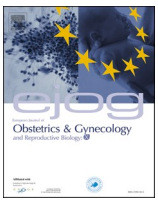
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Sexuality, quality of life and psychological well-being in older adults: A correlational study

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ABSTRACT

Objective: This study aimed at analyzing the relationship between general health status, quality of life, and sexual life among older adults.
Study design: This descriptive-correlational design study was conducted with the participation of 323 (169 female and 154 male) older people at the age of 65 + . The participants were clients of the outpatient services in a general hospital in Istanbul. Data were collected with the General Health Questionnaire, Arizona Sexual Experiences Scale, and Quality of Life Scale.
Results: Psychological well-being had no association with sexuality scores whereas quality of life had a significant association. Older people with better quality of life had less sexual dysfunctionality. Participants who were up the 75 years old, who have lower education, lower economic status, unemployed, having chronic diseases seemed to experience higher ASEX scores, meaning that higher sexual dysfunction, lower GHQ scores and lower quality of life level.
Conclusions: Sexuality in older people changes over time and continues to hold its importance. Less sexual dysfunction seemed to relate with higher quality of life in older people. Researchers should consider the importance of the quality of life on sexual satisfaction in older people.

1. Introduction

Although there have been a lot of publications about sexuality for almost all age periods, the sexuality of older adults is still needed to be addressed more as the world's population is ageing. Sexuality is a crucial dimension of human being having the potential to cause health problems or to be caused by health problems and it might be seen as an indicator of general health status and quality of life for older adults [1]. However, it has been still underestimated or neglected in the elderly population, even by professionals [1–3]. One of the biggest reasons for neglect may be sexual alphabets. Sexual alphabets tell us who legitimate sexual actors are and who aren't. It is possible to say that the most legitimate sexual actors are adults of reproductive age, while the least legitimate ones are young adolescents and the oldest generations [4]. When older individuals interact sexually, pregnancy or reproduction is no longer involved. This may be why sex between older people is seen as

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'unnecessary' and older people are often perceived as asexual individuals [5]. Also, older people tend to avoid from sharing their sexual problems and asking for help too, because of negative social attitudes towards sexuality in elderly life [2]. Although sexuality can mean different things to different people, the stereotype of the older persons being without sexual feelings, desires, or ability, is no longer tenable. However, the research findings consistently suggest that increasing age is associated with a decreased interest in sex, but many older people enjoy an active sex life as well, although they may face several problems [1–6]. Some of the studies found that older people with sexual dysfunction experienced depression, poor relationship with the partner and lower quality of life [5,7]. Some others dealt with the negative impact of chronic diseases, incontinence, menopause and andropause on sexual life [1,8]. However, it is not possible to reach good evidences related to sexuality in older population evaluating the different variables and dimensions.

Sexuality is affected by cultural factors. In some countries, sexuality may be reproductive-oriented; In different countries, the relational dimension of sexual pleasure and sexual activity is given more importance [9]. There is a male-female difference in terms of sexuality in Turkey. Sexuality is generally male-centered; women experience sexuality more conservatively and passively. Especially after menopause, the idea that women lose their femininity comes to the fore. Therefore, for physiological changes due to aging; elderly individuals do not seek treatment. For example, they do not use lubricants to relieve dysmenorrhea or use an additional treatment method such as estrogen for atrophy [9,10].

In summary, the sexuality of older adults still is an issue to be uncovered and be managed sensitively and practically with respect to individual differences in sexual interest and activity. Although research results suggest some common features beyond the cultures, still research from different cultures and geographies seem important for that unspoken issue. In Turkey, we couldn't reach the research directly seeking the older adults' sexuality but there are some review articles [8–10]. Thus, this study aimed to analyze the general health status, quality of life and some sexual dimensions in older people in Turkey.

1.1. Specific aims of the study

Defining the some sexual life characteristics in older adults.

Defining the relationships between sociodemographic characteristics, having chronic diseases, having a partner, and sexual dysfunction in older adults.

Defining the relationship between general health status, quality of life, and sexual dysfunction in older adults.

2. Methods

2.1. Design

This study has a descriptive-correlational design.

