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RESEARCH ARTICLE

# THE ASSOCIATION BETWEEN FERTILITY STATUS AND WOMEN'S SEXUAL ESTEEM: A METHODOLOGICAL AND ANALYTICAL STUDY

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## ABSTRACT

**Purpose:** The present study aims to test the reliability and validity of the Turkish Sexual Esteem subscale of Multidimensional Sexuality Questionnaire in men and women and to examine the association of fertility and sexual esteem in Turkish women.
**Material and Methods:** The full sample was utilized for the psychometric validation, that was the construct validity and the reliability of the Turkish Sexual Esteem subscale of the Multidimensional Sexuality Questionnaire, consisting of 335 individuals. A subsample consisting of 214 fertile and infertile Turkish women, was used for the analytical study. Data were collected by an online questionnaire. We performed descriptive statistics on both samples; confirmatory factor analysis was applied to test the psychometric properties of the Sexual Esteem Subscale, while the associations in fertile and infertile women were evaluated by means of linear regression analysis.
**Results:** The reliability was supported by significant factor loadings and several goodness-of-fit indices. However, the construct (content) validity might be limited. It seems that the items included in the MSQ Sexual Esteem subscale are too narrowly worded. When comparing sexual esteem in infertile women with fertile women, we found that infertile women had higher sexual esteem than fertile women.
**Conclusion:** The Turkish version of the Sexual Esteem subscale is scarcely valid and highly reliable in the Turkish population. The association between fertility and sexual esteem needs to be further investigated in larger samples and in different settings

**Keywords:** fertility, infertile women, Multidimensional Sexuality Questionnaire, sexual esteem, sexual health, sexual well-being

## INTRODUCTION

Sexual esteem is conceptualized as a core aspect of sexual well-being, along with sexual satisfaction and sexual function (1). This study uses the multi-dimensional concept of sexual esteem, as an essential component of sexual health involving an individual's considerations, subjective appraisals of his/her sexual thoughts, feelings and sexual

practices/behaviours (2). Sexual esteem is a fundamental part of an individual's physical, mental, and sexual health and functioning (3).

Around the globe, sexuality has roughly been a controversial topic, influenced by religion and cultural aspects (4). For instance, Turkish culture is strongly influenced by religion, traditional practices, and beliefs: in consequence, research and discussions focusing on sexuality are considered taboo (5). Resulting of sociocultural perspectives, populations suffer from unhealthy sexuality and sexual dysfunctions causing health problems (6). However, research on sexual esteem is still in its infancy.

Infertility is defined by the World Health Organization (WHO) (7) as a devastating health problem as well as a medical problem due to problems it creates in marital relations and the psychological well-being of people. Infertility is considered as the only female problem in societies in which childbirth has always been seen as one of the properties of a woman's role for years (7). Infertile women' sexual esteem level may be affected due to perceiving the reproductive function only as a role of the woman, the pressure exerted by the environment and the thought of being childless as a deficiency (8). Mental health among infertile women is mostly examined and presented as higher depression level on the infertile women than fertile women which lead to have low level sexual esteem (9). In addition, there is also study which present that body image is negatively affected by the infertility in societies where having many children is expected and appreciated (10). Due to the effect and importance of sexual esteem on sexual health, it is important to examine sexual esteem in women from different cultures and religions. Therefore, knowledge about sexual esteem is important to guide health promotion interventions. The aim of this study was two-fold: to test the psychometrical properties of the Turkish Sexual Esteem subscale (SEs) of Multidimensional Sexuality Questionnaire (MSQ) and to assess the association of fertility status with sexual esteem in Turkish women.

## MATERIAL AND METHODS

### Study design

The present study is a methodological study which used to examine the psychometrical properties of the Turkish SEs of MSQ and an analytical study to assess the association of fertility status with sexual esteem.

### Data collection and participants

Data were collected to recruit the full sample for the validation study. Data of the full sample were obtained from fertile women and men at the family health center, and from infertile women at the in vitro fertilization (IVF) center at a university hospital; both situated in a middle-sized city in Türkiye. Fertility was questioned at the family health center based on the WHO's infertility definition which is defined as "a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse" (7). During the data collection, the centers were visited by the researcher two or three days in a week. The inclusion criteria were: (a) married, (b) ≥18 years old, (c) healthy (no chronic or psychiatric diseases or sexual problems which were questioned through the self-questionnaire). We excluded individuals that were pregnant, menopausal, postnatal and those that could not read Turkish. Written informed consents and contact addresses were collected from the respondents. Thereafter, they received the link of the questionnaire by e-mail. To ensure that the participants felt comfortable about sharing their experiences of sexuality, data were collected by means of a survey program provided anonymity for the participant on an online platform established by the first author.

