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Sexual function in cervical cancer patients: psychometric properties and performance of a Chinese version of the Female Sexual Function Index

ABSTRACT

Purpose: This study aimed to examine the psychometric properties and performance of a Chinese version of the Female Sexual Function Index (FSFI) among a sample of Chinese women with cervical cancer.

Methods: A cross-sectional survey design was used. The respondents included 215 women with cervical cancer in an oncology hospital in China. A translated Chinese version of the FSFI was used to investigate their sexual functioning. Psychometric testing included internal consistency reliability (Cronbach's alpha coefficient and item-total correlations), test-retest reliability, construct validity (principal component analysis via oblique rotation and confirmatory factor analysis), and variability (floor and ceiling effects).

Results: The mean score of the total scale was 20.65 ± 4.77 . The Cronbach values were 0.94 for the total scale, 0.72-0.90 for the domains. Test-retest correlation coefficients over 2-4 weeks were 0.84 ($p < 0.05$) for the total scale, 0.68-0.83 for the subscales. Item-total correlation coefficients ranged between 0.47 and 0.83 ($p < 0.05$). A five-factor model was identified via principal component analysis and established by confirmatory factor analysis, including desire/arousal, lubrication, orgasm, satisfaction, and pain. There was no evidence of floor or ceiling effects.

Conclusions: With good psychometric properties similar to its original English version, this Chinese version of the FSFI is demonstrated to be a reliable and valid instrument that can be used to assess sexual functioning of women with cervical cancer in China. Future research is still needed to confirm its psychometric properties and performance among a large sample.

KEYWORDS: instrument; scale; psychometric properties; FSFI; female sexual function; Chinese

INTRODUCTION

Cervical cancer is seen as the second most common cancer affecting women worldwide, with an estimation of 530 000 new cases and more than 270 000 deaths annually due to this disease (WHO, 2013). Of these deaths, 85% occur in low and middle income countries, where the disease is the second largest cancer killer of women (WHO, 2013; Cervical Cancer-Free Coalition, 2014). In China, cervical cancer is the most common type of cancer affecting females with an estimated 33 914 deaths each year; the second highest number of women dying annually from the disease globally (Chen et al., 2013; Cervical Cancer-Free Coalition, 2014).

The current treatment for cervical cancer includes surgery, radiotherapy and chemotherapy, depending on how far the cancer has spread (NHS, 2014). These treatments often cause significant physiological and anatomical changes and complications such as shortened vagina, vaginal dryness and dyspareunia, and consequently have an adverse effect on a women's quality of life and her ability to engage in sexual intercourse (Wilmoth and Spinelli, 2000; Reis et al., 2010). Findings of empirical research have shown that women with cervical cancer often report less sexual interest, a decrease in sexual activity, dyspareunia, lack of lubrication, and low sexual satisfaction (Bergmark et al., 2002; Donovan et al., 2007; Jeffery et al., 2009; Levin et al., 2010; Lammerink et al., 2012).

Female sexual dysfunction (FSD) is regarded as a group of disorders with physiological and psychological changes that have an adverse impact on a woman's quality of life and interpersonal relationships (American Psychiatric Association & American Psychiatric Association, 2000). FSD is often defined as persistent or recurrent disorders of desire/libido, arousal, pain/discomfort, and inhibited orgasm associated with sexual intercourse (American Psychiatric Association & American Psychiatric Association, 2000; Rosen et al., 2000). Based on the framework of the International Classification of Diseases-10 and DSM-IV: Diagnosis and Statistical Manual of Mental Disorders of the American Psychiatric Association, an international consensus conference panel have expanded the existing classifications of FSD to include psychogenic and organic causes of desire (hypoactive sexual desire disorder and sexual aversion disorder), arousal, orgasmic, and pain disorders (dyspareunia, vaginismus and other sexual pain disorders) (Basson et al., 2001).