2.2. Participants

The study was conducted between March-May 2022. Data were collected by simple random sampling method, which is one of the non-probabilistic sampling methods. The minimum sample size required for this study was determined using power analysis. All the calculations used for the power analysis to determine the a priori required minimum sample size were performed with the G*Power 3.1.9.2 program. For this study, the minimum required sample size was calculated to be at least 321 individuals in total with a 5% type 1 error, 0.5 Cohen standardized effect size, double-sided hypothesis, and 99% working power. Considering data loss, 509 older adults were invited to join the study, and 186 of them did not volunteer to participate. (response rate: 63.1%). The sample consisted of 323 older adults (169 female and 154 male) who were service user of a state hospital in Istanbul, Turkey. The inclusion criteria were being able to speak the Turkish language, being age 65 or over, and having the capacity to understand all the questions. Individuals with a serious disease that may affect sexual functions were determined as exclusion criteria (acute mental disorder, advanced dementia, cancer, etc.).

2.3. Instruments

The data were collected by applying each participant's personal information form, General Health Questionnaire (GHQ-28), Arizona Sexual Experiences Scale (ASEX) and Quality of Life Scale in Older People (CASP-19).

2.3.1. The personal information form

was comprised of 20 questions on certain sociodemographic characteristics, such as age, gender, having a partner/spouse, and chronic diseases, as well as on the participant's sexual life, including on the frequency of sexual activity, and expression of sexual problems. In addition to these multiple-choice questions, questions about sexual behavior were also asked. The first thing that comes to mind when talking about sexuality and the first thing to do. Participants was evaluated these questions with more than one answer option.

2.3.2. General Health Questionnaire (GHQ-28)

The GHQ-28 is a self-administered instrument that is used to evaluate psychological well-being. It was developed by Goldberg (1972), and the reliability and validity study of the Turkish version was conducted by Kılıç (1996). [11]. The GHQ-28 is comprised of 28 items that include four subscales covering somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. It evaluates a wide range of psychological disorders, mainly the anxiety/depression spectrum, and has been shown to be a valid and reliable instrument across cultures. Each subscale consists of seven items. Respondents rate each question using the answers of "better than usual," "same as usual," "worse than usual," or "much worse than usual." The first two answers are scored as 0 points, whereas the last two answers are scored as 1 point. Total scores range between 0 and 28, with higher scores indicating more psychological problems. The Cronbach's alpha value for the GHQ-28 for this study was 0.94.

2.3.3. Arizona Sexual Experiences scale (ASEX)

The ASEX is a self-rated five-item scale that evaluates four phases of sexual functioning that are used to evaluate sexual drive, arousal, penile erection/vaginal lubrication, ability to reach orgasm, and satisfaction from orgasm [12]. It was developed by McGahuey et al. (2000), and the reliability and validity study of the Turkish version of the ASEX was conducted by Soykan (2004). [13,14]. Each item is scored using a 6-point Likert scale, and total scores range between 5 and 30. There is no cut point and higher scores indicate sexual dysfunction. The Cronbach's alpha value for this study was 0.92.

2.3.4. Quality of life scale in older people (CASP-19)

The CASP-19 was developed by Hyde et al. (2003), and the reliability and validity study of the Turkish version was conducted by Türkoğlu and Adıbelli (2014). [15]. The Turkish version of the scale is comprised of 13 items and four subscales, namely control, autonomy, pleasure, and self-realization. Each item is scored on a 4-point Likert scale, ranging from never (0) to always (3). Higher scores indicate higher quality of life. The Cronbach's alpha value of the scale for this study was 0.74.

2.4. Procedure

A scale pool was created by reviewing the scales used in the literature to evaluate the sexuality of the elderly. A data collection tool was created by selecting scales for the purpose of the research. Prior to data

collection, a pilot study was conducted on five males and five females in order to test the comprehensibility of the questions and items. After making corrections, an online survey was sent to a social worker, psychiatric nurse, gynecologist, and two gerontologists for expert evaluations. Entire questionnaires could be completed in about 15–20 min. One of the researchers who has experience working with the older people (a midwife with MSc degree) interviewed with the participants. The researcher was trained on what to consider when asking sexuality questions in older people (can feel comfortable; answer without embarrassment, etc.).

2.5. Ethical considerations

Ethical approval from the Clinical Trials Ethics Committee for this study (No: 93/25, dated 18.05.2020) was received, and complied with the Helsinki Declaration. Participants were informed that they had the right to withdraw their consent at any time and their confidentiality would be protected.