Data were collected from October 2019 to June 2020, and completed when the calculated sample size for the validation study was achieved. The literature recommends that sample size should be 5–10 times more than the number of scale items. In confirmatory factor analysis (CFA), sample sizes ≥200 is seen as large and suitable for most models (11). Therefore, it was aimed to access at least 200 participants to conduct validation. The present CFA was applied on 5 items (Sexual Esteem subscale) utilizing the full sample including 335 respondents. There is not found a previous study evaluated sexual self-esteem in fertile and infertile women together using a similar scale to be used. Sample calculation was performed by considering the medium effect size (Cohen's d=0.5), the α=0.05 margin of error and 95% confidence interval. It was used a t-test (difference between the means for two independent groups). After the analysis, it is indicated that 43 women in each group should be included in the present study. However; it was decided to deal with the fertile women group with a similar proportion of infertile women since the comparative analyzes of fertile

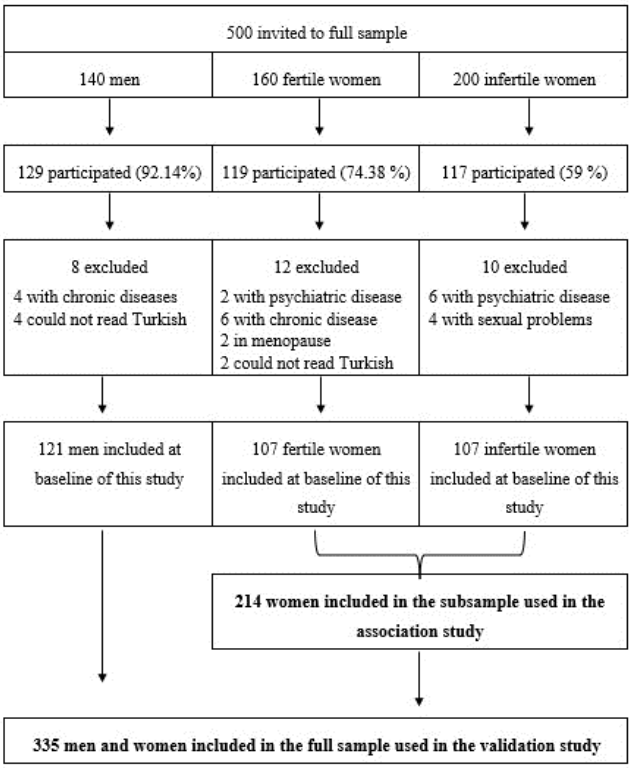


**Figure 1.** Selection of the full sample

women and infertile women will be included within the scope of the study. Figure 1 shows the participant selection process.

**Variables**

The questionnaire included a (a) demographics, and (b) the SEs of MSQ.

- Demographics included age, gender, education level, occupation, income perception and family type.
- The Sexual Esteem subscale is a part of the MSQ, and has been used widely in studies focusing on sexual esteem (12,13). The MSQ was developed by Snell et al. (14) to measure psychological dimensions of sexuality, including 60 items and 12 subscales: sexual self-esteem, sexual preoccupation, internal sexual control, sexual consciousness, sexual motivation, sexual anxiety, sexual assertiveness, sexual depression, external sexual control, sexual monitoring, fear of sexual relations, and sexual satisfaction. These 12 dimensions are evaluated independently: they do not form a total score of sexual wellbeing based in all the 12 dimensions. Therefore, utilizing only one subscale such as sexual esteem, is not statistically problematic. The SEs consists of five items scaled from 0-4 (0=not at all, 1=slightly, 2=somewhat; 3=moderate, 4=very much). Higher scores correspond to greater mounts of the sexual esteem level.

Different scales assessing sexual esteem show various lengths and different limitations and are solely developed in an English-speaking context. This field calls for adapted, reliable and valid instruments to evaluate sexual esteem (15) in different populations. For clinical use, a short scale representing limited research burden and costs is warranted. With its five items, the SEs is a short scale showing good psychometrics among American students (14). To the authors' knowledge, the MSQ and thus neither the SEs have not previously been tested by means of confirmatory factor analysis in a Turkish population. Permission for the using scale was obtained from the corresponding author.

