Knowledge and practices of students of the Medical Institute / Baghdad about spinal cord injuries and the role of physical therapy in treating those injured

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Abstract

Background: Spinal cord injury refers to the damage that has been caused to the spinal cord and which interferes with the means of transmission that links the brain with the body leading to diminished movement and sensory activity below the site of injury. Traumatic events like accidents or infection or diseases can result in such injuries. In case of spinal cord compromise, temporary and permanent changes in functionality can take place. Some of the current trends in research include using engineered scaffolds to support tissues, hypothermia, stem cell implantation, and spinal column stimulation just above the dura mater. Some of the treatment methods include surgical procedures, pharmacotherapy, and rehabilitation. Physical therapy application to patients with spinal injuries is also differentiated by the degree and the level of injury. Epidemiological studies are also very informative especially on prevention measures and advantages of food fortification.

The aimsof the study was to determine the types, etiology, risk factors, and complications of the spinal cord injury and to determine the knowledge and practices of the physiotherapy in the treatment and rehabilitation of spinal cord injury.

Methodology: A descriptive study was carried out. The sample of the study included 100 students of the Medical Institute in Baghdad of both genders. The descriptive and inferential statistical methods were applied in the process of collecting and analyzing survey data.

Results: The sample was investigated in terms of the distribution based on demographics and characteristics of the age group, gender, scientific department, stage, residence, and marital status. The mean age was 19–24 years (SD = 0.50252). The largest percentage (74) was in the 1924 age group. The sample was composed of female participants (60). Most (71.3%) were living in cities. Scientific department (Community Health Technologies) had the highest representation (27ʻm). In terms of academic level, the second level covered 75 % -percent of the sample.

Conclusions: Spinal cord injury is the most common physical disability, which is often caused by some preventable reasons. Most students are unaware of spinal cord injury and this is a matter of concern, and it shows that the students know very little about this. Health institutions and professionals have a significant role of providing health education and most of the information that is provided is not profound enough and is simplified to an extent that is not comprehensive enough to the students. We have indicated that the knowledge about spinal cord injury largely depends on the extent of physical therapy attended by the injured. It was proven in the case of the students of the Medical Institute in Baghdad who showed a good grasp of these problems. This knowledge may prove invaluable to the rehabilitation centers and help them to perfect treatment methods, as well as create programs based on the actual experience of patients. Moreover, it empowers medical professionals to plan patient care in the inpatient rehabilitation in a more effective way.

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Introduction

The spinal cord injury is considered to be the damage to the essential part of the central nervous system. External or internal trauma can make the affected person lose at least 10 per cent of the lower limb functioning. [1]. The studies have shown that young adults who are between 15 and 29 years are the most vulnerable group and most of them are young adults. Road accidents, collision, general accidents, sports injuries, falls, neurological spinal cord diseases, malignant spinal tumors, congenital

malformations in children and, finally, failures of DEX surgeries are other causes of spinal cord injury [2].

Symptoms can be presented to determine the severity of the damage to the spinal cord. They can be total body loss of sensation and no ability to move below the area of injury or some partial loss of sensation or of movement termed as paralysis [3]. The injury to the spinal cord that leads to paralysis may involve all four limbs as it is commonly called quadriplegia and leaves the body of the affected individual with no control over the use of hands, arms, trunk, legs, or pelvic organs. In paraplegia, the trunk, legs and the pelvic organs are paralyzed, but not the arms. An injury to the spinal cord can lead to tetraplegia or quadriplegia whereby, all limbs and majority of the body are affected. Conversely, a lower spinal cord injury can only cause the legs to be affected (paraplegia). Paralysis can be realized at once (primary damage) or gradually as a result of cell death, hemorrhage, and swelling (secondary damage) [4.5].

Spinal cord injury requires instant treatment. There is the use of corticosteroid drugs like methylprednisolone or dexamethasone to decrease swelling. Operative treatment can be recommended. The spinal healing may need bed rest [6.7] The acute injury of the spinal cord might require occupational therapy, physical therapy, and other actions aimed at rehabilitation to avoid long-term effects [7.8].