Despite the high prevalence of sexual dysfunction among cervical cancer patients, it was not until the last decade that some psychometrically sound measures written in English were developed to assess FSD. Of these, the Female Sexual Function Index (FSFI) is widely used in research (Rosen, 2002; DeRogatis, 2008) and has been translated into many different languages (Berne et al., 2004; Rellini et al., 2005; Pechorro et al., 2012; Wylomanski et al., 2014). The FSFI was originally developed in the USA to assess six domains of FSD, including desire, arousal, lubrication, orgasm, satisfaction, and pain. The scale has also been validated in female survivors of various cancers in the USA and Australia, with good psychometric properties reported (Baser et al., 2012; Bartula and Sherman, 2015). However, there is no reliable evidence that the FSFI is a valid scale to assess sexual functioning of women with cervical cancer in China.

In China, little attention has been paid to FSD mainly because of the Chinese traditional ideology in relation to sex and sexual behaviour. Following a detailed literature search, only one validated questionnaire was found in the Chinese language (Sexual Quality of Life

Questionnaire for Women) to assess female sexual functioning (Hu and Hu, 2008). The questionnaire consists of 32 items arranged in six subscales, including satisfaction, communication, anxiety, sexual response, attitude, and self-image. However, the scale, validated with healthy women, assesses only some common domains of sexual dysfunction, limiting its use in cervical cancer patients.

AIMS

This study aimed to examine the psychometric properties and performance of a Chinese version of the FSFI among a sample of cervical cancer patients in mainland China.

METHODS

Design

A cross-sectional survey design was used.

Sample

The study was conducted with a convenience sample of cervical cancer patients in an oncology hospital in Hunan province, China. Participants were approached by nurses who were not part of, but trained by, the research team. Eligible criteria for participation included: women who were aged 18 years or over, were married or cohabitating, had surgery for cervical cancer at least three months before data collection, were either outpatients attending consultation at a gynaecology department or inpatients receiving radiotherapy and/or chemotherapy, and were native Chinese language speakers.

Data collection

The data were collected between June and December 2013. A study information package was distributed to 289 patients, containing an information sheet, a consent form, and questionnaires. The questionnaires were administered twice 2-4 weeks apart and were self-completed by patients. In total, 284 patients completed both assessments and returned their questionnaires. Of these, 69 respondents had no sexual intercourse in the preceding month, and so their responses were excluded from the analysis. Responses from the remaining 215 respondents were included in the analysis.

Procedures

General guidelines for cross-cultural adaption of measures was followed to translate the FSFI, with the use of multi-step procedures of translation, back translation, expert reviewing, and pilot testing (Sousa and Rojjanasrirat, 2011). First, the English version of the original FSFI was translated into Chinese by two translators independently. Discrepancies were solved by discussion. Second, the Chinese version of the scale was back-translated into English by two other bilingual researchers who were native Chinese speakers fluent in English. Third, a committee of eight bilingual nurses with expertise in research and clinical practice reviewed the original, translated, and back-translated versions to ensure each translated item reflected to the original one. Agreement on the final translation was achieved among committee members. Lastly, the translated scale was pilot tested twice with 10

cervical cancer patients with different educational levels to check their understanding of the scale items and response options. Some amendments were made based on the feedback received. The modified scale was tested again with the same group of patients, and no misunderstanding was found.

Instruments

Two instruments were used for data collection: the FSFI (Chinese version) and a general questionnaire. The general questionnaire was used to collect personal social-demographic data such as age, education, and occupation, as well as clinical data such as stage of cancer and type of therapy.

