Effect of Instructional Guidelines on Patients' Knowledge, Activities of Daily Living Practices, and Pain Intensity Following Spinal Cord Injury

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Abstract

Background: A spinal cord injury is a type of lesion to the spinal cord that can result in changes to its function, either permanently or temporarily. There are two categories of spinal cord injury aetiologies: traumatic and non-traumatic. This devastating illness can result in severe neurological damage and a lower standard of living. **Aim of the study:** To determine the effect of instructional guidelines on patients' knowledge, activities of daily living practices, and pain intensity following spinal cord injury**. Research Design:** A quasi-experimental design was used to fulfill the aim of the current study. **Study Settings:** The study was conducted in the neurological intensive care unit and neurology unit and neurology Outpatient Clinic at Sohag University Hospital. **Subject:** A convenient sample of (100) patients was selected from the previously selected settings. **Four tools for data collection**: (1) Patient demographic data, (2) Patients' knowledge regarding spinal cord injury, (3) Patients' Activities of Daily Living practices regarding spinal cord injury, and (4) Numerical Pain Rating Scale. **Result:** The current study revealed that there was a highly statistically significant difference in patients' knowledge and practice, and reductions in pain mean scores among the studied patients post-instructional guidelines implementation compared to pre-instructional guidelines implementation with (P= <0.05). Also, the study demonstrated that there was a highly statistically significant correlation between patients' knowledge and practice, and pain intensity with (P= <0.001). **Conclusion**: The study concluded that instructional guidelines implementation for patients had a positive effect on improving patients' knowledge and activities of daily living practice and pain intensity following spinal cord injury with significant differences between pre and instructional guidelines implementation. **Recommendation:** Develop a simplified illustrated and comprehensive Arabic booklet to be available for all patients early when diagnosed including the latest information about spinal cord injury, its therapeutic regimen, and how the patients can manage their symptoms to improve their knowledge and Activities of Daily Living practices, and pain intensity.

Keywords: Instructional guidelines, Knowledge, Pain, **A**ctivities of **D**aily **L**iving Practices, Patients following spinal cord injury.

Introduction:

A spinal cord injury is a type of lesion that affected the spinal cord that can result in changes to its function, either permanently or temporarily. Traumatic and non-traumatic aetiologies of spinal cord injury are distinguished. Devastating neurological impairment and a diminished quality of life can result from this illness (**Pruthi et al., 2021**). In contrast to non-traumatic spinal cord injury, which happens when the spinal cord is acutely damaged by an external physical impact such as a car accident, fall, sports-related injury, or violence When an acute or chronic disease process—such as degenerative disc disease, a tumor, or an infection—causes the first injury, spinal cord injury results (**Alizadeh et al., 2019**).

Since there are numerous potential causes and no single large registry that houses all the data, it is challenging to estimate the number of spinal cord injuries. It is estimated that the number of Americans with traumatic spinal cord injuries ranges from 183,000 to 230,000; however, this number is expected to more than double if nontraumatic cases are also included. Spinal cord injury instances resulting from tumors and

degenerative diseases were more common in developed nations. Comparatively speaking, developing nations tended to have greater rates of infections, especially HIV and tuberculosis, while it was noteworthy that several also mentioned tumors as a primary reason (**Nadeau et al., 2021)**.

A spinal cord injury can cause partial or complete loss to motor and sensory functions beneath the affected area. It is a debilitating and permanent disorder that depends on the lesion severity. When a spinal cord injury results in function loss in the cervical region, it is referred to as tetraplegia; when it results in function loss in the thoracic, lumbar, or sacral regions, it is referred to as paraplegia. In addition to disabling the victims and their families, these injuries put a burden on the healthcare system and the economy because of lost production and exorbitant medical expenses (**Burkhart et al., 2021**).

There are two types of spinal cord injury aetiologies: traumatic and non-traumatic. Traumatic injuries frequently arise from car crashes, sporting events, falls, or violent acts that cause the spinal cord to be crushed, sheared, or penetrated. Numerous conditions, such as vascular diseases, cancer, and infections, can cause non-traumatic injuries. The degree of paralysis and sensory loss depends on the type and severity of the injury **(Singh et al., 2019)**.

Numerous side effects emerge from the damage caused, such as osteoporosis, pressure ulcers, neuropathic pain, bowel, bladder, and sexual dysfunction, as well as lung and cardiovascular disease. To improve quality of life, lessen the burden on the healthcare system, decrease secondary problems such as pressure injuries and UTIs, and promote function and independence, neuro-recovery strategies are critical (**Kaiser et al., 2020**). The quality of life and long-term neurological and functional results of individuals with spinal cord injuries can be significantly influenced by the immediate care they get. Restoring physiological equilibrium, minimizing secondary harm, keeping an eye out for early indications of developing neurologic deficits, and maintaining neurologic function are the goals of early intervention (**Mohammed & El-Fadl, 2021)**.

Spinal tumors are the primary cause of non-traumatic spinal cord injury in the United States and other industrialized nations, behind degenerative disease of the spine. In contrast, non-traumatic myelopathy is primarily caused by infections, such as HIV and tuberculosis, in many impoverished nations. Non-traumatic spinal cord injury is caused by degenerative and hereditary diseases, inflammation, malnourishment, and other vascular injuries (**Hyun-Yoon, 2019**).