Workouts can enhance, as well as, stimulate the spinal cord neural pathways, thus, promoting physical therapy [9.10.11]. Experiments carried out on human subjects have demonstrated an exercise training can moderate secondary injury by sending the physiological sense signals through the central nervous system pathways. This can help in secretion and liberation of neurotrophic factors that stimulate the development of nerves. [13.14]. Studies are being carried out all over the world and most clinicians are hoping that such studies will help in the treatment of spinal cord injuries. Meanwhile, persons with spinal cord injury can enjoy an independent and meaningful life due to therapeutic intervention, which determines the factors that might need additional care and offers preventive methods that minimize injuries in the future [15].

Results:

Table 4.1: Distribution of the Studied Sample According to the demographics′ and characteristics of the age group, Gender, Scientific Department, Stage, Residence, and Marital status."

Variables	Age groups	No.	%
Age group	Total	100	100%
	19-24 yrs	74	74%
	25-30 yrs	36	36 %
	Mean± SD (Range)	1.5000 ± .50252 (1.00)	
Gender	M ale	***40***	***40***%
	F emale	***60***	***60***%
	Total	**100**	**100%**
Scientific department	Dental industry techniques	5	5%
	Community health technologies	27	27%
	Medical rehabilitation and physical therapy techniques	7	7%
	Orthosis and prosthesis techniques	3	3%
	Nursing techniques	12	12%
	Anesthesia techniques	17	17%
	X-ray techniques	14	14%
	First aid and emergency medicine techniques	8	8%
	Techniques for caring for people with special needs	3	3%
	Healthy nutrition techniques	3	3%
	Total	**100**	**100%**
Stage	First	25	25%
	Second	75	75%
	Total	**100**	**100%**

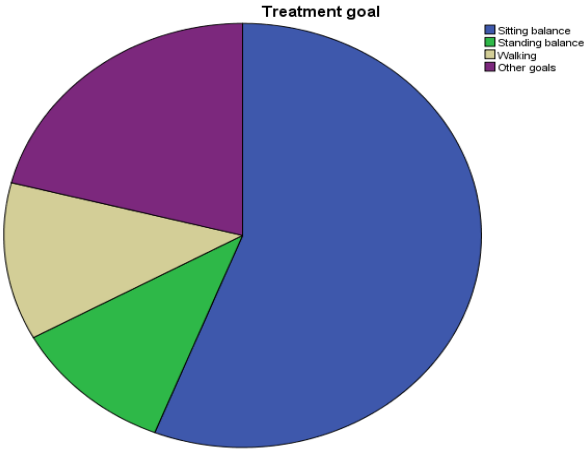

Fig 4.1: The Distribution of the studied sample according to the Treatment goal:

The highest percentage of the Treatment goal is from Sitting balance, while the lowest percentage is from Standing balance.

Table 4.2: Distribution of the Studied Sample According to Their Causes of SCI:

Item	Frequency	Percent %
Trauma	59	**61.3%**
Non-traumatic	25	**22.0%**
Illness	9	**10.7%**
mixed (more than one cause)	7	**6.0%**
Total	100	100%

Table 4.2 Distribution of the students according to the Causes of SCI. The highest percentage, 61.3% of the studied sample, answered that it was trauma. In comparison, the lowest percentage, 6%, answered about mixed (more than one cause).

Table 4.3: Distribution of the studies on General information about spinal injuries.

Variables	frequency	No.(200)	%
The majority of spinal injuries are caused by falls, assaults, auto accidents, and sports injuries.	True	148	74%
	False	44	22%
	I don't know	8	4 %
Loss of sensation, poor muscle strength, poor ability to control defecation and urination, and poor sexual function, temporary or permanent	Yes	98	49%
	No	75	37.5%
	I don't know	27	13.5%
, the spinal nerve roots, or the spine's bones are all impacted by spinal cord injury.	Yes	80	40%
	No	64	32%
	I don't know	56	28%
Concussion due to blunt injury (such as a fall or bump)	Yes	62	31%
	No	92	46%
	I don't know	46	31%
For pressure (compression) brought on by fractured bones, edema, or blood buildup (hematoma)	Yes	85	42.5%
	No	60	30%
	I don't know	55	27.5%
Partial or complete tear (severing tear)	Yes	94	47%
	No	70	35%