2.6. Data analysis

The data were analyzed using SPSS (Statistical Package for Social Sciences) for Windows 22.0 program (SPSS Inc). Normal distribution was assessed by using the Kolmogorov–Smirnov test.

Descriptive statistics were used (frequencies, percentages, arithmetic means, and minimum-maximum values) to describe the sample's characteristics. Independent sample t-test was used to compare the means of 2 independent groups, and One-way ANOVA test was used to compare more than 2 independent groups. In the ANOVA test, if variance homogeneity was provided for group differences, Tukey HSD was used, and if not, Tamhane multiple group comparison test was used. Cause and effect relationships between two or more independent variables affecting a dependent variable were determined using the Stepwise method, one of the multiple linear regression analysis methods. In this way the models that are thought to be meaningful were listed in detail and it was possible to evaluate the stages in determining the latest model reached because of the analysis one by one. Pearson correlation coefficient was calculated in the correlation analysis since the distribution of the scales conformed to the normal distribution. Cronbach's alpha coefficient was used in the reliability analysis of the scales. For significance, $p < .05$% and 95% CI were assumed in the data analysis.

3. Results

Table 1 displays the descriptive and inferential statistics of ASEX, GHQ-28, and CASP-19 according to sociodemographic variables (age, having a partner/spouse, and having chronic diseases, etc.). Of the participants, 52.3% were female, 59.1% were between 65 and 69 years old, and 83.6% were not working. There was a statistically significant difference between age, education, chronic diseases, and working status and ASEX, GHQ-28, and CASP-19 scores (Table 1). Participants who were up the 75 years old, had a lower education level, had a lower economic status, were unemployed, and had chronic diseases seemed to experience higher sexual dysfunctionality, higher psychological problem, and lower quality of life.

Table 2 displays descriptive and inferential statistics of ASEX, GHQ-28, and CASP-19 according to sexual activity variables. Participants who declared having no partner or sexual activity or who did not feel sexually attractive seemed to experience higher sexual dysfunctionality, higher psychological problem, and lower quality of life level.

In addition, when we asked the participants what was the first thing that came to mind when talking about sexuality, only 19.7% of them stated that it was sexual intercourse. The others stated other sexual behaviors, such as hugging (9.8%), holding hands (10.8%), kissing (13.9%), sleeping together (12.6%), and spending time together (11.0%). Furthermore, 80.5% of the participants stated that they could not share their sexual problems with others. Since we could not compare these features, they are not shown in the table. People who shared their sexual problems reported that they shared them most frequently with healthcare professionals (36.9%; n = 65) and their spouses (35.8%; n = 63).

Table 1
Descriptive and inferential statistics of ASEX, GHQ-28, and CASP-19 according to sociodemographic variables.

