

Effective Teaching Strategies for Patient Education in Individuals With Spinal Cord Injury in Iran

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Abstract

Background: Spinal cord injury (SCI) causes multiple complications, which can be prevented or minimized, through patient education (PE). Individuals with SCI are different, according to culture, socioeconomic status, level of education, access to educational facilities, and geographic region. Therefore, different teaching strategies should be used to increase effectiveness of education.

Objectives: The aim of this study is to evaluate the perspectives of individuals with SCI, about their preferred methods of PE.

Patients and Methods: This was a descriptive cross-sectional study undertaken at the brain and spinal cord injury research center (BASIR), Tehran university of medical sciences, Tehran, Iran. The participants comprised of 119 SCI persons (81 men and 38 women), with mean age of 32 ± 10.5 years, referred to BASIR clinic to receive outpatient rehabilitation, in 2012. The patients were asked about their views, concerning preferred methods of PE.

Results: Most participants (94%) appreciated to be informed concerning their illness. The two most preferred education methods were educational movies by CD or DVD (44%) and lectures or face classes (36%), followed by educational TV programs (30%), brochures (24%), education via internet or computer-aided (14.3%), and, finally, educational books (2%).

Conclusions: Health care providers should take into account the differences between individuals with SCI, to use effective teaching strategies. Also, they should apply appropriate teaching methods and more than one teaching strategy, in relation to the different time and situation. Effective PE, in individuals with SCI, can increase their knowledge and motivation in self-care, improve satisfaction, prevent complications and make the PE more effective.

Keywords: Patient Education, Self-Care, Effective Teaching Strategies, Spinal Cord Injuries

1. Background

Patient education (PE) represents a series of activities planned, using lectures or face classes, internet or computer-aided, written material (brochures, books), CDs or DVDs, verbal recall, demonstration, educational TV programs and role playing or combination of methods that leads to improvement and better health in patients and health promotion in the community (1).

Individuals with spinal cord injury (SCI) are different, according to socioeconomic status, level of education, access to facilities and geographic region. Therefore, appropriate teaching strategies should be used.

Individuals with SCI have a high lifelong risk for debilitating and costly medical conditions, such as urinary tract infections, pressure ulcers, pain, spasticity, increased body mass index, respiratory and cardiac complications, depression and psychosocial outcomes (2-8).

Most of these complications can be prevented or minimized through PE. The training, in individuals with SCI is of particular importance. Education of individuals with SCI can provide access to required information (preven-

tion of complications, transportation, employment, and social integration) and leads to long-term adjustment to their particular SCI type (9).

1.2. Barriers of Patient Education in Spinal Cord Injury

Patients and their family members' education can be done during inpatient and outpatient rehabilitation, to avoid secondary complications and increase quality of life (QOL).

Length of stay (LOS) in SCI inpatient rehabilitation has decreased and many patients may be discharged before learning all self-care proficiencies and required information (9-11).

Persons with early onset SCI are prominent in emotional impact and may be unready to learn new information. Their readiness depends on variables, such as age at time of injury, level of injury, time passed from injury and other personal characteristics (12). The care of individuals with SCI takes too much time and, therefore, the staff have little time for face to face PE (13). On the other hand, cultural issues, level of education and access to facilities, are other fac-

tors that impact on choosing appropriate learning styles.

In this context, the teaching methods should be appropriate the socioeconomic level of patient and culture, to increase efficiency of education. The patient's motivation to learn, combined with proper technique with the patient's condition and level of education, are very important.

Effective PE, in individuals with SCI, can increase their knowledge and motivation in self-care, improve satisfaction and prevent complications.

To use either of teaching strategies, we should consider whether the individuals are qualified for the methods of PE. Also, having available and attractive resources, at the appropriate time and place, is also important. For example, using written material (brochures, books and self-care manuals), needs having literacy, as well as using internet or computer-aided needs requires facilities. These factors should be considered to improve the effectiveness of PE, in individuals with SCI, and provide appropriate learning styles and materials, in various stages of rehabilitation (12).

There is little information about appropriate teaching strategies and effective approaches for PE in individuals with SCI, in Iran.

2. Objectives

The aim of this study is to evaluate the views of individuals with SCI about their preferred methods or strategies for PE.

3. Patients and Methods

3.1. Design and Participants

This descriptive cross-sectional study was part of a project, conducted in 2012 (4). The main aim of that project was evaluating psychosocial outcomes, following SCI. The participants were patients with traumatic SCI, referred for outpatient admission to the clinic of the brain and spinal cord injury research center (BASIR), Tehran university of medical sciences, Tehran, Iran. The inclusion criteria were age ≥ 18 years and using wheelchair, while exclusion criteria regarded patients with non-traumatic SCI. There were 81 (68%) men and 38 (32%) women, with a mean age and age at SCI onset of 32.4 ± 10.5 and 28.1 ± 10.4 years, respectively (Table 1). The BASIR has provided many inpatient and outpatient rehabilitation services for individuals with SCI, referred from all parts of Iran (4).

