Effect of Socio-demographic Characteristics on Spinal Cord Injury Patients' Knowledge Regarding Dietary Management after Educational Intervention

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تأثير الخصائص الاجتماعية والديموغرافية على معارف مرضى أصابات الحبل الشوكي المتعلقة بالإدارة الغذائية بعد التدخل التعليمي

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الملخص:

يعتبر تمكين مرضى الحبل الشوكي بالمعرفة حول إدارة النظام الغذائي جزءًا حاسمًا في مجال التمريض، بالإضافة إلى مراعاة الخصائص الديموغرافية هي عامل مهم عند إجراء التدخل التعليمي. تهدف الدراسة إلى تقييم العلاقة بين معرفة المرضى حول إدارة النظام الغذائي وخصائصهم الديموغرافية بعد إدارة التدخل التعليمي. تم استخدام تصميم تجريبي مسبق، يشمل مرضى الشلل النصفي في مستشفى ابن الكف في مدينة بغداد. تم تنفيذ استبانة موثقة لتقييم معرفة المرضى بالأنظمة الغذائية. تم استخدام عينة مريحة لاختيار ثلاثين مريضًا يعانون من شلل الطرف السفلي الكامل والنصفي. أجري تحليل الانحدار الخطي المتعدد (MLR) لفحص العلاقة بين معرفة المرضى وخصائصهم الديموغرافية. كشف تحليل الانحدار الخطي المتعدد عن علاقات معنوية بين معرفة المرضى بعد الاختبار وخصائصهم الديموغرافية، بما في ذلك العمر ومستوى التعليم والوضع الوظيفي والحالة الزوجية والدخل الشهري بقيمة $p < .05$. تسلط النتائج الضوء على أهمية التدخلات التعليمية المخصصة بناءً على الخصائص الديموغرافية، وخاصة مستوى التعليم والحالة الزوجية والدخل الشهري، لتعزيز معرفة مرضى الشلل النصفي والالتزام بالأنظمة الغذائية. توصي الدراسة بتوفير عدد كافٍ من أخصائيي التغذية في المستشفى، بالإضافة إلى توفير تعليمات غذائية مستمرة للمرضى مع مراعاة خصائصهم الديموغرافية.

الكلمات الرئيسية: تأثير، الخصائص الاجتماعية والديموغرافية، المعرفة، إدارة النظام الغذائي، التداخل التعليمي

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ABSTRACT:
Empowering spinal cord patients with knowledge about dietary management is a crucial part of the nursing field. Considering demographic characteristics is also an important factor when conducting educational interventions. This study aims to evaluate the association between patients' knowledge about dietary management and their demographic characteristics after the administration of an educational intervention. A pre-experimental design was employed .The study used an a priori experimental design and involved patients at Ibn Al-Kaff Hospital in Baghdad. A validated questionnaire was used to assess patients' knowledge of diet. Thirty patients with complete and incomplete of the lower extremity were selected using a convenience sample. The researchers performed a multiple linear regression (MLR) analysis to examine the relationship between patients' knowledge and their demographic characteristics. The analysis revealed significant relationships between patients' post-test knowledge and their demographic characteristics, including age, education level, employment status, marital status, and monthly income with a p value < .05. The results emphasize the importance of tailored educational interventions based on demographic characteristics, particularly education level, marital status, and monthly income, in order to improve paraplegic patients' knowledge and adherence to diets. The study suggests the need for an adequate number of

dietitians in the hospital and continuous nutritional instructions for patients, taking into account their demographic characteristics.

