AN OVERVIEW OF FEMALE SEXUAL FUNCTION WITH PRESENTATION OF THE CROATIAN TRANSLATION OF THE FEMALE SEXUAL FUNCTION INDEX

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Introduction: The Female Sexual Function Index (FSFI) is a questionnaire used to assess female sexual function and diagnose sexual dysfunction (SD). Aim: to provide a Croatian translation of the FSFI. Methods: The translation procedure consisted of creating two independent forward translations, merging them into a single forward translation, creating a back translation, comparing the back translation with the original, and deciding on a final translation. Results: no semantic differences were found when comparing the back translation with the original. Therefore, minimal changes were made to the earlier translation when the final translation was created. Conclusions: The Croatian translation of the FSFI is now available for assessing the widespread problem of female SD in the Croatian-speaking population.

Key words: sexual dysfunction, women, Female Sexual Function Index, Croatia

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INTRODUCTION

Sexual function plays an important role in every woman’s life (1). Penile-vaginal intercourse and orgasm have numerous positive effects on women’s quality of life, such as improved hormonal balance, reduced menopausal symptoms, lower risk of breast cancer, and lower prevalence of depressive disorders (2-4). Human sexuality consists of various aspects: anatomical, endocrine, psychological, previous experience of human relationships, sociocultural and religious aspects (5). In 1975, the World Health Organization defined sexual health as “the integration of the somatic, emotional, intellectual, and social aspects of sexual being in a manner that is positively enriching and promotes personality, communication, and love” (6). The sexual response cycle is traditionally divided into four phases, i.e., desire, arousal, orgasm, and resolution (7). The anatomical center for sexual desire in the central nervous system is located in the hypothalamus and surrounding limbic structures. It is physiologically stimulated by testosterone in both males and females (8), but dopaminergic and serotonergic systems also play important roles in various factors of sexual response. Complex integrative activities lead to autonomic and voluntary responses that are processed in the central nervous system through the ‘sexual pleasure cycle’. Key components of the sexual pleasure cycle are sex drive and pleasure perception, which depend on the interaction between the dopaminergic neurons of the reward system, located mainly in the midbrain, and the opioid-endocannabinoid system. Sexual behavior requires implicit sensory stimuli to forebrain limbic structures such as the hypothalamus, amygdala, hip-
Sexual desire refers to sexual thoughts, ideas, or desires that arise spontaneously or during a relationship with a partner and may be conditioned by psychological understanding of sexuality and partnership. Sexual arousal is the subjective perception of sexual pleasure (10) accompanied by physiological changes such as vasocongestion of the genitals and chest, vaginal lubrication, tachycardia, tachypnea, and increased blood pressure (11). Orgasm refers to the climax of sexual pleasure accompanied by rhythmic contractions in the genital and pelvic areas (10). Resolution is the final phase of the sexual response cycle, following orgasm or the plateau of arousal when orgasm has not occurred, and is characterized by general relaxation and satisfaction (10). Note that these four phases overlap and their order may vary (12). In addition, some of the phases may be absent from an individual woman's sexual response cycle. For example, subjective satisfaction with a sexual act need not always involve achieving orgasm. Instead, it may consist of reaching a plateau of a satisfactory level of arousal (10). Sexual dysfunction (SD) is a major public health problem (13), common in all age groups of women, with a prevalence ranging from 19% to 63% (14-17). The prevalence is even higher in women with various comorbidities. For example, the prevalence of SD in women with chronic kidney disease (CKD) is up to 70% (18). It is characterized by a disturbance in sexual desire, arousal, orgasm, or mental satisfaction, or by the occurrence of pain associated with the sexual act (19). SD is a persistent or recurrent problem that causes personal or interpersonal distress (20) and can lead to emotional disturbance or broken relationships (21). For this reason, it is concerning that SD remains an underdiagnosed and undertreated disorder (18). Therefore, there is a real need of tools to diagnose SD. The Female Sexual Function Index (FSFI) was developed by the International Consensus Development Conference on Female Sexual Dysfunctions to assess female sexual function in the following six domains: sexual desire, arousal, orgasm, pain, lubrication, and satisfaction (22). The questionnaire has proven to be a sound instrument in various translations (23-36). FSFI questionnaire translations were made in Portuguese, Urdu, Persian, Dutch, Korean, Malay, Chinese, Japanese, Italian, German, Swedish, Hungarian, Turkish, Spanish, etc. (23-35). Those translations regularly showed sufficiently high values of the Cronbach’s alpha coefficient. The values of Cronbach’s alpha coefficients were 0.92-0.97 for the Italian (31), >0.84 for the Japanese (30), and 0.72-0.9 for the Persian version (25). All three translations were created using the forward-backward translation method, similar to the one that was used to create the Croatian version and is shown in Figure 1.