Originally developed in the English language, the FSFI is a self-reporting multidimensional instrument for assessing FSD (Rosen et al., 2000). The scale was initially validated among a group of women with sexual arousal disorder and a control group of women without this disorder. There are 19 items arranged in six subscales or domains: including two items on desire (questions 1-2), four items on arousal (questions 3-6), four items on lubrication (questions 7-10), three items on orgasm (questions 11-13), three items on satisfaction (questions 14-16), and two items on pain (questions 17-19). The score ranges of individual items are 1-5 for four items (1, 2, 15, and 16) and 0-5 for the rest of the 15 items, with zero indicating no sexual intercourse over the past four weeks. There are six separate scores, one for each domain, as well as an overall score of the total scale. Each subscale has a maximum score of 6 which can be obtained by adding the scores of individual domain items and multiplying the sum by a respective domain factor, which is 0.6 for desire, 0.3 for arousal and lubrication, and 0.4 for orgasm satisfaction and pain. The total score of the full scale is the sum of the six subscale scores and can range from 2 to 36, with a higher score indicating a higher level of sexual functioning.

In terms of reliability and validity of the FSFI, in its original development, Rosen et al. (2000) found the scale had high levels of internal reliability (Cronbach $\alpha = 0.97$), good test-retest reliability over 2-4 weeks ($r = 0.84$), and adequate construct validity as confirmed by discriminant and divergent validity. The psychometric properties of the scale are also supported by studies carried out with cancer patients. For example, Baser et al. (2012) validated the scale with 181 women suffering from various cancers, confirming its validation via a factor analysis and reliability as indicated by Cronbach's alpha of 0.94 and item-total correlations between 0.44 and 0.79. Similarly, in a validation study of 399 breast cancer survivors, Bartula and Sherman (2015) provided evidence of psychometric properties of the scale as shown by a factor analysis, convergent and divergent validity, internal consistency ($\alpha = 0.83-0.96$), and test-retest reliability ($r = 0.74-0.86$). Studying women with mixed sexual dysfunctions, Wiegel et al. (2005) suggested a total score less than 26.55 as a specific clinical cut-off score for potential classification of women's sexual dysfunction.

Statistical analysis

SPSS version 18 statistical software and AMOS software version 18 were used to perform the data analysis. Descriptive statistics including means, median, frequencies, and percentage were calculated to show the distribution of personal social-demographic information, clinical characteristics, and sexual function. Skewness, kurtosis, histograms, and

Q-Q were performed to examine normality distribution of the data. Data were considered to be normally distributed if the skewness or kurtosis statistics were no more than 1.96 times their respective standard error (Field, 2013).

Internal consistency reliability of the scale was tested by Cronbach's alpha. An alpha value above 0.7 indicates acceptable internal consistency (Streiner and Norman, 2008). Test-retest reliability was tested by Pearson correlations, and a correlation coefficient above 0.7 is considered generally good (Streiner and Norman, 2008).

Construct validity was evaluated by principal component analysis and confirmatory factor analysis. The principal component analysis was conducted using oblique rotation after suitability of the data for the analyses being confirmed by Kaiser-Meyer Olkin Measure of 0.5-1.0 (Kaiser, 1974) and Bartlett's Test of Sphericity with statistical significance ($p < 0.05$) (Bartlett, 1954). Multiple goodness-of-fit measurement indices was used to determine a model fit for confirmatory factor analysis, with the following criteria applied: CMIN/DF ratio (< 3), Goodness-of-Fit Index ($GFI \geq 0.90$), Comparative Fit Index ($CFI \geq 0.90$), and the Root Mean Square Error of Approximation ($RMSEA < 0.08$) (Hu and Bentler, 1999). RMSEA values of 0.80-0.10 indicate a reasonable fit (Sugawara and MacCallum, 1993).

To explore variability of the scale, floor and ceiling effects were analysed. A cut off score of $> 15\%$ on the minimum or maximum scores for each item indicates the presence of floor and/or ceiling effects (Terwee et al., 2007).

All statistical tests performed were two-tailed and a p -value < 0.05 was considered statistically significant.