Due to restricted innervated skeletal muscle and a diminished ability to breathe independently, spinal cord injuries impose limitations on not only the convenience of exercising but also its capacity (**Taylor, 2018**). These deficiencies also affect motor, sensory, and autonomic functions. A significant advancement in the field of spinal cord injury care has involved the identification and avoidance of chronic consequences, such as pressure sores, bladder dysfunction, and respiratory impairment, with targeted therapies (**Abrams & Wakasa, 2019).**

If a patient has paraplegia or quadriplegia, they need special nursing care. To minimize bedsores and contractures, the nurse must evaluate each nerve for the patient's potential and develop preventive measures that will aid in early ambulation and rehabilitation. It is critical to assist the patient and their family in adjusting to any potential deficiency. According to the **Consortium for Spinal Cord Medicine Clinical Practice Guidelines (2018)**, the patient and family should be informed about the injury, prognosis, and potential complications.

To provide good nursing care that can prevent or decrease future SCI, nurses working as a multidisciplinary team should strive for the best possible outcomes for their patients. Nurses play an important role in patient education. Along with giving medical care, nursing plans based on scientific nursing theory and evidence-based practice are implemented, patients' psychological well-being is supported, education is given, and the appropriate medical services for patients and their carers are evaluated (**Wang et al., 2022**). In order to promote the physical, psychological, and spiritual well-being of patients with spinal cord injuries and help them transition to a new

way of life, nurses create and put into practice self-care practices. With the help of these activities, patients will be better prepared to accept their limitations, return to their families and communities, and look forward to the future (**Houtenville & Boege**, **2020**).

Significance of the study:

Individuals suffering from spinal cord injuries are severely impaired. Over 500,000 people worldwide suffer from spinal cord injuries each year. Approximately 90% of these instances have trauma-related causes. A recent estimate places the number of new cases of spinal cord injury in the United States at 17,810, and the estimated number of individuals living with the condition is currently 294,000. By the time patients were released from the hospital, less than 1% of them had healed neurologically (**Giraldo et al., 2021**).

The most common causes of traumatic spinal cord damage are external force trauma, which also includes falls, violent incidents, and car accidents. Approximately 36.6% of spinal cord injuries in the US are the result of car accidents. Falls (22.5%) rank as the second most common cause, followed by sports injuries and violence, particularly gunshot wounds. When it comes to spinal cord injuries in the elderly, falls rank first (51.9%) in people 61 to 75 years old and sixth (65.7%) in those 76 years and older (**Singh et al., 2019**).

Among Egyptians who have a greater incidence of cervical lesions, falls are the primary cause of traumatic spinal cord injuries. Men are far more likely than women to get injured, particularly in the young adult demographic. Ten). After suffering a serious spinal cord injury, a patient's knowledge and practice can have a huge impact on how they recover. Therefore, patients need to have a strong passion for providing comprehensive care to these highly dependent patients. Thus, it is critical to understand needs and care results (**Ram et al., 2021**). Therefore, this study's goal was done to determine the effect of instructional guidelines on patients' knowledge, practices, and pain intensity following spinal cord injury

Aim of the study:

To determine the effect of instructional guidelines on patients' knowledge, activities of daily living practices, and pain intensity following spinal cord injury through**:**

- Assess patient's knowledge regarding spinal cord injury pre and post-instructional guidelines implementation
- Assess patient's activities of daily living practices regarding spinal cord injury pre and post-instructional guidelines implementation
- Design instructional guidelines based on the patient's actual needs.
- Implement instructional guidelines concerning patients' actual needs.
- Explore the effect of instructional guidelines implementation on improving patients' knowledge, practices, and pain intensity following spinal cord injury.

Research Hypotheses:

- H1: There will be an improvement in knowledge post-test scores than in the pretest regarding spinal cord injury.
- H2: There will be an improvement in activities of daily living practices post-test scores than in the pretest regarding spinal cord injury.
- H3: There will be a reduction and differences in pain intensity post-test scores than in the pretest regarding spinal cord injury.
- H4: There will be a significant correlation between knowledge, activities of daily living practices, and pain intensity.

Research Design:

To fulfill the aim of the current study a quasi-experimental design was utilized. To assess the unproductive relationship between intervention and outcome, this study has espoused the Quasi experimental design with one group pre and post-test. It's a way of evaluating the impact of an intervention before and after it has been enforced, by comparing scores on different variables (**Thomas, 2022).**

Study Settings:

The study was conducted in the neurological intensive care unit, neurology unit, and

neurology Outpatient Clinic at Sohag University Hospital.

Subject:

A convenient sample of (100) patients was selected from the previously selected settings within six months.

Tools of data collection:

Four tools were used in this study and classified as the following:

Tool (I): Patient's demographic data: It was concerned with (age, gender, educational level, and residence) of the studied patients.

Tool (II): Patient's knowledge regarding spinal cord injury assessment sheet:

To assess the patient's level of knowledge on spinal cord injuries, the investigator designed this tool after examining the literature **(Taha, 2007; Hills, 2021; Babu, 2018; Hyun-Yoon, 2019**). Multiple-choice questions were offered such as What is a spinal cord injury?, Symptoms, Types, Anatomy of the spinal cord, Who is more likely to get a spinal cord injury? How is a spinal cord injury diagnosed and treated?, complications, Treatment, and Rehabilitation.