Keywords: effect, socio-demographic characteristics, Knowledge, dietary management, Educational Intervention

INTRODUCTION:

Spinal cord injury (SCI) is a severe condition that can lead to significant physical and functional impairments. Proper management of SCI involves medical interventions and lifestyle factors, including dietary regimen. The annual incidence of traumatic SCI in the Middle-East and North-Africa (MENA) Region was 23.24/million, with 77% of cases being males with a mean age of 31.32 years. Traffic accidents and falls were the leading causes of traumatic SCI, with the thoracic region being the most common neurological level of injury. [Komlakh and Hatefi, 2022]

The knowledge and understanding of SCI patients regarding their dietary regimen may be influenced by various demographic characteristics, including age, gender, and educational level. Understanding these factors is essential for developing effective educational interventions and counseling programs. Tailored approaches that account for the specific needs and characteristics of SCI patients can enhance communication, knowledge transfer, and adherence to appropriate dietary regimens. [Berkman, et al. 2021]

Dietary regimen plays a crucial role in weight reduction, calorie control, and prevention of secondary complications in patients with SCI. These complications include obesity, cardiovascular disease, increased fat, joint stiffness, broken skin leading to bedsores, and deficiencies in essential nutrients. Age can influence an individual's learning capabilities and receptiveness to new information. Younger patients may be more open to adopting new dietary practices and have easier access to educational resources, potentially leading to higher levels of knowledge acquisition. In contrast, older patients may face challenges in acquiring and assimilating new knowledge due to cognitive changes associated with aging and limited technological skills. [Farkas, et al. 2021]

Educational level is another crucial factor that can impact patients' knowledge regarding dietary regimens. Higher educational attainment is often associated with better health literacy, including the understanding of nutritional concepts and guidelines. Patients with lower educational levels may have limited access to educational resources and may require additional support and guidance to improve their dietary knowledge. [Alrifaie & Al-Mayahi (2022); Berkman, et al. (2021); and Naji B, et al. (2020)]

Study by Yilmaz, et al. (2019) investigated the association between educational level and nutritional knowledge among adults. The findings revealed a positive correlation, indicating that higher educational levels were associated with greater nutritional knowledge.

Other study by Wardle, et al. (2020) explored the relationship between socioeconomic status (a demographic characteristic) and attitudes towards eating and weight among female adolescents. The results showed that socioeconomic status was significantly correlated with attitudes towards eating and weight, suggesting that demographic factors can influence knowledge and attitudes related to dietary behaviors.

Studies have shown that demographic characteristics, such as educational level and socioeconomic status, can influence knowledge and attitudes related to dietary habits and weight management. Being of a healthy weight is important for everyone, especially for people living with SCI, as being too heavy makes it harder to stay mobile and care for patients. [Bigford,. et al. (2023) ; DeVivo, & Chen (2021) ; Wardle, et al. (2018) ; and Esposito, et al. (2017)]

A 24-week energy-restricted Mediterranean-style diet is a nutritional intervention designed to help patients achieve and maintain a healthy weight. This intervention emphasizes fruits, vegetables, whole grains, and minimal trans-fat, limiting daily cholesterol intake to <200 mg/d, and aiming for 14 g/1000 kcal of fiber intake. [Al-Mayahi A, et al. (2023) ;Park, et al. (2023) ; Mohd,

et al. (2021) ;Martínez-González,etal. (2018) ; and Shai, et al. (2018)]

Overall, the introduction provides a background on the influence of demographic factors on dietary knowledge, highlights the relevance of studying this relationship in SCI patients, and outlines the specific aims and intervention of the research.

Hypothesis:

1. **Null Hypothesis (H0):**

There is no significant relationship between socio-demographic characteristics and spinal cord injury patients' knowledge regarding dietary management.

2. **Alternative Hypothesis (HA):**

There is a significant relationship between socio-demographic characteristics and spinal cord injury patients' knowledge regarding dietary management after educational intervention.

The theoretical framework

The theoretical framework used in the study is the Health Belief Model (HBM). The HBM is a psychological model that aims to explain and predict health-related behaviors by considering individuals' beliefs, attitudes, and perceptions. In the context of this study, the HBM was used to understand patients' beliefs, attitudes, and self-efficacy related to dietary management after an educational intervention.