**Psychometrical properties of the Turkish SEs**

The psychometric properties of the SEs were evaluated in accordance with the Guidelines for Translating and Adapting Tests by the International Test Commission (16). Four bilingual experts who are fluent in both Turkish and English translated the SEs into Turkish by following the procedure of back-and-forth translation (17). The back-translators were not aware of the intended concept. No discrepancy was defined (Kendall W=0.290, p=0.003).

The translated version was tested by ten healthy people of both genders who were married and in the age range of 18-65. They confirmed the consistency and clarity of the five items. The translated version was also evaluated by seven experts in the field of sexual health in order to validate the face and content of the scale. Content validity was examined by the Davis technique. For each question in the scale, experts should mark on a form that includes (a) "Appropriate", (b) "The item should be slightly revised", (c) "The item should be reviewed seriously", and (d) "The item is not suitable". has been requested. The content validity indexes were calculated by dividing the number of experts who marked options a and b for each item by the total number of experts who gave their opinion for the item are expected to be above 0.80. In the present study, the content validity index of the scale was calculated as 1.0, which means that the scale met the criteria in terms of content validity.

Face validity was assessed by five academicians in nursing, in terms of comprehensibility, purpose, and

**Table 1.** Sexual esteem score according to participant characteristics (N=335)

| | N (%) | Median (IQR) | p-value |
|---|---|---|---|
| **Age (years)** | | | 0.006 |
| <30 years | 154 (46.0) | 16 (8) | |
| ≥30 years | 181 (54.0) | 15 (13) | |
| **Gender** | | | 0.030 |
| Female | 214 (63.9) | 15 (9) | |
| Male | 121 (36.1) | 15 (17) | |
| **Education** | | | 0.347 |
| Primary school | 31 (9.3) | 17 (5) | |
| High school | 73 (21.8) | 15 (14) | |
| Bachelor degree | 195 (58.2) | 15 (11) | |
| Master or PhD degree | 36 (10.7) | 15 (8) | |
| **Income** | | | 0.945 |
| Low | 64 (19.1) | 15 (8.5) | |
| Average | 191 (57.0) | 15 (10) | |
| High | 80 (23.9) | 15 (15) | |
| **Type of family** | | | 0.852 |
| Nuclear | 316 (94.3) | 15 (11) | |
| Extended | 19 (5.7) | 15 (13) | |

The total sexual esteem score ranges from 0-20 where a higher score indicates a better sexual esteem.
IQR: Inter Quartile Range

culture suitability, as well as significance, clarity, and simplicity.

A scale's psychometric properties relate to its dimensionality, reliability, and construct validity, all of which are considered interrelated measurement properties. Dimensionality is concerned about the homogeneity of the items (18) examining if the items match the defined construct, which in the present study is "Sexual esteem" among Turkish adults. Reliability encompasses an instrument's internal consistence and lack of error variance (18). We used the reliability coefficients Cronbach's alpha (α) and Raykov's reliability (ρc) to assess internal consistence of the items. In this study, construct validity denotes if the Sexual Esteem subscale measures the construct it is proposed to measure. Content validity is embedded in evaluation of construct validity and refers to the degree to which an assessment instrument is relevant to, and representative of, the targeted construct it is designed to measure (19). The literature indicates that Cronbach's α alone cannot be generally trusted as an estimator of reliability (a scale' internal consistency) (20-21). Therefore, composite reliability coefficient was additionally estimated utilizing Raykov's reliability coefficient which is a measure commonly seen as more accurate than Cronbach's alpha. Raykov's reliability coefficient computes coefficients for factors with and without correlated errors, representing a stronger reliability test than the alpha coefficient. A reliability coefficient of ≥0.7 is considered good for both coefficients (22).

