ORIGINAL ARTICLE

Sexual activity and sexual satisfaction in Korean men with spinal cord injury

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Study design: A cross-sectional survey.

Objectives: The aim of this study was to identify and assess the sexual activity and perceived sexual satisfaction of Korean males with spinal cord injury (SCI) and to identify factors influencing sexuality and satisfaction.

Setting: Community residents with SCI.

Methods: A total of 139 male participants with SCI in Korea were eligible for inclusion in this study. All participants completed a face-to-face interview regarding sexuality and satisfaction, as well as structured questionnaires including items on socioeconomic factors, medical conditions and rehabilitation services.

Results: A total of 90 participants (65%) were engaged in sexual activity. A period of 21–25 years since SCI (compared with the initial 5 years since SCI) and an experience of direct sexual rehabilitation education were positively associated with sexual activity. Among 90 sexually active males with SCI, 8 (8.9%) and 56 (62.2%) were sexually satisfied and unsatisfied, respectively. Lower levels of education were strongly correlated with sexual dissatisfaction.

Conclusion: Korean males with SCI showed low levels of satisfaction regarding sexual activities. Results showed that socioeconomic factors (e.g., state of employment and direct person-to-person sexual counseling services) had a greater impact on sexual activity than the degree of physical impairment. Notably, the educational background was the most influential factor on sexual satisfaction.

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INTRODUCTION

Spinal cord injury (SCI) is a traumatic event for the affected individual because it often deteriorates the motor, sensory and autonomic functions.¹ Moreover, SCI often eventually results in sexual impairment and can thus substantially affect the quality of life.^{2,3} However, despite this impact, the sexual activity of individuals with SCI has largely been neglected as a focus of research and is one of the most unmet needs for this group of individuals.^{4,5} In particular, although the sexual activity and coping strategies of people with SCI will likely be diverse across cultures because of cultural differences,^{6,7} little research has been published regarding the sexuality of individuals with SCI, particularly in East Asia. In one of the few studies addressing this issue for an Asian population, a comparative investigation of the life satisfaction between long-term survivors of SCI in Sweden and Japan found that the percentage of sexually active (SA) males engaged in sexual intercourse was significantly lower in Japan than in Sweden, and also observed an absence of sexual counseling for disabled people in the former country.⁸

Within the past 10 years, several hospitals and rehabilitation centers in Korea have offered sexual rehabilitation education and counseling programs for SCI patients. Nevertheless, the current situation regarding sexuality after SCI and the main factors for determining the sexual activity and sexual satisfaction of individuals remains unknown in Korea.

This study aimed to elucidate the sexual activity and perceived sexual satisfaction of Korean males with motor complete SCI and to

identify the factors that influenced sexuality and satisfaction. These findings could be helpful for encouraging more fulfilled sexual lives among individuals with SCI in East Asia.

MATERIALS AND METHODS

Participants

All participants were members of the Korea Spinal Cord Injury Association (KSCIA). KSCIA is a non-profit, non-governmental organization for people with SCI, and its membership and participation are based on online websites. Of the 303 people with SCI who were active members of the KSCIA and willing to volunteer in the study, 246 (81.2%) were male. Of these male subjects, 161 (66.2%) had motor complete SCI. For this study, we analyzed only males with motor complete SCI.

Survey

The survey was conducted by the KSCIA through direct personal interviews with a self-reporting questionnaire. The participants were interviewed by two trained social workers at the KSCIA office. Participants were asked if they were using any sexual rehabilitation methods and to identify the type used if the answer was in the affirmative. These respondents were regarded as SA. The methods of sexual rehabilitation included orally administered medications such as sildenafil citrate (VIAGRA, Pfizer Manufacturing Australia Pty Limited, West Ryde, NSW, Australia), intravenous injection such as alprostadil (CAVERJECT IMPULSE, Pfizer Manufacturing Belgium NV, Rijksweg, Belgium), surgical treatment (e.g., prosthetic implants) and sex utensils. If the participants were not using any sexual rehabilitation techniques, they were regarded as sexually inactive (SI). The questions pertaining to sexual satisfaction were answered

using a 5-point Likert-type scale (1 = very satisfied, 2 = satisfied, 3 = neutral, 4 = dissatisfied, 5 = very dissatisfied). Socioeconomic variables included age, sex, marriage status, educational background, frequency of going out, current employment status and economic state. The medical condition included the type of paralysis, presence of medical complication and duration since the SCI, which was classified according to 5-year intervals. The source of information for sexual rehabilitation was divided into either direct or indirect sexual rehabilitation sources. Direct sources were considered to be from other people with SCI, social welfare services and rehabilitation doctors/specialists. Indirect sources were from mass media such as internet, television, guidance brochures, and so on.

