

Lifestyle Pattern for Patients with Spinal Cord Injury

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Abstract

Background: Spinal cord injury is possibly the most disruptive and traumatic event that can occur in anyone's life. It poses huge challenges in the form of coping process as well as rehabilitation. **Aim of the study:** Was to assess lifestyle pattern for patients with spinal cord injury. **Research design:** Descriptive research design was used to conduct this study. **Setting:** Neurology Outpatient clinic in Benha University Hospital. **Sample:** Convenience sampling (200 patients) were included in the study. **Tools:** Two tools were used to conduct this study. **Tool (I):** Structured questionnaire divided into three parts. (A) Socio-demographic characteristics data of the spinal cord injury patient. (B) Assess the degree of dependency level according to type of injury. (C) Patient knowledge about spinal cord injury. **Tool (II)** lifestyle pattern scale was used to measure patients lifestyle pattern **Results:** 4.0% of the studied patients had dependent level and, 70.0% of them had partially dependent level, while, 26.0% of them had independent level. 27.5% of the studied patients had good total knowledge level while, 52.5% of them had average total knowledge level and only 20.0 % of them had poor level of knowledge about a spinal cord injury. 63.0% of the studied patients had unhealthy lifestyle pattern, while, 37.0% of them had healthy lifestyle. **Conclusion:** There were a highly statistically significant relation between the studied patients' total lifestyle level and their demographic characteristics (age, educational level, job and income ($p < 0.001^{**}$), and there was no significance relation between the studied patients' total lifestyle level and their gender, marital status and residence, ($p > 0.05$). There was statistically significant relation between the studied patients' total lifestyle level and their total dependency level, ($p < 0.05^*$). **Recommendations:** Educational program for patient to raise their awareness about spinal cord injury.

Key words: Lifestyle Pattern, Spinal Cord injury.

Introduction:

Spinal Cord Injury (SCI) damage to any part of the spinal cord or nerves at the end of the spinal canal often causes permanent changes in strength, sensation and other body functions below the site of the injury. When person has recently injured in the spinal cord, it might seem like every aspect of patient life has been affected. You might feel the effects of patient injury emotionally and socially (Hagan et al., 2022).

Spinal cord injuries can be complete or incomplete (partial). A complete injury causes

total paralysis (loss of function) below the level of the injury. It affects both sides of the body. A complete injury may cause paralysis of all four limbs (quadriplegia) or the lower half of the body (paraplegia). Incomplete: After an incomplete injury, some function remains on one or both sides of the body. The body and brain can still communicate along certain pathways (Khan et al., 2022).

Patient ability to control the limbs after a spinal cord injury depends on two factors: where the injury occurred on patient spinal cord and the severity of injury. The lowest part

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of patient spinal cord that remains undamaged after an injury is referred to as the neurological level of patient injury. Paralysis from a spinal cord injury can be referred to as: Tetraplegia or quadriplegia, this means that patient arms, hands, trunk, legs and pelvic organs are all affected by patient spinal cord injury. Paraplegia: This paralysis affects all or part of the trunk, legs and pelvic organs (**Fossey et al., 2022**) (**DiPiro et al., 2022**).

Emergency signs and symptoms: Extreme back pain or pressure in patient neck, head or back, weakness, incoordination or paralysis in any part of patient body, numbness, tingling or loss of sensation in patient hands, fingers, feet or toes, loss of bladder or bowel control, difficulty with balance and walking, impaired breathing after injury and an oddly positioned or twisted neck or back (**Chen et al., 2022**).

Spinal cord injuries can result from damage to the vertebrae, ligaments or disks of the spinal column or to the spinal cord itself. A traumatic spinal cord injury can stem from a sudden, traumatic blow to patient spine that fractures, dislocates, crushes or compresses one or more of patient vertebrae. It can also result from a gunshot or knife wound that penetrates and cuts patient spinal cord. A non traumatic spinal cord injury can be caused by arthritis, cancer, inflammation, infections or disk degeneration of the spine (**Figuérez et al., 2022**).

