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Quality of Life in Iranian Men With Spinal Cord Injury in Comparison With General Population

Manijeh Yazdanshenas Ghazwin [1]; Samira Chaibakhsh [2]; Sahar Latifi [1]; Amir Hossein Tavakoli [1,3,*]; Davood Koushki [4]

[1]Brain and Spinal Injury Research Center, Tehran University of Medical Sciences, Tehran, IR Iran
[2]Department of Biostatistics, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran
[3]Iranian Tissue Bank Research Center, Imam Khomeini Complex Hospital, Tehran University of Medical Sciences, Tehran, IR Iran
[4]Iran University of Medical Sciences, Tehran, IR Iran

*Corresponding author: Amir Hossein Tavakoli, Iranian Tissue Bank Research Center, Imam Khomeini Complex Hospital, Tehran University of Medical Sciences, Keshavarz BLV, Tehran, IR Iran. Tel: +98-2166581561, Fax: +98-2166938885, E-mail: amirtavakoli1@yahoo.com

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Background: Spinal cord injury (SCI) imposes a tremendous burden on physical, mental and psychosocial aspects of life among affected individuals.
Objectives: Until now, there was no statistics about the quality of life (QoL) in Iranian males with SCI. Here, we assessed the QoL among Iranian men with SCI and compared it with general population.
Patients and Methods: Referred male patients with SCI to Brain and Spinal Injury Research Center (BASIR) were invited to participate in this investigation. The QoL was measured by the Short-Form 36-Item Health Survey (SF-36). One sample T-test was used to compare outcomes with normal distribution. Values in general population in Iran were extracted from previous literatures.
Results: Total of 153 patients with mean age of 35.10 ± 16.20 years old participated in this study. The most common reason of trauma was road accidents (49.7%). Cervical level injury was seen in 47% of patients, thoracic level in 28.1% and lumbosacral level in 24.9%. QoL was assessed in eight domains. Mean scores in domain of physical functioning was significantly higher in general population (28.2 ± 25.3 and 87.8 ± 19.0 in SCI group and general population, respectively, $P < 0.0001$). Similarly, scores in domain of physical and emotional role functioning were higher in general population ($P < 0.0001$ and $P = 0.002$, respectively). No significant difference was seen between males with SCI and general population in domain of mental health (70.5 ± 19.6 and 69.2 ± 17.1 in SCI group and general population, respectively; $P = 0.37$).
Conclusions: This study shows that men with SCI have significant reduced QoL in comparison with general population. However, it seems that the scores in domain of mental health are not affected by SCI and this aspect of QoL is spared to some extents after injury.

Keywords: Spinal Cord Injury; Quality of Life; Male; Iran

1. Background

Spinal cord injury (SCI) is a catastrophic event (1, 2) with an incident range of 10.4 to 83 per million each year. Its prevalence is estimated to be between 223 and 755 cases per million (3). SCI is accompanied with many complications including bowel dysfunction, impaired bladder control, mobility limitations, sexual dysfunction and increased risk of pressure ulcers, which leads to considerable changes in quality of life (QoL) (4). Although it is assumed that patients with SCI have poorer QoL (5), no statistics on the measures of QoL among Iranian men with disability has been reported up to now.

Attention to QoL is essential since it affects patients' ability to cope with their new situations (2). QoL is generally considered to be a multidimensional construct, primarily based on a person's subjective appraisal of their physical, functional, emotional, and social well-being (4). QoL is a multidimensional concept, which is usually expressed subjectively by patients and assessed by self-report (5). Evidences support the fact that chronic illnesses affect health-related QoL (6), which is not only dependent on patients' physical conditions, but other factors including social and financial supports, culture and living conditions. Since QoL is affected by social and environmental factors, it is expected to observe differences on the scores of QoL among different nations. In this regard, it is essential that each nation provides its own their specific statistics on the level of QoL to understand the background condition in each subset of population. Among individuals with SCI, no definite statistics on the QoL in Iranian men could be found. However, some previous literatures have illustrated that scores of QoL among patients with disability is only slightly lower than in the general population (7, 8). Reduced QoL can be associated with subsequent complications such as depression, anxi-

ety and drug abuse (9-15); thus, it is essential to evaluate the QoL among patients with SCI to describe the present condition of the affected individuals. These statistics can be cited in further investigations, which intend to examine QoL.

2. Objectives

The purpose of this study was to evaluate QoL in Iranian men with SCI and to compare their scores with those of the general population.