Knowledge scoring system:

Each question was scored as (1) for a correct answer and (zero) for an incorrect answer. The total knowledge score was calculated as follows: knowledge was considered poor if the percent score was <50 % was fair if the percent was (>50% to <75%) and considered good if the percent was 75% or more.

Tool (III) Patients' practices regarding spinal cord injury which was assessed by the Daily Living Activities Scale (Barthel Index) (BI): It is used to measure performance in activities of daily living (ADL). Ten variables describing ADL and mobility are scored, a higher number being a reflection of a greater ability to function independently.

Scoring system

The total score for this scale is 100 degrees (100) according to items of ADLS (Feeding 10 degrees), (Move from wheelchair to bed and return 15 degrees), (Doing personal toilet 5 degrees), (Getting on and off toilet 10 degrees), (Bathing self 5 degrees), (Dressing10 degree) (Walking on a level surface 15 degrees), (Ascending and descending stairs 10 degrees), (Bowel control 10 degrees) and (Bladder control 10 degree).

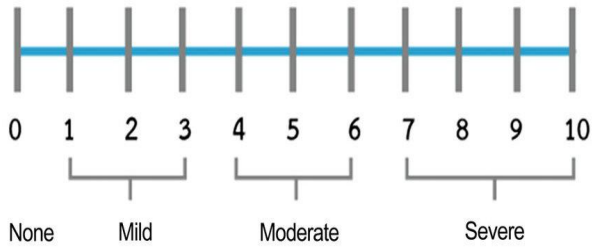
Daily living activity scoring system:

Contained 10 items 6 of them graded as (0, 5, 10), 2 of them graded as (0, 5), and 2 grade as (0, 5, 10, 15), the total score ranging from 0-100. The total daily living activity score was calculated as the following:

0 – 20= Total dependency
21 – 60 = Severe dependency
60 – 90 = Moderate dependency
91 – 100 = Slight dependency

Tool (IV): Numerical Pain Rating Scale:

The pain numeric rating scale (PNRS) is a common standardized scale for pain assessment that determines the severity of pain. It was adopted from **John et al, (2008)**. However, literate patients (r = 0.94) outperformed uneducated ones (r = 0.71). The Numeric Rating Scale (NRS) uses a single 11-point numeric scale to allow patients to choose a value between 0 and 10 to evaluate their pain intensity. PNRS has good test-retest reliability in both literate and illiterate patients (r = 0.96 & 0.95, respectively). So, NPRS was used to quantify pain severity before and after session in this study, with patients asked to select a number that matched their level of discomfort. The NRS uses a 0-10 scale. The NRS has a 0–10 scale that can be used to describe pain severity as no pain (0), mild level of pain (1-3), moderate level of pain (4-6), and severe level of pain (7-10).



Methods:

Preparatory Phase

This phase included reviewing current and past, local and international related literature and theoretical knowledge of various aspects of the study using books, articles, periodical magazines, and the internet to modify tools for data collection. During this phase, the researcher also visited the selected places to get acquainted with the personnel and the study settings. Development of the tools was under supervisors' guidance and experts' opinions were considered.

Tools validity and reliability

Five specialists from different academic categories—two professors, two associate professors, and three lecturers—from the medical surgical nursing department at Sohag University's college of nursing reviewed the instruments and made revisions. The clarity, relevance, thoroughness, accuracy, logical conclusion, applicability, and simplicity of the tools and their content were all evaluated by the specialists. They submitted suggestions, but no changes were implemented.

Testing the reliability of the proposed tools was done statistically by the Cronbach Alpha test. It was used to examine whether the questionnaire had an internal consistency. The knowledge and practice tools had an internal consistency. Alpha tests reached 0.785 for the knowledge tool. An alpha test for the Daily living activity scale was 0.756, and the Numerical Pain scale with alpha test reached 0.815.

Pilot Study

To evaluate the applicability of the developed tools and the clarity of the questions, a pilot research involving 10% (10) of patients was conducted. The time required for each individual to complete the questionnaire has also been estimated thanks to the pilot. The nurses were added to the study sample since, based on the pilot's results, no item adjustments or omissions were made.

Administrative Design

Official permission was obtained by submission of a formal letter issued from the Dean of the Faculty of Nursing, Sohag University. An official agreement was obtained from the Hospital Manager to get their approval to conduct the study. Collect the necessary data for the current study after a brief explanation of the purpose of the study.

Ethical Considerations

Approval was obtained from the study subjects individually and the scientific ethical committee of Sohag University using written informed consent obtained from each participant before any data collection. They were assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture, and beliefs were respected.

Fieldwork

From the beginning of September 2023 until the end of February 2023, a period of six months, was used for data collection. The researcher first visited with patients in the previously described settings, introducing herself and outlining the goal of the study. Following the patient's consent to participate, one-on-one interviews were conducted. In order to gather data, the researcher visited the study setting three days a week during the morning and afternoon shifts. The tool's data collecting takes 35 to 45 minutes.