Figure 1. The algorithm of the translation protocol applied in this study.

Studies assessing the prevalence of SD in Croatia were performed by Stulhofer et al. (36,37). Since a Croatian translation did not seem to exist, our research team conducted the translation procedure recommended by various authors (39-42) and used the translated version on a sample of healthy women and patients with CKD (1,18). It is our hope that this will prove valuable for the Croatian-speaking population, knowing that determining the prevalence of SD and the associated risk factors is important in order to plan the prevention and treatment of SD (1). The Croatian version of the FSFI can be found in the supplement (Appendix 1) and may be freely used.

Appendix 1. The final version of the Croatian Female Sexual Function Index

Indeks ženske seksualne funkcije

Upute: Sljedeća pitanja ispituju o Vašim seksualnim osjećajima i odgovorima u posljednja 4 tjedna. Molimo odgovorite na sljedeća pitanja što je moguće iskrenije i jasnije. Vaši će se odgovori čuvati potpuno povjerljivo. Kod odgovaranja vrijedi sljedeće:
Seksualna aktivnost može uključivati maženje, predigru, masturbaciju i vaginalni spolni odnos.

Spolni se odnos definira kao penetracija (ulazak) penisa u vaginu.

Seksualna stimulacija uključuje situacije kao što su predigra s partnerom, samo-stimulacija (masturbacija) i seksualne maštarije.

OZNAČITE SAMO JEDNU KUĆICU PO PITANJU.

Spolna želja ili zanimanje je osjećaj koji uključuje želju za spolnim iskustvom, osjećaj pristajanja na partnerovu seksualnu inicijativu i mišljenje ili maštanje o spolnom odnosu.

1. Tijekom posljednja 4 tjedna, koliko ste često osjetili seksualnu želju ili zanimanje?
   1) Gotovo uvijek ili uvijek
   2) Većinu vremena (više od polovice vremena)
   3) Ponekad (otprilike polovicu vremena)
   4) Nekoliko puta (manje od polovice vremena)
   5) Gotovo nikad ili nikad

2. Tijekom posljednja 4 tjedna, kako biste ocijenili razinu (stupanj) svoje seksualne želje ili interesa?
   1) Vrlo visoko
   2) Visoko
   3) Umjereno
   4) Nisko
   5) Vrlo nisko ili nimalo

Seksualna napetost je osjećaj koji uključuje i fizičke i psihičke aspekte seksualnog uzbuđenja. Može uključivati osjećaje topline ili trnaca u genitalijama, lubrikaciju (vlaženje) ili mišićne kontrakcije.

3. Tijekom posljednja 4 tjedna, koliko ste često bili seksualno napeti (“uzbuđeni”) tijekom seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Gotovo uvijek ili uvijek
   3) Većinu vremena (više od polovice vremena)
   4) Ponekad (otprilike polovicu vremena)
   5) Nekoliko puta (manje od polovice vremena)
   6) Gotovo nikad ili nikad

4. Tijekom posljednja 4 tjedna, kako biste ocijenili razinu (stupanj) vaše seksualne napetosti (“uzbuđenosti”) tijekom seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Vrlo visoko
   3) Visoko
   4) Umjereno
   5) Nisko
   6) Vrlo nisko ili nimalo

5. Tijekom posljednja 4 tjedna, koliko ste bili sigurni da ćete biti seksualno uzbuđeni tijekom seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Vrlo visoka sigurnost
   3) Visoka sigurnost
   4) Umjerena sigurnost
   5) Niska sigurnost
   6) Vrlo niska sigurnost ili nedostatak sigurnosti