3. Patients and Methods

3.1. Study Design and Participants

In this cross-sectional study on patients referred to Brain and Spinal Injury Research Center (BASIR), data were collected by direct face to face interviews from April 2012 to January 2013. Participation in the study was voluntary. The study protocol was approved by ethical committee of Tehran University of Medical Sciences. Inclusion criteria were as follow: male gender, traumatic SCI, age range of 18-65 years and ability to speak and understand Persian language fluently. Exclusion criteria were as follow: existence of cognitive impairment, history of mental diseases, coincidental chronic diseases including diabetes, cancer, cardiovascular disorders, liver dysfunction, AIDS, kidney failure etc. and consumption of special medications such as antidepressants, steroids, hormones, anticonvulsive drugs, heparin, lithium and antipsychotics. Those patients with addiction to illegal drugs or with history of alcoholism were excluded as well.

3.2. Measures

Baseline characteristics including age, level of education, cause of injury, marital status and employment were asked during interviews and were indexed in prepared forms. QoL was measured by Iranian version of Short-Form 36-Item Health Survey (SF-36). This questionnaire has been shown to have acceptable reliability and validity in Iranian population (16). The SF-36 questionnaire was scored by summing and transforming raw data for each of the eight domains as per the formula in the SF-36 manual. Higher scores on the 8 domains suggest higher Health Related-QoL. The eight SF-36 domains include: (1) physical functioning, indicating the extent to which a person's health limits their day to day physical activities; (2) role limitations at work or in the home due to physical health problems (role-physical); (3) bodily pain, indicating the extent to which pain interferes with daily activities; (4) general health status and perception of health; (5) vitality, a measure of a person's energy levels; (6) social function, indicating the extent to which health limits social activities; (7) role limitations due to emotional problems (role-emotional), indicating the extent to which a person's emotional problems impact on daily and work activities; and (8) mental health, indicating the amount of time a person experiences feelings of nervousness, depression, happiness, etc. (17).

Data on general population was extracted from Montazeri et al. study in Iranian population (16). The mean score and standard deviation (SD) of each of these eight domains were extracted and were entered into analysis for comparison with SCI population. In Montazeri et al. study, total number of participants was 4163 in which 1997 subjects were male. For proper comparison, only the data on male population entered into analysis in our investigation.

3.3. Statistical Analysis

All statistical analysis was performed using STATA software version 12 (STATA/C, StataCorp). Continuous variables are expressed by mean ± SD and categorical data are presented by frequency number and percentages. One sample T-test was used for proper comparison of means with normal distribution. $P < 0.05$ was considered significant.

Table 1. Baseline Characteristics in Individuals With Spinal Cord Injury [a]

	SCI Males (N = 153)
Age	35.10 ± 16.20
Marital Status	
Single	65 (42.5)
Married	46 (30)
Widower	6 (3.9)
Divorced	24 (15.6)
Separated	12 (8)
Occupation	
Employed	29 (18.9)
Student	28 (18.3)
Unemployed	68 (44.5)
Other	28 (18.3)
Age of injury	
18-30	84 (54.9)
31-43	40 (26.1)
44-65	29 (19)
Cause of injury	
Motor vehicle crashes	76 (49.7)
Violence	24 (15.7)
Fall	21 (13.6)
Sports	24 (15.7)
Other causes	8 (5.2)
Schooling	
Illiterate	21 (13.7)
Basic education	37 (24.2)
Moderate education	57 (37.3)
Higher education	38 (24.8)
Level of injury	
Cervical	72 (47)
Thoracic	43 (28.1)
Lumbosacral	38 (24.9)

[a] Data is presented as Mean ± SD or No. (%).

Table 2. Domain Scores in Individuals With Spinal Cord Injury And General Population

Domains	General Population for Males (N = 1997) [a]	Spinal Cord Injury for Males (N = 153) [a]	P Value
Physical functioning	87.8 ± 19.0	28.2 ± 25.3	< 0.0001
Physical role functioning	73.8 ± 36.4	54.6 ± 35.6	< 0.0001
Emotional role functioning	70.1 ± 39.7	59.7 ± 41.2	0.002
Vitality	68.9 ± 16.2	61.0 ± 19.5	< 0.0001
Mental health	69.2 ± 17.1	70.5 ± 19.6	0.370
Social functioning	78.0 ± 23.5	63.1 ± 22.8	< 0.0001
Bodily pain	82.7 ± 23.4	69.8 ± 26.4	< 0.0001
General health	70.2 ± 19.6	50.0 ± 9.8	< 0.0001

[a] Data is presented as Mean ± SD.