Spinal cord injuries are associated with numerous complications such as urinary tract infections, pressure sores, deep vein thrombosis, autonomic dysreflexia, and chronic pain. Long-term complications of a spinal cord injury may include: Increased risk of heart or lung problems. Loss of bladder or bowel control. Paralysis in the arms or legs. Spasticity, joint contracture. There are also significant indirect costs through lost mobility, inability to work, and heavy caregiver burden. The most common causes of mortality are

pneumonia and sepsis (**Michael & Fehlings, M. 2019**).

Healthy lifestyle refers to the combination of healthy physical activity with appropriate dietary, relaxation, and sleep behaviors. patients with SCI are more likely than the general population to have health problems related to weight gain, changes in cholesterol, and high blood sugar. Eating well and keeping active are important for health and help to achieve and maintain a healthy weight. Being of a healthy weight is important for everyone and is especially important for people living with SCI. Being too heavy (overweight or obese) makes it harder to stay mobile and care for patient (**Barbiellini et al., 2022**).

Community Health Nurse (CHN) participating in aspects of care management such as providing psychosocial support, discharge planning, and consulting with other caregivers, an important role for nursing staff is educating patients and family members about the physiologic changes that occur as a result of a traumatic SCI. Therefore, education and awareness of such changes should be addressed during the rehabilitation process to promote healthy function Also CHN role for patients include: preventing injury to the spinal cord, maximizing respiratory function, promote mobility and/or independence, prevent or minimize complications, support psychological adjustment of patient and/or SO, and providing information (**Shen et al., 2022;Kralj & Bajd, 2022**).

Significance of study:

The annual incidence of traumatic SCI in the Middle-East and North-Africa (MENA) Region was 23.24/million. 77% of traumatic SCI cases were males with a mean age of 31.32 years. Furthermore, traffic accidents and falls were the leading causes of traumatic SCI. The thoracic region was the most common neurological level of injury among those populations. The male to female ratio was 4:1.

The mean age at injury was 18:32 years. The most frequent cause of traumatic SCI was falls (49.2%), followed by traffic accidents (43.1%). The neurological level of injury was 52.3% in cervical region, 30.8% in lumbar region and finally 16.9% in thoracic region (Komlakh & Hatefi, 2022).

Aim of the study:

This study aimed to assess the lifestyle pattern for patients with spinal cord injury.

Research questions:

- 1-What is the degree of dependency level among patient with spinal cord injury?
- 2-What is the patient's knowledge about spinal cord injury?
- 3-What is the patient's lifestyle pattern with spinal cord injury?
- 4-Is there a relation between patient knowledge and their demographic characteristics?
- 5-Is there a relation between patient lifestyle pattern and their demographic characteristics?
- 6-Is there a relation between the degree of dependency level and lifestyle among spinal cord injury patients?

Subjects and Method

Research Design:

A descriptive research design was utilized to conduct this study.

Setting:

The present study was conducted at Neurology Outpatient clinic in Benha University Hospital.

Sampling:

Convenience sampling was used in this study. The total number of SCI patients diagnosed in last year attending at Neurology Outpatient at Benha University Hospital were 200 case. The data was collected for six months.

Tools of data collection:

First tool: Structured interviewing questionnaire was designed by the researchers and consisted of:

Part I: Socio-demographic characteristics data of the SCI patients which includes (7 items) about: age, gender, educational level, marital status, residence, job and income.

Part II: Assess the degree of dependency level according to type of injury which includes (23 items).

Scoring system:

The scoring system for each item was calculated as follows (2) score for independent, while (1) score for partially dependent and (0) for dependent. The total score of 23 items were 46grades.Total scoring system of patients' dependency was calculated and classified in three levels as following: Independent when the total score was75-100% (35-46 grades).Partially dependent when the total score was60- <75 % (28- <35grades).Dependent when the total score was less than 60%(<28 grades).

