, values under 0.06 were considered adequate [11-13].

- The internal consistency of the identified factors was evaluated with Cronbach's alpha, taking a value >0.7 as acceptable. Pearson correlation coefficient between each item and the corrected total was used to check the discriminating capacity of the items. McDonald's omega was calculated as well, which is currently recommended, as it gives less biased estimates[14].

A fact sheet, informed consent, and the full protocol were evaluated and approved by the Ethics Committee of the Health Service of Concepción, accredited by the Ministry of Health of Chile. Its resolution is N°002954.30.08.2013.

Table 1. Average score of the indicators evaluated by experts.

PISQ-12 instrument questions	Indicator Relevance*	Sufficiency Indicator †	Comprehension indicator ‡	Indicator essentiality #
1. How frequently do you feel sexual desire? This feelling may include wanting to have sex, planning tohave sex, feeling frustrated because of lack of sex, and so forth.	4.0	4.0	3.6	3.6
2. Do you climax (have an orgasm) when having sexual intercourse with your partner?	3.8	3.6	4.0	
3. Do you feel sexually excited (turned on) when having sexual activity with your partner?	3.8	3.6	4.0	
4. How satisfied are you with the variety of sexual activities in your current sex life?	3.8	2.8	3.8	
5. Do you feel pain during sexual intercourse?	4.0	3.4	3.6	4.0
6. Are you urinary incontinence (urine leakage) during sexual activity?	4.0	3.4	4.0	
7. Does fear of urinary incontinence (either stool or urine) restrict your sexual activity?	4.0	3.6	4.0	
8. Do you avoid sexual intercourse because of bulging in the vagina (either the bladder, rectum, or vagina falling out)?	4.0	3.2	3.0	
9. When you have sex with your partner, do you negative emotional reactions such as fear, disgust, shame, or guilt?	4.0	3.6	3.4	
10. Does your partner have an erection problem that affects his sexual activity?	4.0	3.8	3.2	3.0
11. Does your partner have a premature ejaculation problem that affects his sexual activity?	4.0	3.4	3.6	
12. Compared with the orgasms you have had in the past, how intense are the orgasms you have had in the past 6 months?	3.6	3.0	3.0	

* Item is relevant to assessment of its sexual dimension.
† Items from the same domain are enough to assess it.
‡ Item can be easily understood by a Chilean user.
# Item must be included, as it is essential for its dimension of sexual function.

Results

All women invited accepted to participate in the study. Population is 217, age 27-85 years (M= 53.4; SD= 9.7); height: 1.20-1.75 m (M= 1.6; SD= 0.07); weight (n= 216): 42-140 kg (M= 72.3; SD= 11.8), and BMI (n= 216): 21.8-49.7 (M= 29.7; SD= 4.3). Vaginal births were 0-10 (M= 1.84; SD=1.80), C-sections were 0-6 (M= 1.08; SD= 1.34), and instrumental deliveries were 0-1.

Eighty two percent have a steady partner, 44.2% have completed secondary education or participated in tertiary education, and around 63.1% do not generate their own income. 13.0% have had 5 or more pregnancies, 17.1% have had 3 or more C-sections, and 11.5% have had an instrumental delivery. 40.6% suffer from recurrent UI. 89.4% had a UI when admitted to the unit, and the most common POP stage is III (Table 2).

Among the experts, there was one urogynecologist and four pelvic floor physiotherapists. Maximum score was 4 points, mainly in "Item is relevant to assessment of its sexual dimension", where 75% of its items showed such score. On the other hand, the minimum score was 2.8, only for "Item can be easily understood by a Chilean user", which contained question 4 of the tool (Table 1). Experts were also asked to give a general evaluation, using the following indicators: the tool includes all possible elements to evaluate the sexual function in women with pelvic floor dysfunction (mean: 2.8; min.: 2; max.: 4), the contents of the tool are clearly stated (mean: 3.4; min.: 2; max.: 4), and the tool is relevant to assessment of sexual function in Chilean women with pelvic floor dysfunction (mean: 3.6; min.: 3; max.: 4).