Sociodemographic variables			ASEX	GHQ-28	CASP-19
	n	%	Mean±SD	Mean±SD	Mean±SD
Age groups					
65–69	191	59.1	17.84 ± 5.65	5.15 ± 6.26	23.23 ± 7.65
70–74	73	22.6	20.07 ± 6.14	7.11 ± 5.85	21.83 ± 6.99
75–79	35	10.9	23.74 ± 6.03	7.48 ± 6.76	18.83 ± 8.38
80 and above	24	7.4	25.70 ± 4.00	9.54 ± 6.72	15.66 ± 8.12
F P			F= 21.470 p < 0.001 *	F= 5.042 p = 0.002 *	F= 9.174 p < 0.001*
Gender					
Female	169	52.3	20.17 ± 6.05	6.76 ± 6.89	22.14 ± 7.71
Male	154	47.7	18.92 ± 6.37	5.54 ± 5.73	21.58 ± 8.13
t p			t = −1.805 p = 0.072	t = −1.718 p = 0.087	t = −0.640 p = 0.523
Education					
Illiterate	67	20.7	22.86 ± 5.64	9.46 ± 7.63	17.83 ± 7.37
Primary school	109	33.7	21.00 ± 6.28	6.11 ± 5.79	20.70 ± 7.31
Secondary school	47	14.6	19.21 ± 5.30	6.74 ± 6.49	21.76 ± 7.26
High School	54	16.7	17.05 ± 5.26	4.50 ± 5.45	25.26 ± 8.32
University and above	46	14.2	14.80 ± 4.80	3.00 ± 4.24	26.59 ± 6.33
			F= 18.233 p < 0.001*	F= 9.091 p < 0.001*	F= 13.213 p < 0.001*
Income level					
Income < Expense	83	25.7	20.99 ± 6.42	8.41 ± 7.30	19.73 ± 7.18
Income = Expense	156	48.3	19.44 ± 6.15	5.88 ± 6.01	21.73 ± 7.94
Income > Expense	84	26	18.44 ± 5.99	4.55 ± 5.50	24.21 ± 7.98
			F= 3.593 p = 0.029 *	F= 8.299 p < 0.001*	F= 6.957 p < 0.001*
Working status					
Has a regular job	33	10.2	15.36 ± 4.95	3.69 ± 4.82	25.27 ± 7.31
Works sometimes	20	6.2	14.65 ± 4.54	4.25 ± 4.67	24.50 ± 6.55
Does not work	270	83.6	20.45 ± 6.11	6.62 ± 6.58	21.26 ± 7.95
			F= 18.253 p = 0.001 *	F= 4.136 p < 0.001*	F= 5.065 p = 0.007*
Having chronic diseases					
Yes	226	70	20.69 ± 5.84	7.42 ± 6.48	20.24 ± 7.35
No	97	30	16.97 ± 6.36	3.29 ± 5.14	25.67 ± 7.88
			t = 5.116 p < 0.001*	t = 6.101 p < 0.001*	t = −5.952 p < 0.001*

t = t-test. F= ANOVA, ASEX: Arizona Sexual Experiences Scale. GHQ-28: General Health Questionnaire. CASP-19: Quality of Life Scale in Older People

Table 3 displays that the ASEX scores have a moderate positive correlation with the GHQ-28 scores (r: 0.327) and a moderate negative correlation with the CASP-19 scores (r: −0.77). In addition, the GHQ-28 scores have a strong negative correlation with the CASP-19 scores (r: −0.61) ($p \leq 0.01$).

Table 4 displays the stepwise regression analysis used for exploring the effects of general health status and quality of life on the ASEX scores and the impacts made by the independent variables on the dependent variable. Quality of life had a significant impact on the ASEX scores in all models, whereas general health status did not have a significant impact. The F values indicate that all models were statistically meaningful.

As a result of stepwise regression analysis, a total of 7 models in Table 4 were obtained. The independent variables included in the aforementioned models are given in the "Model" column of the table, respectively. For example, Model 1 consists of Constant and CASP-19

Table 2
Descriptive and inferential statistics of ASEX, GHQ-28, and CASP-19 according to sexual activity variables.

			ASEX	GHQ-28	CASP-19
	n	%	Mean±SD	Mean±SD	Mean±SD
Having a partner					
Yes	215	66.6	18.41 ± 5.46	4.86 ± 5.59	23.10 ± 7.11
No	108	33.4	21.88 ± 6.87	8.81 ± 7.05	19.44 ± 8.83
			t = −4.881 p < 0.001*	t = −5.500 p < 0.001*	t = 4.004 p < 0.001*
Relationship with spouse/partner					
No sexual relationship	113	35	21.62 ± 7.03	8.66 ± 7.08	19.70 ± 8.85
Poor	18	5.6	20.22 ± 6.22	9.77 ± 7.18	20.05 ± 6.20
Moderate	81	25.1	19.55 ± 4.85	5.36 ± 5.69	22.02 ± 6.69
Sufficient	111	34.4	17.40 ± 5.55	3.64 ± 4.61	24.26 ± 7.31
			F= 9.27 p = 0.001*	F= 15.761 p < 0.001 *	F= 6.881 p < 0.001*
Considers himself/herself as sexually attractive					
Yes	135	41.8	16.38 ± 5.24	4.28 ± 4.92	24.70 ± 6.51
No	188	58.2	21.88 ± 5.88	7.55 ± 6.96	19.83 ± 8.21
			t = −8.819 p = 0.001*	t = −4.930 p < 0.001 *	t = 5.919 p < 0.001*
Frequency of sexual activity					
Never	168	52.0	22.77 ± 5.55	7.66 ± 6.94	19.28 ± 7.92
3–4 times a year	73	22.6	16.96 ± 5.33	4.71 ± 4.86	23.27 ± 6.84
3–4 times a month	82	25.4	15.31 ± 4.43	4.41 ± 5.65	25.96 ± 6.69
			F= 67.314 p = 0.001*	F= 10.143 p < 0.001*	F= 24.237 p < 0.001*

t = t-test. F= ANOVA, ASEX: Arizona Sexual Experiences Scale; GHQ-28: General Health Questionnaire; CASP-19: Quality of Life Scale in Older People

Table 3
Correlation between ASEX, GHQ-28 and CASP-19.