B-Implementation phase:

The study included 100 patients following spinal cord injury. The researchers collected data from the patients following spinal cord injury who attended previously selected settings. The researchers met patients following spinal cord injury individually at previously selected setting and explained the aim of the study after introducing themself to patients following spinal cord injury.

Using both theoretical and practical components, the researchers developed and put into practice instructional standards addressing spinal cord injury. The theoretical and practical part included the patients' knowledge and activities of daily living practices in recovering from spinal cord injuries. Role-plays, educational videos, posters, lectures, and scenarios were used to put it into

practice. The researchers supplied patients with an informative pamphlet about spinal cord damage, which was written in plain Arabic and included descriptive photographs.

There were two sessions covering the topic material for the theoretical component, each lasting around twenty to thirty minutes. One was finished in thirty minutes total. Each session started with a review of the input from the previous session, and the first session opened with an introduction to the educational guidelines related to spinal cord injury. Details about spinal cord injury procedures were included in the practical section. Each patient who had suffered a spinal cord injury spent about 20 to 30 minutes to complete the questionnaire and respond to the questions. Posters, lectures, and instructional films were used to implement it.

Regarding spinal cord damage, the following information was covered in the instructional guidelines:

- Anatomy of the spinal cord
- What is a spinal cord injury?
- Symptoms of spinal cord injury
- Types of Spinal Cord Injury
- Who is more likely to get a spinal cord injury?
- Complications of spinal cord injury
- Treatment of spinal cord injury
- Rehabilitation after spinal cord injury
- Daily activity and mobility after spinal cord injury

Evaluation:

The evaluation was conducted one month after the guidelines were implemented. Patients were re-interviewed to gauge their understanding, behaviors, and level of pain using the same pre-test instruments that were scored using the same methodology (II, III, and IV).

Statistical Analysis

Data entry and data analysis were done using a statistical package for the social science (SPSS) version 26. Data were presented as numbers, percentage means, and standard deviation. The chi-square test was used to show the relation between variables. A T-test was used to compare the mean. P-value considered statistically significant when $p < 0.05$.

Significance of the results:

- ✓ Highly significant at p-value < 0.01.
- ✓ Statistically significant was considered at p-value < 0.05
- ✓ Non-significant at p-value ≥ 0.05.

Results:

Table (1): regarding demographic characteristics, it is illustrated that 47% of studied patients had an age group from (30 - < 60) years with a mean and SD of 48.5±14.1. Concerning sex about 65% of patients were male. Regarding residence, 60% were from urban areas.

Figure (1) demonstrates that 97% of the patients under study did not participate in training sessions on how to care for individuals with spinal cord injuries.

Figure (2): Interestingly, 67% of the patients in the study said that doctors were the primary source of information about spinal cord injury.

Table (2): demonstrates that after adopting instructional guidelines, the patients' knowledge of spinal cord injury improved over the pre-implementation period. After one month of implementing instructional guidelines, a highly statistically significant difference was observed in all knowledge items (P-value <0.001).

Table (3): Comparing the analyzed patient's overall knowledge of spinal cord injury before and after the execution of instructional guidelines, highly statistically significant differences were identified (p<0.001).

Table (4): demonstrates that, when compared to before the instructional guidelines were implemented, there was an improvement in the everyday activities of the patients under study concerning spinal cord injuries. All daily living activity items were shown to differ significantly (highly statistically) before and after a month of the implementation of instructional instructions (P-value <0.001).

Figure (3) makes clear the patient's total practice activities of daily living practices score before and after the adoption of the instructional

recommendations for a month. The study found that following spinal cord injury and the installation of pre-instructional guidelines, 87% of the patients under investigation had poor habits. This percentage dropped to 13% with the implementation of a single post-instructional guideline. Conversely, one month following the installation of instructional guidelines, 88% of patients still followed good practices, compared to 12% of patients who did not, and a difference that was shown to be very statistically significant**.**

Figure (4) explains the patients' total activities of daily living practices practice score before and after the adoption of the instructional guidelines for a month. After spinal cord injury and before instructional instructions were implemented, the majority of the patients (30%) were found to be somewhat dependent on their daily activities. After one month, however, this percentage improved to 52%.

Table (5): shows that, following the application of the instructional guidelines, there were highly statistically significant differences in the mean pain scores among the patients under study (P = <0.001).

Figure (6) defines the patients' overall pain scores before and after a month of following the prescribed instructions. After one month of implementing the instructional guidelines, the percentage of patients experiencing severe pain dropped to 15% from the majority of the analyzed patients (56%) before implementing the instructional guidelines.

Table (7): Illustrates that after one month of implementing the instructional guidelines, there was a positive association (P=0.005) between the patients' knowledge ratings and their activities of daily living practice regarding spinal cord injury.

Table (8): indicates that the patient's age, education, place of residence, and employment are significantly correlated with how much they know about spinal cord injuries overall. Additionally, there were correlations between patients' residential status and the spinal cord injury practices they followed.

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Table (9): showed that the majority of patients (96%) expressed satisfaction with the instructional guidelines' content, which addressed all of their inquiries about spinal cord injuries and was written understandably and easily.