Confirmatory factor analysis (CFA) using STATA 16.1 (StataCorp, 2019) was applied to the psychometrics of the Sexual Esteem subscale. CFA is commonly used across clinical research (11), including the development and psychometric evaluation of measurement instruments. CFA is an element of the broader multivariate technique structural equation modelling (SEM) and deals specifically with measurement models (11). A strength of CFA is that it accounts for random measurement error, deriving the truly accurate evaluation of the psychometric properties of a scale. Hence, using empirical data, CFA aims to confirm a theoretical model which in this study is Sexual Esteem. CFA deals specifically with measurement models, accounting for random measurement error and deriving the truly accurate evaluation of the psychometric properties of a scale. Utilizing CFA, a high loading of an item indicates that the factor and the respective item have much in common. Factor loadings below 0.32 are considered poor, while loadings of ≥0.45 are fair, ≥0.55 good, ≥0.63 very good, and above 0.71 are excellent. As a

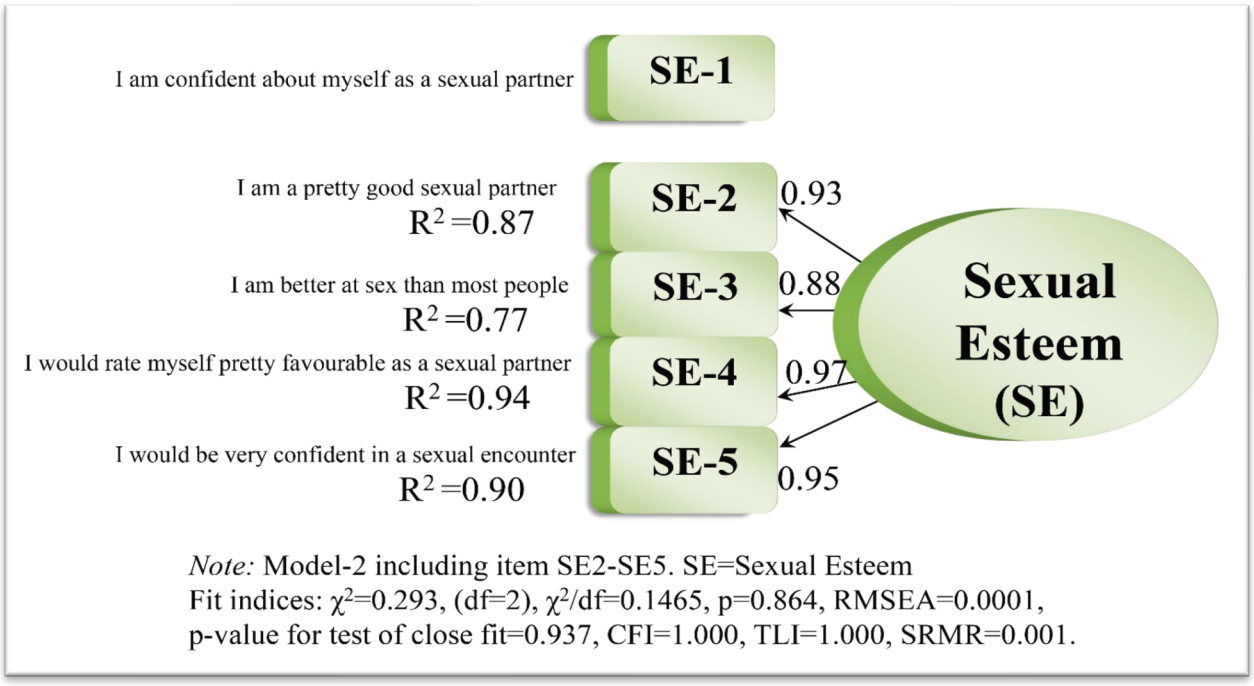


**Figure 2.** Measurement model of **Turkish Sexual Esteem subscale of** Multidimensional Sexuality Questionnaire (MSQ)

rule of thumb is suggested: a minimum loading of 0.32 corresponds to about 10% overlapping variance with the other items in the factor (23). Hence, a 'cross-loading' item loads at 0.32 or higher on two or more factors.

In line with the 'rules of thumb' given as conventional cut-off criteria the following fit indices were used to evaluate model fit; chi-square (χ2) and its p-value which is significant in most cases (22). Therefore, it is suggested to consider the value of χ2/degrees of freedom (df), which should be ≤2 for good fit and ≤3 for an acceptable fit (24). Under non-normality (significant skewness and kurtosis), the Satorra-Bentler-scaled chi-square statistic is the correct asymptotic mean (25); therefore, the Satorra-Bentler-scaled chi-square was applied as a goodness-of-fit statistic. Further, the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMS) with values below 0.05/0.10 indicating good or acceptable fit, respectably, the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) with god/acceptable fit set at 0.95/0.90 were used (22).

