



Original Research / Orijinal Araştırma

Predictors of Protective Behaviors Against Sexually Transmitted Infections in Women of Reproductive Age

Üreme Çağındaki Kadınlarda Cinsel Yolla Bulaşan Enfeksiyonlardan Korunma Davranışlarının Yordayıcıları

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Abstract

Objective: In this study, the levels of sexual self-efficacy and protective behavior against sexually transmitted infections among women of reproductive age and the factors associated with protective behavior against sexually transmitted infections were explored.

Methods: The study data were collected online via Google Form between April and June 2024. Descriptive Characteristics Form, Sexual self-efficacy (SSE) Scale, and Behavior Scale for Protection from Sexually Transmitted Diseases (STD-SCS) were used to evaluate the participants. The research was completed with 494 women. Data were analyzed using multiple linear regression analyses (enter method).

Results: In this study, the participants' mean STD-SCS and SSE scores were 83.9 (SD=10.9) and 32.6 (SD=7.1), respectively. The mean SSE scale scores and sociodemographic characteristics of the participants were identified as significant determinants of the mean STD-SCS scores. In addition, education level, sexual self-efficacy, and knowledge about sexually transmitted diseases were found to be significant factors influencing protective behaviors.

Conclusions: To ensure that no one is left behind, programs to improve women's sexual self-efficacy should be included in clinical/field intervention programs to be carried out for the prevention of sexually transmitted infections.

Keywords: sexual and reproductive health; sexual self-efficacy; sexually transmitted infections; women's health

Özet

Amaç: Üreme çağındaki kadınların cinsel öz-yeterlilik ve cinsel yolla bulaşan enfeksiyonlardan korunma davranış düzeylerini ve cinsel yolla bulaşan enfeksiyonlardan korunma davranış düzeyleri ile ilişkili faktörleri belirlemek

Yöntem: Çalışma verileri Nisan-Haziran 2024 tarihleri arasında Google Form aracılığıyla toplandı. Katılımcıların değerlendirilmesinde, Tanımlayıcı Özellikler Formu, Cinsel Öz-Yeterlilik (SSE) Ölçeği, Cinsel Yolla Bulaşan Hastalıklardan Korunma Davranışı Ölçeği (STD-SCS) kullanıldı. Araştırma 494 kadınla tamamlandı. Veriler, çoklu doğrusal regresyon analizi (enter yöntemi) kullanılarak değerlendirildi.

Bulgular: Çalışmada, katılımcıların STD-SCS ve SSE puan ortalamaları sırasıyla 83.9 (SD=10.9) ve 32.6 (SD=7.1) idi. Katılımcıların ortalama SSE ölçek puanları ve sosyodemografik özellikleri, ortalama STD-SCS puanlarının önemli belirleyicileri olarak tanımlanmıştır. Ayrıca, eğitim düzeyi, cinsel öz yeterlilik ve cinsel yolla bulaşan hastalıklar hakkındaki bilgi düzeyinin koruyucu davranışları etkileyen önemli faktörler olduğu bulunmuştur.

Sonuç: Kimsenin geride kalmamasını sağlamak için, cinsel yolla bulaşan enfeksiyonların önlenmesi amacıyla yürütülecek klinik/saha müdahale programlarına kadınların cinsel öz-yeterliliklerini artırmaya yönelik programlar dahil edilmelidir.

Anahtar kelimeler: cinsel sağlık ve üreme sağlığı; cinsel öz-yeterlilik; cinsel yolla bulaşan enfeksiyonlar; kadın sağlığı

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Introduction

Sexually transmitted infections (STIs) are a major public health problem worldwide. These infections directly affect sexual and reproductive health.^{1,2} In many World Health Organization (WHO) regions, case notifications of STIs are increasing rather than decreasing.² Although many of them are preventable infections, STIs are still frequently seen in societies.³ WHO states that more than 1 million treatable STIs occur every day in individuals aged 15-49 years.⁴ According to Turkish Statistical Institute (TURKSTAT) 2023 data, the female population in the 15-49 age group constitutes 51.3% of all age groups in Türkiye. This rate is important in terms of targeting a risky group, most of whom are asymptomatic, where STIs are most likely to be seen.⁵