Part III: Assess patient knowledge about spinal cord injury which includes (14 questions).

Scoring system:

The scoring system for the studied patient's knowledge was calculated as follows (2) score for complete correct answer, while (1) score for incomplete correct answer, and(0) score for don't know and incorrect answer. The total scoring system of patients' knowledge was 28 grades. The total scoring system of patients' knowledge was calculated and classified in three levels as following: Good level of knowledge when the total score was75-100% (21-28 grades). Average level of knowledge when the total score was60- <75% (17- 21 < grades).Poor level of knowledge when the total score was less than 60% (<17 grades).

Second tool: Lifestyle pattern scale guided by (Fagerstorm, 2008) which was adapted by the researchers under supervision to assess patients lifestyle pattern which include nutrition, exercise, sleep, skin care, genitourinary care and daily activity.

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Scoring system:

Score for each item was given as follows: (2) grades if always, (1) grade if sometimes, (0) if never, the total score of 41 items were 82 grades. The total scoring system of patients' lifestyle was calculated and classified in two levels as following: Healthy lifestyle when the total score was 60-100 % (50-82 grades). Unhealthy lifestyle when the total score was 60 % (< 50 grades).

Content validity:

The tools were reviewed for comprehensiveness, appropriateness and legibility by five of Faculty Staff Nursing experts from the Community Specialties. The experts ascertained the face and Content validity of the tools.

Content reliability:

Reliability of the tools was applied by the researchers for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar condition on one more occasion. Answers from repeated testing were compared (test-re-test reliability). The reliability was done by Cronbachs Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of knowledge was 0,967, dependency was 0,994 and lifestyle was 0,751.

Ethical consideration:

The research approval was obtained from the patient before starting the study. The researcher clarified the objective and aim of the study to patient included in the study and was be assuring maintaining anonymity and confidentiality of subjects. Patients informed that they are allowed to choose to participate or not in the study and they had the right to withdraw from the study at any time.

Pilot study:

A pilot study was carried out on 10% (20) of the studied patient to test the applicability, clarity, feasibility of tool and to identify obstacles that may be encountered during data collection and to estimate the time needed for filling the forms. No modification done, so the pilot study sample included to the total sample of the study.

Field work:

The actual field work carried out a period of 6 months from the beginning of October 2021 to the end of April 2022. The researcher was available in the study settings two days weekly (Sunday and Tuesday) at morning from 9Am to 2 pm to collect the data by previous tools. The average time needed for the sheet was around 30-45/minutes and average numbers of interviewing was between 4-6patients /day depending on their responses to the interviewers. The researcher started the data collection by introducing herself to the studied patients and giving them an explanation about the aim of the research and its expected outcome and took their approval to participate in the study prior to data collection.

Statistical analysis:

The collected data were organized, tabulated and analyzed by using electronic computer and statistical analysis was done by using Statistical Package for Social Sciences (SPSS, version 26).

Results:

Table (1): Shows that, 46.0 % of the studied patients aged between 30-40 years with **Mean \pm SD= 35.67 \pm 6.57**, 69.5 % were males, 49.5 % of them had intermediate education and 63.5% of them were married. Also, 53.0 % of the studied patients were from urban area, 39.0% of them had free business and 53.0 % of them their income didn't enough.

Figure (1): Shows that, 4.0% of the studied patients had dependent level and, 70.0% of

them had partially dependent level, while, 26.0% of them had independent level.

Figure (2): Shows that, 27.5 % of the studied patients had good total knowledge level while, 52.5% of them had average total knowledge level and only 20.0 % of them had poor level of knowledge about a spinal cord injury.

Figure (3): Clarifies that, 63.0% of the studied patients had total unhealthy lifestyle pattern, while, 37.0 % of them had total healthy lifestyle.

