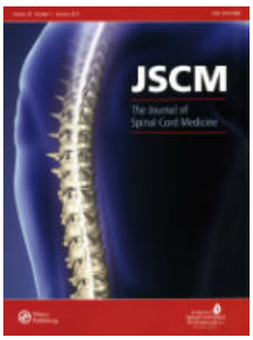

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Research Article

Dyadic adjustment and the relationship between sexual self-consciousness and sexual dysfunction in individuals with spinal cord injuries: A descriptive study

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Purpose: This study was conducted to determine the dyadic adjustment between individuals with SCI and their spouses and the relationship between their sexual self-consciousness and sexual life and to evaluate it according to the objectification theory.

Method: This descriptive and cross-sectional study was conducted with 131 married individuals with SCI registered in the physical therapy and rehabilitation outpatient clinic of a university hospital between February 2020 and April 2021. The data of the study were collected using a Descriptive Information Form, the American Spinal Injury Association Impairment Scale (ASIA), the Dyadic Adjustment Scale (DAS), the Sexual Self-Consciousness Scale (SSCS), and the Arizona Sexual Experiences Scale (ASEX). In the study, the predictors of the sexual life of individuals with SCI were evaluated with the Stepwise Multiple Linear Regression analysis. In addition, predictors of sexual dysfunction in individuals with SCI were evaluated by the logistic regression analysis. The results were discussed within the framework of objectification theory.

Results: According to the results of the study, .67.2% of the individuals with spinal cord injuries experienced sexual functionality problems; increased age, falling injuries, and being in ASIA grade A increased sexual self-awareness and sexual dysfunction; and being a male with SCI increased sexual focus. It was found that the adjustment between individuals with SCI and their spouses was a predictor that significantly reduced sexual embarrassment, sexual self-consciousness, and sexual dysfunction and that the strong adjustment between couples was an important factor for the prevention of sexual dysfunction development.

Conclusion: It was found that most individuals with spinal cord injuries experienced sexual dysfunction. The importance of dyadic adjustment and sexual self-consciousness has come to the fore in the sexual life of these individuals.

Key words: Spinal cord injury, Objectification theory, Sexual function, Sexual self-consciousness, Dyadic adjustment

Introduction

Sexual life is the exceptional part of life that contributes to the exclusiveness of the relationship between couples. There is a mutual interaction between couples' other life dynamics and their sexual lives.[1] Sexual life adds movement and vitality to the routine life dynamics of couples. At the same time, the adjustment between couples is uniquely reflected in sexual life.[2]

The level of injury and full or partial motor loss are important determinants of sexual function.[3,4] In addition to this important factor, the complications of this loss [5] and some conditions related to the psychosocial life of the individual also affect the sexual life.[6]

An important aspect that affects sexual life is the body image and sexual self-consciousness, which is a key factor in understanding sexuality. In the objectification theory of Fredrickson and Roberts (1997), it is reported that negative body attitudes may be associated with sexual dissatisfaction.[7] Although the theory was first developed to explain the experiences of women,

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over time it was understood that this theory also applied to explaining men's experiences. Self-objectification is about the persistent focus of the individual on their body and their following and observation of their body.[8] It is an expected situation that individuals with SCI focus on and follow their bodies due to the loss of physical strength that they experience. The effect of this situation on sexual life can be explained by the objectification theory. Sexual self-consciousness is about the sexual embarrassment and focusing on their body in sex life. More focus on their body may result in less confidence in sexual function and more emotional disconnectedness from sexual experiences.[9,10] Within the framework of objectification theory, individuals with SCI can focus more on their bodies due to their disability in their sexual life.

On the other hand, the presence of a supportive spouse, spouse satisfaction, and the quality of the relationship is positively reflected on sexual life in individuals with SCI, thereby facilitating adjustment to all dynamics of life after injury.[5,11,12] Sexual life provides adjustment, mutual satisfaction, consensus, and emotional expression about the relationships of the partners.[13,14] For this reason, it is important in meeting the need for intimacy and understanding their relationships. This situation makes it a priority to continue sexual life in individuals with SCI.[6]

There are studies in the literature on the sexual life of individuals with SCI.[5,6,9,11,15,16] However, according to the authors' knowledge, there is no study evaluating the effect of sexual self-awareness and the adjustment of couples in their relationships on sexual life in individuals with SCI. In addition, evaluating and discussing the results of the study according to the objectification theory is also important in terms of the originality of the study. This study aimed to determine the adjustment between individuals with SCI and their spouses and the relationship between their sexual self-consciousness and sexual life and to evaluate it according to the objectification theory (Figure 1).

Methods

Participants and procedures

This descriptive and cross-sectional study was carried out with 131 individuals with SCI registered in the physical therapy and rehabilitation outpatient clinic of a university hospital between February 2020 and April 2021. Individuals who were between the ages of 18 and 60, agreed to participate in the study, had a sexual partner aged between 18 and 70, and had injuries in the spinal cord centers responsible for sexual function were included in the study. According to DSM V (Diagnostic and Statistical Manual of Mental Disorders), patients with psychiatric diagnoses and using psychotropic drugs were not included in the study, considering that their sexual life was more affected. Individuals with SCI registered in the archive were contacted by phone and routine control times were learned. Individuals who accepted to participate in the study were given an appointment according to their routine control times. During the data collection, the patients were taken to a separate, quiet room to ensure reliable responses and privacy of the patients. First, the patients were informed about the study, and their written and verbal consent was obtained. Then a brief conversation about daily issues was held so that they could feel relaxed. Afterward, data forms were filled in by holding interviews about sexuality and dyadic relationships with the spouse. Interviews took 25–30 min on average.

Measures

The data of the study were collected using a Descriptive Information Form, the American Spinal Injury Association Impairment Scale (ASIA), the Dyadic Adjustment Scale (DAS), the Sexual Self-Consciousness Scale (SSCS), and the Arizona Sexual Experiences Scale (ASEX).