Compared to men, women are disproportionately affected by STIs throughout their lifetime. This is mainly due to the higher efficiency of male-to-female transmission of STIs and the biology of the female reproductive system. In addition, there are social and structural barriers for women.⁶ Studies have drawn attention to the inadequacy of individuals' knowledge and awareness about STIs and, therefore, the emergence of misperceptions about STIs.^{7,8} In the study conducted by Alomair et al., it was reported that women's knowledge of STI signs, symptoms, diagnosis and treatment, and prevention methods was inadequate, and their perceptions were wrong.⁷ Lack of knowledge was found to be associated with age, marital status, region, education level, income level, and clinical exposure.^{8,9} In addition, some demographic characteristics (such as age, educational status, and distance of the health institution) also affect care-seeking behavior.¹⁰

Self-efficacy beliefs can influence people's behavior in different situations. At the same time, their sexual self-efficacy (SSE) beliefs may also affect their sexual behavior. Individuals' behaviors, attitudes, and sexual problems in their sexual relationships may vary according to SSE.¹¹ The context in which sexual behavior is expressed can make the behavior risky. Some high-risk sexual behaviors (such as unprotected intercourse, initiating sexual intercourse at an early age, etc.) are known to lead to STIs.¹² The SSE refers to confidence in an individual's ability to make decisions and take actions related to sexuality. The SSE plays an important role in individuals' decision-making and control over their sexual lives.¹⁴ In this way, SSE is a factor that can reduce sexual risk behaviors that can lead to STIs in women.^{13,15} A literature review revealed that the study mainly focused on adolescents/university youth.^{16,17} There are limited studies on women of reproductive age, who are considered a vulnerable group.¹³ In Türkiye, sexual issues are still considered taboo, and the effects of gender inequality, problems of access to sexual and reproductive health services, socioeconomic status, and cultural practices affect women's sexual and reproductive health.^{18,19} The STIs, which can cause many behavioral, social, economic, structural, and political challenges, require prioritization and multi-sectoral public health approaches.²⁰

In this cross-sectional study, the levels of sexual self-efficacy and protective behavior against sexually transmitted infections among women of reproductive age and the factors associated with protective behavior against sexually transmitted infections were explored. We hypothesized that certain demographic characteristics and sexual self-efficacy of women of reproductive age may influence their sexually transmitted infection prevention behaviors.

Methods

Study design, setting, and participants

A cross-sectional correlational study was conducted with women of reproductive age (18–49 years) living in the city center of Kayseri. The minimum sample size required for the study was calculated using the G*Power 3.1.9.7 program. We used the method recommended for correlation and regression studies to determine the sample. We calculated that 109 people could be included in the sample based on 80% test power (1- β), 5% significance level, and medium effect size $f^2 = 0.15$.^{21,22} For regression equations using six or more predictors, an absolute minimum of 10 participants per predictor variable is appropriate.²³ Based on these recommendations, the sample size of the study was calculated as 440 individuals by assuming 50 subjects per variable (8 variables) for regression analysis and considering the 10% possibility of data loss. The study included women between the ages of 18 and 49 who were using smartphones and voluntarily agreed to participate in the study. Menopausal women were not included. The research was completed with 494 participants.

Data collection tools

Descriptive Characteristics Form: This form contains socio-demographic information (Table 1) compiled by researchers.

Sexual Self-Efficacy: Based on self-report, the SSE Scale is a measurement tool designed to ascertain an individual's SSE levels. It was developed by Humphreys and Kennett, and adapted to Turkish culture by Çelik, and validity and reliability studies were conducted. The 8-point Likert scale is unidimensional and gives a total score. In the five-item scale, items 3 and 4 were reverse-coded. The internal consistency coefficient of the scale is 0.71. The maximum score that can be obtained from the scale is 40 and the minimum score is 5. High scores indicate a high level of sexual self-efficacy.¹¹ For this study, Cronbach's alpha is 0.76.