### Data analysis

Due to significant skewness and kurtosis, Mann-Whitney U tests and Kruskal Wallis tests were applied in evaluating the associations of sexual esteem with several demographics. Bivariate analysis of the demographics according to fertility status were done using chi-square tests. Multivariable analyses were performed by means of general linear models. In the first model (Model 1) we adjusted for age, while the second model (Model 2) was adjusted for age, education, income, and family type. We calculated least square means of sexual esteem score with corresponding 95% confidence intervals for fertile and infertile women. Fertile women were the reference group. All statistical analyses were performed using STATA 16 (26).

### Ethical considerations

Ethical approval was obtained from the Clinical Research Ethics Committee of Akdeniz University Faculty of Medicine (No: 1003, Date: 23.10.2019). Each participant provided informed consent voluntarily.

## RESULTS

About 54% of the participants were older than 30 years and 36.1 % were men. Almost 70% held an academic degree. About 57% had a moderate income, 19.1% had a low income, whereas 23.9% had a high income. Younger participants had higher sexual esteem than older participants and women reported higher sexual esteem than men. Sexual

**Table 2.** Goodness-of-fit measures for Sexual Esteem subscale measurement model.

| Fit Measure | Model-1<br>N=335<br>5 items | Model-1A<br>N=335<br>5 items, [1]TD1-2 | Model-2<br>N=335<br>4 items |
|---|---|---|---|
| $\chi^2$ *Satorra Bentler* | 75.264<br>(df=5) | 15.647<br>(df=4) | 0.293<br>(df=2) |
| p-value | 0.0001 | 0.004 | 0.864 |
| $\frac{x^2}{df}$ *Satorra Bentler* | 15.0528 | 3.91175 | 0.1465 |
| [2]RMSEA | 0.205 | 0.093 | 0.000 |
| *p-value (close fit test)* | 0.0001 | 0.058 | 0.937 |
| [3]SRMR | 0.017 | 0.009 | 0.001 |
| [4]CFI | 0.97 | 0.995 | 1.000 |
| [5]TLI | 0.94 | 0.988 | 1.003 |
| Average Variance extracted (AVE) | 0.866 | 0.859 | 0.875 |
| $\rho c = \frac{(\sum \lambda)^2}{\left[(\sum \lambda)^2 + \sum(\theta)\right]}$ | 0.971 | 0.962 | 0.967 |

*Note.* [2]RMSEA=Root Mean Square Error of Approximation. [3]SRMS=Standardized Root Mean Square Residual, [4]CFI=The Comparative Fit Index, [5]TLI=Tucker-Lewis Index, [6]Df=Degrees of freedom, ρc=Composite reliability. Model-1: original 5 items, Model-2: 4 items (item 1 is dismissed), Model-3: 5 items, including a correlated error term between item 1 and item2 ([1]TD1,2). Listwise N=335, Asymptotic RML.

esteem did not differ between educations levels, income levels or family type (Table 1).

**Results of the psychometrical properties of the Turkish SEs**

**Confirmatory Factor Analysis (CFA)**

**Model-1 – the original 5-item version**

The original five-item version of the SEs was tested, showing a bad fit: χ2=75.264 (df=5), χ2/df=15.05, p=0.001, RMSEA=0.205, p-value for test of close fit=0.0001, CFI=0.97, TLI=0.94, and SRMR=0.017 (Table 2). The χ2 and RMSEA were too high, while TLI was too low; all of which indicating some misspecification. Hence, we scrutinized the reliability and the construct validity of this model termed Model-1.

**Reliability**

Reliability of a scale depends on the factor loadings (λ) and the multiple squared correlations (R2); the present findings showed factor loadings ranging from 0.87 to 0.96, with R2-estimates between 0.76 and 0.93. Accordingly, both Cronbach's alpha and composite reliability were 0.97, and the inter-item correlations showed high values ranging between 0.86 and 0.93. The high correlations between the items and the high alpha and composite reliability indicate high internal consistency of the scale. Hence, reliability was supported.