6. Tijekom posljednja 4 tjedna, koliko ste često bili zadovoljni svojom spolnom napetosti (uzbuđenjem) tijekom seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Gotovo uvijek ili uvijek
   3) Većinu vremena (više od polovice vremena)
   4) Ponekad (otprilike polovicu vremena)
   5) Nekoliko puta (manje od polovice vremena)
   6) Gotovo nikad ili nikad

7. Tijekom posljednja 4 tjedna, koliko ste često bili lubricirani (“navlaženi”) tijekom seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Gotovo uvijek ili uvijek
   3) Većinu vremena (više od polovice vremena)
   4) Ponekad (otprilike polovicu vremena)
   5) Nekoliko puta (manje od polovice vremena)
   6) Gotovo nikad ili nikad

8. Tijekom posljednja 4 tjedna, koliko Valo je bilo teško postati lubricirani (“navlaženi”) tijekom seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Izuzetno teško ili nemoguće
   3) Vrlo teško
   4) Teško
   5) Pomalo teško
   6) Bez teškoća

9. Tijekom posljednja 4 tjedna, koliko ste često održali svoju lubrikaciju (“navlaženost”) do kraja seksualne aktivnosti ili spolnog odnosa?
   1) Nisam imala seksualnu aktivnost
   2) Izuzetno teško ili nemoguće
   3) Vrlo teško
   4) Teško
   5) Pomalo teško
   6) Bez teškoća

10. Tijekom posljednja 4 tjedna, koliko Valo je bilo teško održati svoju lubrikaciju (“navlaženost”) do kraja seksualne aktivnosti ili spolnog odnosa?
    1) Nisam imala seksualnu aktivnost
    2) Izuzetno teško ili nemoguće
    3) Vrlo teško
    4) Teško
    5) Pomalo teško
    6) Bez teškoća
11. Tijekom posljednja 4 tjedna, kad ste imali seksualnu stimulaciju ili spolni odnos, koliko ste često postijeli orgazam (vrhunac)?
1) Nisam imala seksualnu aktivnost
2) Gotovo uvijek ili uvijek
3) Većinu vremena (više od polovice vremena)
4) Ponekad (otprilike polovicu vremena)
5) Nekoliko puta (manje od polovice vremena)
6) Gotovo nikad ili nikad

12. Tijekom posljednja 4 tjedna, kad ste imali seksualnu stimulaciju ili spolni odnos, koliko Vam je bilo teško postići orgazam (vrhunac)?
1) Nisam imala seksualnu aktivnost
2) Izuzetno teško ili nemoguće
3) Vrlo teško
4) Teško
5) Pomalo teško
6) Bez teškoća

13. Tijekom posljednja 4 tjedna, koliko ste bili zadovoljni svojom sposobnosti postizanja orgazma (vrhunca) tijekom seksualne aktivnosti ili spolnog odnosa?
1) Nisam imala seksualnu aktivnost
2) Vrlo zadovoljna
3) Umjereno zadovoljna
4) Podjednako zadovoljna i nezadovoljna
5) Umjereno nezadovoljna
6) Vrlo nezadovoljna

14. Tijekom posljednja 4 tjedna, koliko ste bili zadovoljni količinom emotivne bliskosti tijekom seksualne aktivnosti između Vas i Vašeg partnera?
1) Nisam imala seksualnu aktivnost
2) Vrlo zadovoljna
3) Umjereno zadovoljna
4) Podjednako zadovoljna i nezadovoljna
5) Umjereno nezadovoljna
6) Vrlo nezadovoljna

15. Tijekom posljednja 4 tjedna, koliko ste bili zadovoljni seksualnom vezom sa svojim partnerom?
1) Vrlo zadovoljna
2) Umjereno zadovoljna
3) Podjednako zadovoljna i nezadovoljna
4) Umjereno nezadovoljna
5) Vrlo nezadovoljna

16. Tijekom posljednja 4 tjedna, koliko ste bili zadovoljni Vašim ukupnim spolnim životom?
1) Vrlo zadovoljna
2) Umjereno zadovoljna
3) Podjednako zadovoljna i nezadovoljna
4) Umjereno nezadovoljna
5) Vrlo nezadovoljna