3.2. Methodology

The data were collected by trained interviewers. The first part of the questionnaire concerned demographic and clinical information, including age, sex, age at the time of injury, marital status, education level, occupation, and the cause of injury. Level of injury (tetraplegia/paraplegia) and completeness (complete/incomplete) were obtained from medical records.

The second part of the questionnaire consisted of these

questions: Do you need to know about your condition (yes/no)? Do you need to learn physical skills in SCI (for example riding a wheelchair, moving from a wheelchair to a bed, bathing, toileting) (yes/no)? Do your family need to be trained in your care (yes/no)? What are the preferred methods of PE (more than one option could be chosen) (Videos on CD ROM or DVD, attending lecture or face classes, educational TV programs, brochures, books or computer-aided education including internet)? We asked about these methods, because these methods were better known to the participants than other methods. This interview lasted about 15 minutes.

This study was approved by Tehran University of Medical Sciences, Tehran, Iran. Each subject signed a written informed consent, prior to participation.

3.3. Statistical Analysis

We used SPSS software version 18 for windows (SPSS Inc., Chicago, IL, USA). Continuous variables, in two categorical groups, were analyzed, using a t-test or Mann-Whitney U test, as appropriate.

Relationships between categorical variables were evaluated using chi-square or Fisher's exact test. Continuous variables were presented as mean \pm standard deviation. The significance level was considered at $P \leq 0.05$.

4. Results

The demographic and clinical characteristics of participants have been shown in Table 1. Most of them, 112 (94%), liked to know about their illness, 69 (60%) stated the need to learn physical skills in SCI, while 59 (49.6%) stated that their family need to be trained in their care. The two most preferred education methods were educational movies by CD or DVD (44%) and attending lectures or face classes (36%). Other methods were educational TV programs (30%), brochures (24%), education via internet or computer-aided (14.3%) and, finally, educational books (1.7%). There were no differences in these items, between the two genders, level of injury and completeness.

The frequency of preferred method of educational videos on CD-ROM or DVD, in participants with education level of > 12 year (academic education) was nine (47%) and in participants with education level of ≤ 12 year was 43 (43%). Six (31.5%) participants, who had education level of > 12 year, and 11 (11%) participants, who had education level of ≤ 12 year, preferred the method of internet or computer-aided.

There was no association between age and desire to know about illness and learning physical skills, and desire for their families to be trained. Also, the duration of SCI was not associated with desire to know about illness and learning physical skills, while the mean duration of SCI, in individuals that desired their families to be trained, was less than for others (3.5 ± 5 vs. 4.9 ± 4 years, $P = 0.006$).

Individuals with tetraplegia predominantly desired to learn physical skills in SCI and their family to be trained in their care, compared to paraplegic ones (Table 2).

Table 1. The Demographic and Clinical Characteristics of Participants^a

Criterion/ Status	Values ^b
Age	32.4 ± 10.5
Age at time of SCI	28.1 ± 10.4
Duration of SCI	4.2 ± 4.6
Level of injury	
Paraplegia	80 (67.2)
Tetraplegia	39 (32.8)
Completeness	
Incomplete	59 (49.6)
Complete	60 (50.4)
Marital status	
Single	51 (42.8)
Married	59 (49.6)
Divorced	4 (3.4)
Widow	3 (2.5)
Separated	2 (1.7)
Education level, y	
0 - 8	60 (50.4)
9 - 12	40 (33.6)
> 12	19 (16.0)
Occupation	
Unemployed	85 (71.4)
Student	9 (7.6)
Employed	25 (21.0)
The cause of injury	
Crash injury	79 (66.4)
Falling	15 (12.6)
Others	25 (21)

^aAbbreviation: SCI, Spinal Cord Injury.

^bData are presented as mean ± SD or No. (%).

Table 2. The Perspective of Participants About Patient Education^{a,b}

Question	Answer	Gender		p ^c	Level of Injury		p ^c	Completeness		p ^c
		Male	Female		Paraplegia	Tetraplegia		Incomplete	Complete	
Do you need to know about your condition?	Yes	78 (96.3)	34 (89.5)	0.1 ^d	56 (93.3)	24 (100)	0.3 ^d	28 (93.3)	42 (97.7)	0.6 ^d
Do you need to learn physical skills in SCI?	Yes	48 (61.5)	21 (56.8)	0.6	27 (46.6)	17 (73.9)	0.03	14 (48.3)	25 (61)	0.3
Do your family need to be trained in your care?	Yes	43 (53.1)	16 (42.1)	0.3	19 (31.7)	15 (62.5)	0.009	10 (33.3)	21 (48.8)	0.2

^aAbbreviation: SCI, Spinal Cord Injury.

^bValues are presented as No. (%).

^cChi-Square Tests.