Statistical analysis

The independent *t*-test for continuous variables and χ^2 analyses for categorical variables were performed to identify differences in various demographic, socioeconomic and medical factors between the SA and SI groups. Additionally, binary logistic regression analysis for sexual activity and multiple logistic regression analysis for sexual satisfaction were performed to investigate important factors related to sexuality. *P*-values of <0.05 were considered significant. All statistical analyses were carried out with SPSS ver. 17.0 (SPSS Inc., Chicago, IL, USA).

Statement of ethics

We certify that all applicable institutional and governmental regulations concerning the ethical use of human volunteers were followed during the course of this research. The study procedures were reviewed and approved by our institution's research committee for human subjects [IRB No. 1409-032-608].

RESULTS

Subject characteristics

Of the 161 male subjects with motor complete SCI, 22 were excluded because of missing data with respect to age, partner status, the types of paralysis or the time since injury. Therefore, a total of 139 males were eligible for final inclusion in this study. The mean age was 43.3 years (range, 16–69 years), and the mean postinjury duration was 14.4 ± 7.7 years (range, 1–40 years; median, 14 years). Of the study population, 64 (46%) and 75 (53.9%) were with partners and without partners, respectively. Moreover, 27 (19.4%) and 112 (80.6%) had complete tetraplegia and complete paraplegia, respectively. Additionally, 56 participants (40.3%) were in paid employment, and 50 (36%) had a university or advanced degree.

Sexual activity

A total of 90 participants (65%) were engaged in sexual activity. Of these, 60 (67%) and 25 (28%) participants were taking orally administered medications and using intravenous injections of alprostadil, respectively. Meanwhile, 2 (2%) maintained their sexual life with the aid of sex utensils, and 3 (3%) had undergone surgical treatment (e.g., prosthetic implants).

Both the employment rate and percentage of subjects with an experience of direct sexual rehabilitation education regarding sexual activity were significantly greater in the SA group than those in the SI group ($P=0.038$ and $P=0.011$, respectively). A significant difference in the time since the injury was also observed between the SA and SI groups ($P=0.003$) (Table 1). The binary logistic regression analysis revealed a period of 21–25 years since SCI (compared with the initial 5 years since SCI) and an experience of direct sexual rehabilitation education were independent factors strongly correlated with sexual activity (odds ratio, 3.33) (Table 2).

Sexual satisfaction among SA males

Based on the Likert-type scores, none of 90 SA males were very satisfied. Instead, 8 participants (8.9%) were satisfied, whereas 26 (28.9%) were neither satisfied nor unsatisfied. Furthermore, 28 participants (31.1%) were dissatisfied, whereas another 28 (31.1%) were very dissatisfied. To assess further the factors associated with sexual satisfaction among the SA group, we classified these subjects into three groups with reference to the Likert-type scale: Group A (scores of 1 and 2); Group B (score of 3); and Group C (scores of 4 and 5) (Table 3). Based on the analysis using this classification system, a lower level of background education was found to be significantly

Table 1 Comparison between the sexually active group and the sexually inactive group in males with motor complete SCI

Characteristics	Sexually active group (n = 90)		Sexually inactive group (n = 49)		P-value
	n	%	n	%	
Age (mean)	42.8 ± 9.9		44.2 ± 11		0.47
	(16–69)		(25–63)		
Partner status					0.88
With partner	41	45.6	23	46.9	
Without partner	49	54.4	26	53.1	
Level of education					0.55
≤ High school	56	62.2	33	67.3	
> College	34	37.8	16	32.7	
Employment status					0.04*
Full or part time	42	46.7	14	28.6	
None	48	55.3	35	71.4	
Economic status					0.21
Non-recipients	56	62.9	25	52.1	
Recipients of pension under Basic Living Assurance Law or under the lower income group	33	37.1	23	47.9	
Frequency of going out					0.05
Daily outing	62	69.7	26	53.1	
No or occasional outing	27	30.3	23	46.9	
Type of paralysis					0.50
Complete tetraplegia	19	21.2	8	16.3	
Complete paraplegia	71	78.9	41	83.7	
Time since injury (years)					0.003*
1–5	10	11.1	3	6.1	
6–10	19	21.1	16	32.7	
11–15	31	34.4	5	10.2	
16–20	17	18.9	10	20.4	
21–25	5	5.6	11	22.4	
25–30	3	3.3	4	8.2	
31–35	4	4.4	0	0	
35–40	1	1.1	0	0	
Education regarding sexual activity					0.01*
Direct	67	82.7	24	61.5	
Indirect	14	17.3	15	38.5	