17. Tijekom posljednja 4 tjedna, koliko ste često osjetili nelagodu ili bol tijekom penetracije u vaginu?
1) Nisam pokušala imati spolni odnos
2) Gotovo uvijek ili uvijek
3) Većinu vremena (više od polovice vremena)
4) Ponekad (otprilike polovicu vremena)
5) Nekoliko puta (manje od polovice vremena)
6) Gotovo nikad ili nikad

18. Tijekom posljednja 4 tjedna, koliko ste često osjetili nelagodu ili bol nakon penetracije u vaginu?
1) Nisam pokušala imati spolni odnos
2) Vrlo visoka
3) Visoka
4) Umjerena
5) Niska
6) Vrlo niska ili nepostojeća

19. Tijekom posljednja 4 tjedna, kako biste ocijenili razinu (stupanj) nelagode ili boli tijekom ili nakon penetracije u vaginu?
1) Nisam pokušala imati spolni odnos
2) Vrlo visoka
3) Visoka
4) Umjerena
5) Niska
6) Vrlo niska ili nepostojeća

METHODS

The Female Sexual Function Index

The FSFI is a 19-item questionnaire that assesses a woman’s sexual function within the four weeks preceding the examination. As we mentioned earlier, it quantifies the following six domains of female sexual function: desire, arousal, orgasm, pain, lubrication, and satisfaction. The response options range from 0 or 1 to 5, with 0 indicating no sexual activity. The individual scores related to each of the six domains above are calculated as the sum of the scores of the questions related to a single domain multiplied by the factor determined by the authors of the scale. For example, the score for the arousal domain is calculated as the sum of the scores of the four questionnaire items related to the arousal domain multiplied by the specified factor. The sum of all six individual scores for the domain equals the total FSFI. The total FSFI ranges from 2 to 36, with higher scores indicating better sexual function, and vice versa. A cutoff value of 26.55 is suggested by Wiegel et al.; subjects with total FSFI below the cutoff are likely to have SD (43). The FSFI questionnaire showed excellent internal consistency (Cronbach’s alpha >0.9) (43-45). The questionnaire is also suitable for internet use and has shown good psychometric results (46-48).
**Procedure**

Two fluent bilingual physicians independently prepared two forward translations of the original English version into Croatian. The two forward translations were then combined into a single translation by a team of translators. Subsequently, the combined forward translation was back-translated into English by a native Croatian translator with a master's degree in English language and literature, who was neither involved in the preparation of the forward translations nor familiar with the original English version. Finally, a team of translators compared the back translation with the original version, found the translation process satisfactory, and agreed on a final version. The algorithm of the procedure is shown in Figure 1. This algorithm was selected after consulting suggestions from various sources (40,42,49-53).

**Results**

The original version, the combined forward and backward translation can be seen in Table 1. Comparison of the two independent forward translations is shown in Table 2. The aim of the translation was to create a Croatian version of the questionnaire that would not have significant differences in the meaning of the questions compared to the original version. When comparing the back-translation with the original, no semantic differences were found. The only differences were in the use of different forms of the same meaning (e.g., question 2 in the original reads “Over the past 4 weeks, how would you rate your level (degree) of sexual desire or interest?” and in the back translation it reads “During the last 4 weeks, how would you grade the level (degree) of your sexual desire or interest?”).