Table (2): Shows that, there were a highly statistically significant relation between the studied patients' total knowledge level and their educational level, ($p < 0.001^{**}$), and there was a statistically significant relation between the studied patients' total knowledge level and their age, ($p < 0.05^*$), while there was no significance relation between the studied patients' total knowledge level and their gender, marital status, residence, job and income, ($p > 0.05$).

Table (3): Shows that, there were a highly statistically significant relation between the studied patients' total lifestyle level and their demographic characteristics (age, educational level, job and income) ($p < 0.001^{**}$), and there was no significance relation between the

studied patients' total lifestyle level and their gender, marital status and residence, ($p > 0.05$).

Table (4): Clarifies that, there were statistically significant relation between the studied patients' total lifestyle level and their total dependency level, ($p < 0.05^*$).

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Table (1): Frequency distribution of the studied patients regarding their socio-demographic characteristics (n=200).

Demographic characteristics	No.	%
Age/ years		
<30	51	25.5
30-40	92	46.0
>40	57	28.5
Min –Max	25-49	
Mean± SD	35.67±6.57	
Gender		
Male	139	69.5
Female	61	30.5
Educational level		
Don't read and write	60	30.0
Primary education	11	5.5
Intermediate education	99	49.5
University education or more	30	15.0
Marital status		
Single	53	26.5
Married	127	63.5
Widow	8	4.0
Divorced	12	6.0
Residence		
Rural	94	47.0
Urban	106	53.0
Occupation		
Don't work	50	25.0
Governmental work	72	36.0
Free business	78	39.0
Income		
Enough	61	30.5
Enough and saved	33	16.5
Not enough	106	53.0

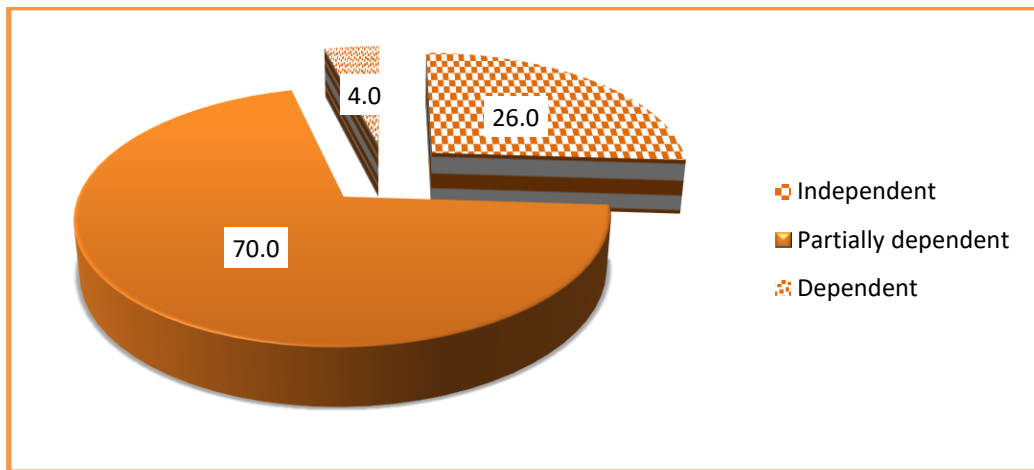


Figure (1): Percentage distribution of the studied patients regarding their total dependency level (n=200).

