
THE SEXUAL FUNCTION QUESTIONNAIRE: VALIDATION AND GENDER-NEUTRAL ADAPTATION TO HUNGARIAN (SFQ18_HU)

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Abstract

Objectives: Assessment tools for sexual function have been developed and validated separately for women and men, resulting in gender-specific screening tools. In order to fill in this gap, the objective of this study was the translation, adaptation and validation of the Sexual Function Questionnaire-Version 2 (SFQ-V2) into Hungarian, in a gender-neutral language, to make it suitable for both genders.

Methods: A total of 1662 adults were evaluated with the checklist. The items were translated and adapted for both male and female respondents, reformulating in the specific Hungarian gender-neutral vocabulary. An exploratory factor analysis was performed for this new scale, followed by a confirmatory factor analysis. Cronbach's alpha was used to examine the reliability of the factors. We assumed sensitivity, specificity and positive predictive value in the detection of sexual dysfunction.

Results: The Hungarian, gender neutral version of the scale consists of 18 questions and 5 domains: arousal, desire, pain, enjoyment and orgasm. According to our results, the model with 5-factor structure is adequate, in that it was indicated by the model fit indices. Our results have revealed that the SFQ_18 HU has good psychometric properties and may be a useful instrument for assessing of sexual functions.

Conclusions: The use of the instrument both in clinical practice and/or research can be effective, while the administration and interpretation of scores is easy and not time consuming. The proposed questionnaire, SFQ18_HU is conceptualized as a screening scale or checklist, not a diagnostic instrument.

Key words: sexual function, desire, arousal, enjoyment, pain, orgasm.

INTRODUCTION

Sexual health is conceptualized on many levels, not only the physical and emotional, but its mental and social well-being components are equally important. Sexual health implies a positive and respectful approach, along with

absence of discrimination. The World Health Organization (WHO, n.d.) emphasizes sexual rights, safety and maturity. An important part of overall sexual health is healthy sexual functioning, which requires the ability to experience sexual pleasure and satisfaction when desired.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5), American Psychiatric Association (American Psychiatric Association, 2013) provides a standardized classification of sexual dysfunctions. Sexual disorders (classified into 4 categories - desire disorders, arousal disorders, orgasm disorders and pain disorders) are frequent in the general population. The definition of sexual dysfunction from the DSM-5 associates it with extreme distress and interpersonal strain, present for at least six months, whilst excluding substance use or medication side-effects (Nolen-Hoeksema, 2014). Female sexual dysfunction affects 41% of reproductive-age women worldwide, making it a highly prevalent medical issue (McCool *et al.*, 2016). Summarizing data from studies on erectile dysfunction (Brenk Franz *et al.*, 2018), the prevalence in males drops to 20-30%. The origin of the sexual dysfunction may be linked to a biological or organic condition, a psychological condition and/or a social condition (Thomas & Thurston, 2016), highlighting a complex etiology of the symptoms. Gender differences in prevalence can be explained by difficulties of operationalization in research and also factorial overlapping in symptoms (Brenk Franz *et al.*, 2018). Various forms of sexual dysfunctions are present in the life of a significant number of people, but stable community estimations of the current prevalence of sexual dysfunctions remain unavailable (Simons & Carey, 2001).

Several instruments were developed in the past decades to assess sexual function in males (e.g. International Index of Erectile Function, Rosen *et al.*, 2002; Male Sexual Health Questionnaire, Seftel, 2005) and in females (Female Sexual Function Index, Derogatis *et al.*, 2002; Decreased Sexual Desire Screener, Clayton *et al.*, 2009). The Arizona Sexual Experiences Scale applied a gender-neutral approach (McGahuey *et al.*, 2000), to cover five sexual dimensions: sex drive, excitement, erection/lubrication, orgasm and satisfaction with the experience of orgasm. This scale is considered a uniform factor; the instrument does not differentiate between sexual functions.