The next part is a confirmatory factor analysis (CFA) of PISQ-12, evaluating the fit indicators for the three-factor model proposed by Rogers et al. [9] (model A), which showed acceptable scores for CFI (0.949) and TLI (0.934), but could not reach the cut-off scores for RMSEA (0.126 (0.109-0.143)) and SRMR (0.078). By evaluating the modification indexes, the most

Table 2. Description of the study population's biosociodemographic and gyneco-obstetrical characteristics.

Variable	Category	N (%)
Civil status	Married and Cohabiting	178 (82.0)
	Single, Separated and Widow	39 (18.0)
Educational level	No studies	3 (1.4)
	Primary education	79 (36.4)
	Secondary education	97 (44.7)
	Higher Technical Education	30 (13.8)
	University education	8 (3.7)
Occupation	Dependent worker	54 (24.9)
	Independent worker	26 (12.0)
	Unemployed	19 (8.8)
	Retired and Pensioner	18 (13.0)
	Housework	90 (41.5)
Number of term pregnancies	0	3 (1.4)
	1-4	186 (85.7)
	≥5	28 (12.9)
Number of vaginal deliveries	0	69 (31.8)
	1-4	39 (61.3)
	≥5	15 (6.9)
Number of cesarean deliveries	0	106 (48.9)
	1-4	107 (49.3)
	≥5	4 (1.8)
Presence of Instrumental deliveries		25 (11.5)
History of recurrent urinary tract infections		88 (40.6)
Diagnosis of admission to the Pelvic Floor Unit of the High Complexity Hospital *	Pelvic organ prolapse stage I	19 (8.8)
	Pelvic organ prolapse stage II	25 (11.5)
	Pelvic organ prolapse stage III	48 (22.1)
	Pelvic organ prolapse stage IV	24 (11.1)
	Urinary incontinence	194 (89.4)
	Fecal incontinence	12 (5.5)

*Women can be admitted to the unit with one or more diagnoses, so the percentage is based on all 217 women and does not add up to 100%, unlike the other variables.

important index was discovered to be the correlated error between items 6 and 7, with a standardized estimated parameter change (SEPC) of 0.470 (Table 3). Because of this, the analysis was repeated, taking into account the correlated errors between these items (model B), and the result was adequate for CFI and TLI, but RMSEA and SRMR still had to reach an acceptable level. After re-evaluating the modification indexes, the correlated errors between items 5 and 12 became relevant (SEPC= 0.252), so fit indicators were calculated for a model with these newly found errors (model C). Given the indicators did not significantly improve and there was the risk of overfitting, model B was finally chosen (Table 3). Figure 1 shows estimated parameters for model B.

Using Cronbach's alpha, the most used coefficient for this purpose, the first factor showed good reliability (α= 0.856), the second was acceptable (α= 0.738), and the third showed poor results (α= 0.634). However, McDonald's omega is being proposed nowadays, as it would give less biased estimates [14]; in this case, all values for sexual response (ω= 0.897), female sexual

Table 3. Comparison of fit indicators of the three-factor model and the three-factor model with correlated errors for PISQ-12 when applied to Chilean women.

Model	CFI	TLI	RMSEA (90% CI)	SRMR
A. 3 factors	0.949	0.934	0.126 (0.109-0.143)	0.078
B. 3 factors*	0.968	0.957	0.101 (0.084-0.119)	0.066
C. 3 factors**	0.974	0.965	0.092 (0.074-0.110)	0.062

TLI: Tucker-Lewis index.
CFI: Comparative fit index.
RMSEA: Root mean square error of approximation.
CI: Confidence interval.
SRMR: Standardized root mean square residual.
* Model with correlated errors (items 6 and 7).
** Model with correlated errors (items 6 and 7, plus 5 and 12).