**Construct validity**

An inspection of the standardized residuals and the modification indices (MIs) discovered no significant residuals, but two pairs of items (iems1-2; items1-3) showed high MIs of 64.58 and 21.70, respectively, indicating misspecification. Item1 concerns that “I am confident about myself as a sexual partner” and item2 assesses that “I am a pretty good sexual partner”. Hence, it is logical that these items share error variance. Accordingly, letting these error terms correlate is rational. A nested version of Model-1 including Theta Delta1,2 revealed a model with factor loadings ranging between 0.88-0.97, R2 between

**Table 3.** Characteristics of the participants according to fertility status in the all-female sample (N=214)

| | Fertility status | | |
|---|---|---|---|
| | Infertile (n=107) | Fertile (n=107) | |
| | **N (%)** | **N (%)** | **p-value** |
| **Age (years)** | | | 0.779 |
| <30 years | 65 (60.8) | 67 (62.6) | |
| ≥30 years | 42 (39.2) | 40 (37.4) | |
| **Education** | | | 0.001 |
| Primary school | 8 (7.5) | 16 (15.0) | |
| High school | 28 (26.2) | 27 (25.2) | |
| Bachelor degree | 51 (47.7) | 61 (57.0) | |
| Master or PhD degree | 20 (18.7) | 3 (2.8) | |
| **Income** | | | 0.463 |
| Low | 24 (22.4) | 18 (16.8) | |
| Average | 67 (62.6) | 68 (63.6) | |
| High | 16 (15.0) | 21 (19.6) | |
| **Type of family** | | | 0.181 |
| Nuclear | 102 (95.3) | 97 (90.7) | |
| Extended | 5 (4.7) | 10 (9.3) | |

0.77-0.94, a MI of 13.06 (item1, item3) and two significant MIs under 10 (5.17: 5.96) showing an acceptable to good fit ($\chi2=15.647$, (df=4), $\chi2/df=2.53$, p=0.004 RMSEA=0.093, p-value for test of close fit=0.058, CFI=0.995, TLI=0.988, SRMR=0.009). The $\chi2$ and RMSEA were acceptable but not good, while the other fit measures indicated a good fit. Therefore, we wanted to test the model excluding item1 which disclosed the lowest loading and a wording very similar with item2 and thus seemed redundant. Dismissing item1 we run CFA ones more, exploring Model-2.

**Table 4.** Least square means and 95% confidence intervals for fertility and sexual esteem (n=214)

| | | Model 1 | | Model 2 | |
|---|---|---|---|---|---|
| **Fertility status** | **N** | **Mean** | **95% CI** | **Mean** | **95% CI** |
| Fertile | 107 | 12.0 | 10.9-13.1 | 11.9 | 10.8-13.0 |
| Infertile | 107 | 15.6 | 14.6-16.7 | 15.8 | 14.7-16.9 |
| p- value | | p< 0.001 | | p<0.001 | |

The total sexual esteem score ranges from 0-20 where a higher score indicates a better sexual esteem. Model 1 is adjusted for age. Model 2 is adjusted for age, education, income and family type. CI, confidence interval.

**Model-2 – a 4-item version**

This model including four items (items 2, 3, 4 and 5) framed Model-2 revealed an exceptionally good fit ($\chi2=0.293$, (df=2), $\chi2/df=0.1465$, p=0.864, RMSEA=0.0001, p-value for test of close fit=0.937, CFI=1.000, TLI=1.000, SRMR=0.001) (Table 2), significant t-values for all estimates and, completely standardized factor loadings ranging between 0.88-0.97. Cronbach's Alpha and composite reliability were still 0.95.

**The association of fertility status and sexual esteem level in women**

Around 60% of both the fertile and the infertile women were below 30 years. There was a significant difference in the rate of having a master and Ph.D. degree between the infertile and fertile women (p=0.001). There were no differences in income or family type between the two groups (Table 3).

In Model 1 adjusted for age, infertile women had higher sexual esteem compared to fertile women (Mean: 15.6, 95% CI 10.9-13.1; Mean: 12.0, 95% CI 14.6-16.7, respectively, p<0.001). The association persisted in Model 2 that was further adjusted for education, income, and family type with least-square means of 15.8 (95% CI 14.7-16.9) and 11.9 (95% CI

10.8-13.0) for infertile and fertile women respectively (Table 4).

## DISCUSSION

Sexual esteem represents a resource for people's health and well-being. However, this research field calls for adapted, reliable and valid instruments to evaluate sexual esteem in different populations (26). Therefore, an aim of this study was to assess the psychometric properties SEs of the MSQ in the Turkish population. By translating the sexual esteem subscale into Turkish and validate it among healthy adults in Türkiye, this study adds to the growing body of evidence in three ways; this study provides more insight to the concept of sexual esteem in general; such knowledge is important to guide health promotion interventions related to people's sexual health; and a short scale reliable and valid in the Turkish context is important to expand the international perspective on the concept of sexual esteem as well as for clinical use and health promotion outside an English-speaking context. The present study revealed that the Turkish version of the SEs is highly reliable and scarcely valid in the Turkish population and infertile women reported stronger sexual esteem compared to fertile women.