Behaviors For Protection From Sexually Transmitted Diseases: The Scale of Behaviors for Protection from Sexually Transmitted Diseases/STD-SCS was developed by Kılavuz and Yiğit. Validity and reliability studies were conducted,

and it consisted of 21 items. The overall Cronbach's Alpha Coefficient of the scale is 0.911. The scale is a 5-point Likert scale. The items 3,6,7,10,12,13,14,17,19,20 are reverse coded. The maximum score that can be obtained from the scale is 105, and the minimum score is 21. The increase in scores indicates that positive behaviors towards protection from sexually transmitted diseases have improved.²⁴ For this study, Cronbach's alpha is 0.82.

The dependent variable of the study: The STD-SCS

The independent variable of the study: The scale of SSE and socio-demographic characteristics

Data collection

Data were collected online via Google Forms between April 15 and June 30, 2024. The form was delivered to women via WhatsApp following the snowball sampling method.

Statistical Analysis

The data were analyzed using IBM SPSS Statistics, Version 25 (IBM Corp., Armonk, New York, USA). In comparing sociodemographic characteristics and mean scores of the STD-SCS and SSE scale, Welch test, and t-test were used. A multiple linear regression analysis was applied to determine the predictive effect of the mean SSE scale score and sociodemographic characteristics on the mean STD-SCS score. $p < 0.05$ was considered statistically significant.

Results

The study determined that 61.7% of the participants were young adults, 33% were married, and 62.6% were high school graduates. In addition, 32.4% had an active sexual life, 48% were in a relationship, and 93.5% were informed about STDs (Table 1).

The participants' mean STD-SCS and SSE scores were 83.9 (SD=10.9) and 32.6 (SD=7.1), respectively. The comparison of sociodemographic characteristics and mean scores of SSE and STD-SCS is shown in Table 1. The mean scores of both SSE and STD-SCS were found to be significantly lower in women between the ages of 25-49, who were married, who were secondary school graduates, and who stated that they were sexually active ($p < 0.05$). In addition, the mean STD-SCS scores of women who were working, were in a relationship, and were not knowledgeable about STDs were lower ($p < 0.05$).

Table 1. Comparison of women's sociodemographic characteristics and STD-SCS and SSE Scale score means ($n=494$).

Characteristics of women	n (%)	STD-SCS Mean $\pm$ SD	t/F; P	SSE Scale Mean $\pm$ SD	t/F; P
Age group			5.899¹; <.001		3.209¹; <.001
18-24	305 (61.7)	86.3 $\pm$ 0.5		33.5 $\pm$ 0.4	
25-49	189 (38.3)	80.2 $\pm$ 0.9		31.3 $\pm$ 0.6	
Marital Status			5.169¹; <.001		3.544¹; <.001
Single	331 (67.0)	85.8 $\pm$ 9.6		33.5 $\pm$ 6.5	
Married	163 (33.0)	80.1 $\pm$ 12.4		30.9 $\pm$ 7.8	
Educational Status			32.423^{2,3}; <.001		5.599^{2,3}; <.005
Secondary	30 (6.1)	71.1 $\pm$ 10.3 ^a		29.1 $\pm$ 8.4 ^a	
High	309 (62.6)	86.1 $\pm$ 9.5 ^b		33.4 $\pm$ 6.5 ^b	
Bachelor and post-graduate	155 (31.3)	82.1 $\pm$ 11.7 ^c		31.8 $\pm$ 7.5	
Working status			2.534¹; <.01		-.406¹; .68
Not working	362 (73.3)	84.7 $\pm$ 10.5		32.5 $\pm$ 7.2	
Working	132 (26.7)	81.8 $\pm$ 11.9		32.8 $\pm$ 6.6	
Sex life			3.897¹; <.001		2.879¹; <.004
Active	160 (32.4)	81.0 $\pm$ 12.1		31.3 $\pm$ 7.7	
Not Active	334 (67.6)	85.3 $\pm$ 10.1		33.3 $\pm$ 6.6	
Relationship status			2.820¹; <.005		1.705¹; .09
In a relationship	237 (48.0)	82.5 $\pm$ 11.6		32.1 $\pm$ 7.4	
No relationship	257 (52.0)	85.3 $\pm$ 10.1		33.1 $\pm$ 6.7	
The existence of information about STI			-5.892¹; <.001		-1.848¹; .07
Yes	462 (93.5)	84.7 $\pm$ 10.6		32.8 $\pm$ 6.9	
No	32 (6.5)	73.3 $\pm$ 10.7		30.4 $\pm$ 8.2	