This research was motivated by the want of standardized instruments in Hungarian that assess sexual function. Only the Female Sexual Function Index (FSFI), originally developed by Derogatis *et al.*, 2002, was validated and translated in Hungarian by Hock *et al.*, 2019, however it is valid and reliable only for women. To the best of our knowledge, validated Hungarian language questionnaires for men are lacking. At the moment, the Hungarian Version of Sociosexual Orientation Inventory Revised (SOI-R), validated by Meskó *et al.* (2014), is the single gender-neutral questionnaire in use. Its aim is to measure the extent to which one is willing to engage in uncommitted sexual relations, but does not address sexual functioning.

This lack of valid instruments for certain segments of the Hungarian population (e.g. males) encouraged the gender-neutral validation of a new questionnaire, applicable in the clinical screening of sexual functioning in adults, regardless of gender. The Sexual Function Questionnaire (SFQ) developed by Quirk *et al.* (2002, 2005) was chosen for this purpose. Available SFQ versions include a 31-item, 34-item, 26-item, 28-item and 20-item abbreviated version. For this study we chose the 26-item (SFQ-V2) revised version. This instrument has available online many translations and it was already adapted to a large number of populations, e.g. Polish population (Slaski & Stefankiewicz, 2011) and Iranian population (Khademi *et al.*, 2006), or populations with different medical or psychiatric disorders (ex. Legocki *et al.*, 2013; Courtois *et al.*, 2018). Taking everything into account, SFQ proved to be the best tool for our objectives, despite the fact that it was originally developed to measure sexual function in women. The items address all aspects of the sexual response cycle and pain during sex, incorporating recent classifications of sexual functioning areas. Besides, the majority of the items are not gender specific. Considering these aspects, we think the SFQ is a good option to be validated in Hungarian and adapted to be applicable to both men and women, in order to fill up the need for a screening instrument of adult sexual function, to help clinicians and researchers.

Objectives

Assessment tools for sexual function have been developed and validated separately for women and men, resulting in gender-specific screening tools. We believe there are no Hungarian instruments pertaining to this research area, that assess simultaneously sexual problems among men and women. A screening tool that can assess this issue regardless of gender, would support clinical practice and research as well.

The main objective of this study is to develop and validate a multidimensional simple screening checklist for sexual function, applicable to men and women. The purpose of the study was to translate and reformulate in gender-neutral language some items of Sexual Function Questionnaire-Version 2 (SFQ-V2), originally developed by Quirk et al. (2002), and validate it in Hungarian, whilst it can assess important markers of sexual functioning in both sexes. The proposed questionnaire, SFQ18_HU is conceptualized as a screening scale or checklist, not a diagnostic instrument.

Materials and methods

Linguistic adaptation

In this study the original Sexual Function Questionnaire-version 2 (SFQ-V2) (Quirk et al., 2002) was translated and the items were adapted for both male and female respondents (see Table 2 for the original and the translated/reformulated items). Two Hungarian speaking clinical psychologists evaluated and confirmed the content validity of the new scale. The standard methodology of “forward-backward” procedure was used to translate the questionnaire from English into Hungarian. The help of linguists was also required for exact translation and checking for unintentional altered meaning.

Participants

Initially, 4335 individuals completed the scale, but after checking for inclusion/exclusion criteria and identifying outliers, 1662 eligible individuals were included in the study. The sample is recruited from the general pop-

ulation of Hungary and Ethnic Hungarians in Romania (Transylvania).

Inclusion criteria were: sexually active adult participants (age 19 to 55 years) in a stable romantic relationship for at least 4 weeks prior to enrolment.

From this study were excluded individuals with: 1) primary neurological or psychiatric disease; 2) regular treatment with any medications known to have psychoactive effect and 3) drug or alcohol abuse.

A total of 1662 adults completed the checklist. The mean age of participants was $M(SD) = 27.67(8.65)$ years, 36.5% (606) were male participants. The participants were Hungarian speakers, 75.9% (1262) from Hungary and 24.1% (400) ethnic Hungarian adults inhabiting Transylvania, Romania. Descriptive statistics of the participants are presented in Table 1.