The Health Belief Model (HBM) will be used as a base to design nutrition education program for older adults to increase their knowledge and consumption of fluid. The Health Belief Model was developed in the 1950s. It is one of the first and well-known theories that used to understand health behavior. (Hall , 2022)

MATERIALS AND METHODS:

Research design and samples

The study design was a pre-experimental design. The present study was conducted at Ibn Al-Kuff for spinal cord injuries hospital in Baghdad. The study used convenience sampling, meaning participants were selected based on their availability and accessibility at Ibn Al-Kuff Hospital in Baghdad the total number of

SCI patients diagnosed in the last year attending at Ibn Al-Kuff Hospital in Baghdad was 30. The data was collected for six months.

Regarding the procedures used in the study, a pre-experimental design was employed. The study took place at Ibn Al-Kuff Hospital in Baghdad city, Iraq, and involved spinal cord patients. The participants were divided into two groups: one group underwent the educational intervention, while the other group did not. The educational intervention aimed to empower patients with knowledge about dietary management.

To assess the patients' knowledge of dietary regimens, a validated questionnaire was administered. The questionnaire was likely developed based on existing literature and validated through appropriate methods, although the specific details are not provided in the document. Convenient sampling was used to select a sample of thirty patients with complete and incomplete lower extremity paralysis.

Researchers would typically collect data from a sample of SCI patients and assess their knowledge regarding dietary regimens through interviews. To calculate the sample size, thirty patients were selected by using the following formula:

$n = (Z^2 * p * q * N) / [(Z^2 * p * q) + ((N-1) * e^2)]$

[Trivedi, (2020) ; and Lohr, (2019)]

- Where: n: Sample size for each stratum
- Z: Z-score corresponding to the desired confidence level (1.96 for a 95% confidence level)
- p: Estimated proportion of patients with sufficient knowledge (based on previous studies)
- q: Complementary probability to p ($q = 1 - p$)
- N: Total population size (number of spinal cord injury patients)
- e: Desired margin of error (the precision you want in estimating the proportion)

Study instrument

Structured questionnaire was designed by the researchers and consisted of: first part was socio-demographic characteristics data of the SCI patients which includes (7 items) about: age, gender, educational level, marital status, residence, job and income. Second part was to evaluate patients' knowledge with spinal cord injury about dietary regimen this includes (20 Items). The scoring system for the studied patient's knowledge was calculated as follows (1) score for correct answer, while (0) score for incorrect answer and don't know. The total scoring system of patients' knowledge was 20 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% (15-20 grades). Average level of knowledge when the total score was 50 - >75% (10- 15 > grades). Poor level of knowledge when the total score was less than 50% (>10 grades). The tools were reviewed by nursing experts to ensure comprehensiveness, appropriateness, and legibility, face and content validity. The internal consistency of knowledge part was 0.94, this high reliability score suggest that the tools are reliable which can be used with confidence in measuring the intended constructs. Conducting a pilot study on 10% of the studied patients was a good way to test the applicability, clarity, and feasibility of the tools and identify any potential obstacles during data collection. The researchers were able to estimate the time needed for filling out the forms and make any necessary modifications before proceeding with the full study.

Ethical considerations

The researchers obtained approval from patients before starting the study and ensured that patients were aware of the study's objective and aim. Patients were also given the option to withdraw from the study at any time, and their anonymity and confidentiality were maintained throughout the study. Before collecting patient samples, he Ethics and Sobriety Committee for Scientific Research has reviewed the intervention program and questionnaire outlined in

Book 1, dated March 18, 2023. The research protocol has been approved by the Research Ethics Committee at the University of Baghdad's College of Nursing and registered under number 1 on March 18, 2023. The researcher was also available in the study settings for three days a week in the morning to collect data, and the average time needed for each sheet was around 30-45 minutes. The researcher introduced herself to the studied patients and explained the purpose of the research before obtaining their approval to participate in the study.

Statistical analysis:

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS, version 29). Descriptive analysis was performed, involving the calculation of frequencies and percentages to summarize the data. Inferential analysis was conducted using the multiple linear regression analysis (MLR), which is appropriate for examining relationships between categorical variables.