Ethical considerations

The research was approved by an independent ethics committee which was identified by the Hunan Cancer Hospital, China (Approval number: 2013year34th). General ethical principles in health and social care were followed. An information sheet with details about the study and the nature of participation was provided. Participation was voluntary and all respondents provided a signed consent form. Respondents were assured that their care was not affected by whether or not they participated in the study and that any information they provided remained unidentifiable and confidential. Each participant received a towel as incentive for her participation.

RESULTS

Table 1 shows self-reported demographic profiles of the 215 patients who responded. The mean age was 43.25 years \pm 7.05 (range 19-63 years). The largest proportion of respondents for each characteristic were housewives (58.6%); in the age group of 40-49 years (53.5%); educated at secondary level (67.0%); lived in the countryside (62.8%). The majority of respondents were in either Stage I (51.2%) or Stage II (36.2%) of cancer. All respondents had surgery and almost two thirds had also received radiotherapy.

Overall data distribution showed a positive skewness of 0.14. The skewness or kurtosis statistics were no more than 1.96 times their respective standard error (0.14/0.17=0.82, 0.19/0.33=0.58, respectively), indicating the data were normally distributed. The data normality was also confirmed by histograms and Q-Q plots. The mean score of the total FSFI scale was 20.65 \pm 4.77 (range 8.40-33.70). Of all respondents, 86.5 % (186/215) had a score

below the cut-off point of sexual dysfunction (26.55).

In terms of internal consistency reliability (Table 2), the Cronbach α coefficients were 0.94 for the full score and 0.72-0.90 for the domains; item-total correlation coefficients ranged between 0.47 and 0.83 ($p < 0.05$); domain-total correlation coefficients were 0.59-0.89 ($p < 0.05$). For test-retest reliability, the Pearson correlation coefficient between two assessments in an interval of 2-4 weeks was 0.84 ($p < 0.001$) for the total scale, and ranged between 0.68 (Arousal) and 0.83 (Lubrication) for the six subscales with all correlations statistically significant ($p < 0.001$).

For principal component analysis, the Kaiser-Meyer Olkin Measure of the FSFI scores was satisfactory (0.91) and the Bartlett's Test of Sphericity was statistically significant ($\chi^2=3184.896$, $p < 0.001$), indicating the data were suitable for the analysis to explore the dimensions of the scale. Principal component analysis using oblique rotation (Table 3) identified five factors accounting for 77.57% of the total variance in responses. Each factor had an eigenvalue greater than 1. The first factor consisted of a mixture of desire/arousal, and the rest were lubrication, orgasm, satisfaction, and pain. Each item loaded mainly on the single factor associated with its relevant domain with three exceptions. Item 11 "Orgasm: frequency" and item 12 "Orgasm: difficulty" in the Orgasm subscale cross loaded on the Desire/Arousal and Lubrication factors at similar factor loadings. Item 14 "Satisfaction: with amount of closeness with partner" in the Satisfaction subscale loaded on the Orgasm subscale factor.

For confirmatory factor analysis, a six-factor model was computed first, which indicated the model was not a good fit to the data (CMIN/DF=3.12, GFI=0.83, CFI=0.91, RMSEA=0.100). Then a five-factor model was computed (Figure 1). The findings (CMIN/DF=3.08, CFI=0.91, GFI=0.83, RMSEA=0.099) indicated that the five-factor model was a reasonable fit to the data. The five factors included desire/arousal, lubrication, orgasm, satisfaction, and pain.

With regard to floor and ceiling effects, for each item across all 19 items scoring on either the highest or the lowest score did not exceed the 15% cut off, indicating the absence of either ceiling or floor effects (Table 3).

DISCUSSION

The purpose of this study was to examine the psychometric properties and performance of a Chinese version of the 19-item FSFI in cervical cancer survivors in mainland China. The results indicated that the scale had satisfactory reliability and validity for use in a sample of women with cervical cancer.