	I don't know	36	18%
Complete separation (dislocation) of adjacent vertebrae			
	Yes	73	36.5%
	No	78	39%
	I don't know	49	24.5%
Displacement or partial subluxation of the adjacent vertebrae	Yes	80	40%
	No	61	30.5%
	I don't know	59	29.5%
The connective tissue-based ligaments connecting neighboring vertebrae are loose.	Yes	97	48.5%
	No	51	25.5%
	I don't know	52	26%
causes of violence and injuries at work (such as gunshot or knife wounds)	Yes	81	40.5%
	No	74	37%
	I don't know	45	22.5%
Falls are the most common cause among older people. Older adults also face an increased risk of serious spinal injuries.	yes	101	50.5%
	No	51	25.5%
	I don't know	48	24%

Table 4.3 shows the results for General information about spinal injuries, specifically the questions asked by students with SCI. The highest percentage (74 %) of the studied sample answered positively about (Most spinal injuries result from motor vehicle collisions, " falls, assaults, and sports injuries). While the lowest percentage (31%) answered correctly that (Concussion due to blunt injury (such as a fall or bump))."

Table 4.4: Distribution of study samples according to their general knowledge about spinal cord injuries

Variables	frequency	No. (200)	%
Are spinal cord injuries defined as either partial or complete severing of the spinal cord that affects the body's normal autonomic, sensory, and motor functions? Are these modifications Long-term or short-term?	yes	135	**67.5**%
	No	43	21.5%
	I don't know	22	11%
Are spinal cord injuries caused by chronic diseases?	yes	94	47%
	No	76	38%
	I don't know	30	15%
Do these injuries lead to paralysis	yes	82	41%
	No	61	30.5%
	I don't know	57	28.5%
Is the cause of the disease a bacterium or a virus	yes	111	55.5%
	No	52	26%
	I don't know	37	18.5%
Is the cause of the disease a bacterium or a virus			
	yes	77	38.5%
	No	80	40%
	I don't know	43	21.5%
Is taking some medications, such as epilepsy medications, one of the causes of infection?			
	yes	78	39%

	No	58	29%
	I don't know	64	know32%
Is taking some medications, such as epilepsy medications, one of the causes of infection?	yes	103	51.5%
	No	50	25%
	I don't know	47	23.5%
genetic factors cause damage to the spinal cord and surrounding nerves	yes	85	42.5%
	No	76	38%
	I don't know	39	19.5%
Do genetic factors cause damage to the spinal cord and surrounding nerves	yes	81	40.5%
	No	57	28.5%
	I don't know	62	31%
May the injury cause disability, whether physical or intellectual	yes	108	54%
	No	61	30.5%
	I don't know	31	15.5%
Can a spinal cord injury be fatal?	yes	73	36.5%
	No	81	40.5%
	I don't know	46	23%
Spinal cord injuries can be rehabilitated or treated with physical therapy	yes	91	45.5%
	No	53	26.5%
	I don't know	56	28%
Children with spina bifida may experience problems with bowel and bladder control, skin and bone problems	yes	114	57%
	No	55	27.5%
	I don't know	31	15.5%
Physical therapy is important for the health care and physical fitness of the injured person	yes	72	36%
	No	81	40.5%
	I don't know	47	23.5%
Do you know what the complications of the disease are if you are not treated with physical therapy?	yes	78	39%
	No	52	26%
	I don't know	70	35%
Is there anyone in your family suffering from a spinal cord or vertebral injury	yes	93	46.5%
	No	51	25.5%
	I don't know	56	28%
Physical therapy helps the patient regain movement and muscle activity	yes	79	39.5%
	No	82	41%
	I don't know	39	19.5%

Assessing the patient through some questions about birth and the stages of the child's development is considered part of physical therapy	yes	79	39.5%
	No	63	31.5%
	I don't know	58	29%
Physiotherapy is important to prevent children from obesity or any other problems	yes	88	44%

	No	56	28%
	I don't know	56	28%
When an injury occurs in the first and second cervical vertebrae, it may be fatal	yes	86	43%
	No	69	34.5%
	I don't know	45	22.5%
The complications of the disease include disability or death	yes	60	30%
	No	69	34.5%
	I don't know	71	35.5%
Physical therapists recommend the use of special equipment, such as braces and a walker	yes	68	34%
	No	64	32%
	I don't know	68	34%
Is physical therapy the ideal and safe solution with fewer side effects than other therapeutic methods?	yes	84	42%
	No	69	34.5%
	I don't know	47	23.5%
Is treatment possible for spinal cord paralysis	yes	75	37.5%
	No	58	29%
	I don't know	67	33.5%
Bleeding and swelling in the spinal cord resulting from the initial trauma can also resolve over time	Yes	107	53.5%
	No	58	29%
	I don't know	35	17.5%
Patients may recover even years after the injury	yes	89	44.5%
	No	69	34.5%
	I don't know	42	21%
Patients with spina bifida may experience complications such as infections and urinary tract problems	yes	97	48.5%
	No	53	26.5%
	I don't know	50	25%