Descriptive information form

This form, which was developed by the researchers based on the literature[3,5,15,16], consisted of two parts and 13 questions. In the first part, there are 11 questions about age, gender, marital status, educational status, profession, social security, smoking and alcohol use, and sociodemographic characteristics. The second part consists of 2 questions about the type of the accident and receiving sexual counseling.

American spinal injury association (ASIA)

The neurological classification of the patients was made according to the American Spinal Injury Association Impairment Scale (ASIA). Since the key muscles used in determining the motor level according to ASIA standards are not located between the C1–4, T2 – L1, and S2–5 segments, the motor level at these levels is determined by checking the sensory level.[17]

Individuals with ASIA grade A (complete lesion) have a complete loss of motor movement and sensation (including segments S4 and S5). Individuals with ASIA grade B (partial lesion) have a complete motor loss, but the sensory function is preserved below the neurological level. Individuals with ASIA grade C (partial lesion) have a motor and sensory loss, but muscle strength of less than grade 3 is preserved in major muscle groups

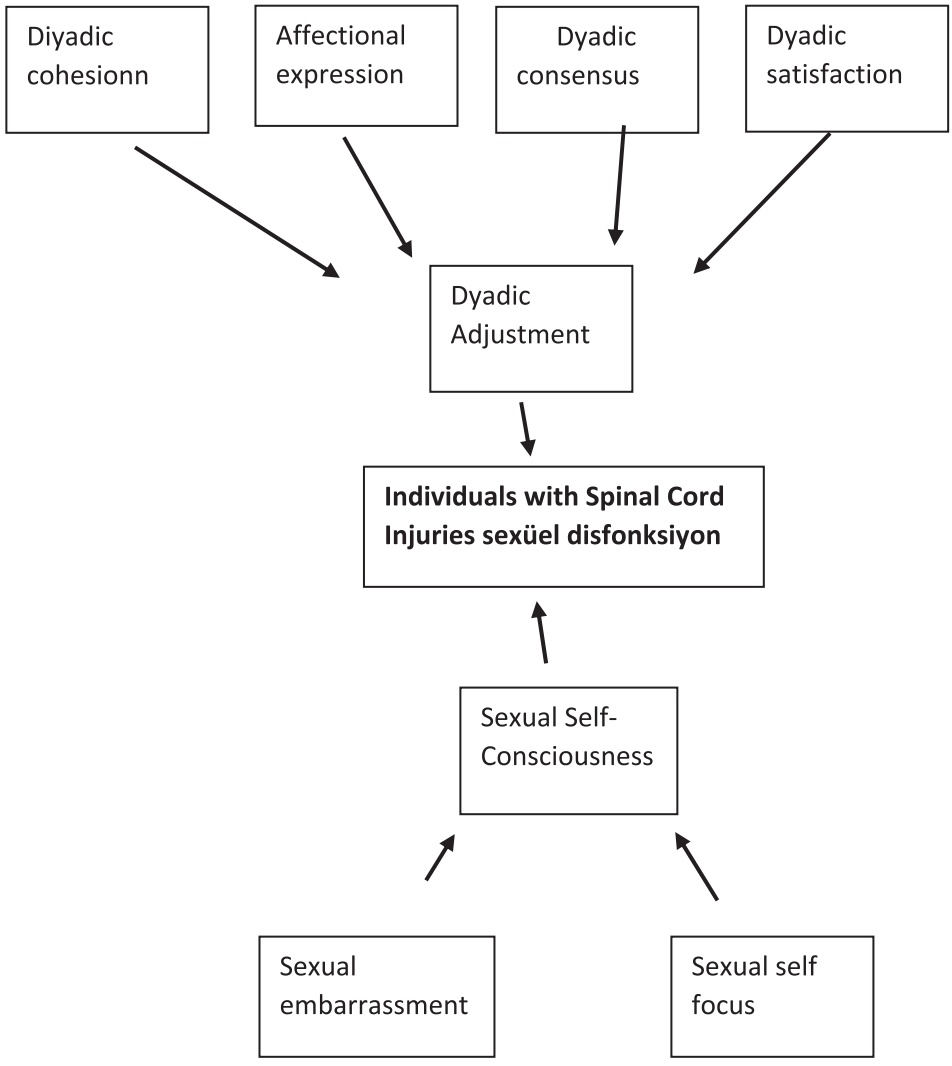

Figure 1 Sexual dysfunction in Individuals with Spinal Cord Injuries.

below the lesion level. Individuals with ASIA grade D (partial lesion) have a motor and sensory loss, but muscle strength of above grade 3 or higher levels is preserved in major muscle groups below the lesion level.[17]

Dyadic adjustment scale (DAS)

This scale was developed by Spanier (1976) to examine the quality of the relationship and styles of perceiving relationships among married or cohabiting couples.[18] The scale consists of a total of 32 five-point Likert and yes-no type questions. As the scores from the scale increase, the satisfaction of couples from their relationships increases, as well. The Turkish psychometric properties of the scale were established by Fışıloğlu and Demir (2000).[19] The scale consists of four subscales: dyadic satisfaction, dyadic cohesion, dyadic consensus, and affectional expression. The total internal consistency coefficient of the Turkish form of the scale is .92. The internal consistency coefficients of the sub-dimensions range from .61 to .83. In this study, the total internal consistency coefficient is .84, and the internal consistency coefficients of the sub-dimensions vary between .77 and .85.

Sexual self-consciousness scale (SSCS)

The scale was developed by Van Lankveld *et al.* to measure sexual embarrassment and self-focus.[20] It was adapted to Turkish by Çelik (2013).[21] This five-point Likert-type scale consists of 12 items and two sub-dimensions: sexual embarrassment and sexual self-focus. The scale scores are calculated both for the overall sexual self-consciousness scale and two sub-dimensions. High scores indicate that there is a high level of sexual self-awareness, and high sub-dimension scores indicate that the feature related to the relevant sub-dimension is high. Scores range from 0 to 48. In this study, the Cronbach's α values of the overall SSCS, the sexual self-focus sub-dimension, and the

sexual embarrassment sub-dimension were .83, .84, and .77, respectively.