SCALES		ASEX	GHQ-28
ASEX	r	1	**.327****
	p		< 0.001
GHQ-28	r	**.327****	1
	p	< 0.001	
CASP-19	r	**-.477****	**-.561****
	p	< 0.001	< 0.001

r = Pearson's correlation test, ASEX: Arizona Sexual Experiences Scale. GHQ-28: General Health Questionnaire. CASP-19: Quality of Life Scale in Older People

independent variables (ASEX= 27.80–0.38CASP-19), while Model 7, which has the highest R^2, consists of Constant, CASP-19, sexually attractive, Frequency of sexual activity (3–4 times a month), Frequency of sexual activity (3–4 times a year), Does not work, Age (75−79) and Age (70−74) independent variables (ASEX= 22.32–0.20 CASP-19 + 2.27sexually attractive −3.81Frequency of sexual activity (3–4 times a month)− 3.13 Frequency of sexual activity (3–4 times a year)+ 1.84 Does not work+ 3.13Age (75−79) + 2.40Age (70) − 74)). The interpretation of the table is similar for other models. All models were found to be significant ($p < 0.05$) and since the model with the highest model explanation rate was Model 7, the application of the said model was deemed appropriate. The significance of the model was 67.5%, and the rate of explaining the total variance was 45.5% (R=.675; R2 =.455; $p < 0.05$).

4. Discussion

Sexuality, which has the potential to cause or be affected by health problems, is also an important issue for evaluation in all aspects among older patients [7,16]. Sexuality is generally considered as a part of youthfulness, and it is expected to cease during later life. However, existing studies have shown that older adults may continue to have an active sexual life, which was also shown in the present study [7,17,18]. Aiming to explore different dimension of older adults' sexuality, this study analyzed the relationship between psychological well-being, quality of life and sexual dysfunctionality, and other possible related factors in older people. In this extent, this correlational study has a number of key findings about the sexuality of older people.

In the present study, we found that the sexual dysfunctionality was associated with quality of life rather than psychological status (GHQ-28 scores). Quality of life was better and sexual dysfunctionality were lower for the participants, who defined their sexual relationship as sufficient, considered themselves as attractive, engaged in sexual activity more frequently and had a partner/spouse, higher education level, lower age, having a regular job.

In this study, 25.4% of the participants stated that they have sexual activity 3–4 times a month and 22.6% 3–4 times a year. Although the sexual intercourse was the prominent thought about the sexuality, they also stated emotional intimacy, such as kissing, sleeping together and holding hands, as the other types of sexual activity in this study. Similar to this finding, in studies conducted with elderly people who stated that they are sexually active, sexuality is defined in a wide range from holding hands and walking to sexual intercourse [19,20]. Previous studies addressed that older people might feel freer and concentrate on their partners. Because the reproduction is not the main concern anymore, which, in turn, increases sexual pleasure [9,21,22].

The majority of the participants did not consider themselves as sexually attractive. Whereas, feeling sexually attractive is an important factor that shapes sexuality in later ages [22]. Older people believe that they lost their attractiveness due to the physiological changes caused by aging, such as wrinkles, loss of hair and loose skin etc. [21,22]. Ševčíková and Sedláková (2020) also addressed that older people, who believed that they were sexually less attractive, avoided from sexual activity since they blamed themselves for the sexual problems of their partners. In our study, sexual dysfunction was lower for the participants who defined their sexual relationship with the partner as sufficient, considered themselves as sexually attractive, engaged in sexual activity more frequently, and had a partner/spouse, a lower age, a higher education and income level, a regular job, and no chronic diseases. These findings were compatible with the other studies which addressed that age, income, education levels, physical and mental health, attitudes towards sexual life in aging, sexual relationship with the partner/-spouse, frequency of sexual activity and previous sexual life, as the related factors [18,23]. Contrary to previous studies' findings [18,24] regression analysis showed that psychological wellbeing had no association with sexuality scores whereas quality of life had a significant association in this study.