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Table (1): Distribution of studied patients according to their demographic data (n=100)

Demographic data	N	%
Age group:		
18-< 30 year	23	23.0
30- <60 year	47	**47.0**
60 years or more	30	30.0
Age mean± SD	**48.5±14.1**	
Gender		
Male	65	**65.0**
Female	35	35.0
Educational level:		
High education	30	**30.0**
Secondary	25	25.0
Primary	27	27.0
Can't read and write	18	18.0
Residence:		
Urban area	60	**60.0**
Rural area	40	40.0

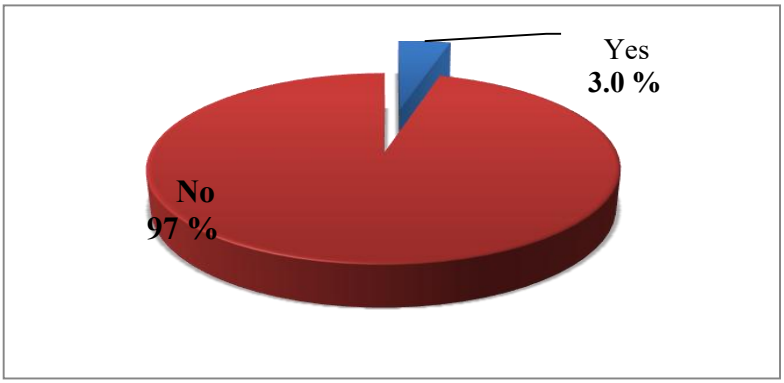


Figure (1): The studied patients' distribution according to attending training programs related (n=100).

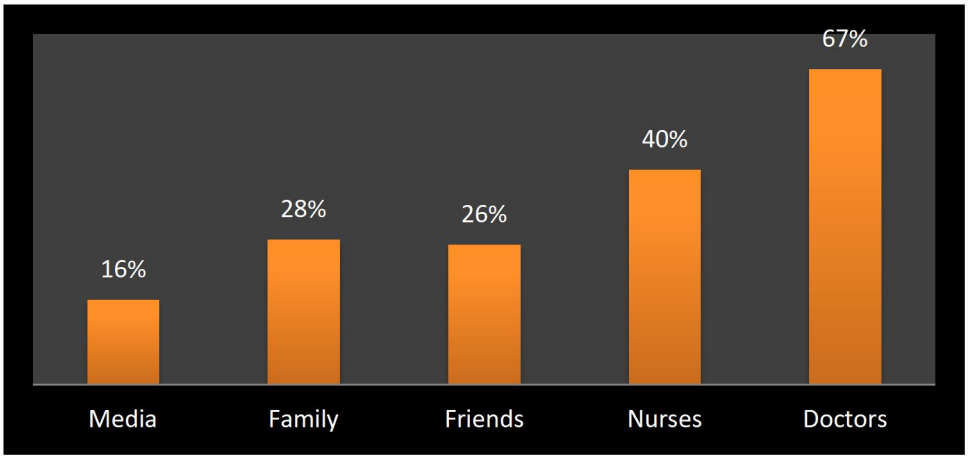


Figure (2): Source of knowledge about spinal cord injury among the studied patients.

Table (2): Differences between the studied patients regarding knowledge about spinal cord injury pre and post-one-month of instructional guidelines implementation (n=100)

Knowledge Items about Spinal Cord Injury	Pre-implementation		Post-implementation		X 2 P-value
	No.	%	No.	%	
Anatomy of the spinal cord					
Don't know	17	17	3	3	15.0
Know	83	83	97	97	0.001*
What is a spinal cord injury?					
Don't know	19	19	8	8	30.28
Know	81	81	92	92	0.001*
Symptoms of spinal cord injury					
Don't know	15	15	20	20	16.46
Know	85	85	80	80	0.001*
Types of Spinal Cord Injury					
Don't know	16	16	19	19	17. 68
Know	84	84	81	81	0.001*
Who is more likely to get a spinal cord injury?					
Don't know	12	12	8	8	22.16
Know	82	82	92	92	0.001*
Complications of spinal cord injury					
Don't know	20	20	10	10	32.26
Know	80	80	90	90	0.001*
Treatment of spinal cord injury					
Don't know	18	18	12	12	26.36
Know	82	82	88	88	0.001*
Rehabilitation after spinal cord injury					
Don't know	10	10	10	10	22.42
Know	90	90	90	90	0.001*

*Statistically significant level at P < .05

Table (3): Total knowledge level of the studied patients about spinal cord injury pre and post-instructional guidelines implementation (n=100)