Arizona sexual experiences scale (ASEX)

This scale was developed by McGahuey *et al*.[22] It was adapted to Turkish by Soykan.[23] The six-point Likert-type scale consisting of five items has separate forms for males and females. In the Turkish validity and reliability study, the Cronbach's α values were 0.89 and 0.90 for male and female genders, respectively. The scale is also used to differentiate sexual dysfunction. The score range of the scale is 5–30. A higher total score indicates sexual dysfunction, and the cut-off point for sexual dysfunction is 11 points.[23] In this study, the Cronbach's α values were 0.88 and 0.87 for males and females, respectively.

Data analysis

The data were analyzed using the SPSS 23 (Statistical Package of Social Science) software package at a 95% confidence interval and $p < 0.05$ significance level. Descriptive statistical methods (frequency values, percentages, mean scores, standard deviation values) were used to evaluate the data. Pearson's correlation analysis was used to determine the direction and the level of the relationship between two scales. The relationships between the factors affecting the sexual lives of individuals with SCI were evaluated using the linear regression analysis. Predictors of sexual dysfunction were evaluated using the logistic regression analysis. Hosmer-Lemeshow, likelihood value (−2 log-likelihood (−2LL) index), and the ratio of explained variance of independent variables were taken into consideration to determine the most suitable model in logistic regression. To decide which variables will be included in the model, the forward selection method, one of the stepwise methods, was used.

Results

Descriptive characteristics of the patients

The mean age of individuals with SCI was 43.89 ± 9.09 years, the average length of marriage was 21.54 ± 9.42 years, 33.6% of the participants were under the age of 39, 63.4% were male, 38.2% were secondary school graduates, and 32.1% were public officials. Also, 50.4% perceived their income equal to their expenses, 95.42% had social security, 72.5% did not smoke, and 93.1% did not use alcohol. It was determined that 41.2% of the participants had an in-vehicle traffic accident, 35.1% had ASIA grade A injuries, .67.2% had sexual functionality problems, and that 87.0% did not receive sexual counseling (Table 1).

Table 1 Distribution of characteristics.

Characteristics	X ± SD (Min-Max)	
Age Mean	43.89 ± 9.09(28-59)	
Marital Status	21.54 ± 9.42 (5-37)	
Cıgarette smoking frequancy/day	15.42 ± 6.44 (2-40)	
	n	%
Gender		
Female	48	36.6
Male	83	63.4
Age		
≤39 Age	44	33.6
40–49 Age	39	29.8
50≥	48	36.6
Educatıon		
Primary school	9	6.9
Secondary school	50	38.2
High school	40	30.5
University	32	24.4
Occupation		
Housewife	39	29.8
Public official	42	32.1
Worker	24	18.3
Self Employed	17	13.0
Retired	9	6.9
Economic Status		
Income < expenditure		
48		
36.6		
Income = expenditure	66	50.4
Income > expenditure	17	13
Health Insurance Status		
Yes	125	95.4
No	6	4.6
Smoking		
Yes	36	27.5
No	95	72.5
Alcohol		
Yes	9	6.9
No	122	93.1
Type of accident that caused the injury		
Traffic accident (in vehicle)	54	41.2
Traffic accident (not in vehicle)	7	5.3
Falling from height	33	25.2
Other (surgery. gunshot wound)	37	28.2
American Spinal Injury Association (ASIA) Impairment Scale		
	46	35.1
A	37	28.2
B	23	17.6
C	25	19.1
D		
Receiving sexual counseling		
Yes	17	13.0
No	114	87.0
Sexual dysfunction		
Yes (ASEX > 11)	88	67.2
No (ASEX ≤11)	43	32.8

Mean scale scores

Participants' mean scores were 31.47 ± 11.12, 16.06 ± 5.70, and 14.67 ± 6.67 on the total SSCS and sexual embarrassment and sexual self-focus sub-dimensions,

Table 2 Points that can be obtained and received from scales.

Scale and Sub-dimensions	Scale scores	Scale Cronbach alpha values
Sexual Self-Consciousness Scale (SSCS)		
Sexual embarrassment (Items)	16.06 ± 5.70 (3-24)	.84
Sexual self focus (Items)	14.67 ± 6.67 (3-24)	.77
Total SSCS Score	31.47 ± 11.12 (6-48)	.83
Dyadic Adjustment Scale (DAS)		
Diyadic cohesionn	16.17 ± 7.60 (2-32)	.77
Affectional expression	7.06 ± 5.00 (0-24)	.81
Dyadic consensus	20.30 ± 12.76 (0-28)	.78
Dyadic satisfaction	29.45 ± 12.37 (0-48)	.85
DAS Total Score	73.00 ± 19.76 (24-120)	.84
Arizona Sexual Experience Scale (ASEX)	17.00 ± 6.30 (8-28)	.88
ASEX Female Score	17.78 ± 6.85 (7-30)	.87
ASEX Male Score		

respectively. Their mean scores were 73.00 ± 19.76, 16.17 ± 7.60, 7.06 ± 5.00, 20.30 ± 12.76, and 29.45 ± 12.37 on the total DAS and dyadic cohesion, affectional expression, dyadic consensus, and dyadic satisfaction sub-dimensions, respectively. The scores of female and male participants on the ASEX were 17.00 ± 6.30 and 17.00 ± 6.85, respectively (Table 2).

The relationship between scores on the DAS and SSCS, ASEX male, and ASEX female scales

The examination of the correlations between participants' scores on the scales indicated that there was a negative correlation between overall DAS and its sub-dimensions and the sexual embarrassment sub-dimension of the SSCS, total SSCS, ASEX male, and ASEX female scales, which are related to sexual life. It was determined that significant correlational relationships were at a moderate level (Table 3).