Older people with better quality of life had less sexual dysfunctionality. Quality of life in other studies was lower for the people with physical or mental health problems, which, in turn, had a negative impact on sexual life [25–27]. Other factors that have influenced sexuality scores included age [28], gender [28], relationship with the partner/spouse [27], chronic diseases [29], mental health problems [29,30], body image [27], and frequency of sexual activity [28,30].

In summary, despite there was no study using ASEX with older people, similar to the studies with other samples, we found that age, having a partner, education level, chronic diseases, income level, working status, relationship with the partner/spouse, evaluation of self-attractiveness and frequency of sexual activity influenced the sexuality scores. This study showed that older people were having sexual experience in different dimensions and their quality of life seemed to be associated with the sexual functionality. One reason might be the profile of the participants. In this study, the majority of the participants were between the ages of 65 and 69 years, had chronic diseases, did not smoke or use alcohol, graduated from primary school, lived with their spouses, did not work, and had moderate income. Due to this reason, findings of this study may not be generalizable to all older population. However, older people may be more reluctant to talk about their sexual problems

Table 4
Analysis of the impact of general health status and quality of life on sexual life according to demographic characteristics.

		Unstandardized Coefficients		Standardized Coefficients	t	Sig	Model Summary and ANOVA
	Model	B	Se	B	t	p	
Model1	**Constant**	27.80	0.90		30.89	< 0.001	R = 0.477. R^2 = 0.228. F= 94.361*
	CASP-19	- 0.38	0.04	- 0.48	- 9.71	< 0.001	p < 0.001
Model 2	**Constant**	23.78	1.04		22.83	< 0.001	R = 0.566. R^2 = 0.321. F= 75.324*
	CASP-19	- 0.30	0.04	- 0.38	- 7.84	< 0.001	p < 0.001
	sexually attractive	4.04	0.61	0.32	6.61	< 0.001	
Model 3	**Constant**	24.09	1.01		23.75	< 0.001	R = 0.601. R^2 = 0.361. F= 59.830*
	CASP-19	- 0.26	0.04	- 0.33	- 6.83	< 0.001	p < 0.001
	sexually attractive	3.37	0.61	0.27	5.52	< 0.001	
	Frequency of sexual activity (3–4 times a month)	- 3.09	0.69	- 0.22	- 4.46	< 0.001	
Model 4	**Constant**	25.28	0.99		25.48	< 0.001	R = 0.647. R^2 = 0.418. F= 56.986*
	CASP-19	- 0.23	0.04	- 0.29	- 6.23	< 0.001	p < 0.001
	sexually attractive	2.45	0.61	0.19	4.04	< 0.001	
	Frequency of sexual activity (3–4 times a month)	- 4.79	0.73	- 0.34	- 6.58	< 0.001	
	Frequency of sexual activity (3–4 times a year)	- 4.01	0.72	- 0.27	- 5.60	< 0.001	
Model 5	**Constant**	23.49	1.20		19.64	< 0.001	R = 0.656. R^2 = 0.431. F= 47.798*
	CASP-19	- 0.22	0.04	- 0.29	- 6.16	< 0.001	p < 0.001
	sexually attractive	2.22	0.61	0.18	3.65	< 0.001	
	Frequency of sexual activity (3–4 times a month)	- 4.42	0.73	- 0.31	- 6.02	< 0.001	
	Frequency of sexual activity (3–4 times a year)	- 3.69	0.72	- 0.25	- 5.13	< 0.001	
	Does not work	1.99	0.76	0.12	2.62	< 0.001	
Model 6	**Constant**	22.87	1.21		18.88	< 0.001	R = 0.665. R^2 = 0.442. F= 41.565*
	CASP-19	- 0.21	0.04	- 0.27	- 5.77	< 0.001	p < 0.001
	sexually attractive	2.24	0.60	0.18	3.71	< 0.001	
	Frequency of sexual activity (3–4 times a month)	- 4.15	0.74	- 0.29	- 5.64	< 0.001	
	Frequency of sexual activity (3–4 times a year)	- 3.42	0.72	- 0.23	- 4.74	< 0.001	
	Does not work	1.97	0.75	0.12	2.62	0.01	
	Age (75–79)	2.62	1.04	0.11	2.52	0.01	
Model 7	**Constant**	22.32	1.22		18.36	< 0.001	R = 0.675. R^2 = 0.455. F= 37.461*
	CASP-19	- 0.20	0.04	- 0.26	- 5.57	< 0.001	p < 0.001
	Sexually attractive	2.27	0.60	0.18	3.81	< 0.001	
	Frequency of sexual activity (3–4 times a month)	- 3.81	0.74	- 0.27	- 5.14	< 0.001	
	Frequency of sexual activity (3–4 times a year)	- 3.13	0.72	- 0.21	- 4.33	< 0.001	
	Does not work	1.84	0.75	0.11	2.46	0.01	
	Age (75–79)	3.13	1.05	0.13	2.99	< 0.001	
	Age (70–74)	2.40	0.87	0.12	2.76	0.01	