4. Results

Total of 153 males with SCI with mean age of 33.10 ± 8.08 years participated in this study. Marital status was single in 65 (42.5%) of patients and married in 46 (30%). Six men (3.9%) were widower, 24 men were divorced (15.6%) and 12 patients (8%) were separated (without official divorce). Table 1 illustrates the baseline characteristics of these patients. The most common cause of injury was road accidents (49.7%) and cervical level injury was the most common (47%). The majority of patients were unemployed. Age at the time of injury occurrence was mostly between 18 and 30 years old (54.9%). Fifty-eight patients (37.9%) were illiterate or had only primary educational level.

Mean score in domain of physical functioning was 28.2 ± 25.3 in men with SCI, which was significantly lower than the general population (87.8 ± 19.0) (P < 0.0001). Mean scores in physical role functioning were 73.8 ± 36.4 and 54.6 ± 35.6 in general population and patients with SCI, respectively (P < 0.0001). Similarly, scores in emotional role functioning was significantly higher in general population (P: 0.002). Table 2 shows the mean scores in each domain in general population and Iranian men with SCI. There was no significant difference between patients with SCI and general population in domain of mental health (mean scores of 69.2 ± 17.1 and 70.5 ± 19.6 in general and SCI population, respectively) (P = 0.37). Scores in general population were significantly higher in domains of vitality, social functioning, bodily pain and general health (P < 0.0001).

5. Discussion

In the present study, the QoL of Iranian men with SCI was compared with general population. Our results show that patients with SCI have significantly reduced QoL in all domains except in domain of mental health.

Our study has shown that about two-thirds of our samples did not acquire employment following their injury, which is in line with Tasiemski et al. (18) investigation. In the present study, we found that about one-sixth of Iranian men with SCI (15.6%) were divorced and two-third of these divorces occurred after SCI, which estimates the approximate divorce rate of 11% after SCI among Iranian males. Previously, it has been reported that divorce rate after SCI is 1.5–2.5 times higher than that of the general population (19, 20), which occurs mostly in the first three years after SCI (21). However, since news stations report a divorce rate of 15% in general population in Iran (1 in each 6.5 marriages) (22), it seems that there is no significant difference between the divorce rate of Iranian general population and men after SCI.

Similar to results in Devivo et al. investigation (23), we found that road accidents were the most common cause s of SCI. However, they reported higher rate of injuries caused by falling than violence, while our study revealed violence as the second common cause of spinal cord injury following traffic accidents.

The SF-36 has been validated and reported to be a reliable tool for assessment of QoL in the general population (24-26) as well as in different patients groups (27, 28). Previously, Westgren and Levi reported that scores of QoL (obtained by SF-36 questionnaire) are significantly lower in all domains compared with able-bodied individuals (28), which is in consistency with our results. Similar finding has also been reported in previous literatures (29-37). However, here we detected that in domain of mental health, scores in Iranian men with SCI are similar to those of general population. This result is in conformity with Kreuter et al. and Middleton et al. reports, since they have shown absence of significant differences between persons with SCI and normal population in mental health domain (38, 39). Possible explanation for this similarity can be due to development of mental maturity as a consequence of coping with chronic stressful conditions. It is expected that patients with disability report reduced QoL in the domains of physical functioning; but scores in domain of mental health are reduced after SCI, which is due to healthy mental condition and probably higher mental maturity in affected patients.

While our study has illustrated lower scores of QoL in men with SCI compared with normal subjects in seven

domains of SF-36 questionnaire, there are many investigations that support the reduced scores in all eight domains (37-42). One reason for this controversy can be due to existence of differences between genders. All these investigations had considered both males and females; however, here we only investigated men with SCI. Mousavi et al. (43) showed that females with SCI had reduced scores in all domains of SF-36 except for domain of vitality in comparison with general population. By considering the results from his study, existence of a sexual polymorphism in the pattern of QoL scores after SCI can be suggested.

Our study shows that Iranian men with SCI have significantly reduced health-related QoL assessed by Short Form of SF-36 questionnaire in all studied domains except for domain of mental health. It is expected to observe reduced scores in physical functioning in patients with disability. However, similar scores in domain of mental health between men with SCI and able-bodied subjects shows existence of intact mental health or even some levels of mental maturation due to coping with hard and stressful conditions.

This study gives statistics on the QoL in Iranian men with SCI. Since it is essential to have background statistics on both genders, it is recommended that further studies consider both sexes to describe the present condition of these patients with adequate statistics.

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Authors' Contributions

Manijeh Yazdanshenas Ghazwin contributed to study design and data collection. Amir Hossein Tavakoli contributed to study design, patients' recruitment and data collection and obtained the ethical approve. Dr. Samira Chaibakhsh contributed to statistical analysis and study design. Dr. Sahar Latifi contributed to writing the manuscript. Davood Koushki contributed to writing and editing the manuscript.

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