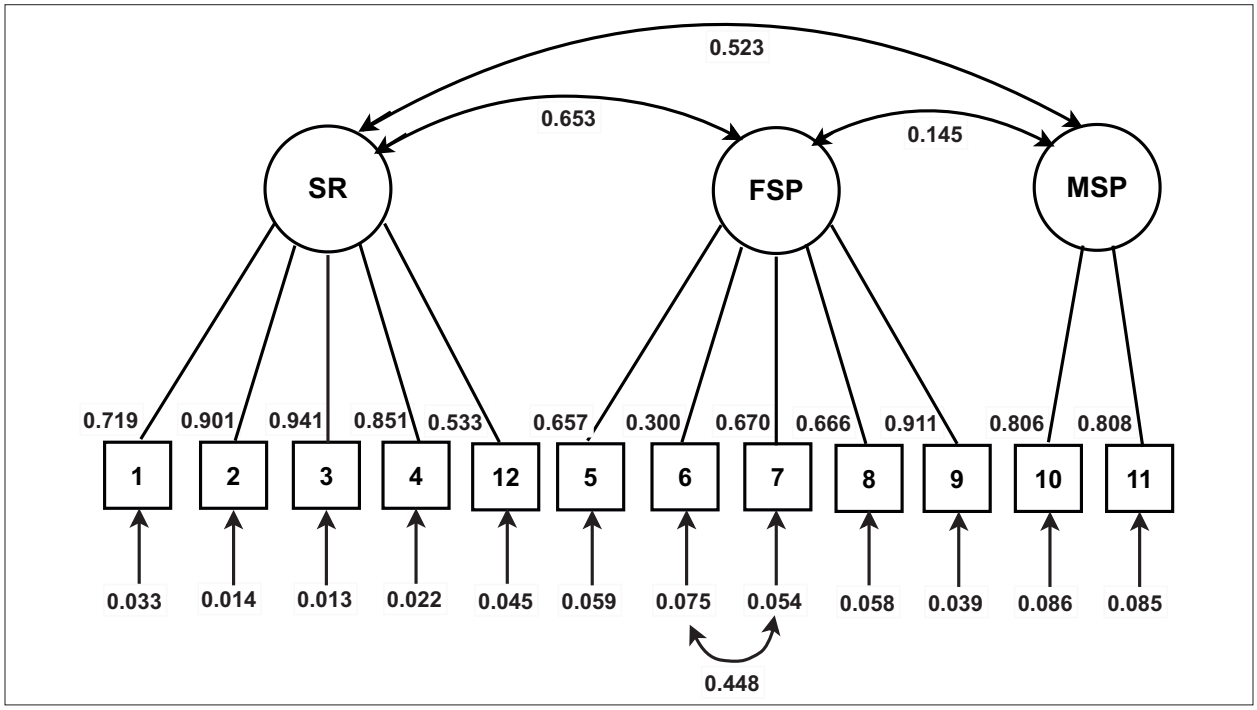

Figure 1. Three-factor model with correlated error between items 6 and 7 after a confirmatory factor analysis of PISQ-12, applied to Chilean women. SR: Sexual response; FSL: female sexual problems; MSP: male sexual problems.

problems (ω= 0.788), and male sexual problems (ω= 0.789) were adequate. Therefore, scores were calculated with this coefficient and then analyzed (Table 4).

Results show that sexual response and female sexual problems had a moderately symmetrical distribution (sexual response: P25: 6; P50: 10; P75: 15; asymmetry:-0.27, and female sexual problems: P25: 7; P50: 11; P75: 15; asymmetry: -0.12), while male sexual problems had a marked negative asymmetry (P25: 5; P50: 8, P75: 8; asymmetry: -1.30), and all three cases were noticeably leptokurtic (sexual response: 2.06; female sexual problems: 2.20, male sexual problems: 3.73), which shows highly homogeneous scores [12].

Correlation between sexual response and sexual problems was calculated. A better sexual response was associated with a lower perception of female sexual problems and a higher one of male sexual problems, with a medium effect size between both. In addition to this, although BMI did not have a significant relation to any factor, an association between older women and a better sexual response and less male sexual problems was found (Table 5).

Moreover, sexual response is higher when there are fewer pregnancies and vaginal births, while sexual problems related to pelvic floor dysfunctions are not associated with pregnancy or number of births (Table 6).

Lastly, a higher education is associated with a higher sexual response (r_s= 0.36; p <0.001), female sexual problems (r_s= 0.27; p= 0.001), and male sexual problems (r_s= 0.19; p= 0.004).

Table 4. Descriptive analysis of the factors identified in the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12). (N= 2,017)

Factors	ω	M	DE	Mín	Máx	P25	P50	P75	Asymmetry	Kurtosis
Sexual response	0.897	10.31	5.34	0	20	6	10	15	-0.27	2.06
Female sexual problems	0.788	10.82	5.52	0	20	7	11	15	-0.12	2.20
Male sexual problems	0.789	6.49	2.18	0	8	5	8	8	-1.30	3.73

Table 5. Spearman's correlation among the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire (PISQ-12) factors, age, and BMI.