Analysis of the predictors of the sexual life of individuals with SCI using the stepwise multiple linear regression model

In the study, the predictors of the sexual life of individuals with SCI were evaluated by Stepwise Multiple Linear Regression analysis. In the analysis, some variables (gender, age, length of marriage, the status of smoking and alcohol use, type of injury, ASIA grade) and the scores on the sub-dimensions of the DAS were included in the model. The stepwise method was used to decide which of the specified variables would be included in the model. In the Linear Regression, the R^2 value was evaluated for the extent of the variance in the data defined. In the regression model, Durbin Watson statistics were evaluated to determine whether the terms showed correlation. The expected Durbin Watson value in the model should not be less than 1. The best sexual life model was formed in the 8th step for the total score of the SSCS, in the 6th step for the sexual embarrassment sub-dimension of the SSCS, and in the 2nd step for sexual self-focus. It was formed in the 6th step for ASEX female and the 5th step for ASEX male scales. The Durbin-Watson value provided model validity for linear regression models (SSCS total D = 2.218, sexual embarrassment D = 1.576; sexual self-focus D = 1.817, ASEX female D = 1.692, ASEX Male D = 1.733). Tolerance and VIF values showed that there was no equality between variables (Table 4).

Table 3 Correlations between DAS with SSCS and ASEX.

		Sexual Embarassment	Sexual Self-Focus	SSCS Total	ASEX Female	ASEX Male
Dyadic satisfaction	r	−.327	.092	−.214	−.167	−.196
	p	.009**	.295	.014*	.256	.076
Dyadic cohesion	r	−.678	.033	−.721	−.644	−.531
	p	.000**	.705	.000**	.000**	.000**
Dyadic consensus	r	−.528	.084	−.566	−.557	−.529
	p	.000**	.341	.000**	.000**	.000**
Affectional expression	*r*	−.410	.017	−.487	−.532	−.529
	p	.000	.850	.000**	.000**	.000**
DAS Total Score	r	−.003	.103	−.078	−.098	−.101
	p	.968	.241	.379	.509	.364

Pearson correlation analysis **p<0.0.1, SSCS: Sexual Self-Consciousness Scale, ASEX: Arizona Sexuel Experiences Scale, DAS: Dyadic Adjustment Scale

Table 4 Stepwise multiple linear regression model.

S. EMBARASSMENT

				Change statistics				
Model	R	R^2	Adjusted R^2	SE of estimation	R^2	F	Sig. of change in F	Durbin–Watson
1	.778	.606	.603	3.59024	.606	198.353	.000	1.576
2	.809	.655	.649	3.37419	.049	18.048	.000	
3	.847	.718	.711	3.06035	.063	28.599	.000	
4	.867	.752	.744	2.88308	.034	17.098	.000	
5	.877	.770	.760	2.78940	.018	9.605	.002	
6	.884	.782	.771	2.72655	.012	6.830	.010	

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model 7	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(Constant)	6.920	1.339		5.168	.000		
ASIA A	.419	.036	.558	11.637	.000	.765	1.306
DAS Diyadic cohesion	−4.399	.705	−.295	−6.236	.000	.788	1.269
DAS Affectional expression	−3.887	.672	−.269	−5.788	.000	.815	1.227
Age	.100	.028	.160	3.575	.001	.882	1.134
Injury by falling	1.752	.567	.134	3.090	.002	.936	1.068
DAS Dyadic consensus	−.135	.052	−.119	−2.613	.010	.855	1.170

S. SELF FOCUS

				Change statistics				
Model	R	R^2	Adjusted R^2	SE of estimation	R^2	F	Sig. of change in F	Durbin–Watson
1	.258	.067	.060	6.47906	.067	9.236	.003	1.817
2	.309	.096	.082	6.40272	.029	4.095	.045	

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model 7	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(Constant)	14.614	.797		18.346	.000		
Male	3.667	1.297	.239	2.827	.005	.461	2.168
ASIA D	−2.364	1.168	−.171	−2.024	.045	.635	1.574

SSCS TOTAL

Model	R	R^2	Adjusted R^2	Change statistics: SE of estimation	R^2	F	Sig. of change in F	Durbin–Watson
1	.721	.521	.517	7.73283	.521	140.056	.000	2.218
2	.780	.608	.602	7.01711	.088	28.657	.000	
3	.813	.660	.652	6.55857	.052	19.524	.000	
4	.836	.698	.689	6.20858	.038	15.722	.000	
5	.876	.768	.759	5.46634	.070	37.541	.000	
6	.884	.782	.771	5.32253	.014	7.846	.006	
7	.890	.791	.779	5.22589	.010	5.629	.019	
8	.896	.802	.789	5.10432	.011	6.929	.010	

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model 5	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(Constant)	18.729	2.765		6.773	.000		
ASIA A	.628	.072	.429	8.710	.000	.668	1.497
DAS Diyadic cohesionn	−.231	.120	−.104	−1.928	.056	.557	1.796
Age	.244	.053	.199	4.631	.000	.874	1.144
ASIA D	−8.171	1.286	−.290	−6.353	.000	.778	1.285
DAS Affectional expression	−8.876	1.330	−.305	−6.676	.000	.777	1.287
Injury by falling	2.960	1.068	.116	2.770	.006	.925	1.082
DAS Dyadic consensus	−.148	.046	−.170	−3.206	.002	.573	1.744
Female	−3.012	1.144	−.131	−2.632	.010	.654	1.529