The mean score of the total FSFI was 20.65 ± 4.77 , and 86.5% of the sample had a total score below 26.55, a cut-off point of FSFI-based estimation of FSD as suggested by Wiegel et al. (2005). These findings indicate that the sexual functioning of women in our study was a serious issue of concern. The mean score seemed low, compared to the mean score of 24.75 ± 6.75 on FSFI as reported in a study of women with various cancers (Baser et al., 2012). This may be due to the variations in two samples. Our study only included patients with cervical cancer in China where women tend to hold traditional Chinese values towards sexual behaviour, while Baser et al. (2012) studied women with different types of gynaecologic cancers in the USA.

Our findings revealed good internal consistency reliability for the FSFI, as demonstrated by Cronbach α coefficients (0.94 for the total scale; 0.72-0.90 for the domains) and item-total correlation coefficients (0.47-0.83). High test-retest reliability over 2-4 weeks ($r = 0.84$) was also reported. These findings are consistent with previous studies conducted by others (i.e. Rosen et al., 2000; Baser et al., 2012; Bartula and Sherman, 2015). For example, in the scale's original development among women with or without sexual dysfunction, Rosen et al. (2000) obtained Cronbach's α values of 0.82-0.97 and test-retest reliability coefficients of 0.79-0.86. Similarly, Baser et al. (2012) reported Cronbach α coefficient of 0.94 and item-total correlation coefficients of 0.44-0.79 among survivors with various cancers, while Bartula and Sherman (2015) found Cronbach α coefficients of 0.83-0.96 and test-retest reliability of 0.74-0.86 among breast cancer survivors. These findings have repeatedly shown satisfactory reliability of the FSFI, suggesting that the scale can be used to measure levels of sexual functioning in diverse populations including female cancer survivors.

Five factors emerged from our principal component analysis via oblique rotation, including desire/arousal, lubrication, orgasm, satisfaction, and pain. This five-factor structure was also confirmed in our confirmatory factor analysis, in which the five-factor model was shown to be a reasonable fit to our data. The overlap among the domains of desire and arousal may reflect to our respondents' perception of sexual intercourse, where the distinction between sexual desire and arousal was not clear. A similar five-factor solution was also reported by Baser et al. (2005) in a study of women with various cancers. In fact, in the FSFI's original validation study, the same five-factor solution was identified initially, but the desire/arousal domain was separated later into two factors based on a clinical decision (Rosen et al., 2000). The pattern of five-factor loadings in our study corresponded closely with that reported in previous studies of women with sexual dysfunction (Wiegel et al., 2005; Baser et al., 2012). Furthermore, Opperman et al. (2013) evaluated four different models of the FSFI using confirmatory analysis and found that a five-factor model demonstrated adequate fit, although a six-factor model had significantly better fit than the five-factor model. Statistical support for a five-factor model, as demonstrated in our study and previous studies, suggests the interconnected nature of women's sexual desire and arousal and supports the argument on combining these two domains into one disorder (Brotto, 2010; Graham, 2010).

Compared to the original FSFI six-factor structure, there are some discrepancies between our study and the study conducted by Rosen et al. (2000) in terms of factor loadings of individual items. In our study, items 11 and 12 in the Orgasm subscale cross loaded on the Desire/Arousal and Lubrication factors at similar factor loadings. This may be explained by our respondents' interpretation of orgasm. A patient might decide whether she had orgasm based on the frequency of her desire/arousal and the extent of lubrication. If she frequently had desire, arousal, and lubrication, she might have interpreted it as the result of orgasm. Item 14 in the Satisfaction subscale loaded on the Orgasm subscale. The explanation may lie in that a respondent might consider orgasm was closely related to her satisfaction with her partner during sexual intercourse. Therefore, a respondent might have reported orgasm because she was satisfied with her partner. These findings may highlight the important role that emotional intimacy with a partner can play in the sexual functioning of women with cancer (Baser et al., 2012).