Participants completed the checklist online and were informed that their participation in the survey was anonymous and completely voluntary.

Instrument

A structured survey was used for recording sociodemographic data and clinical details of the participants.

Sexual Function Questionnaire-version 2 (SFQ-V2) with 7 domains and 26 items was used. The screening checklist includes 7 domains, and it assesses the following: desire, arousal-sensation, arousal-lubrication, orgasm, enjoyment, pain, and partner relationship (Quirk et al., 2002). The original scale (SFQ-V2) was specifically designed to assess sexual functioning in women within the past month, higher scores indicating greater dysfunction.

Procedure and data analysis

A cross-sectional design was used. Data were described using descriptive statistics, all data were presented as mean and standard deviation ($M \pm SD$) for continuous variables and percentages for categorical variables. Calculations using SPSS (Statistical Package for the Social Sciences) version 23.0 and SPSS AMOS package 22 were performed.

Table 1. Sociodemographic data of the participants

		Total sample (N=1662)
Age (M±SD)		27.67 (8.65)
Gender	Male	606 (36.5%)
	Female	1056 (63.5%)
Education level	Elementary school	44 (2.6%)
	High school	884 (53.2%)
	University	734 (44.2%)
Sexual orientation	Heterosexual	1601 (96.3%)
	Bisexual	45 (2.7%)
	Homosexual	16 (1%)
Marital status	Married	437 (26.3%)
	In a relationship	1225 (73.7%)
Occupation	Student	629 (37.8%)
	Employed	849 (51.1%)
	Unemployed	60 (3.6%)
	Other	124 (7.5%)
Perceived economic status	Poor	372 (2.4%)
	Moderate	1214 (73%)
	Good	76 (4.6%)
Country	Hungary	1262 (75.9%)
	Romania	400 (24.1%)

Note: Values represent frequency and percentage, unless indicated otherwise.

Table 2. Summary of exploratory factor analysis for SFQ18_HU (N = 1662)

Items	Components				
	1.Arousal (sensational/ physiological)	2. Desire	3. Pain	4. Enjoy- ment	5. Orgasm
1. Milyen gyakran voltak kellemes gondolatai és milyen gyakran érezte azt, hogy szeretkezne (szexuálisan aktív lenne)? ^R (orig. Q1. Frequency of pleasurable thoughts about sexual activity)	.207	.808	.064	.056	.156
2. Milyen gyakran akarta, hogy partnere megérintse vagy érezkies simogassa? ^R (orig. Q2. Frequency of wanting to be touched)	.125	.706	.012	.385	-.027
3. Milyen gyakran akart szeretkezni (szexuálisan aktív lenni)? ^R (orig. Q3. Frequency of wanting to take part in sexual activity)	.187	.840	.088	.074	.126
4. Milyen gyakran kezdeményezett a partnerével szexuális együttélést? ^R (orig. Q4. How often initiated sexual activity)	.163	.715	.074	.225	.142
5. Milyen gyakran érezte, hogy forrósodott/begerjedt a nemi szerve amikor megkívánta a szexet? ^R (orig. Q8. Amount of warmth during sexual activity)	.590	.327	.034	-.051	.177
6. Milyen gyakran érezte, hogy pulzál a nemi szerve szexuális aktivitás közben? ^R (orig. Q9. Frequency of pulsating during sexual activity)	.707	.164	.032	.129	.298
7. Milyen mértékben pulzált a nemi szerve a szexuális aktivitás közben? ^R (orig. Q10. Amount of pulsating during sexual activity)	.676	.135	.031	.128	.338
8. Milyen gyakran vette észre, hogy sikosodott / merevedett a nemi szerve szexuális aktivitás közben? ^R (orig. Q11. Frequency of vaginal wetness/penis erection* during sexual activity)	.733	.119	.102	.322	-.017