Abbreviations: STI: sexually transmitted infections; STD-SCS: Scale of Behaviors for Protection from Sexually Transmitted Diseases; SSE: Sexual Self-Efficacy; SD: standard deviation; t: independent sample test; F: Welch test.

¹ t denotes Independent Sample Test

² F denotes the Welch test.

³ denotes Games-Howell ($a < b, c$; $*P < 0.05$)

There was a statistically significant, positive, weak correlation ($r = .373$, $p < .01$) between STD-SCS and SSE scale. The prediction of the STD-SCS score based on the participants' SSE scores and sociodemographic variables was analyzed using multiple linear regression analysis (Table 2). The mean SSE scale scores and sociodemographic characteristics of the participants were identified as significant determinants of the mean STD-SCS scores. ($F = 21.516$; $p < .001$). Additionally, it was found that SSE scores along with sociodemographic factors accounted for 28.8% of the variance in STD-SCS scores.

Table2. The level at which sociodemographic characteristics variables and SSE Scale scores predicted the women's STD-SCS score.

Independent variable	Unstandardize d coefficients		Standardized coefficients	t	P	95% CI
	B	SE	β			
STD-SCS(Constant)	50.321	3.050		16.501	<.001*	44.329 to 56.313
SSE	.508	.060	.336	8.470	<.001*	.390 to .626
Age group (R=25-49)						
18-24	1.756	2.405	.080	.730	.466	-2.969 to 6.481
Marital Status (R=Single)						
Married	-2.372	2.109	-.105	-1.125	.261	-6.516 to 1.772
Educational Status (R=secondary)						
High	9.175	2.589	.417	3.544	<.001*	4.089 to 14.262
Bachelor and post-graduate	9.224	1.938	.401	4.760	<.001*	5.416 to 13.031
Working status (R=not working)						
Working	-.746	1.349	-.031	-.553	.580	-3.398 to 1.905
Sex life (R=not active)						
Active	2.261	1.843	.099	1.226	.221	-1.361 to 5.882
Relationship status (R=not relationship)						
In a relationship	-.405	1.056	-.019	-.384	.701	-2.481 to 1.670
The existence of information about STD (R=no)						
Yes	8.627	1.696	.201	5.085	<.001*	5.294 to 11.960

Notes: Durbin-Watson=2.023; $F = 21.516$; $p < .001$; $R = 0.537$; $R^2 = 0.288$; Adjusted $R^2 = 0.275$

Abbreviations: STD: sexually transmitted diseases; STD-SCS: Scale of Behaviors for Protection from Sexually Transmitted Diseases; SSE: Sexual Self-Efficacy; SE: standard error; β : standardized regression coefficient; CI: confidence interval.

*Significance level was accepted as $p < .05$.

Discussion

In this study, it was determined that women of reproductive age scored high on the scale of STD-SCS.²⁴ In the current study, STD-SCS scores of women between the ages of 25-49, married, secondary school graduates, employed, sexually active, and in a relationship were significantly lower. It is stated in the literature that adolescents/young people between the ages of 15-24 are more vulnerable to STIs.^{17,25,26} In Türkiye, culture is an important factor affecting sexual and reproductive health. Being sexually active is associated with marriage in Turkish society. Though sexual and reproductive health services in Türkiye are provided to women of reproductive age between 15-49 years in primary health care services, regardless of whether they are married or sexually active, it has been reported that unmarried, sexually inactive younger women face sociocultural barriers in accessing these services and are left behind.¹⁹ However, the fact that participants who are not sexually active and/or do not have a partner and are in the younger age group have higher STD-SCS scores may suggest that they may exhibit more positive behaviors regarding protection against STIs. These results are important in terms of their decision-making and protection processes regarding their sexual and reproductive health. Another important finding of the study is that married individuals, those over the age of 25, and sexually active participants had lower scores on protective behaviors. This may be

related to individuals perceiving themselves to be at lower risk. In particular, among married individuals, trust in their spouse may create a perception of safety that reduces the perceived need for protective behaviors.