In relation to variability, although the mean score was low our data distribution did not

show evidence of a floor effect, with a less than 15% scoring on the minimum score for each item. This finding indicates the ability of FSFI to capture variation in our data and is consistent with the study by Wylomanski et al. (2014) who did not find a floor effect in a study of French women seeking gynaecology consultation, although two items (items 9 and 10) had a ceiling effect. It appears that data variability was evident in our study; however, the issue of possible ceiling effects of the FSFI is worth further investigation.

Limitations

This study aimed to analyse the psychometric properties and performance of the translated 19-item Chinese version of the FSFI. Despite promising results, there are some limitations of our study. First, the respondents were recruited from one oncology hospital, and therefore findings from the current study may not be able to be generalised to patients with cervical cancer from other areas of China and beyond. Second, the sample size of our study was small, limiting the generalisability of our findings. Despite these limitations, some clinical implications can be drawn from our findings.

Clinical implications

This study is the first systematic assessment of a Chinese version of the FSFI in terms of its reliability, construct validity, and variability among a sample of cervical cancer survivors in China. Our findings have shown some evidence of good psychometric properties of this scale, suggesting that the scale could be recommended for use in clinical settings to measure sexual functioning in cervical cancer patients, so that those who may suffer from sexual dysfunction could be identified for early intervention. The absence of a floor effect as we found in our data suggests that the scale is suitable for use in women with a low level of sexual functioning.

However, attention must be paid when the FSFI is administered to women with little or no sexual activity in the past four weeks. Of the 19 items, 15 items have response options of “no sexual activity” or “did not attempt intercourse”, which are assigned a score of zero. A domain score of zero can only indicate that no sexual activity is reported, but it conveys no useful information about this specific domain. In the original validation study of the FSFI, Rosen et al. (2000) indicated that it would be appropriate to use the scale only for women with some level of recent sexual activity, although a reanalysis of the factor structure showed little change following exclusion of data from women with no recent sexual activity. Rosen et al. (2000) argue that when a score of zero was assigned for an item, it is not clear whether this was due to a respondent’s dysfunctions in the symptoms assessed by the item, or due to other reasons such as lack of a sexual partner or a poor marital relationship. Baser et al. (2012) strongly recommend that when researchers use the FSFI among women with cancer, specific attention needs to be paid not only to respondents’ sexual activity levels but also to their reasons for sexual inactivity.

CONCLUSION

In conclusion, the Chinese version of the FSFI we tested has satisfactory psychometric properties and performance when used in a sample of women with cervical cancer in China. Similar to the original English version, this Chinese version of the scale has good reliability

and validity as demonstrated by internal consistency, test-retest reliability, construct validity, and variability. This scale has proven to be a reliable and valid instrument for measuring sexual functioning in Chinese women with cancer for research and clinical purposes. However, caution should be paid when the scale is used in women with little recent sexual activity. It would be valuable for future research to confirm its psychometric properties and performance among a large sample of cervical cancer patients across China.

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Table 1 Sample characteristics (n=215)

	n	%
Age		
Aged 29 or under	23	10.70
Aged 30-39	61	28.37
Aged 40-49	115	53.49
Aged 50 or above	16	7.44
Education level		
Junior secondary or below	46	21.40
Secondary	144	66.97
College or above	25	11.63
Occupation		
Professional worker	89	41.40
Housewife	126	58.60
Place of residence		
Urban	80	37.21
Countryside	135	62.79
Stage of cancer		
Stage I	110	51.16
Stage II	78	36.28
Stage III	27	12.56
Treatment		
Hysterectomy only	22	10.23
Hysterectomy and radiotherapy	51	23.72
Hysterectomy and chemotherapy	52	24.19
Hysterectomy, and combined radiotherapy and chemotherapy	90	41.86

Table 2 Performance of the Female Sexual Function Index (n=215)