Items	Components				
	1.Arousal (sensational/ physiological)	2. Desire	3. Pain	4. Enjoy- ment	5. Orgasm
9. Milyen mértékben síkosodott / merevedett a nemi szerve szexuális aktivitás közben? ^R (orig. Q12. Amount of vaginal wetness/penis erection* during sexual activity)	.742	.143	.125	.306	.069
10. Milyen mértékben volt élvezetes a partnere érzéki simogatása és érintése? ^R (orig. Q6. Enjoyment of touching by partner)	.225	.262	.031	.715	.196
11. Mennyire élvezte a behatolást? ^R (orig. Q14. Enjoyment of penetrative sexual activity)	.263	.244	.187	.558	.334
12. Milyen gyakran érezte érzelmileg közel a partnerét a szexuális aktivitás alatt? ^R (orig. Q19. Emotional closeness with partner during sexual activity)	.173	.128	.046	.786	.128
13. Milyen gyakran tapasztalt nemi szerv tájékán fájdalmat a szexuális aktivitás során? (orig. Q15. Frequency of pain during sexual activity)	.071	.042	.876	.090	.033
14. Milyen mértékű fájdalmat tapasztalt a szexuális aktivitás során? (orig. Q16. Amount of pain during sexual activity)	.064	.061	.874	.063	.073
15. Milyen gyakran aggódott vagy idegeskedett a szexuális aktivitás közben megjelenő fájdalom miatt? (orig. Q20. Worry about pain during sexual activity)	.066	.078	.744	.015	.175
16. Milyen gyakran volt orgazmusa szexuális aktivitás közben? ^R (orig. Q22. Frequency of orgasms)	.212	.093	.071	.203	.733
17. Mennyire volt örömteljes az orgazmusa? ^R (orig. Q23. How pleasurable were orgasms)	.239	.148	.096	.391	.610
18. Mennyire volt könnyű elérni az orgazmust? ^R (orig. Q24. Ease of orgasm)	.143	.129	.165	.045	.769
Eigenvalues	6.244	1.982	1.528	1.090	1.016
% of variance	15.552	30.867	43.149	54.751	65.891
α	.806	.830	.800	.721	.709

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 6 iterations. 1,2,3,4,5,6,7,8,9,10,11,12,16,17,18 are reversed items (R), * transcribed version

In the first stage the Z-score method of outlier detection was applied, values far from zero (generally between -3 and 3) were considered outliers and removed from the database. The data distribution was also checked. Values between -2 and +2 for Skewness and Kurtosis were considered acceptable for normal univariate distribution (George, Mallery, 2010). To evaluate the utility of the scale, we examined its structure and reliability, followed with data cleaning. First an Exploratory factor analysis (EFA), then a Confirmatory Factor Analysis (CFA) was performed using the SPSS AMOS,

to validate the final questionnaire. To examine the reliability, Cronbach's alpha values were calculated to check the internal consistency of the subscales of the questionnaire. Sensitivity, specificity, and positive predictive value (PPV) were estimated for the detection of sexual dysfunction. Finally, receiver operating characteristics (ROC) curves were plotted to estimate the discriminating power of the instrument and the optimal cut-off for case detection. This method plays a central role in assessing the diagnostic ability of tests to distinguish the real condition of subjects.

RESULTS

Exploratory factor analysis

In the first step, factor structure of the proposed SFQ18_HU questionnaire was examined. In this article, we used the criteria defined in the literature for identification of domains and retention of items (Field, 2009), factors with eigenvalues > 1.0, items with factor loading > 0.5, and Pearson’s correlation coefficient < .3. According to these criteria, 18 items of the initial 26 items of the original scale were included.