The results of the study, which are revealed significant relationships between patients' post-test knowledge and their demographic characteristics, particularly age, education level, occupational status, marital status, and monthly income.

RESULTS:

Table (1): Distribution of spinal cord injured Sample by their Demographic data:

Variables	Groups	Freq.	%
Age group	20-29	17	57
	30-39	7	23
	40-49	2	7
	50-59	4	13
	Total	30	100
Gender	Male	21	70
	Female	9	30
	Total	30	100
Level of education	Not read &not write (Illiterate)	1	3
	Read & write	9	30
	Primary school	10	33
	Intermediate school	4	13

	Secondary school	2	7
	Institute	2	7
	College &postgraduate	2	7
	Total	30	100

Occupational status	Unemployed	5	17
	Housewives	5	17
	Free business	9	30
	Student	4	13
	Employee in the public or private sectors	4	13
	Retired	3	10
	Total	30	100
Marital status	Single	13	43
	Married	11	37
	Widowed	3	10
	Divorced	2	7
	Separated	1	3
	Total	30	100

The family's monthly income	Sufficient	4	13
	Somewhat sufficient	6	20
	Insufficient	20	67
	Total	30	100
Number of family members	(3-5) persons	10	33
	(6-8) persons	14	47
	(9-11) persons	6	20
	Total	30	100
Residence Environment	Rural	11	37
	Urban	19	63
	Total	30	100

Freq. = frequency, % = Percentage

Table 1 displays the demographic characteristics of the study sample. The majority of patients (57%) were in the age group of 20-29 years, and most patients (70%) were male. In terms of education level, the majority of patients (33%) had completed primary school. Regarding occupational status, the majority of patients (30%) were self-employed. Moreover, most patients (43%) were single. The majority of patients (67%) reported insufficient monthly family

income, and the majority of patients (47%) came from families with 6-8 members. The majority of patients (63%) lived in urban areas.

Table (2): Distribution of spinal cord injured Sample by their answers according to level of knowledge at pretest and posttests 1&2

Knowledge evaluation items	Pre-Test				Post-Test 1				Post-Test 2			
	Correct		Incorrect		Correct		Incorrect		Correct		Incorrect	
	F	%	F	%	F	%	F	%	F	%	F	%
1.Regular diets provide balanced nutrition	6	20	24	80	24	80	6	20	25	83	5	17
2.Special diets are low in sugar and salt	3	10	27	83	16	53	14	47	3	10	27	90
3.Drinking water before a meal helps you feel full	18	60	12	40	14	47	16	53	24	80	6	20
4. Diet helps in losing weight	9	30	21	70	18	60	12	40	25	83	5	17
5. Eating meat and fish helps in losing weight.	22	73	8	27	16	53	14	47	4	13	26	87
6. Eating late makes it difficult to absorb nutrients	3	10	27	90	13	43	17	57	25	83	5	17
7. eat two modest meals a day	18	60	12	40	14	47	16	53	25	83	5	17
8. eat three servings a day of low-fat dairy products	12	40	18	60	15	50	15	50	27	90	3	10
9. Food measured in cups, grams, pieces, slices, or spoons	3	10	27	90	12	40	18	60	25	83	5	17
10. Dietary fiber, such as whole grains, some fruits, vegetables, and legumes. Helps ease digestion	6	20	24	80	22	73	8	27	27	90	3	10
11. Eliminate salt consumption by avoiding condiments, fish sauce, and gravies.	15	50	15	50	14	47	16	53	25	83	5	17
12.12. Sugar consumption can be reduced by eating uncooked fruits.	3	10	27	90	10	33	20	67	25	83	5	17
13. Obesity causes heart disease, blocked arteries, high blood pressure and diabetes.	21	70	9	30	25	83	5	17	27	90	3	10
14. Diet and exercise help in losing weight	18	60	12	40	27	90	3	10	27	90	3	10
15. Dietary regimen, choose diets with fewer calories.	9	30	21	70	26	87	4	13	27	90	3	10
16. Fruits rich in minerals and vitamins are crucial for a healthy diet.	15	50	15	50	22	73	8	27	27	90	3	10
17. Meat and chicken skin are	2	7	28	93	16	53	14	46	27	90	3	10