Domain	Item	Mean \pm SD	Cronbach α if item deleted	Item/Doma in-total correlation	Floor/ceilin g effect %
Desire	1.Desire:frequency	2.70 \pm 0.93	.94	.56	7.44/4.18
	2. Desire: level	2.60 \pm 0.81	.94	.73	8.37/2.33
	Domain: Desire	3.18 \pm 0.92	.72	.75	4.19/2.33
Arousal	3. Arousal: frequency	2.65 \pm 0.97	.94	.72	11.16/3.72
	4. Arousal: level	2.84 \pm 0.92	.94	.76	7.44/3.72
	5. Arousal: confidence	2.97 \pm 0.94	.94	.79	6.51/4.65
	6. Arousal: satisfaction	2.64 \pm 0.89	.94	.72	7.44/2.33
	Domain: Arousal	3.33 \pm 0.97	.89	.86	2.33/0.47
Lubrication	7. Lubrication: frequency	2.77 \pm 0.93	.94	.83	6.05/4.65
	8. Lubrication: difficulty	3.03 \pm 1.07	.94	.72	5.58/14.42
	9. Lubrication: frequency of maintaining	2.85 \pm 0.88	.94	.79	6.05/1.86
	10. Lubrication: difficulty in maintaining	2.98 \pm 1.01	.94	.71	5.58/11.63
	Domain: Lubrication	3.49 \pm 1.03	.90	.84	1.40/1.40
Orgasm	11. Orgasm: frequency	2.60 \pm 0.92	.94	.80	9.76/3.26
	12. Orgasm: difficulty	2.86 \pm 1.05	.94	.77	8.37/10.70
	13. Orgasm: satisfaction	3.15 \pm 0.95	.94	.74	5.58/7.44
	Domain: Orgasm	3.45 \pm 1.01	.83	.89	3.72/0.93
Satisfaction	14. Satisfaction: with amount of closeness with partner	3.18 \pm 1.05	.94	.75	5.12/11.63
	15. Satisfaction with sexual relationship	2.65 \pm 0.91	.94	.69	10.23/0.47
	16. Satisfaction: with overall sex life	2.74 \pm 1.03	.94	.67	10.70/2.79
	Domain: Satisfaction	3.43 \pm 1.05	.85	.81	2.79/0.47
Pain	17. Pain: frequency during vaginal penetration	3.09 \pm 0.97	.94	.57	4.19/8.84

	18. Pain: frequency following vaginal penetration	3.24±1.03	.94	.55	6.51/11.63
	19. Pain: level during or following vaginal penetration	3.11±1.00	.94	.47	5.58/12.09
	Domain: Pain	3.78±1.08	.89	.59	4.19/8.84

Table 3 Principal components analysis using oblique rotation (n=215)

Item	Factors				
	1	2	3	4	5
1. Desire: frequency	.76*	.22	-.32	.38	.06
2. Desire: level	.86*	.22	-.47	.44	-.37
3. Arousal: frequency	.86*	.20	-.48	.43	-.37
4. Arousal: level	.85*	.22	-.53	.46	-.45
5. Arousal: confidence	.83*	.25	-.58	.50	-.48
6. Arousal: satisfaction	.73*	.38	-.51	.49	-.27
7. Lubrication: frequency	.67	.44	-.82*	.49	-.37
8. Lubrication: difficulty	.43	.33	-.92*	.45	-.28
9. Lubrication: frequency of maintaining	.66	.33	-.79*	.54	-.30
10. Lubrication: difficulty in maintaining	.41	.33	-.92*	.43	-.32
11. Orgasm: frequency	.68*	.36	-.69*	.49	-.58*
12. Orgasm: difficulty	.57	.35	-.75*	.45	-.58*
13. Orgasm: satisfaction	.56	.36	-.54	.53	-.76*
14. Satisfaction: with amount of closeness with partner	.48	.49	-.51	.65*	-.71*
15. Satisfaction with sexual relationship	.45	.31	-.49	.95*	-.30
16. Satisfaction: with overall sex life	.47	.29	-.44	.95*	-.24
17. Pain: frequency during vaginal penetration	.27	.90*	-.34	.41	-.14
18. Pain: frequency following vaginal penetration	.23	.93*	-.33	.25	-.25
19. Pain: level during or following vaginal penetration	.16	.90*	-.28	.22	-.12
Eigenvalue	7.16	4.15	6.75	5.35	3.19
% Total variance accounted for by each factor	50.34	11.17	6.48	5.92	3.66
% Total variance accounted for by 5-factor solution	77.57				