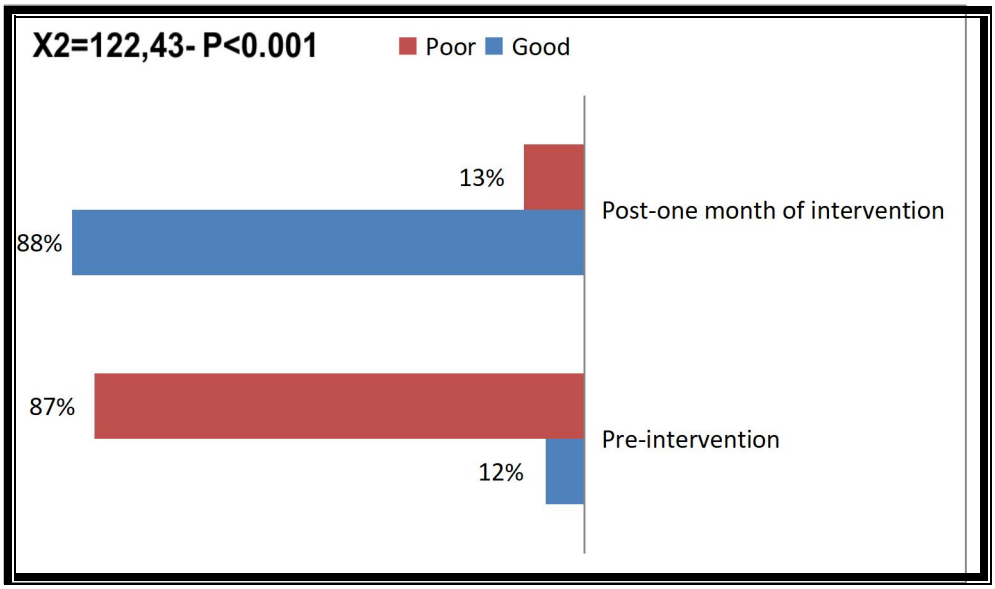
Total knowledge	Pre		Post		T	P-value
	No	%	No	%		
Poor	70	70	0	0	4.063	<0.001*
Fair	30	30	37	37		
Good	0	0	63	63		

*Statistically significant level at P < .05

Table (4): Comparison of pre and post-one-month instructional guidelines implementation of patients' activities of daily living practices regarding spinal cord injury (n=100)

Practices Items about spinal cord injury	Pre-implementation		Post-implementation		X 2 P-value
	No.	%	No.	%	
Feeding					
Independent	97	97	10	10	15.0
Dependent	3	3	90	90	0.001*
Move from wheelchair to bed and return					
Independent	89	89	8	8	30.28
Dependent	11	11	92	92	0.001*
Doing personal toilet					
Independent	88	88	9	9	15.0
Dependent	12	12	91	91	0.001*
Getting on and off the toilet					
Independent	90	90	11	11	30.28
Dependent	10	10	89	89	0.001*
Bathing self					
Independent	86	86	83	83	15.0
Dependent	14	14	17	17	0.001*
Dressing					
Independent	78	78	9	17	30.28
Dependent	22	22	91	83	0.001*
Walking on a level surface					
Independent	83	83	11	19	15.0
Dependent	17	17	89	81	0.001*
Ascending and descending stairs					
Independent	80	80	10	10	30.28
Dependent	20	20	90	90	0.001*
Bowel control					
Independent	79	79	12	12	15.0
Dependent	21	21	88	88	0.001*
Bladder control					
Independent	84	84	11	18	30.28
Dependent	16	16	89	82	0.001*

*Statistically significant level at P < .05



*Statistically significant level at P < .05

Figure (3): Total activities of daily living practice level of the studied patients about spinal cord injury pre and post-instructional guidelines implementation (n=100)

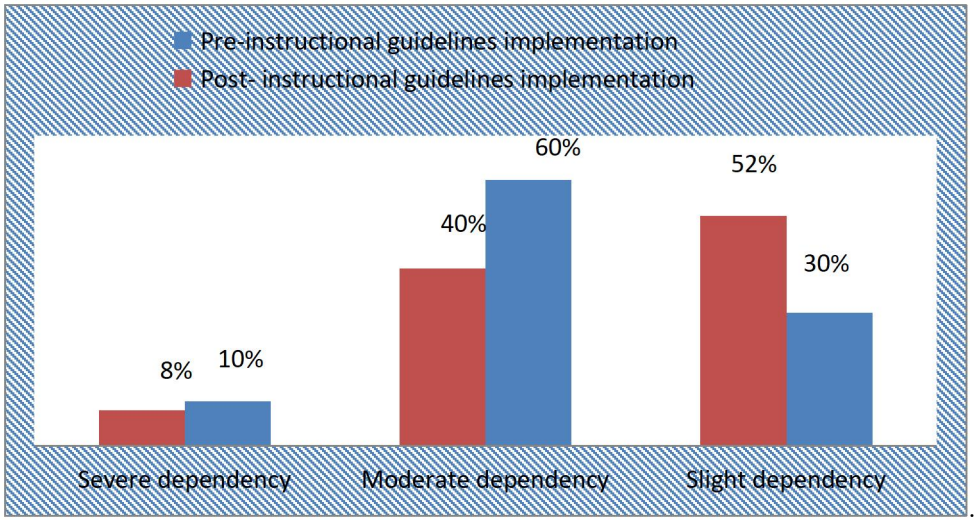


Figure (4): Total daily living activity of studied patients following spinal cord injury pre and post-instructional guidelines implementation (n=100)

Table (5): Patient's distribution according to pain mean scores pre and post-instructional guidelines implementation (N=100)

Items	Pre- implementation Mean ±SD	Post- implementation Mean ±SD	t-test	P-value
Pain scores	8.0 ±0.3	8.2 ±0.5	0.443	0.660
	8.2 ±0.6	6.3 ±1.2	5.238	<0.001 *