<table>
<thead>
<tr>
<th>Table 1. The translation process of the FSFI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Original</strong></td>
</tr>
<tr>
<td>1. Over the past 4 weeks, how often did you feel sexual desire or interest?</td>
</tr>
<tr>
<td>2. Over the past 4 weeks, how would you rate your level (degree) of sexual desire or interest?</td>
</tr>
<tr>
<td>3. Over the past 4 weeks, how often did you sexually aroused (“turned on”) during sexual activity or intercourse?</td>
</tr>
<tr>
<td>4. Over the past 4 weeks, how would you rate your level of sexual arousal (“turn on”) during sexual activity or intercourse?</td>
</tr>
<tr>
<td>5. Over the past 4 weeks, how confident were you about becoming sexually aroused during sexual activity or intercourse?</td>
</tr>
<tr>
<td>6. Over the past 4 weeks, how often have you been satisfied with your arousal (excitement) during sexual activity or intercourse?</td>
</tr>
<tr>
<td>7. Over the past 4 weeks, how often did you become lubricated (“wet”) during sexual activity or intercourse?</td>
</tr>
<tr>
<td>8. Over the past 4 weeks, how difficult was it to become lubricated (“wet”) during sexual activity or intercourse?</td>
</tr>
<tr>
<td>9. Over the past 4 weeks, how often did you maintain your lubrication (“wetness”) until completion of sexual activity or intercourse?</td>
</tr>
<tr>
<td>10. Over the past 4 weeks, how difficult was it to maintain your lubrication (“wetness”) until completion of sexual activity or intercourse?</td>
</tr>
<tr>
<td>11. Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you reach orgasm (climax)?</td>
</tr>
<tr>
<td>12. Over the past 4 weeks, when you had sexual stimulation or intercourse, how difficult was it for you to reach orgasm (climax)?</td>
</tr>
<tr>
<td>13. Over the past 4 weeks, how satisfied were you with your ability to reach orgasm (climax) during sexual activity or intercourse?</td>
</tr>
</tbody>
</table>
14. Over the past 4 weeks, how satisfied have you been with the amount of emotional closeness during sexual activity between you and your partner?

15. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?

16. Over the past 4 weeks, how satisfied have you been with your overall sexual life?

17. Over the past 4 weeks, how often did you experience discomfort or pain during vaginal penetration?

18. Over the past 4 weeks, how often did you experience discomfort or pain following vaginal penetration?

19. Over the past 4 weeks, how would you rate your level (degree) of discomfort or pain during or following vaginal penetration?

Table 2. The comparison of two forward translations of the FSFI
DISCUSSION

Our translation of FSFI into the translation language showed appropriate choice as confirmed by back-translation. We believe that the translation algorithm enabled the best Croatian version of the questionnaire, as it was experienced in other languages (24-32,34,35). Research on women's sexual function has increased considerably recently, and a number of questionnaires have been developed to facilitate sexual history taking and assessment (44). According to the systematic literature review by Lim-Watson et al., the most commonly used questionnaires are FSFI, Sexual Satisfying Events (SSE), and Female Sexual Distress Scale-Revised (FSDS-R) (54), possibly due to the 2016 Food and Drug Administration (FDA) guidance on clinical trials for female SD. Among these, the FSFI remains the gold standard, adapted and validated in more than 20 languages and most commonly used for screening and outcome measurement of female sexual function (38).

However, the FDA has raised concerns about the psychometric properties of the FSFI, particularly regarding content validity. First, it was developed primarily for sexually active women, and the inclusion of sexually inactive women could bias the results. Women who are not sexually active for various reasons could select a zero response even though they do not have sexual dysfunction (47). In addition, there is a discrepancy in the definition of sexual desire, which is defined as spontaneous in the FSFI model, whereas research suggests that female sexual desire can often be triggered. The overlap between subjective arousal and desire has been ignored in the creation of a separate domain for desire. Another shortcoming is that the complexity of sexual desire can hardly be captured by the experience over four weeks (55). The final concern is the lack of assessment of sexual distress, which is currently considered a necessary condition, along with sexual functioning, for the diagnosis of SD. This is particularly important because sexual distress is associated with greater motivation to discuss sexually related problems with professionals and seek treatment (56).

However, Croatian translation of the FSFI is now available instrument for measuring female sexual function and diagnosing SD. The authors have developed the Croatian translation in the hope that it will prove useful and reliable over time for dealing with the widespread problem of female SD in the Croatian-speaking population.

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SAŽETAK

PREGLED ŽENSKE SPOLNE FUNKCIJE S PRIKAZOM HRVATSKOG PRIJEVODA INDEKSA ŽENSKE SPOLNE FUNKCIJE

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Ključne riječi: seksualna disfunkcija, žene, Indeks ženske seksualne funkcije, Hrvatska