Abbreviation: SCI, spinal cord injury.

* $P < 0.05$.

Table 2 Binary logistic regression model for sexual activity

Characteristics	Odds ratio	95% CI	P-value
<i>Time since injury (years)</i>			
1–5	1	—	—
6–10	3.79	0.71–20.14	0.12
11–15	0.73	0.12–4.39	0.73
16–20	2.65	0.47–14.78	0.27
21–25	9.9	1.54–63.69	0.02*
25–30	6.0	0.70–51.10	0.10
31–35	0	—	0.99
35–40	0	—	1.00
<i>Education regarding sexual activity</i>			
Indirect	1	—	—
Direct	3.33	1.31–8.41	0.01*
<i>Employment status</i>			
None	1	—	—
Full or part time	1.45	0.60–3.51	0.41
<i>Frequency of going out</i>			
No or occasional outing	1	—	—
Daily outing	1.72	0.72–4.1	0.22

Abbreviation: CI, confidence intervals.

* $P < 0.05$.

associated with sexual dissatisfaction ($P = 0.021$) (Table 3). Furthermore, the impact of direct sexual rehabilitation education was only of slight significance ($P = 0.06$). The multiple logistic regression analysis indicated that compared with Group A, a lower level of education was the most influential factor for sexual dissatisfaction in Group B (odds ratio, 6.74) (Table 4).

DISCUSSION

Limited research has been published on the sexuality of Asian women with SCI, such as in Malaysia or Turkey.^{6,7} However, to our knowledge, no previous formal academic study has described the overall current state of sexuality and sexual satisfaction among Asian men with motor complete SCI.

In the present study, 62.7% of the participants were SA. The subjects in this group were more likely to be employed, have a longer period of time since the injury and have direct educational information for sexual rehabilitation than those not SA. These findings on the percentage of SA males with SCI in Korea are comparable or somewhat lower compared with those reported for other recent studies. Sösteen *et al.*⁹ and Reitz *et al.*¹⁰ reported 64% (60 males) and 60% (47 males) with SCI had had intercourse, respectively. Additionally, Dahlberg *et al.*¹¹ reported that 68% of 92 males with traumatic SCI had engaged in sexual activity.

Furthermore, when compared with the sexual activity of healthy middle-aged males in the population throughout both the East and West,^{12,13} the sexual activity of males with SCI was definitely reduced. In general, people with physical disabilities are known to have more limited sexual lives.¹⁴

The sexual satisfaction of SA Korean men in this study was relatively lower than that of other reports in Western countries. The research of Dahlberg *et al.*¹¹ reported that 36% ($n = 33$) of their study subjects were very or somewhat satisfied with their sexual life. Berkman *et al.*¹⁵ assessed the sex lives of 104 male SCI veterans and found that 41%, 36% and 23% had satisfactory, somewhat satisfactory and