A principal component analysis (PCA) was conducted on the 18 items with orthogonal rotation (varimax). The KMO (Kaiser–Meyer–Olkin) measure verified the sampling adequacy for the analysis, in case of our data the result was very good, KMO = .88, values between 0.8 and 0.9 are considered great (Field, 2009). Bartlett’s test of sphericity $\chi^2 (153) = 12348.97$, $p < .001$, indicated that correlations between items were sufficiently large for PCA. Five components had eigenvalues over Kaiser’s criterion of 1 and explained 65.89% of the variance of sexual functioning. Table 2 shows the factor loadings after rotation.

The final instrument contains 18 questions with responses scored on a 5-point Likert scale, total score ranges from 18 (minimum) to 90 points (maximum). Items 1,2,3,4,5,6,7,8,9,10,11,12,16,17, and 18 have an inverted score and higher scores indicate greater dysfunctions. The 5 domains of the 18-item SFQ18_HU include: arousal-sensation and arousal-lubrication (item5–9; score range 4–25); desire (item1–4; score range 4–20); pain (item 13-15; score range 3–15); enjoyment (item 10-12; score range 3–15); orgasm (item16-18; score range 3–15).

Reliability/Internal consistency

The SFQ18_HU produced good internal consistencies in each of its subscales (see Table 2), with Cronbach’s alphas ranging from .70 to .83. The subscales of the 18-item SFQ18_HU showed good internal consistency: arousal subscale $\alpha = .80$, desire subscale $\alpha = .83$, pain subscale $\alpha = .80$, enjoyment subscale $\alpha = .72$, orgasm subscale $\alpha = .70$, and the internal validity of the total scale is also very good, $\alpha = .88$.

Confirmatory Factor Analysis

In the next step, a Confirmatory Factor Analysis (CFA) was conducted for the five-factor structure model, using the SPSS AMOS package (see Figure 1).

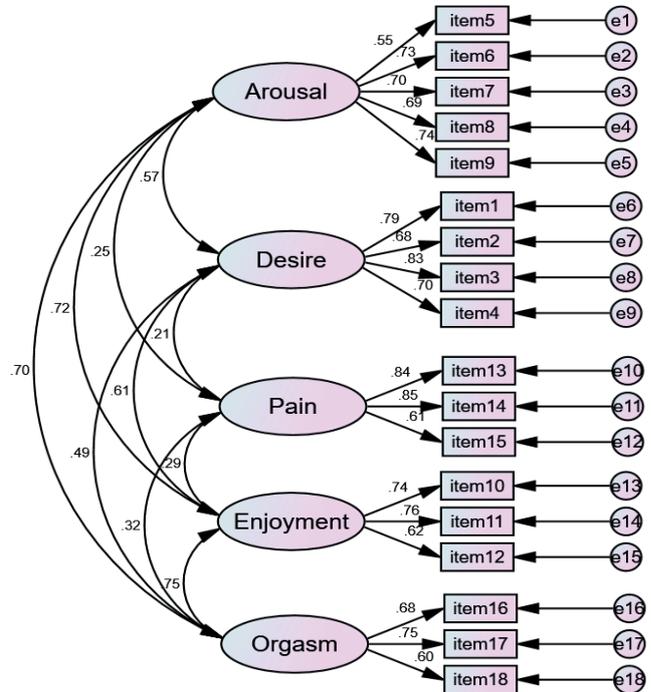


Figure 1.
Factor structure of SFQ_18 HU

The Maximum Likelihood (ML) procedure was used, since it is the most frequently used fitting function for structural equation models. The chi-square statistic for the Likelihood Ratio Test is expected to be insignificant for a good model fit, however this statistic is overly affected by sample sizes larger than 400 (see SEM: Fit (David A. Kenny), 2015; Vandenberg, 2006), thus other fit indices are recommended as a criterion for acceptance vs rejection of the model. Guidelines for interpreting the results of the model fit indices were as follows: for the CFI-Comparative Fit Index (Bentler, 1990) values close to or greater than .90–.95 are acceptable; for the RMSEA-Root Mean Square Error of Approximation values an excellent fit of the model is indicated by a value lower than .05, whilst a good fit can be concluded from a value less than .08, whereas values > .10 are not acceptable. (Browne & Cudeck, 1989).