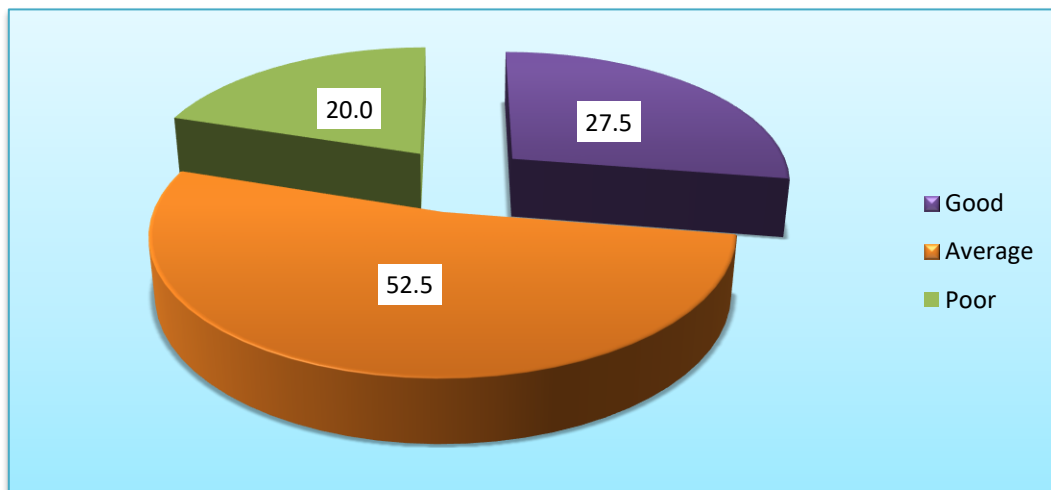


Figure (2): Percentage distribution of the studied patients regarding their total knowledge level about spinal cord injury (n=200).

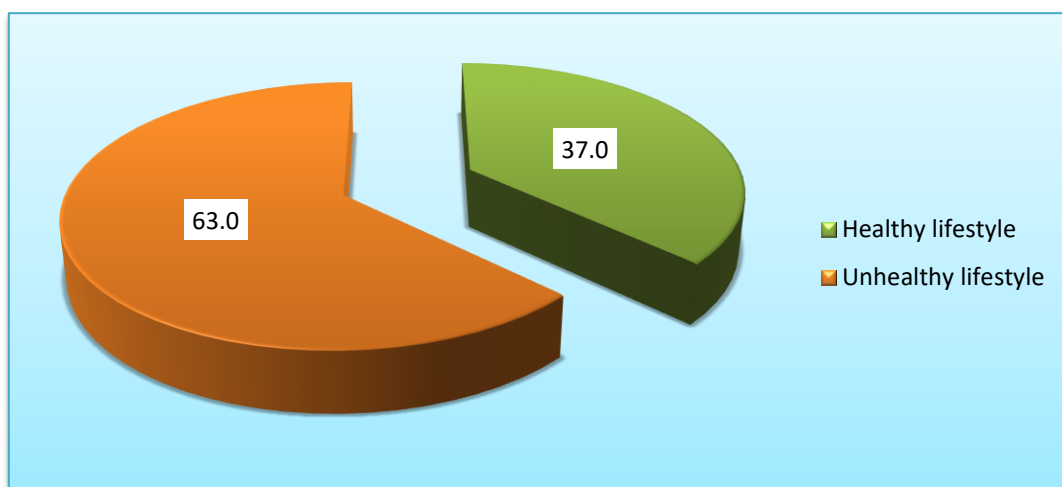


Figure (3): Percentage distribution of the studied patients regarding their total lifestyle pattern (n=200).

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Table (2): Statistically relation between total knowledge level and demographic characteristics of the studied patients (n=200).