Table 4.4 Knowledge about questions of the studied students with SCI. Out of the total number of subjects participated in the current study, there are results that the highest percentage (67.5 %) of the studied sample answered positively about (Are spinal cord injuries: a partial or complete severing of the spinal cord that results in changes in normal movement, sensation, and autonomic functions in the body? Are these changes permanent or temporary?) While the lowest percentage answered (30 %) correctly that the complications of the disease include disability or death.

Table 4.5: Distribution of study samples according to complications and people most vulnerable to spinal cord injuries

Variables	frequency	No. .(200)	%
Lack of control over urine or stool	yes	138	69%
	no	53	26.5%
	I don't know	9	
The patient experiences a period of shock that can last from several hours to 6 weeks. It can sometimes be difficult to determine the extent of damage to the spinal cord during this trauma.	yes	96	48%
	no	84	42%
	I don't know	20	10%
Children are more susceptible to spinal cord injuries	Yes	63	31.5%
	no	63	1.5%
	I don't know	74	37%
The elderly are more susceptible to infection	Yes	90	45%
	No	62	31%
	I don't know	48	24%
People who sustain spinal cord injuries suffer from osteoporosis of people	Yes	86	43%
	no	78	39%
	I don't know	36	18%
Who suffers from spinal tumors?	Yes	76	38%
	No	60	30%
	I don't know	64	32%

Table 4.5 shows the results for the students with SCI regarding complications and people most vulnerable to spinal cord injuries. The highest percentage (69 %) of the studied sample answered positively about (Lack of control over urine or stool), while the lowest percentage (31.5 %) answered correctly that (Children are more susceptible to spinal cord injuries).

Table 4.6: Distribution of Studied Sample According to Their Practices questions about SCI: -

Item	Yes		No		Don't know	
	No.	%	No.	%	No.	%
Do you do sit balance exercises?	72	72%	11	11%	17	17%
Do you do stand balance exercises?	73	73%	9	9%	18	18%
Do you engage in educational activities	64	64%	15	15%	21	21%
Learn, organize and practice daily activities	60	60%	39	39%	1	1%
Do you practice walking or walking with assistance?	97	97%	2	2%	1	1%
Do you practice stretching and lengthening exercises?	94	94%	5	5%	1	1%
Are the devices and equipment available	61	61%	31	31%	8	8%
Do you do leg movement exercises	93	93%	3	3%	4	4%
Do you do arm movement exercises	95	95%	2	2%	3	3%
Can you climb stairs?	80	80%	14	14%	6	6%
Can you move around in the open air	82	82%	15	15%	3	3%
Do you travel by wheelchair	70	70%	21	21%	9	9%
Cardiovascular fitness exercises (sports)	82	82%	6	6%	12	12%
Strength and shoulder exercises	40	40%	47	47%	13	13%
Shoulder girdle exercises	29	29%	66	66%	5	5%
Exercises to strengthen the ankle and limb bones	68	68%	11	11%	21	21%
Sensory and motor stimulation exercises	90	90%	3	3%	7	7%
Physiotherapy using ultrasound or short waves	91	91%	3	3%	6	6%
Pain relieving exercises	72	72%	11	11%	17	17%
Activation, stimulation, and tightening exercises to repair muscle tissue and nerves.	73	73%	9	9%	18	18%
Stem cell therapy in SCI .	64	64%	15	15%	21	21%
Aerobic exercises.	68	68%	11	11%	21	21%
Stretching exercises.	90	90%	3	3%	7	7%
Joint mobilization.	68	68%	11	11%	21	21%

Table 4.6: Represented the Practices of students with SCI about questions. The highest percentage (97%) of the studied sample answered correctly about (Do you practice walking or walking with assistance), while the lowest percentage (29%) of the studied sample answered positively about (Shoulder girdle exercises)