Variables	1	2	3	4	5
Sexual response	-				
Female sexual limitations	-0.46**	-			
Male sexual limitations	0.38**	0.08	-		
Agen	-0.33**	-0.13	-0.22*	-	
Body Mass Index (BMI)	-0.11	-0.03	-0.13	-0.02	-

N=217; *: p<0.01; **: p<0.001

Table 6. Spearman's correlation among PISQ-12 factors and obstetrical characteristics.

Variables	Sexual response	Female sexual problems	Male sexual problems
Number of pregnancies	-0.189**	-0.113	-0.126
Number of vaginal deliveries	-0.254***	-0.102	-0.185**
Number of cesarean deliveries	0.157*	-0.032	0.116
Presence of instrumentals deliveries	0.026	-0.089	-0.057

N= 217; *: p <0.05; **: p <0.01; ***: p <0.001.

Discussion

Population is mainly perimenopausal, highly educated -although with no income- and affected by UI. A psychometric analysis revealed three factors with a good and acceptable reliability, respectively: age, education, and number of pregnancies and births.

On the topic of content validity, the experts' answers were highly homogeneous. Most coinciding percentages show a high degree of agreement [3,5] in whether the item was relevant, sufficient, understandable, and essential to the questionnaire or not.

Confirmatory factor analysis empirically supported the three-factor structure, the same as the two original articles [7,8].

When checking the three factors' reliability, values ranged from α= 0.63 to α= 0.85, showing a changeable reliability that goes from "poor" to "good" [15]. However, when using McDonald's omega, values ranged from ω= 0.788 to ω= 0.897, which would mean that these values are an accurate measurement of the factors.

This study determined that older women had less score in the "Sexual response" dimension (r_s= -0.35), for a moderate association. This result agrees with other two studies where older women with UI reported a higher prevalence of sexual dysfunctions[17,18]. In China, a study evaluated sexual function and quality of life in women with pelvic floor dysfunctions, and found that older women had a worse sexual function than younger women, as the first obtained lower scores in the general PISQ-12 and in its three factors [19]. The impact of age on female sexual function was also assessed with the Female Sexual Function Index (FSFI), concluding that it is negatively correlated to sexual function [20]. However, this tool has not been validated for its use in population with pelvic floor dysfunctions. In Poland, a study assessed sexual function in women with POP or only UI and its association with clinical and sociodemographic variables, finding that age was inversely correlated to users' sexual function in the general PISQ-12 and in two dimensions, "Emotional behavior" and "Partner-related factors" [21].

Women with a higher education level had higher scores in the "Sexual response" factor (r_s= 0.36), which was also seen in studies in Turkey and Brazil [17,18,22]. According to Cohen, the relation is moderate, as the value is around 0.3 [16]. In Chile, there is evidence of the relationship between a higher education level and higher levels of sexual satisfaction [23,24].

On the topic of OB-GYN history, a negative correlation between sexual response and number of pregnancies (r_s= -0.19) and vaginal births (r_s= -0.25), and a positive correlation between sexual function and number of C-sections (r_s= 0.16) were found. However, it cannot be forgotten that the relation of these variables is weak (around 0.1) according to Cohen [16], unlike the moderate intensity of the relation between sexual function and number of pregnancies and

vaginal births. The latter should be evaluated, since the changes in the pelvic floor produced by pregnancy, birth, and postpartum can condition the sexual response, either positively (with pelvic floor muscle training) or negatively (with no preparation for birth) [25].

There were two limitations in this study. First, although scientific literature suggests that psychometric studies should include 20 people per each item to obtain statistically significant results, this study could only include 18 per item; however, the results were deemed satisfactory, and they could be applied to a similar population. The second limitation was that, despite the small number of experts asked to review the tool, there was a high level of coincidence in the quality of the items included in PISQ-12.

Conclusion

PISQ-12 is valid and reliable to measure the dimensions of sexual response, female sexual problems, and male sexual problems. Age, education, number of pregnancies and vaginal births are moderately correlated to sexual response.

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