Items	Poor (n=40)		Average (n=105)		Good (n=55)		X ²	p-value
	No.	%	No.	%	No.	%		
Age/ years								
<30	12	30.0	28	26.7	11	20.0	16.97	0.002*
30-40	18	45.0	57	54.3	17	30.9		
40 or more	10	25.0	20	19.0	27	49.1		
Gender								
Male	27	67.5	68	64.8	44	80.0	4.048	0.132
Female	13	32.5	37	35.2	11	20.0		
Educational level								
Don't read and write	25	62.5	29	27.6	6	10.9	31.001	0.000**
Primary education	0	0.0	7	6.7	4	7.3		
Intermediate education	12	30.0	52	49.5	35	63.6		
University education	3	7.5	17	16.2	10	18.2		
Marital status								
Single	12	30.0	30	28.6	11	20.0	3.624	0.727
Married	23	57.5	66	62.9	38	69.1		
Widow	1	2.5	4	3.8	3	5.5		
Divorced	4	10.0	5	4.8	3	5.5		
Residence								
Rural	16	40.0	50	47.6	28	50.9	1.14	0.565
Urban	24	60.0	55	52.4	27	49.1		
Job								
Don't work	10	25.0	30	28.6	10	18.2	2.52	0.641
Employer	15	37.5	34	32.4	23	41.8		
Free business	15	37.5	41	39.0	22	40.0		
Income								
Enough	7	17.5	37	35.2	17	30.9	5.224	0.265
Not enough	25	62.5	54	51.4	27	49.1		
Enough and saved	8	20.0	14	13.3	11	20.0		

Table (3): Statistically relation between total lifestyle pattern level and demographic characteristics of the studied patients (n=200).

Items	Unhealthy lifestyle (n=126)		Healthy lifestyle (n=74)		X ²	p-value
	No.	%	No.	%		
Age/ years						
<30	32	25.4	19	25.7	17.203	0.000**
30-40	59	46.8	33	44.6		
40 or more	35	27.8	22	29.7		
Gender						
Male	92	73.0	47	63.5	1.986	0.159
Female	34	27.0	27	36.5		
Educational level						
Don't read and write	42	33.3	18	24.3	24.55	0.000**
Primary education	9	7.1	2	2.7		
Intermediate education	68	54.0	31	41.9		
University education	7	5.6	23	31.1		
Marital status						
Single	35	27.8	18	24.3	5.268	0.153
Married	81	64.3	46	62.2		
Widow	6	4.8	2	2.7		
Divorced	4	3.2	8	10.8		
Residence						
Rural	57	45.2	37	50.0	0.424	0.515
Urban	69	54.8	37	50.0		
Job						
Don't work	42	33.3	8	10.8	14.16	0.001**
Employer	44	34.9	28	37.8		
Free business	40	31.7	38	51.4		
Income						
Enough	56	44.4	5	6.8	54.25	0.000**
Not enough	65	51.6	41	55.4		
Enough and saved	5	4.0	28	37.8		

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Table (4): Statistically relation between total lifestyle pattern level and dependency level of the studied patients (n=200).

	Unhealthy lifestyle (n=126).		Healthy lifestyle (n=74).		X ²	p-value
	no	%	no	%		
Dependency level						
Independent (n=52)	52	41.3	40	54.1	6.741	0.034*
Partially Dependent (n=140)	66	52.4	34	45.9		
Dependent (n=8)	8	6.3	0	0.0		

Discussion:

Spinal Cord Injury is a catastrophic, life-changing event with enormous physical, social, psychological and economic consequences. In terms of adverse effects on quality of life, Patients with SCI suffer greatly not only due to the symptoms but also due to associated social isolation created by a fear of experiencing bowel accidents in public, psychosocial disorder with poor self-esteem and depression, impact on relationships including sexual relationships, loss of independence, expense, and numerous other related health conditions, including associated anorectal disorders. Management of bowel dysfunction in persons with SCI requires a stepwise, comprehensive, and individualized approach encompassing aspects of lifestyle, establishing a toileting routine, digital stimulation, diet, massage, medications (oral and rectal), electrical stimulation, or surgery (Zürcher et al., 2019).

Initial management focuses heavily on surgical intervention and lifestyle modifications, as well as employing assistive behaviors and devices in order to develop adequate rehabilitation according to

individualized patients' condition. CHN plays a very significant role in lifestyle modification and decreasing the dependency level. Nurse should help the patient to modify their life style according to their dependency level, give appropriate instructions regarding safety measures during use of assistive devices or wheelchair (Aylin, & Paker, 2020).