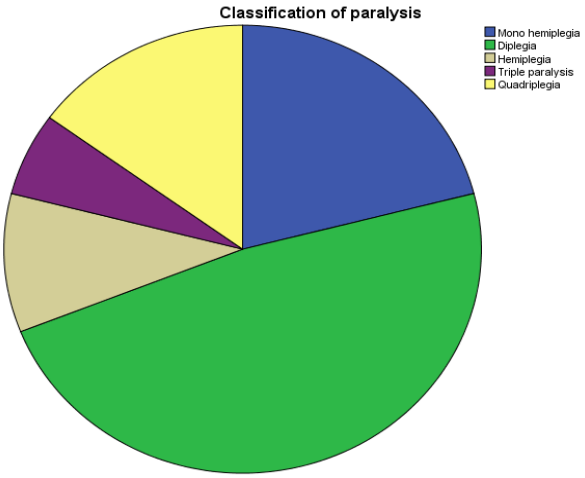

Fig 4.2: The distribution of the studied sample according to the Classification of paralysis:

The highest percentage of Classification of paralysis is from Diplegia, while the lowest percentage is from Triple paralysis.

Discussion

Some studies have explored the knowledge and practices at various levels. The current study is concerned with the knowledge and practices of students in Baghdad Medical Institute. There is no previous research comparing knowledge and practices of patients with rehabilitation spinal cord injury with those of students of the Medical Institute who question patients about spinal cord injury and influence of physical therapy in the treatment of such patients. [16, 17].

Part I: Demographic Characteristics of Spinal Cord Injury Study Sample.

Gender

The current data show that during the study, the sample that responded was majorly female (60 0) in the sample. This is contrary to the results of Canada where the respondents were mainly men (78 %) [18, 19]. The same was seen in Bangladesh where the proportion of females was the greatest (76.4 %) [20].

Residence

Residence analysis showed that most respondents lived in the urban regions (71.37). This concurs with the other published studies in Bangladesh [20] and not with the reports that show a rural preponderance (81.9) in Bangladesh [20, 21].

Marital status

Single (85-percent) were highest proportion of respondents. This trend is contrary to other reported studies that have reported higher visibility of married respondents (81.9ʿ) in Bangladesh [21].

Causes of SCI

Most of the respondents claimed that their spinal cord injury was due to trauma. This observation is similar to Canadian trauma research, which claims 69 0 -percent cases of trauma [20], and is consistent with Bangladeshi reports of a prevalence of 79.5 0 -percent of trauma [21].

Part II: Informed Consent about the Sample (General Information) about Spinal Cord Injury.

Knowledge about general information about SCI.

The proportion of respondents who gave a positive answer to the statement was seventy-seven percent (67.5 0 -1) as they responded to the question: Spinal cord injuries are a partial or complete cutting of the spinal cord that leads to altered normal movements, sensation, and autonomic functions of the body. Are these changes here to stay or here to pass? Such an outcome cannot be ignored in accordance with a study in Bangladesh [21].

The smallest number (30 per cent) of respondents was able to name the complications of the disease, such as disability or death. This result is in line with a Canadian study [20].

Part III: Spinal Cord Injury practices.

Besides knowledge assessment, the present research evaluates the practices of the students of the Medical Institute in Baghdad about the spinal cord injury and its treatment with the help of physical therapy. The survey involved the opinions of students on how SCI patients should be managed best.

The proportion of respondents who stated they engage in walking or walking with assistance was high (97%), and similar studies conducted in Bangladesh have supported the result [21].

On the other hand, a lower number of 29 percent of the respondents had experienced shoulder girdle exercises, which was similar to that of the Canadian research [20].

Conclusions:

The most common physical handicap has been spinal cord injury with most cases of paralysis due to preventable causes although most students are not aware of SCI. Health institutions and professionals have a major role in educating the people on their health, but the current curriculum seems to be too simplistic. The level of physical therapy practice has a significant impact on the level of awareness of SCI among the students of the Medical Institute, Baghdad.

Recommendations:

Patients are supposed to have a more detailed information about SCI. Future research is also required to establish the actual occurrence of SCI. The treatment of persons with SCI requires the use of multidisciplinary facilities, among which physical therapy is included. Education campaigns and also on national media should be established to increase knowledge and practice regarding cerebral palsy. There is the urgent need to work on lessening the effects of life events on health, creating awareness about SCI management in the community, and alleviating its causes. More studies should assess the awareness and behavior of patients, medical practitioners and paramedical personnel with regards to spinal cord injury.

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