Table 3 Comparison of sexually active groups for sexual satisfaction

Characteristics	A (n = 8)		B (n = 26)		C (n = 56)		P-value
	n	%	n	%	n	%	
Age	37.1 ± 13.5		42.8 ± 8.4		43.7 ± 9.6		0.21
Partner status							0.96
With partner	4	50	12	46.2	25	44.6	
Without partner	4	50	14	53.8	31	55.4	
Level of education							0.02*
≤ High school	3	37.5	21	80.8	32	57.1	
> College	5	62.5	5	19.2	24	42.9	
Employment status							0.06
Full or part time	7	87.5	11	42.3	24	42.9	
None	1	12.5	15	57.7	32	57.1	
Economic status							0.48
Non-recipient	6	75	18	69.2	32	58.2	
Recipients ^a	2	25	8	30.8	23	41.8	
Frequency of going out							0.49
Daily outing	7	87.5	17	65.4	38	69.1	
No or occasional outing	1	12.5	9	34.6	17	30.9	
Level of SCI							0.41
Complete tetraplegia	3	37.5	4	15.4	12	21.4	
Complete paraplegia	5	62.5	22	84.6	44	78.6	
Time since injury (years)							0.64
1–5	0	0	3	11.5	7	12.5	
6–10	1	12.5	5	19.2	13	23.2	
11–15	2	25	12	46.2	17	30.4	
16–20	4	50	2	7.7	11	19.6	
21–25	0	0	2	7.7	3	5.4	
25–30	0	0	1	3.8	2	3.6	
31–35	1	12.5	1	3.8	2	3.6	
35–40	0	0	0	0	1	1.8	
Education regarding sexual activity							0.06
Direct	4	50	19	86.4	44	86.3	
Indirect	4	50	3	13.6	7	13.7	

Abbreviations: SCI, spinal cord injury.

A, Sexually satisfied group; B, sexually neither satisfied nor dissatisfied group; C, sexually dissatisfied group.

* $P < 0.05$.^aPension under Basic Living Assurance Law or under the lower income group.**Table 4** Multiple logistic regression model for sexual satisfaction

Characteristic	Odds ratio	95% CI	P-value
<i>Level of education</i>			
≤ High school			
A	1	—	—
B	6.74	1.13–40.34	0.04*
C	2.22	0.44–11.12	0.33
> College	1	—	—

Abbreviation: CI, confidence intervals.

A, Sexually satisfied group; B, sexually neither satisfied nor dissatisfied group; C, sexually dissatisfied group.

* $P < 0.05$.

unsatisfactory sex lives, respectively. The predominant Confucian cultural influences on sexual attitudes may explain the lower sexual satisfaction of males with SCI in the present study than that of participants in Western studies.¹² For example, life satisfaction in persons with SCI between Japan and Sweden was investigated in the context of cultural differences between East Asian and North European cultures. The Japanese SCI patients more often responded that they were sexually dissatisfied than Swedish SCI patients.⁸ Face-to-face interviews were chosen over letters or mail-back questionnaires because indirect questioning could have resulted in lower response rates and lack of validity because of cultural influence.

However, even within the present cultural context of the study population, we found that lower educational attainment and direct sexual rehabilitation education (although it was only slightly significant) had a great impact on sexual satisfaction. Education and counseling for sexuality are often poorly incorporated into the rehabilitation process.^{16,17} Therefore, based on the present findings, rehabilitation physicians and faculties need to integrate person-to-person tailored sexual education and sexual counseling services as part of a comprehensive rehabilitation program, in consideration of the individuals' academic background.

In the present study, we observed the severity of SCI (paraplegia or tetraplegia) was not associated with sexuality, which is consistent with the findings of previous research. In particular, Siösteen *et al.* found that physical and social independence and high mood levels were positive determinants of sexual adaptation after the injury, whereas the neurological level and completeness of the injury were not significantly correlated with sexuality.⁹ Moreover, Kreuter *et al.*¹⁸ reported that psychosocial rather than physical factors are more essential for a satisfactory sex life and relationships within this population. Hence, the current findings support previous results that sexual adjustment after SCI depends on factors other than the degree of physical disability.

This study had several limitations. First, because of an inhibited attitude toward sexuality in Asia, including Korea,^{12,19} we were unable to ask direct questions with respect to the presence of sexual activity, sexual partnership status and frequency of intercourse or sexual orgasm in the preliminary questionnaire of the survey. Second, previous studies have reported that psychological factors such as depression, intimacy with a partner and self-esteem are closely related to sexual satisfaction; however, we were unable to deal with psychological or emotional aspects in the present study. Finally, sexuality constitutes a fundamental part of people's lives, integrating physical, emotional, intellectual and social aspects.²⁰ Multimodal assessments for sexuality should be considered for further investigation.

Although this study had the above-mentioned limitations, these findings provide useful information for the current sexual rehabilitation intervention of patients with SCI and supporting data for

developing the contents of both short- and long-term rehabilitation education programs in the future.

DATA ARCHIVING

There were no data to deposit.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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