The results of the current study revealed that nearly half of studied patients aged from 30 to 40 years old with mean age 35.67±6.57 and more than two thirds of them were male. The study was supported by Solinsky et al., (2022) who studied "Acute spinal cord injury is associated with prevalent cardiometabolic risk factors, Honolulu"(n=95) and revealed that the mean age of studied patients was 37.8§14.4 years old and more than three quarters of them were male.

The results of the current study also illustrated that nearly half of them had intermediate education. The finding agree with Mohammed et al., (2021) who studied "Effect of video assisted teaching program on nurses' performance regarding the care of patients with spinal cord injury, Suez canal University Hospital"(n=50) and revealed that

nearly half of patients were married and more than half of them had intermediate education.

Regarding the total dependency level, the result of the current study illustrated that the minority of the studied patients had dependent level and, nearly three quarters of them had partially dependent level, while, slightly more than one quarter of them had independent level. The study was supported by **Irgens et al., (2018)** who studied “Telehealth for people with spinal cord injury: a narrative review. spinal cord” and revealed more than half of participants needed help in performing ADLs and nearly one quarter of them were completely dependent. From the researcher point of view, this might be due to the level of dependency may be affected by patients’ age, body mass index and association of other comorbid medical condition.

Concerning patients’ total knowledge about spinal cord injury, the results of the present study illustrated that slightly more one quarter of the studied patients had good total knowledge level while, more than half of them had average total knowledge level and nearly one quarter of them had poor level of knowledge about a spinal cord injury. The study was supported by **Chhabra et al., (2018)** who studied “Challenges in comprehensive management of spinal cord injury in India and in the Asian Spinal Cord network region”(n=160) and revealed that nearly half of studied participants had lack of awareness regarding SCI and nearly one third had moderate awareness. In addition, the study was supported by **Rodger, & Bench, (2019)** who studied “Education provision for patients following a spinal cord injury” and illustrated that the majority of patients had poor knowledge about spinal cord injury including causes, diagnosis, manifestations, management and rehabilitation including use of assistive device. From the researcher point of view, this might be due to intermediate

educational level, lack of exposure to educational guidelines about SCI and improper exposure to such information.

Regarding studied patients’ total lifestyle pattern, the result of the current study illustrated that nearly two thirds of the studied patients had total unhealthy lifestyle pattern, while, less than one third of them had total healthy lifestyle. The results of the current study was supported by **Mothabeng & Mashola, (2019)** who studied “Associations between health behavior, secondary health conditions and quality of life in people with spinal cord injury”(n=36) and revealed that more than half of patients had total unhealthy lifestyle pattern post spinal cord injury. In addition, the study was agreed with **Carlson et al., (2019)** who studied “Lifestyle intervention for adults with spinal cord injury, Los Angeles” (n=232) and revealed that more than half of studied patients had inadequate life style pattern regarding disease management. From the researcher point of view, this could be due to patients’ health condition and impaired physical activities, and lack of education and training about healthy life style pattern.

Concerning statistically relation between total knowledge level and demographic characteristics of the studied patients, the result of the present study revealed that there were a highly statistically significant relation between the studied patients' total knowledge level and their educational level and there was a statistically significant relation between the studied patients' total knowledge level and their age. The study was congruent with **Irgens et al., (2018)** revealed that there was statistically significant relation between studied patients’ total knowledge and their age and educational level. The study was congruent with **David et al., (2019)** who studied “Traumatic and nontraumatic spinal cord injury: pathological insights from

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neuroimaging” and illustrated that there was statistically significant relation between studied patients’ total knowledge level and their age and educational level. From the researcher point of view, this might be due to that patients took the knowledge from health team.

Regarding statistically relation between patients’ lifestyle pattern and their demographic characteristics, there were a highly statistically significant relation between the studied patients' total lifestyle level and their demographic characteristics such as age and educational level. The study was congruent with **Mothabeng & Mashola, (2019)** illustrated that young age and higher education were associated with healthy lifestyle pattern application. From the researcher point of view, this could be related to that patients may be more motivated to ask and search for more knowledge about the disease, manifestations, causes, diagnosis and management in order to improve their life style practice.