*Statistically significant level at P < .0001

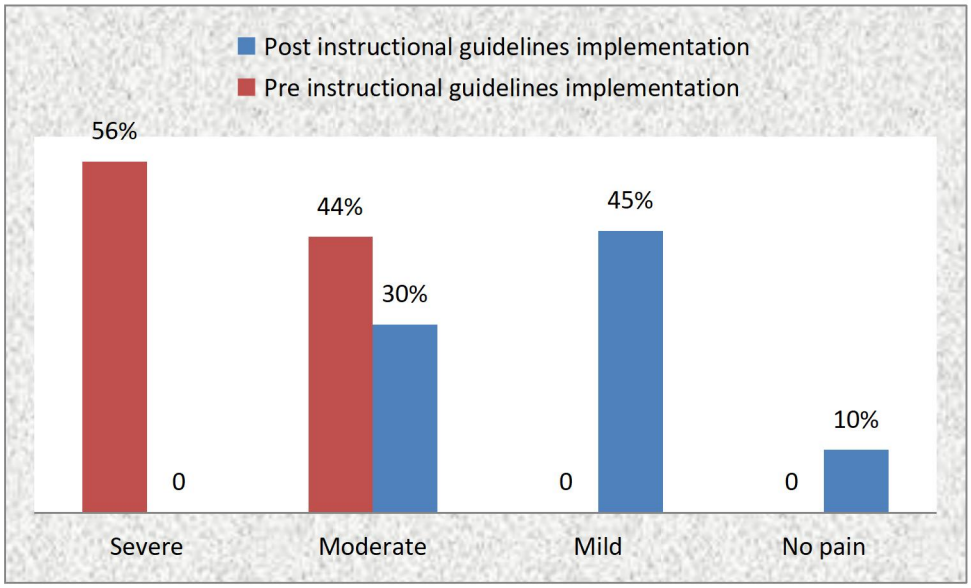


Figure (6): The studied patient's distribution regarding their total pain levels pre and post-instructional guidelines implementation (n=100)

Table (7): Correlation coefficient between total studied patients' knowledge and activities of daily living practice scores regarding spinal cord injury during pre and post-instructional guidelines implementation

Knowledge	Practice			
	Pre- implementation		Post implementation	
	R	P	R	P
- Pre-test total knowledge	0.036	0.815(N.S)	---	---
- Post-test total knowledge	---	---	0.413	0.005

Table (8): Correlation between patients' total knowledge, activities of daily living practice, and their demographic data of

Variables		Total knowledge	Total practice
Age	R	0.15	0.15
	P	0.37*	0.22
Education	R	.179 *	-
	P	.037	-
Residence	R	0.34*	0.44**
	P	0.004	0.001
Occupation	R	.178 *	-
	P	.037	-

Table (9): Patients' point of view regarding to content of the guidelines about spinal cord injury (n=100)

Content of instructional guidelines implementation	No	%
Satisfaction about the content of the guidelines		
• Yes	96	96
• No	4	4
All questions related to spinal cord injury were answered through Instructional guidelines implementation.		
• Yes	88	88
• No	12	12
Guidelines content was easily written in a simple language		
• Yes		
• No	91	91
	9	9

Discussion:

A spinal cord injury is a neurological emergency that carries a significant risk of morbidity and a lower standard of living. According to **Muller-Jensen et al. (2021**), it is defined as any spinal cord damage arising from a non-traumatic origin. Patients with spinal cord injuries continue to experience secondary medical issues even after receiving pharmacological and surgical treatment as well as rehabilitation specifically targeted to their condition. The mortality and morbidity linked to spinal cord injury are exacerbated by acute and chronic secondary consequences, which include respiratory, cardiovascular, and neurological issues. Respiratory failure, wound problems, UTIs, and neurogenic shock are some of these consequences. Longer hospital stays, a decline in functional recovery at long-term follow-up, and a higher death rate can result from these issues **(Arul et al., 2019).**

People with spinal cord injuries (SCI) may experience severe consequences to their motor and cognitive abilities. The best treatment for a patient with a spinal cord injury depends on using the right nursing and rehabilitation techniques. A patient's degree of disability, ability to operate independently, and lifestyle are all significantly impacted by their prognosis. Thus, the current research aimed to determine the effect of instructional guidelines on patients' knowledge, practices, and pain intensity following spinal cord injury **(Jiang et al., 2021)**

In terms of the patient's demographics, the current study's findings showed that, with a mean and SD of 46.8±16.3, fewer than half of the patients were in the 30- to 60-year-old age range. About sexuality, less than two-thirds of them were men. Of those who answered the question, three-fifths lived in cities.

The current study's findings are consistent with those of **Welk et al. (2021**) who conducted a study titled "A qualitative assessment of psychosocial aspects that play a role in bladder management after spinal cord injury" and noted that, while they disagreed with the findings regarding age, less than two-thirds of the studied patients had a median age of 49 years. Additionally, **Burke et al., (2018)** conducted a study titled "Quality of Life after Spinal Cord Injury: The Impact of Pain" and reported that, although the mean age of respondents was 52 years, less than three-quarters of the patients in the study were male.

The result of the present study revealed that almost all of the studied patients didn't participate in any training programs regarding the care of patients with spinal cord injuries. From the researchers' points of view, it confirmed the important need for instructional guidelines implementation.