### Sexual Esteem subscale - Reliability

The significant standardized factor loadings (λ, Model-1) ranging from 0.87 to 0.96 indicated that these items perform as highly reliable indicators of sexual esteem in this Turkish population. The multiple squared correlations (R2), termed the variance extracted of the item, represent how much variation in an item the latent construct explains (35); the R2-values ranged between 076-0.93. However, it must be questioned if such high estimates indicate a valid measurement model; a factor loading of 0.96 followed by a squared correlation of 0.92─ both close to 1─ explaining almost all variance of the latent construct; is this rational? Or, is the latent variable of sexual esteem worded too narrowly? Also, the inter-item correlations revealed very high estimates ranging between 0.86─0.93: an inter-item correlation of 0.90 signifies that the pair of items measures almost the same, and thus resulting in a high Cronbach's alpha and composite reliability. Though, without adding any nuances or substance to the construct. In this study, Cronbach's alpha (α) and composite reliability (ρc) (Table 2) exposed extremely high values (both=0.97) close to 1, indicating high internal consistency (30). Nevertheless, this extraordinary internal consistency seems to illuminate that the items are so narrowly worded that possible nuances in the concept are scarcely covered. That is, reliability is good, but the construct validity might be limited.

### SEs - Content Validity

Construct validity includes the exactness of measurement. Content validity is a sub-form of construct validity, referring to whether the SEs has an appropriate, relevant sample of items covering the content of construct. One pair of items (item1 and 2) revealed a high modification indicium (MI=11.368). Looking at these two items "I am confident about myself as a sexual partner" (item1) and "I am a pretty good sexual partner" (item2), the wording, that is the theoretical content, seems very close. Being confident about oneself as a sexual partner implies that you perceive yourself as a pretty good sexual partner. Hence, these items probably assess almost the same content of the construct and share much variance. When two items are verbalized so that they express almost the same, this leads to increase the average correlation among items, which in effect increases the reliability coefficients, yet without adding substantively to the content validity of the measure. The present results showing an extremely high reliability (α and ρc = 0.94) indicate that the wordings are too close. Consequently, one of these two items (item1 or 2) should be dismissed or re-worded.

Similarly, the pair of items three and five exposed high inter-correlations and a significant MI; "I am better at sex than most other people" (item3) and "I would be very confident in a sexual encounter" (item5). It is obvious that if you perceive yourself as better at sex than most other people, you will also be very confident in a sexual encounter. Thus, also this pair of items assess virtually the same content of the construct sexual esteem. One of them could be dismissed, or one of them should be re-worded so the content of the entire construct is better covered by the included items.

### Sexual Esteem and Demographic Response Patterns

The mean of sexual esteem was with women revealing a significantly lower estimate than the men. Similarly, Snell et al. (14) found a significant difference between the genders showing a higher sexual esteem among men compared to women.

Previous research in Asian countries such as Iran (27), China (28) and the present study from Türkiye, as well as western countries such as the Netherlands, U.S. and Britain (29) indicate a higher sexual esteem among men compared to women; accordingly, men seem more likely to value themselves as a "sexual being". One might expect that these findings associate with cultural characteristics in Asian countries, making sexuality a taboo among women along with a deprivation of women's opportunities to learn and speak about sexuality (5). However, studies in Pakistan (30) as well as San Francisco (31) have disclosed no significant difference in sexual esteem between the genders. Hence, the concept of sexual esteem needs to be further examined.

Around the globe, sexuality has more or less been a controversial topic, influenced by religion and cultural aspects (30). Meaning of the sexuality in Türkiye which affected by the culture inheritance are shaped by religious beliefs and traditional values. In this context, sexual issues have turned into a conservative and problematic area together with misinformation and wrong beliefs (5). In this conservative and problematic area, parents offer limited education to their children because they cannot receive professional training, or teaching of sexual information is neglected (32). Therefore, it is important that family type and its's function on the women' sexuality. However, the present study has a very different distribution of family type ratios. Therefore, it does not seem to possible to discuss this finding.