The results of the present study also showed that there was highly statistically significant relation between studied patients’ life style and their job and income. The study was congruent with **Carlson et al., (2019)** revealed that there was significant relation between studied patients’ lifestyle pattern and their income as the increased patients’ income is associated with more healthy life style pattern. From the researcher point of view, this might be related to that acquiring stable job results in sufficient income so that they were able to obtain resources that help in maintenance of healthy life style such as having financial resources that help in getting the healthy diet, following medical appointments and follow-up physician instructions and also becoming able to follow physiotherapist recommendations.

Concerning the relation between the degree of dependency level and lifestyle pattern among spinal cord injury patients, the results of the current study revealed that there were statistically significant relation between the studied patients' total lifestyle level and their total dependency level. The study was supported by **Mothabeng & Mashola, (2019)** revealed that there was statistically significant correlation between studied patients’ life style pattern and their total dependency level. From the researcher point of view, this could be due to that following healthy life style pattern is associated with greater patients’ independence and performing activities of daily livings without help or with minor help.

Conclusion:

Two fifths of the studied patients had dependent level while, less than three quarters of them had partially dependent level, and, more than one quarters of them had independent level. Shows that, more than one quarter of the studied patients had good total knowledge level while, more than half of them had average total knowledge level and only one fifths of them had poor level of knowledge about a spinal cord injury. The result illustrated that nearly two thirds of the studied patients had total unhealthy lifestyle pattern, while, less than one third of them had total healthy lifestyle. There were a highly statistically significant relation between the studied patients' total knowledge level and their educational level, ($p < 0.001^{**}$), and there was a statistically significant relation between the studied patients' total knowledge level and their age, ($p < 0.05^*$), while there was no significance relation between the studied patients' total knowledge level and their gender, marital status, residence, job and income, ($p > 0.05$). Also there were a highly statistically significant relation between the studied patients' total lifestyle level and their demographic characteristics (age, educational

level, job and income ($p < 0.001^{**}$), and there was no significance relation between the studied patients' total lifestyle level and their gender, marital status and residence, ($p > 0.05$). There were statistically significant relation between the studied patients' total lifestyle level and their total dependency level, ($p < 0.05^*$).

Recommendations:

1-Develop educational program for patient to raise their awareness about Spinal Cord Injury related factors should be a priority to ensure early diagnosis of the disease.

2-Regular follow up schedule of patient with Spinal Cord Injury to evaluate health related quality of life to detect any health problems early.

Recommendations for further studies:

1-Coping strategies of patient with spinal cord injury to improve lifestyle pattern.

2-Factors affecting lifestyle pattern of patient with spinal cord injury

3-Replication of the study on large sample size in different setting.

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نمط الحياة لمرضى إصابات الحبل الشوكي

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من المحتمل أن تكون لإصابة الحبل الشوكي تأثيرا كبيرا على حياة أي شخص و تطرح تحديات كبيرة في شكل عملية التأقلم وكذلك إعادة التأهيل. لذلك هدفت الدراسة الى تقييم نمط الحياة للمرضى الذين يعانون من إصابات في النخاع الشوكي. وقد أجريت الدراسة في العيادة الخارجية للمخ والأعصاب بمستشفى جامعة بنها وتم تضمين عينة ملائمة (200 مريض) في الدراسة. وأسفرت نتائج الدراسة الى أن ما يقرب من ثلثي المرضى الخاضعين للدراسة لديهم نمط حياة غير صحي ، بينما أقل من ثلثهم كان لديهم نمط حياة صحي. كما أوصت الدراسة الى تطبيق برنامج تعليمي للمريض زيادة وعيهم بإصابة الحبل الشوكي.