The result of the present study revealed that about two-thirds of the studied patients ' sources of knowledge regarding spinal cord injury were doctors. From the researchers' points of view, this demonstrated the adequate and

accurate information that medical professionals had given about the subject. Furthermore, the accurate information that medical professionals have provided can aid in dispelling myths and misconceptions regarding spinal cord injury.

Regarding the patients under study, the current study's findings indicated that the patient's knowledge of spinal cord injury had improved after the implementation of instructional guidelines when compared to the time before the guidelines were put into place. A highly significant difference was observed between all knowledge items before and after a month of the implementation of the guidelines, and the investigator speculated that this increase in knowledge could be attributed to the benefits of the guidelines' implementation.

The study findings indicate that there were notable statistical distinctions between the patients' overall level of knowledge regarding spinal cord injury before and following the implementation of instructional guidelines. The good impact of implementing instructional guidelines that fit the needs of the patients under study is seen in these results.

According to the current study's findings, after adopting instructional instructions, the daily living activities of the patients with spinal cord injuries were found to be better than they were before. All daily living activity items were shown to differ significantly (highly statistically) before and after a month of the adoption of instructional instructions. These outcomes demonstrate how well instructional guidelines are implemented and suit the needs of the patients under study. This outcome further demonstrated the necessity for the patients under study to increase their level of understanding and practice to become better information providers.

The majority of the patients in the current study had poor activities of daily living practices following spinal cord injury and the implementation of pre-instructional guidelines; however, after the implementation of one post-instructional guideline, this percentage dropped to 13%, with a highly statistically significant difference observed. Following the rules, these outcomes make perfect sense and lead to a rise in knowledge, indicating the participants' need for useful guidelines and best practices.

In contrast to the findings of the current study, **Jiang et al., (2021**) conducted a study titled "Identification and Relationship of Quality of Life and Self-care Ability among Chinese Patients with Spinal Cord Injuries" and found that while a minority of the patients independent for daily living activities, over one-fifth of the patients were highly dependent on their carers, two-fifths were moderately dependent, and over one-tenth were mildly dependent.

The results of the current study highlighted that there were highly statistically significant differences in the pain mean scores among the studied patient's post-instructional guidelines implementation. From the researchers' point of view, the findings showed that the accessibility and ease of use of the instructional guidelines' content contributed to their efficacy.

The majority of the patients under study experienced severe pain before the implementation of instructional guidelines, and this pain decreased following one month of guidelines implementation, according to the patient's overall pain scores. From the researchers' point of view, this result reflects the positive effect of instructional guidelines, which met the needs of the patients and provided them with sufficient knowledge to maintain health and reduce their pain scores.

The results of this study are consistent with those of **Hyun- Yoon (2019**), who conducted a study titled " Shoulder pain and its associated functional limitation for a patient with spinal cord injury at center for rehabilitation" and reported that a significant proportion of the patients under investigation experienced moderate pain, with a tenth experiencing severe pain. The result disagree with **Giraldo et al.'s (2021**) study, "Post-traumatic stress disorder symptoms and pain intensity in persons with spinal cord injury," which showed that a significant proportion of the patients were experiencing moderate to severe pain, fewer than 5% were experiencing no pain at all, and more than 10% were experiencing mild pain.

The current study's findings showed that, following a month of application of instructional

guidelines, there was a favorable association between patients' knowledge scores and their practice regarding spinal cord injury. These results underlined how important it is to improve patients' understanding and activities of daily living practices to help them absorb and use quality information. This connection can be explained by the fact that the study's patients were able to practice successfully after they gained enough knowledge. According to the researchers, the substance of the instructional guidelines was readily available and straightforward, which contributed to their success. This outcome illustrates the beneficial impact of educational guidelines that satisfied patients' requirements and gave them the knowledge they needed to preserve their health and reduce their pain.

According to the study's findings, the patient's age, education, place of residence, and employment were significantly correlated with their overall knowledge regarding spinal cord injury. Also, there were associations between patients' practice regarding spinal cord injury and their residence. From the researchers' point of view, it might be explained that younger and educated patients can acquire more knowledge and practice well than older patients. Also, patients who live in urban areas acquire more knowledge and practice due to the availability of services than in rural areas.

The current study's results showed that most patients expressed satisfaction with the instructional guidelines' content, which addressed all concerns about spinal cord injuries and was written in an understandable, straightforward manner. This suggests that the guidelines were successful.

Conclusion:

Based on the findings of the current study, the results of this study suggest that, with significant differences between the pre and post-implementation of instructional guidelines, patients' knowledge, practice, and pain intensity after spinal cord injury improved as a result of using these guidelines. Following the application of instructional guidelines for one month, there was a positive association observed between the knowledge scores of the patients and their practice.

Recommendations:

The following suggestions are made in light of the findings of the current study:

- The creation of a comprehensive Arabic booklet with simplified illustrations that will be accessible to all patients as soon as they are diagnosed, containing up-to-date information on spinal cord injuries, their treatment plans, and how patients can manage their symptoms to reduce pain and increase knowledge and skills.

- For results that can be applied to other situations, it is advised to repeat the current study with a bigger probability sample.

- Patients should have access to a reference pamphlet with simplified illustrations explaining spinal cord injury.

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