ASEX FEMALE

Model	R	R^2	Adjusted R^2	Change statistics: SE of estimation	R^2	F	Sig. of change in F	Durbin–Watson
1	.844	.713	.707	3.41173	.713	114.310	.000	1.692
2	.926	.857	.851	2.43527	.144	45.284	.000	
3	.938	.880	.872	2.25254	.023	8.597	.005	
4	.948	.898	.889	2.10376	.018	7.443	.009	
5	.961	.924	.915	1.83739	.026	14.371	.000	
6	.969	.939	.930	1.66766	.015	9.985	.003	

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model 5	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(Constant)	7.326	1.000		7.325	.000		
Injury by falling	.603	.033	.896	18.507	.000	.636	1.572
ASIA A	4.451	.792	.349	5.618	.000	.386	2.591
ASIA B	2.927	.764	.209	3.832	.000	.503	1.988
Age	3.382	.685	.212	4.935	.000	.810	1.234
DAS Diyadic cohesionn	−5.169	1.019	−.384	−5.074	.000	.260	3.848
DAS affectional expression	−3.970	1.256	−.249	−3.160	.003	.241	4.151

ASEX
MALE

Model	R	R^2	Adjusted R^2	SE of estimation	Change statistics				Durbin–Watson
					R^2	F	Sig. of change in F		
1	.542	.294	.285	5.79901	.294	33.727	.000		1.733
2	.689	.475	.462	5.03068	.181	27.632	.000		
3	.763	.582	.567	4.51571	.107	20.287	.000		
4	.819	.671	.654	4.03565	.088	20.913	.000		
5	.830	.690	.670	3.94310	.019	4.705	.033		

Model 4	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(Constant)	12.908	2.549		5.063	.000		
ASIA A	5.171	.972	.371	5.322	.000	.828	1.207
Smoking	4.786	.973	.329	4.918	.000	.901	1.110
DAS Affectional expression	−.764	.179	−.301	−4.262	.000	.810	1.234
Injury by falling	4.050	.999	.269	4.055	.000	.913	1.095
Age	.100	.046	.150	2.169	.033	.841	1.189

p: Multible Linear Regression Analysis R^2: Coefficient of determination

Predictors of SSCS sexual embarrassment

It was determined that the standard deviation of the sexual embarrassment sub-dimension decreased by 0.295 units with a one-unit increase in the standard deviation of the dyadic cohesion sub-dimension of the DAS, by 0.269 units with a one-unit increase in the standard deviation of the affectional expression sub-dimension of the DAS, and by 0.119 units with a one-unit increase in the standard deviation of the dyadic consensus sub-dimension of the DAS. Of the descriptive features, age increased the sexual embarrassment score by 0.160 units and falling injuries by 0.134 units. It was determined that the final model created explained 77.1% of the variance ($p < .001$; Table 4).

Predictors of SSCS sexual self-focus

Of the descriptive features, age increased the sexual self-focus score by 0.239 units according to the male gender and decreased it by 0.171 units according to the ASIA grade D. The sub-dimensions of the DAS were not included in the sexual self-focus model. The final model created explained 8.2% of the variance ($p < .001$; Table 4).

Predictors of the SSCS total

It was determined that the standard deviation of the total SSCS score decreased by 0.104 units with a one-unit increase in the standard deviation of the DAS dyadic cohesion sub-dimension, by 0.305 units with a one-unit increase in the standard deviation of the DAS affectional expression sub-dimension, and by 0.170 units with a one-unit increase in the standard deviation of the DAS dyadic consensus sub-dimension. Of the descriptive features, age increased the SSCS total score by 0.199 units, falling injuries by 0.116 units, and ASIA grade A by 0.429 units, while female gender decreased it by 0.131 units and ASIA grade D by 0.290 units. The final model created explained 78.9% of the variance ($p < .001$; Table 4).

Predictors of the ASEX female

It was found that the standard deviation of the ASEX female scale decreased by 0.384 units with a one-unit increase in the standard deviation of the dyadic cohesion sub-dimension of the DAS and by 0.249 units with a one-unit increase in the standard deviation of the affectional expression sub-dimension of the DAS. Of the descriptive features, falling injuries decreased the ASEX female score by 0.269 units, age by 0.212 units, ASIA grade A by 0.371 units, and ASIA grade B by 0.209 units. The final model created explained 93.0% of the variance.

Predictors of the ASEX male

It was found that the standard deviation of the ASEX male scale decreased by 0.301 units with a one-unit increase in the standard deviation of the dyadic cohesion sub-dimension of the DAS. Of the descriptive features, ASIA grade A increased the ASEX male score by 0.371 units, smoking by 0.329 units, falling injuries by 0.269 units, and age by 0.150 units. The final model created explained 67.0% of the variance.

Evaluation of sexual dysfunction by logistic regression analysis

Individuals who score above 11 on the ASEX scale are considered to have sexual dysfunction. In the study, variables and sub-dimensions of the scales that were found to be statistically significant in univariate analyses in the prediction of sexual dysfunction in individuals with SCI were evaluated by logistic regression analysis. The best model was formed in the second step for females and in the third step for males (Table 5).

Sexual dysfunction was found to be 45.0% more in women with low scores on the dyadic cohesion sub-dimension of the DAS than women with high scores on the same sub-dimension and 18.7% more in women with low scores on the affectional expression sub-dimension of the DAS than women with high scores on the same dub-dimension (Nagelkerke R2: 0.923. Model: x2 = 37.361 $p = 0.00$. Model R2: 0.689).

Males with low scores on the affectional expression sub-dimension of the DAS had 88.0% more sexual dysfunction than males with high scores on the same sub-dimension. It was determined that sexual dysfunction was increased by 1.952 times by ASIA grade A and by 1.636 times by high scores on the sexual self-focus sub-dimension (Nagelkerke R2: 0.812; Model: x2 = 19.443, $p = 0.013$; Model R2: 0.876).