According to our results, the 5-factor structure model is adequate, the model fit indices

showing a good fit: $\chi^2=1209.35$, $df=125$, $p=.000$, $CFI=.911$, $RMSEA=.072$.

Criterion validity

Throughout the sample, only a few participants had a clinical diagnosis of sexual dysfunction, thus self-confessed diagnosis was taken into account. ROC analysis (Receiver operating characteristic) was performed in order to determine the best cut-off scores (highest true positive rate together with the lowest false positive rate) of the questionnaire with proper clinical sensitivity and specificity.

The Area Under Curve (AUC) for the SFQ_18 HU was .93 (95% CI: .91-.95). The cut-off scores were as follows: scores above 44.50 will screen positive in 85.3% of affected population, specificity is 88.1% and it has 11.9% false negative; scores between 18-45 mean that is unlikely show the unlikelihood of suffering from sexual dysfunction, scores above 46 indicate that it is very likely to experience sexual dysfunction. For the cut-off score analysis, we did not find any gender differences.

Prevalence of sexual dysfunctions

Based on the SFQ_18 HU questionnaire, 18.7% of the participants (17.3% of males and 19.4% of females) reported sexual dysfunctions (see Table 3).

The association between gender and sexual dysfunction symptoms was assessed with Chi square test, but the results were not significant ($\chi^2(1) = 1.114$, $p = .291$).

DISCUSSION AND CONCLUSION

In this study, we describe the development and validation of a new screening tool (SFQ_18 HU) for measuring sexual functioning in both sexes. Our results have revealed that the

SFQ_18 HU has good psychometric properties and may be a useful instrument for assessing or screening of sexual functions in the general population of Hungarian speaking male and female adults.

The use of the instrument both in clinical practice and/or research can be effective, while the administration and interpretation of scores is easy and not time consuming, typically requiring maximum 5 minutes for completion and interpretation. In conclusion, we encourage the use of SFQ_18 HU version of SFQ-V2 in clinical and research settings, for a valid and reliable screening of the quality of sexual functioning in Hungarian speaking males and females on five dimensions: desire, arousal, enjoyment, pain and orgasm.

Limitations and further directions

Some important limitations of the study should be highlighted. The SFQ_18 HU instrument was validated in general population. The questionnaire is not suitable for patients with various psychiatric or other medical illnesses, since the relevant factors that influence these conditions, were not taken into consideration in the current study. Another important limitation of our study is not discussing relevant factors for hypersexuality, since this research is focused on factors for hyposexual disorders. Furthermore, this screening instrument does not address specific female and male sexual problems (e.g. premature ejaculation). A clinical diagnosis of sexual dysfunction requires a detailed examination of gender-specific differences. As we worked with a self-reported screening tool, another limitation pertains to the subjective appraisal of the participants, which may affect research conclusions. Future studies on Hungarian samples are necessary to clarify the uncertainties listed above.

Table 3. Prevalence of sexual dysfunction symptoms based on SFQ_18 HU

	unlikely to have sexual dysfunctions	likely to have sexual dysfunctions	Total
Male	501 (82.7%)	105(17.3%)	606
Female	851 (80.6%)	205(19.4%)	1056
Total	1352 (81.3%)	310(18.7%)	1662

Note: Values represent frequency and percentage

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Nothing to declare.

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Ethics

Study is in line with research ethical standards and ethical approval was obtained from Babeş-Bolyai University (reference number 11.804 / 26.08.2020).

Data availability statement

Kalcza Janosi, Kinga; Marschalko, Eszter Eniko; Kotta, Ibolya; Bibok, Bea (2020): The Sexual Function Questionnaire: Validation and Gender-Neutral Adaptation to Hungarian (SFQ18_HU). figshare. Dataset. <https://doi.org/10.6084/m9.figshare.12794348.v1>

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