In this study, there was a statistically significant, positive, weak correlation²⁷ between STD-SCS and the SSE scale. In the analysis of the variables influencing STD-SCS scores through regression, it was found that educational level was a significant factor. Women with high school and higher education had higher scores than secondary school graduates. In previous studies conducted in different geographical regions, similar results have been found, indicating that a higher level of education increases knowledge and awareness about STIs.^{8,9,28,29} The status of women in society is one of the factors that directly and/or indirectly affect women's health at every stage of development.³⁰ In Türkiye, compared to the past, there have been positive developments in the level of education.⁵ Education contributes significantly to women's autonomy, knowledge, and women's empowerment.¹⁹ Higher levels of education positively affect women's knowledge about factors that may positively/negatively affect their health and their access to and utilization of health services.³¹ According to the results, nurses who are members of the team in primary health care should provide education and counseling to women with low education levels in the region/community where they work to help them learn about the factors that may positively/negatively affect their health.

Higher self-efficacy levels have been reported to reduce the likelihood of unwanted or risky sexual intercourse.^{16,17,32} In our study, the SSE score of women of reproductive age was found to be high.¹¹ This finding supports studies^{13,33,34} that use different measurement tools and prove that women have high SSE. Furthermore, in our study, the SSE scores of women between the ages of 18-24, unmarried, high school graduates, and not sexually active were significantly higher. In their study with young people, Kisaakye et al. stated that low self-efficacy in women is more likely to engage in risky behaviors than men.¹⁶ In our study, women with high levels of SSE according to their sociodemographic characteristics may have a significant advantage in these areas. According to the results of the regression analysis, women may display more positive behaviors related to STI protection when their SSE rises. These findings show the importance of including practices to increase SSE in intervention programs planned for individuals' sexual and reproductive health. It is emphasized that individuals should be encouraged to take precautions against the effects of STIs through information, education, and counseling services.³⁵ With information, education, and counseling services in the clinic/field, individuals' SSE can be increased, and they can be encouraged to take precautions against the effects of STIs.

Access to comprehensive, quality information about sexuality and the risks of unprotected sexual activity are very important for the sexual health and well-being of individuals.³⁵ Knowledge about STIs is associated with a reduction in sexual risk behaviors.¹³ The vast majority of women who participated in our study (93.5%) stated that they knew about STIs. This result is similar to Winarto et al.'s study result³⁶ but different from Alomair et al. study result.⁷ In our study, the STD-SCS scores of women with knowledge about STIs were higher. The regression analysis suggests that women with knowledge about STIs have more positive protection behaviors from STIs. These findings are important because knowledge about STIs, many of which are asymptomatic, and behaviors to protect against them are important in terms of supporting these women in preventing related diseases and successfully treating them when necessary.

Our study has some limitations. The study's convenience sampling approach might have had a detrimental effect on the sample's representativeness. The fact that over 90% of participants had a high school education or higher and stated that they were knowledgeable about STIs indicates a high degree of homogeneity among the participants. This situation limits the generalization of the findings to the general population. Future research should consider that attitudes and behaviors may differ in groups with lower levels of education or limited awareness of STIs.

Conclusion

In the study, considering the average scores of women of reproductive age, it can be said that they tend to have high levels of sexual self-efficacy and developed positive behaviors for protection against sexually transmitted diseases. In addition, level of education, SSE, and knowledge about sexually transmitted diseases significantly predicted protection behaviors from STIs. To ensure that no one is left behind, programs to improve women's SSE should be included in clinical/field intervention programs to be carried out for the prevention of STIs.

The ethical aspect of the study: This study was performed in line with the principles of the Declaration of Helsinki and approved by the Academic Committee Decision (2024/01) and the Erciyes University Social and Human Sciences Ethics Committee (2024/131). All participants provided written informed consent.

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