saturated fat-containing foods												
18.Excessive fried food intake raises cholesterol levels	**3**	**10**	**27**	**90**	**16**	**53**	**14**	**46**	**27**	**90**	**3**	**10**
19. One teaspoon of iodized sodium is the daily recommended dose	**12**	**40**	**18**	**60**	**10**	**33**	**20**	**67**	**24**	**80**	**6**	**20**
20. Two cups of fresh fruit and vegetable juice equals one serving.	**8**	**27**	**22**	**73**	**18**	**60**	**12**	**27**	**25**	**83**	**5**	**17**
Total	**32.3 %**		**-**		**56.6 %**		**-**		**82.16%**		**-**	

Freq: frequency, %: percentage, Lk. = level of Knowledge (Poor < 50%, Fair 50%- 75%, Good 76%- 100%)

Table 2 presents the patients' knowledge levels regarding dietary regimen before and after the instructional program. At pretest, patients had poor knowledge (MS=<0.50) in all items except for items 3, 7, 11, 13, 14, and 16, which were at a fair level (MS=0.50-0.75). At posttest1, patients' knowledge was still poor (MS=<0.50) in items (2, 3, 5, 6, 7, 9, 11, 12), while items (4, 8, 10, 16- 20) were at a fair level (MS=0.50-0.75), and items 1, 13, 14, and 15 were at a good level (MS≥0.76).

Regarding the overall evaluation of patients' knowledge of Spinal Cord Injury concerning dietary regimen, the level was poor (32.3%) at the pretest. However, it improved to a fair level (56.6%) at posttest1 and finally, reached a high level (82.16%) at posttest2. Overall, patients' knowledge improved from poor to fair at posttest1 and reached a high level at posttest2.

Table 3: Association between demographical characteristics variables of the study Sample with their knowledge about dietary regimen at posttest1 by using a multiple linear regression analysis

Demographical characteristics'	patients' knowledge at Post-Test Period				
	a multiple linear regression analysis (MLR)				
	Coefficient	Std. Error	t-value	p-value	Regression Results
1.Age group:					
20-29	1.243	0.456	2.726	0.006	
30-39	0.876	0.381	2.297	0.022	F = 3.875
40-49	0.589	0.522	1.127	0.260	
50-59	0.1026	0.146	0.704	0.513	

2.Gender: Male	0.325	0.189	-1.718	0.086	R^2= 0.478
Female	-0.234	0.325	-0.721	0.504	
3.Level of education:	0..912	0.277	3.292	0.001	
4.Occupational status:	0.677	0.319	2.123	0.034	
5. Marital status:	0.543	0.201	2.703	0.007	
6. monthly Income:	0.556	0.256	2.170	0.03	

MLR. = multiple linear regression, R^2= R-squared, Std. Err. = Standard Error, F= F. statistic, p-value is sig. if < 0.05.

Based on the provided regression results, a multiple linear regression (MLR) analysis revealed significant associations between patients' knowledge at the post-test period and their demographic characteristics. Age, level of education, occupational status, marital status, and monthly income showed statistically significant relationships with post-test knowledge. Gender, however, did not. 47.8% of the variation in patients' knowledge can be explained by the independent variables in the model. Coefficients are to understand the direction and strength of the relationship between each independent variable and the dependent variable. The p-values can help determine the statistical significance of each variable, where lower p-values indicate a higher level of significance. The R-squared value gives an indication of the overall fit of the model, with higher values indicating a better fit.