GHQ-28: General Health Questionnaire CASP-19: Quality of Life Scale in Older People
Dependent variable: ASEX: Arizona Sexual Experiences Scale Score
Stepwise regression analysis was applied to analyze cause-effect relationship between two or more independent variables. In the table the non-standardized beta (B) value shows how many units the dependent variable increases with each unit increment of the predictor variable. Regression models are created according to these values.
As a result of stepwise regression analysis, a total of 7 models in Table 4 were obtained. The independent variables included in the aforementioned models are given in the "Model" column of the table, respectively. For example, Model 1 consists of Constant and CASP-19 independent variables (ASEX= 27.80–0.38CASP-19), while Model 7, which has the highest R^2, consists of Constant, CASP-19, sexually attractive, Frequency of sexual activity (3–4 times a month), Frequency of sexual activity (3–4 times a year), Does not work, Age (75–79) and Age (70–74) independent variables (ASEX= 22.32–0.20 CASP-19 + 2.27sexually attractive −3.81Frequency of sexual activity (3–4 times a month)− 3.13 Frequency of sexual activity (3–4 times a year)+ 1.84 Does not work+ 3.13Age (75–79) + 2.40Age (70) − 74)). The interpretation of the table is similar for other models.
* p<0.01 ASEX: Arizona Sexual Experiences Scale

since the society considers them as sexually inactive people that should no more engage in sexual activity [9,17,31,32]. Thus, poor communication may augment the reluctance of older people to express their sexual problems and increase the associated risks [33]. Therefore, rather than focusing only on the physical health problems of older patients, health professionals should develop a holistic approach and encourage these patients to express their sexual problems.

5. Limitations and suggestions

This study analyzed and define the factors related to sexuality and the relationship between psychological status, quality of life and sexual functionality in older people. Since psychological status and quality of life items has ambiguity maybe common method bias can be considered for one of the limitations of this research. To solve this ambiguity the questions was asked to the participants by one of the researchers one by one. However, again this procedure might also have been affected the answers.

GHQ is a scale evaluating some psychological problems mainly the anxiety/depression spectrum. Despite there was a mild correlation with ASEX scores and GHQ scores, in regression model its relationship was disappeared. We considered that the items of the quality-of-life scale may seem more neutral and positive statements and may be this feature affected the answers of the participants. Or with larger sample groups the effect can be proved. Since the sexual dysfunctionality was based on what the participants expressed, this can be considered another limitation of this study.

CRediT author contribution statement

Nur Elcin Boyacıoğlu: Conceptualization, Investigation, Data curation, Resources, Writing – review & editing. **Fahriye Oflaz:** Conceptualization, Investigation, Data curation, Resources, Writing – review & editing. **Aysu Yıldız Karaahmet:** Conceptualization, Investigation, Writing – review & editing. **Buse Kübra Hodaeı:** Conceptualization, Investigation, Writing – review & editing. **Yasin Afşin:** Conceptualization, Methodology, Formal analysis, editing. **Semra Erpolat Taşabat:** Conceptualization, Methodology, Formal analysis,

editing.

Conflicts of interest statement

All authors report no conflicts of interest with the topic matter of this manuscript, as described in the instructions to authors.

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