The present study suggested no significant differences in sexual self-esteem related to education, family type and income. Possibly, variables affecting sexual esteem might not only include descriptive characteristics but also bio-psycho-social variables such as emotional well-being, having physical health, qualities of relationship with family or partner, and personal characteristics. In this respect, the MSQ Sexual Esteem subscale can be useful in examining self-esteem in relation to several variables, representing knowledge about how sexual esteem can be facilitated and supported by health professionals. Hence, further research is needed on sexual esteem in different cultures and contexts.

**The association of Fertility Status with Sexual Esteem in women**

Infertility is mostly described as a vulnerability for the women (33). In the present study, we found that infertile women had higher sexual esteem than fertile women. This finding is surprising as we hypothesized that infertile women would have lower sexual esteem than their fertile counterparts. Lotfollahi et al. (34) reported no statistically difference between sexual esteem in fertile women compared to infertile women. The literature states that women with an integrated sexual identity are more likely to achieve a strong sexual self-esteem (35).

Sexual esteem is a complex concept affected by personality characteristics (36) such as women's relation to their body image (37), biological factors (age, gender, marital status, disability), psychological factors such as mental health, and social factors (parents and peers, social media) (35). Sexual esteem is facilitated by some described relational factors such as experience of a loving, open, stable and respectful relationship with their partner; advances, attention, or interest from males, positive modelling of relationships, and understanding the needs of their partner (38). Previous research on marital relationships among infertile women has shown that infertility affects marital relationships negatively (28). However, Heinrichs et al. (38) found that bonding through crisis provided opportunities for couples to experience greater emotional closeness, which in tum facilitated their sexual self-esteem and sexual intimacy. Stronger sexual esteem in infertile women may be explained by greater emotional closeness and intimacy in their marital relationship in the present study. Further research is needed to examine sexual esteem in infertile women by handling relational, communicational and psychological factors. Among the infertile women a larger part holds a master or a PhD degree, indicating that these respondents represent self-actualization women with higher general self-esteem who prioritize independency and a carrier/work life before having children. It is rational, that sexual esteem corresponds to an individual's general self-esteem.

Around the globe, sexual esteem is seen to correlate with factors such as sexual function, sexual satisfaction (39), sexual communication, and marital

satisfaction (40). Nevertheless, studies examining the concept of sexual esteem and its correlations are still scarce. In order to develop health promoting programs, further studies should elaborate more deeply on factors impacting sexual esteem, and both qualitative and quantitative approaches are needed.

**Strengths and Limitations**

The present study has some strengths and limitations. The Sexual Esteem subscale was translated following a well-accepted approach and found to be reliable and valid in the general Turkish population. The sample size used for CFA was 335 on five items, giving a strong statistical power in the analysis. Another strength is the large sample size used to evaluate the associations among fertile and infertile women.

The volunteers participating in this study (both samples) might represent a special section of the population who might have a strong sexual esteem and thus great sexual confidence, and perhaps also a greater general self-esteem. Plausibly, those who decided not to participate might have lower sexual esteem, being less confident in a sexual encounter or are less confident on talking about sexuality in general. In Türkiye, due to religion and culture it is not common to talk about or to focus on sexuality. The Turkish population is generally not comfortable with sharing their sexuality with professionals or others (13). Therefore, the present self-reported data were collected by means of an online survey providing anonymity for the participant: possibly, there might be a systematic over-exaggeration of sexual esteem or for example income in the two samples used. In addition, the sample of the study is just limited to the individuals living in a particular region where a family health center and IVF center are located in Antalya city center. Other limitation of the present study is that convergent and divergent scales which are related to the concept of sexual self-esteem could not be determined in our study, and these analyzes could not be carried out.

## CONCLUSION

The reliability of the MSQ Sexual Esteem subscale in a Turkish healthy population was supported by significant factor loadings and several goodness-of-fit indices. The Turkish version of the Sexual Esteem subscale is reliable and valid in the general Turkish population. In this study, infertile women reported stronger sexual esteem compared to fertile women. From a health-promoting perspective, it is important to identify which factors might promote sexual esteem among fertile and infertile women in a context such as Türkiye. Future studies should utilize both qualitative and quantitative approaches to further develop the content of the sexual esteem concept, contributing to a more accurate rewording of some items of the Sexual Esteem subscale to better cover the latent construct. The MSQ Sexual Esteem subscale seems useful in examining self-esteem in relation to several variables, representing knowledge about how sexual esteem can be facilitated and supported by health professionals. Research on sexual esteem in different cultures and contexts is needed.

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