The study used a multiple linear regression (MLR) analysis to examine the relationship between demographic characteristics and patients' knowledge post-test. The results showed a significant association between age, gender, level of education, occupational status, marital status, and monthly income. Age group patients showed a 1.243 unit increase in knowledge scores compared to the reference category. Gender did not show a significant association, with males and females showing (-0.325 and -0.234) coefficients respectively.

Level of education showed a 0.912 unit increase in knowledge scores compared to lower levels. Occupational status showed a 0.677 unit increase in knowledge compared to lower occupational status. Marital status showed a 0.543 unit increase in knowledge

compared to the reference category. Monthly income showed a 0.556 unit increase in knowledge compared to lower incomes. The overall model fit indicated that approximately 47.8% of the variation in patients' knowledge at the post-test period can be explained by the independent variables included in the model. The F-statistic for the model is 3.875, suggesting that the model's overall fit is statistically significant.

According to marital status, the coefficient is 0.543, with a standard error of 0.201. The t-value is 2.703, and the associated p-value is 0.007, suggesting a statistically significant relationship between marital status and patients' knowledge at the post-test period. Additionally, individuals who are married, on average, have a 0.543 unit increase in their post-test knowledge about dietary regimen compared to the reference category, controlling for other variables. The coefficient is statistically significant at the 0.007 level, suggesting a positive association between being married and higher post-test knowledge. Based on the provided MLR analysis, being single and married appears to be associated with higher post-test knowledge about dietary regimen. However, the associations between being divorced, widowed, or separated and post-test knowledge may not be statistically significant or robust.

The coefficient for monthly income is 0.556, with a standard error of 0.256. The t-value is 2.170, and the corresponding p-value is 0.030, indicating a statistically significant association between monthly income and patients' knowledge at the post-test period. Patients with higher monthly incomes, on average, have a 0.556 unit increase in their post-test knowledge compared to those with lower incomes, while controlling for other variables.

DISCUSSION:

This study investigates the relationship between demographic characteristics and knowledge of dietary regimens among spinal cord injury patients after giving educational intervention. The MLR analysis revealed significant relationships between patients' post-test knowledge and their demographic characteristics, including age, education level, occupational status, marital status, and monthly

income (p-values < 0.05). However, gender did not show a significant association with knowledge (p = 0.86 for males, 0.504 for females).

Based on MLR results, the results indicated a significant association between demographical characteristics' as (age, educational level, occupational status, and marital status) and patients' knowledge regarding dietary regimens at posttest (p < 0.05). However, gender did not show a significant association with knowledge (p = 0.86 for males, 0.504 for females).

many previous studies conducted that found a highly significant correlation between patients' total lifestyle level and demographic characteristics such as age, educational level, job, income, and marital status (p<0.001**). However, there was no significant association between lifestyle level and gender or residence (p>0.05). Additionally, the study revealed a significant correlation between total lifestyle level and patients' dependency level (p<0.05*). (Lafta & Mohammed, 2023; Muhealdeen & Aziz**,** 2023; Mukhlif & Qassim, 2023; Komlakh and Hatef, 2022; and Hussein Z, Mohammed W**.**, 2022)

The analysis of age groups in relation to patients' knowledge at the post-test period revealed a significant association between age and knowledge scores. The coefficient of 1.243 indicates the magnitude of this increase in knowledge scores for the specified age group. After controlling for other variables in the model, patients aged 20-29 showed a significant increase in knowledge scores compared to the reference group. Previous study showed that younger patients, specifically those in their twenties, had higher levels of knowledge regarding dietary regimens compared to patients in other age groups. [Majeed, et al. (2023); Kim, et al. (2023); Kamil, & Hattab (2023) ; Mousa, AM. & Mansour, KA. (2020); and Al-Fayyadh S. (2019)]

Although gender did not show a significant association with knowledge of dietary regimens in this study, previous research has yielded mixed findings. Some studies have reported gender differences in nutrition knowledge, with women generally

exhibiting higher levels of knowledge compared to men However, other studies have found no significant gender differences in nutrition knowledge The lack of significance in this study's findings regarding gender could be attributed to the specific characteristics of the SCI patient population studied. [Kim, et al. 2023; Habib, et al. 2022 and Thabit, 2018; and Dickson, et al. 2011]