^dFisher's Exact Test.

5. Discussion

Most participants (94%) liked to know about their illness. The two most preferred education methods were educational movies by CD or DVD (44%) and lectures or face classes (36%). Educational movies by CD or DVD are the favorite method for participants, because they can watch several times and it helps them to learn and remember better. Also, several features of face classes, such as communication, and question and answer interaction, lead to more proneness to this learning method. For example, individuals with SCI need long sessions of physiotherapy and occupational therapy; therefore, this method can be used during these procedures. This is inconsistent with Matter et al. (14) study, which reported that most frequently preferred methods of PE were internet (53.8%), followed by in person with a health care provider (55.2%), and newspaper by postal mail (41.5%) (14). Using a learning strategy depends on access to the necessary means. Internet access is an important factor in choosing internet as a source of education. In Matter et al (14) study, 80.2% of participants with SCI reported having internet access. We did not ask about internet access, even though the access of internet in Iran is low, while CD or DVD player can be found in every house.

Many published randomized trials have shown that video media promote understanding and maintain health information. For example, in Calderon et al. study, mean knowledge scores were higher in the educational video, compared to educational session with an HIV counselor (15). Also, Armstrong et al. showed that online video-based PE resulted in greater improvement in clinical outcome, compared with pamphlet-based education, resulting that the online video was significantly more appealing than the pamphlet (16). Therefore, video or digital media would provide more useful information for individuals with SCI.

In Iran, similar to other countries, individuals with early onset SCI are depressed and may be unready to learn new information (4). Therefore, they could not learn the required information during stay in hospitals or inpatient rehabilitation. They should learn about self-care after discharge. On the other hand, individuals with SCI have transportation problems, such as paramedic transportation (4). Therefore, learning by CD or DVD, at their house, can be a good method of education, and save time and money. They and their families learn without going to inpatient or outpatient clinics.

However, Agre et al. reported that CD-ROM programs can be more comprehensive than video media or booklets and cover a wider area of educational needs. Patients of different levels of education can be taught by self-directed learning (17).

Computer-based PE is an effective teaching method that improves patient knowledge and satisfaction and reduces anxiety and, therefore, can be an effective additive for face-to-face education (18). Patients have consultation

and communication with the educator to ask medical questions and discuss about the benefits and harmful effects of their treatment options. It can save time and money, by bringing information to the patient, at their preferred place and time, resulting in a more efficient patient care, without dissatisfying the patients (19).

The internet is an important way to access information for individuals with SCI, especially when they are far away from health care providers, have transportation problems or have limited access to other sources of information. Using internet has led to better health related QOL (20, 21).

A study, in patients with carpal tunnel syndrome, showed that patients, who were educated using a computer, had higher knowledge levels than patients who were educated by a doctor, and, after both methods of education, satisfaction was equal (19).

Lectures or face classes are good methods with teacher-learner interaction. However, these presentations are restricted to persons who live nearby and can participate. The individuals with SCI, who have severe disability or have transportation problems, may be unable to attend these classes (10).

Educational TV programs may be as effective as CD or DVD, although specific issues, such as SCI, may rarely be addressed.

Twenty four percent of our participants selected brochures, as a preferred method of education that is similar to Matter et al. study (22.4%) (14). However, written materials should be prepared in an appropriate manner, reading level and comprehensibility for people with SCI (22). Combination of text and spoken word are more effective than using only text (10).

Our study showed only 2% of participants chose educational books, as a preferred information source that is similar to Matter et al. study, in which books or public libraries were selected by less than 10% of participants, as current and preferred methods of receiving SCI information (14).

The frequency of preferred method of CD in participants, with high and low education level (> 12 years and ≤ 12 years) was similar. However, the preferred method of internet or computer-aided, in participants who had education level of > 12 years, was about three times greater than in those with education level of ≤ 12 year. This may be due to more access to internet and more computer and internet literacy, in participants who had education level of > 12 years.

There was no association between duration of SCI and desire to PE. Therefore, they needed information at any time after injury. However, the mean duration of SCI, in individuals that desired their families to be trained, was less than in others. This may be due to gaining more experience by their families, after a longer period of SCI. The tetraplegic individuals desired more to learn physical skills in SCI, and also that their families to be trained in their care, compared to paraplegic individuals. Perhaps, this is because of more disabilities and need to further enhance their capabilities.

Most of our participants selected more than one method of learning method, revealing the importance of using more than one learning style, at different time and situation, after injury.

This study conflates the teaching strategies with the method of delivery. In our participants, educational videos on CD-ROM or DVD and face to face classes were the two preferred methods. Internet was not highly preferred, probably because participants had limited access. It seems education level and access to the technologies are two important factors, affecting the preferred methods. Health care providers should take into account the differences between individuals with SCI regarding use of effective teaching strategies. Also, they should apply appropriate teaching method and more than one teaching strategy, at different time and situation.

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