*Items with the highest loadings within each factor

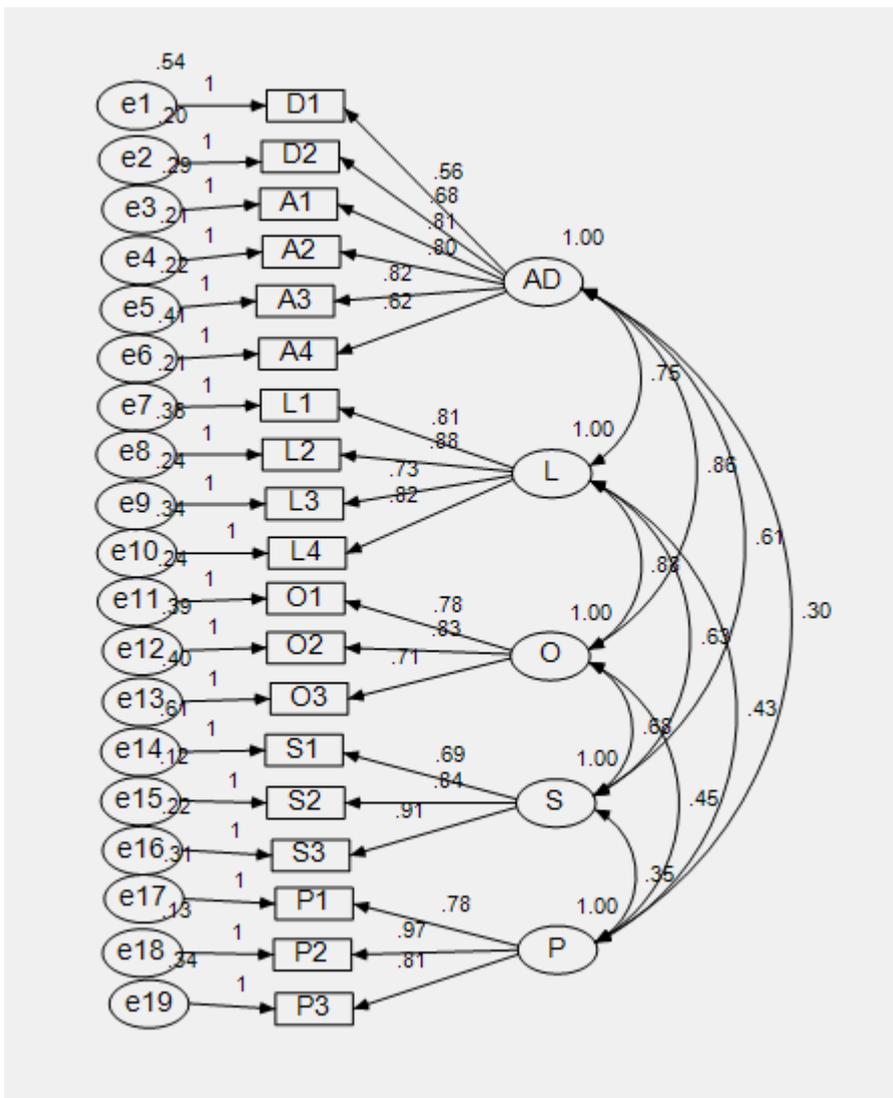


Figure 1. Confirmatory factor analysis: five-factor model of the Female Sexual Function Index

e: item; D: desire; A: arousal; L: lubrication; O: orgasm; S: satisfaction; P: pain