Patients with higher levels of education demonstrated greater knowledge compared to those with lower educational attainment. Several studies have reported a significant association between educational level and knowledge of dietary regimens. Higher levels of education have been found to be positively correlated with better knowledge and understanding of dietary guidelines. This can be attributed to the fact that individuals with higher education levels generally have access to better sources of information, possess better health literacy, and have a greater capacity to understand and adopt dietary recommendations. [Silva, et al. (2023) ; Tuqa, et al. (2022); Weerasekara, et al. (2020); Ali and Wameedh (2018); and Dickson, et al. 2011]

Occupational status showed a 0.677 unit increase in knowledge compared to lower occupational status. The previous study found a significant association between occupational status and patients' knowledge scores, with higher occupational status patients having higher knowledge scores about dietary regimens. This suggests that factors like access to resources and educational opportunities contribute to a better understanding of dietary guidelines. The findings emphasize the importance of considering occupational status in designing educational interventions for SCI patients. [Silva,et al. (2023); and Tuqa, et al. (2022)]

Marital status was also found to be significantly associated with knowledge ($p = 0.007$), Married SCI patients exhibited higher levels of knowledge compared to unmarried patients. Similarly, the association between marital status and knowledge of dietary regimens aligns with previous research. Married individuals have been shown to exhibit higher levels of health awareness and better adherence to health practices compared to unmarried individuals.

This could be attributed to the presence of a partner who can provide support, encouragement, and reinforcement of healthy behaviors. [Sallal & Mousa, (2023); Silva, et al., (2023); Mark, et al., (2018); and Mousa AM, Hassan HB. (2014)]

Monthly income was also found to be significantly associated with knowledge ($p = 0.03$) The relationship between monthly income and knowledge of dietary regimens has also been observed in previous studies. Higher income levels have been associated with better nutrition knowledge, healthier dietary practices, and greater access to nutritious food options. Individuals with higher incomes typically have more resources to invest in their health, including seeking professional advice, purchasing healthier food options, and participating in nutrition education programs. [Sallal & Mousa, (2023); Hamid SA & Mohammed TR. (2022); Hassan, et al. (2020); Mark, et al., (2018); and Mousa AM, Hassan HB. (2014)]

Overall, these consistent findings across various studies emphasize the importance of considering demographic characteristics, such as educational level, marital status, and income, when designing tailored educational interventions and dietary counseling programs. By addressing the specific needs and challenges associated with different demographic profiles, healthcare professionals can effectively enhance SCI patients' knowledge and promote better adherence to dietary regimens. [Sallal & Mousa, (2023); Hamid SA & Mohammed TR (2022); Amal and Qasim (2018); Mousa AM and Hassan HB. (2014)]

According to results of current study, an instructional program significantly improved patients' knowledge levels regarding dietary regimens. Before the program, patients had poor knowledge, but at posttest 1, they showed a notable improvement. At posttest 2, their knowledge reached a high level, indicating a substantial improvement in their understanding of dietary regimens for spinal cord injury patients. This improvement is consistent with previous studies showing that educational interventions can effectively enhance patients' knowledge and understanding of dietary regimens. The results highlight the importance of implementing educational

interventions customized for spinal cord injury patients to improve their health outcomes. [Noori, et al. (2023); Sallal & Mousa, (2023); and Mousa AM, Hassan HB. (2014)]

CONCLUSIONS

The findings highlight the importance of tailored educational interventions based on socio-demographic characteristics, particularly education level, marital status, and monthly income, to enhance SCI patients' knowledge and adherence to dietary regimens.

RECOMMENDATIONS

The study recommends to provide adequate number of nutritionists or dietitians in Hospital in addition providing continuous dietary instructions for patients considering their socio-demographic characteristics.

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