Discussion

The findings of this subjective study provide important evidence on dyadic adjustment and the relationship between sexual self-consciousness and sexual dysfunction in individuals with SCI. In the study, it was determined that most of the individuals with SCI (67.2%) had sexual dysfunction. It is estimated that 35% to 80% of individuals are not sexually active after SCI.[24–27] The literature highlights the problem of sexual dysfunction in individuals with SCI. According to the authors' knowledge, this is the first study investigating the relationships between the development of sexual dysfunction and the descriptive characteristics of individuals with SCI, ASIA classification, adjustment to the spouse, and self-focus. In addition, the study was discussed based on the objectification theory.

After the injury, the self-perception of individuals with SCI and communication with their partners and their environment are affected. Negative body attitudes may develop in individuals with SCI as a result of injury.[8] In addition, changes in sexual life are expected as a natural consequence of the injury.[11,28] Cognitive factors related to the focus of attention on sexual performance may cause sexual performance anxiety in individuals.[29] It is common for individuals with SCI to experience this anxiety. According to the objectification theory, negative attitudes towards one's body during sexual intercourse can increase body self-consciousness, and this exaggerated body self-consciousness may prevent focus on sexual pleasure by causing sexual dissatisfaction.[7].

Table 5 Evaluation of sexual dysfunction (ASEX) via logistic regression analysis.

							95% CI	
		β	SE	Wald	p	OR	Lower	Upper
Upper	Constant	9.289	4.007	5.374	.020*	10814.8		
[1] ASEX Female	DAS Diyadic cohesionn	−.430	.196	4.815	.028	.650	.443	.955
	DAS affectional expression	−.207	.100	4.237	.040	.813	.668	.990
[2] ASEX Male	Constant	7.529	3.540	4.523	.033	.001		
	ASIA A	.669	.298	5.034	.025	1.952	1.088	3.502
	Sexual Self Focus	.492	.241	4.179	.041	1.636	1.021	2.623
	DAS Affectional expression	−1.512	.903	2.807	.094	.220	.038	1.293

[1] [a]Variables included in the logistic model: Education. Age. Smoking and Alcohol use. Accident type. American Spinal Injury Association (ASIA) Impairment Scale. SSCS subdimens. DAS subdimens. Forward selection method was used. The most significant model was formed in step 2. Nagelkerke R^2:0.923. Model: $x^2 = 37.361$ $p = 0.00$.. Model R^2: 0.689. *$p < 0.05$ **$p < 0.01$ CI: confidence interval. OR: odds ratio. SE: Standart Error

[2] [a]Education. Age. Smoking and Alcohol use. Accident type. American Spinal Injury Association (ASIA) Impairment Scale. SSCS subdimens. DAS subdimens. Forward selection method was used. The most significant model was formed in step 3.. Nagelkerke R^2:0.812. Model: $x^2 = 19.443$ $p = 0.013$.. Model R^2: 0.876. *$p < 0.05$ **$p < 0.01$ CI: confidence interval. OR: odds ratio. SE: Standart Error

Relationship between descriptive characteristics of individuals with SCI and sexual self-consciousness and sexual dysfunction

In the study, it was determined that advanced age, falling injuries, and ASIA grade A increased sexual self-awareness and sexual dysfunction. ASIA grade B in females and smoking in males were predictors that increased sexual dysfunction. Similar to the findings of the study, a study using a different sex life scale pointed out that the injury affected sexual life more in individuals with SCI in ASIA A and ASIA B.[28] Another study emphasized the importance of knowing the neurological level in understanding the sexual potential of the patient and in counseling and treatment practices to improve this potential.[3] Similar to the findings in the literature, it was reported that advanced age in individuals with SCI negatively affected sexual life.[3,5,15,28,30,31] This may be because young individuals adapt their sexual life to new situations more easily after injury. In addition, the expected sexual effects that increase with age in older individuals may have increased this situation. In the study, as in the study of Taylan *et al*., it was found that the sexual life of individuals with SCI who were injured due to falling was affected more.[28] Burst-type fractures, which are most common in falls from height, cause a reduction in the space available for neurological structures.[32] In addition, the percentage of canal narrowing is associated with neurological recovery.[33] It is thought that the reason for more common sexual dysfunction in cases of falling from height is caused by burst-type fractures. In the literature, the relationship between long-term smoking and erectile dysfunction in men has been highlighted.[34,35] The fact that smoking, one of the modifiable life habits, is a predictor in the development of sexual dysfunction in men with SCI has revealed the importance of encouragement, counseling, education, and interventions for quitting smoking. In this context, nurses working in physical therapy, rehabilitation, and family health centers have important responsibilities.

It was found that the male gender was a predictor that increased sexual focus in individuals with SCI and the female gender was a predictor that decreased sexual self-consciousness in individuals with SCI (Table 4). In addition, the development of male sexual dysfunction increased the sexual self-focus score (Table 5). Many studies highlight erectile and ejaculation problems in men with SCI. [24,36,37] Elimination of erection problems is the first necessary step for coitus to occur and getting sexual pleasure and satisfaction. This situation means a focus on the idea of achieving the first step. In a male-centered patriarchal culture, there are hierarchical relationships and unequal distribution of power between men and women. As a result, the sex learned in men may be completely penile-centered. Since a penis is seen as a "proud property" for most men, they may view a state of threat to erectile function as a danger of losing their masculinity and identity.[38] This perceived danger can increase sexual focus. As a matter of fact, according to the objectification theory, too, negative body attitudes may be associated with sexual dissatisfaction.

Relationship between the scores of individuals with SCI on the sub-dimensions of the DAS and sexual self-consciousness and sexual dysfunction

The sexual lives of individuals with SCI, which is badly affected, can mainly stem from the difficulties they experience in relationships with their spouse, medical problems, and lack of privacy.[3] In the study, it was concluded that the adjustment between individuals with SCI and their spouses was a predictor that significantly reduced sexual embarrassment, sexual self-consciousness, and sexual dysfunction. Within the scope of objectification theory, it can be said that individuals with strong dyadic adjustment experience less sexual shame and sexual dysfunction problems by focusing on sexual pleasure and the special moments they share with their spouses by moving their thoughts away from their own bodies during sexual intercourse. As a matter of fact, sexuality is beyond physical intercourse with its psychological and social aspects.[11]

Evaluating the adjustment between couples contributes to our understanding of their lives and relationships. Especially the "in good times and bad" promise and the formality of the relationship between married couples increase the expectation of adjustment of both their environment and themselves. The adjustment between married couples depends on their satisfaction, unity, consensus, and emotional expressions. Sexual life is an important part of the couple's adjustment and the relationship that they have. It has been found that strong adjustment between couples is an important factor for avoiding the development of sexual dysfunction. Individuals with SCI have to face many challenges to sexual functioning [39] because, after SCI, change or loss in genital sensation has a significant effect on sexual functioning of both men and women.[38] However, psychological factors in individuals with SCI such as intimacy may play a more important role in their lives than physical disability.[40,41] SCI cannot

eliminate the attraction and the ability to experience love and sexual life between two people. [38] The results of the study clearly show the importance of interventions to strengthen the marital adjustment and sexual rehabilitation involving spouses, which encourages removing thoughts from the body and function and focusing on sexual pleasure for supporting the sexual life of individuals with SCI and reducing sexual dysfunction.

Limitations and strengths of the study

The study has some limitations. This study had a population and sample that was registered in a hospital; therefore, the results cannot be generalized to the whole society. On the other hand, this is the first study that evaluated dyadic adjustment, sexual consciousness, and sexual dysfunction in individuals with SCI, and the study was based on the objectification theory. These are the strengths of the study.

Conclusion

An important conclusion of the study is that most of the individuals with SCI had sexual dysfunction. In addition, it was concluded that advanced age, falling injuries, and ASIA grade A increased sexual self-consicousness and sexual dysfunction and that the male gender increased sexual focus in individuals with SCI. Besides, the adjustment between individuals with SCI and their spouses were predictors that significantly reduced sexual embarrassment, sexual self-consciousness, and sexual dysfunction. It was found that strong adjustment between couples was an important factor for preventing the development of sexual dysfunction.

Ethical considerations

Before the study was initiated, approval of the Marmara University Faculty of Health Sciences Non-Invasive Clinical Studies Ethics Committee (Date: 27.02.2020; Issue: 22) and the institution where the study was conducted was obtained.

Disclaimer statements

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References

1 Yang L, Comninos AN, Dhillo WS. Intrinsic links among sex, emotion, and reproduction. Cell Mol Life Sci 2018;75(12): 2197–2210.
2 Debrot A, Meuwly N, Muise A, Impett EA, Schoebi D. More than just Sex. Pers Soc Psychol Bull 2017;43(3):287–299.
3 Alexander M, Courtois F, Elliott S, Tepper M. Improving sexual satisfaction in persons with spinal cord injuries: collective wisdom. Top Spinal Cord Inj Rehabil 2017;23(1):57–70.
4 Stoffel JT, Van der Aa F, Wittmann D, Yande S, Elliott S. Fertility and sexuality in the spinal cord injury patient. World J Urol 2018; 36(10):1577–1585.
5 Merghati-Khoei E, Emami-Razavi SH, Bakhtiyari M, Lamyian M, Hajmirzaei S, Ton-Tab Haghighi S, *et al*. Spinal cord injury and women's sexual life: case-control study. Spinal Cord 2017;55 (3):269–273.
6 Taylan S, Gozuyesil E, Manav AI, Isik EI. An evaluation of the factors that affect the sexual satisfaction of people with spinal cord injuries. J Spinal Cord Med 2019;44(4):1–8.
7 Fredrickson BL, Roberts T. Objectification theory. Objectification theory: toward understanding women's lived experiences and mental health risks. Psychol Women Q 1997;21:173–206.
8 van den Brink F, Vollmann M, Sternheim LC, Berkhout LJ, Zomerdijk RA, Woertman L. Negative body attitudes and sexual dissatisfaction in Men: The mediating role of body self-consciousness during physical intimacy. Arch Sex Behav 2018;47(3):693–701.
9 Moyano N, Dib-Fayad N, Vélez-Schemankewitz M. Adaptation and validation of the sexual self-consciousness scale in Ecuadorian women. Sex Relation Ther 2017;32(2):155–172.
10 van Lankveld JJ, van den Hout MA, Schouten EG. The effects of self-focused attention, performance demand, and dispositional sexual self-consciousness on sexual arousal of sexually functional and dysfunctional men. Behav Res Ther 2004;42(8):915–935.
11 Taylan S, Ozkan I, Kucukakca Celik G. Experiences of patients and their partners with sexual problems after spinal cord injury: A phenomenological qualitative study. J Spinal Cord Med 2020; 45(2):1–9.
12 Zarei F, Rashedi S, Tavousi M, Haeri-Mehrizi AA, Maasoumi R. A mobile-based educational intervention on sexo-marital life in Iranian men with spinal cord injury: a randomized controlled trial. Spinal Cord 2020;58(11):1189–1196.
13 Londero-Santos A, Natividade JC, Féres-Carneiro T. Romantic relationship and partner schemas: concepts associated with a positive valence. Trends in Psychology 2020;28(4):511–528.
14 Rohr MK, Nestler S, Kunzmann U. A trouble shared is a trouble halved: Age differences in emotional experience and expression during couples' conversations. Psychol Aging 2019;34(6):848–861.
15 Merghati-Khoei E, Maasoumi R, Zarei F, Laleh L, Pasha YY, Korte JE, *et al*. How Do Iranian people with spinal cord injury understand marriage? Top Spinal Cord Inj Rehabil 2017;23(1): 71–77.
16 Miranda EP, Gomes CM, de Bessa J, Najjar Abdo CH, Suzuki Bellucci CH, de Castro Filho JE, *et al*. Evaluation of sexual dysfunction in Men With spinal cord injury using the Male sexual quotient. Arch Phys Med Rehabil 2016;97(6):947–952.
17 Roberts TT, Leonard GR, Cepela DJ. Classifications In brief: American spinal injury association (ASIA) impairment scale. Clinical Orthopaedics & Related Research 2017;475(5): 1499–1504.
18 Spanier GB. Measuring dyadic adjustment: New scales for assessing quality of marriage and similar dyads. J Marriage Fam 1976; 38:15–28.
19 Fışıloğlu H, Demir A. Brief report. applicability of the dyadic adjustment scale for measurement of marital quality with Turkish couples. Eur J Psychol Assess 2000;16(3):214–218.
20 van Lankveld JJ, Geijen WE, Sykora H. The sexual self-consciousness scale: psychometric properties. Arch Sex Behav 2008; 37(6):925–933.
21 Çelik E, Arıcı N. Using a structural equation model to examine factors affecting married ındividuals' sexual embarrassment. Educational Sciences: Theory & Practice 2014;14(5):1689–1707.
22 McGahuey CA, Gelenberg AJ, Laukes CA, Moreno FA, Delgado PL, McKnight KM, *et al*. The Arizona sexual experience scale (ASEX): reliability and validity. J Sex Marital Ther 2000;26(1): 25–40.
23 Soykan A. The reliability and validity of Arizona sexual experiences scale in Turkish ESRD patients undergoing hemodialysis. Int J Impot Res 2004;16(6):531–534.

24 Akman RY, Coskun Celik E, Karatas M. Sexuality and sexual dysfunction in spinal cord-injured men in Turkey. Turk J Med Sci 2015;45(4):758–761.
25 Cuenca AI C, Sampietro-Crespo A, Virseda-Chamorro M, Martin-Espinosa N. Psychological impact and sexual dysfunction in men with and without spinal cord injury. J Sex Med 2015;12(2): 436–444.
26 Latella D, Maggio MG, Manuli A, Militi D, Calabro RS. Sexual dysfunction in Male individuals with spinal cord iniury: what do we know so far? J Clin Neurosci 2019;68:20–27.
27 Ohl DA, Carlsson M, Stecher VJ, Rippon GA. Efficacy and safety of sildenafil in Men With sexual dysfunction and spinal cord injury. Sex Med Rev 2017;5(4):521–528.
28 Gıannopapas V, Pneumatıcos SG, Vlamıs I. Spinal cord injury and Sexual health. Acta Orthopaedica Et Traumatologica Hellenica 2021;72(4):374–381.
29 Milhausen RR, Buchholz AC, Opperman EA, Benson LE. Relationships between body image, body composition, sexual functioning, and sexual satisfaction Among heterosexual young adults. Arch Sex Behav 2015;44(6):1621–1633.
30 Merghati-Khoei E, Maasoumi R, Rahdari F, Bayat A, Hajmirzaei S, Lotfi S, *et al*. Psychometric properties of the sexual adjustment questionnaire (SAQ) in the Iranian population with spinal cord injury. Spinal Cord 2015;53(11):807–810.
31 Bin A S, Qureshi AR, Ahmad A ZAZ, Ahmad N, Butt AW. Sexual functioning in a cohort of Pakistani Men with spinal cord injury. Sex Disabil 2018;36(4):377–388.
32 Spiegl UJ, Josten C, Devitt BM, Heyde CE. Incomplete burst fractures of the thoracolumbar spine: a review of literature. Eur Spine J 2017;26(12):3187–3198.
33 Piccone L, Cipolloni V, Nasto LA, Pripp C, Tamburrelli FC, Maccauro G, *et al*. Thoracolumbar burst fractures associated with incomplete neurological deficit in patients under the age of 40: Is the posterior approach enough? Surgical Treatment and Results in a Case Series of; 10, Patients with a Minimum Follow-up of 2 Years. Injury 2020;51(2):312–316.
34 Mollaioli D, Ciocca G, Limoncin E, Di Sante S, Gravina GL, Carosa E, *et al*. Lifestyles and sexuality in men and women: the gender perspective in sexual medicine. Reprod Biol Endocrinol 2020;18(1):1–11.
35 Ozmen S, Dulger S, Coban S, Ozmen OA, Guzelsoy M, Dikis OS, *et al*. Olfactory and erectile dysfunction association in smoking and non-smoking men. Physiol Behav 2016;160:1–5.
36 D'Andrea S, Minaldi E, Castellini C, Cavallo F, Felzani G, Francavilla S, *et al*. Independent association of erectile dysfunction and Low testosterone levels With life dissatisfaction in Men With chronic spinal cord injury. J Sex Med 2020;17(5): 911–918.
37 Soler JM, Navaux MA, Previnaire JG. Positive sexuality in men with spinal cord injury. Spinal Cord 2018;56(12):1199–1206.
38 Federici S, Artegiani F, Pigliautile M, Antonelli P, Diotallevi D, Ritacco I, *et al*. Enhancing psychological sexual health of people With spinal cord injury and their partners in an Italian unipolar spinal unit: A pilot data study. Front Psychol 2019; 10(754):1–12.
39 Gomes CM, Miranda EP, de Bessa J, Bellucci CHS, Battistella LR, Abdo CHN, *et al*. Erectile function predicts sexual satisfaction in Men With spinal cord injury. Sex Med 2017;5(3): e148–ee55.
40 Buunk AP, Zurriaga R, Gonzalez P. Does theorizing on reciprocal altruism apply to the relationships of individuals with a spinal cord injury? Evol Psychol 2012;10(5):147470491201000–29.
41 Zurcher C, Tough H, Fekete C, Swi SCISG. Mental health in individuals with spinal cord injury: The role of socioeconomic conditions and social relationships. PLoS One 2019;14(2): e0206069-1–e0206069-20.