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Effectiveness of Intervention Program on Nurses' Practices toward Diet Instructions for Orthopedic Patients Treated by Internal Fixation Devices

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ABSTRACT

Objective(s): The study aims to determine the effectiveness of the intervention program on nurses' practices toward diet instructions for orthopedic patients treated by internal fixation devices**.**

Methodology: A quantitative approach using the per-experimental design was use to carry out the study in Misan Governorate / Al-Zaharawy Surgical Hospital / Orthopedic Wards. A non-probability, purposive sample of (30) nurses who work at the orthopedic ward. An interventional program was prepared and presented to the nurses and an observation checklist was constructed and used to evaluate their practices pre and pot the implementation of the program. Descriptive and inferential data analysis approached were used to analyze the study data.

Results: the study presented that there are high significant differences between pre and post-test of the program presentation in all items of nurses' practices toward patients' dietary instructions.

Conclusions: The study concluded the presented program has confirmed its effectiveness through the improvement in nurses' practices regarding nutritional instruction for their patients at the orthopedic wards.

Recommendations: The study recommends that the presented program can be used as a guide by all orthopedic nurses to update their skills with patients' instructions and teaching them about the healthy nutrition and dietary habits.

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فاعلية برنامج تداخلي في ممارسات الممرضين تجاه الارشادات التغذوية لمرضى الكسور المعالجين بوسائل التثبيت الداخلي

المستخلص

الأهداف: تهدف الدراسة الى تقويم فاعلًية البرنامج التداخلًي في ممارسات الممرضين حول الارشادات التغذوية للمرضى المعالجين بوسائل التثبيت الداخلي.

منهجية البحث: أجريت دراسة ذات تصمّم كمي وتجريبي في محافظة ميسان / مستشفى الزهراوي الجراحي / ردهات الكسور. اختيرت عينة غرضية غير احتمالية قوامها (30) ممرض (ة) من العاملين في ردهات الكسور. تم إعداد برنامج تدخلي وتقديمه إلى الممرضين مع إنشاء قائمة مراقبة المشاهدات واستخدامها لتقييم ممارساتهم قبل وبعد تنفيذ البرنامج. تم استخدام تحليل البيانات الوصفية والاستنتاجية لتحليل بيانات الدراسة.

النتائج: اظهرت الدراسة وجود فروق ذات دلالة إحصائية بين الاختبار القبلي والبعدي في جميع فقرات الدراسة بخصوص ممارسات الممرضين المتعلقة بتعليمات النظام الغذائي.

الاستنتاجات: خلصت الدراسة إلى أن البرنامج المقدم أكد فعاليته من خلال تحسين ممارسات الممرضين فيما يتعلق بالإرشادات التغذوية لمرضاهم في ردهات الكسور

التوصيات: توصي الدراسة بأن البرنامج المقدم يمكن استخدامه كدليل من قبل جميع ممرضي ردهات الكسور لتحديث مهاراتهم المتعلقة بتعليمات المرضى وتعليمهم حول التغذية الصحية والعادات الغذائية.

الكلمات المفتاحية: ممارسات الممرضين، الارشادات التغذوية، مرضى الكسور، وسائل التثبيت الداخلي.

Introduction

Lower extremity trauma fracture is common in both military and civilian populations. Therefore, the goal of the surgical and rehabilitation team is focused on returning a patient to their previous level of functioning, often in the context of competing short-lived problems [(1)].

Globally, in 2019, about 178 million new fractures (an increase of 33·4% since 1990), increasing in number of patients related to in increased in population, modern life style, age and chronic diseases [(2)].

Nearly 66% of all traumatic that cover musculoskeletal system fracture, injuries of soft tissues and dislocation. Musculoskeletal injuries are therefore commonly seen in healthcare and in a significant part of professional care nursing home. Modern industrialized life and the increase in traffic accidents and violence have led to a higher incidence of fractures. This increase may be related to advancing age., medication and nutritional deficiencies are possible causes of lower bone fractures [(3)].

Nurses who work in orthopedic should identify and implement evidence-based practices that promote patient safety initiatives and the early detection of changes in the patient's condition. Additionally, orthopedic nurses must lead teams with the primary goal of preventing patient complications, one of the most important practices to prevent complications was healthy diet [(4)].

Orthopedic nurses working in orthopedic critical care services require knowledge and skills to prepare patients for discharge, including nutritional instruction and training, particularly in light of new surgical techniques, rapid recovery protocols and the reduction in length of hospital stay for orthopedic surgery [(5)].

Treatment of fractures biggest body bone is complex. Patients suffering from fractures of the lower extremities of different age groups showed the incidence of postoperative complications, the risk of malunion, delayed healing and non-union remains high and contributes significantly to disability, reduced quality of life and significant treatment costs [(6)].

Healing of bone fracture take more time and dependent on many factors including diet intake. The role of nutrition in bone fracture is quite important. Adopting a balanced diet, rich

in nutrients, minerals, and vitamins, can contribute significantly to bone healing [7].

Nutritional intervention was cost effective and was associated with an improvement in nutritional status and a greater functional recovery. Improvement, early healing, and speed of fracture healing are closely related to the proper nutritional guidance in terms of quality, not quantity of food [8].

Poor diet intake in patients with fracture is highly variable and is associated with poorer outcomes. Therefore, good nutritional education and teaching for patients treated with internal fixation were very important and contributed to decrease healing process time [9].

The current study was carried out to evaluate the effectiveness of the intervention program on nurses' practices toward diet instructions for orthopedic patients treated by internal fixation devices.

Methodology

A quantitative approach using per-experimental design was conducted. The study has started from 1st of April 2022 and ended on 15th of December, 2022.

Prior to collection of the data, formal administrative approval was obtained to conduct the study from the ministry of planning / central organization of statistics for the acceptance of the questionnaire. An official request was submitted from the university of Baghdad / college of nursing to the ministry of health / Misan health directorate / department of planning and resources development / center of staff training and development/ al-zaharawy surgical hospital to take approval for data collection.

A non-probability, purposive sample of (30) nurses as a study and control group who work at the orthopedic ward were selected based on the study criteria and after obtaining a consent from them.

After reviewing the related literature and relevant studies, intervention program was conducted. Check list was constructed to evaluate nurses' practices toward diet instructions for Orthopedic Patients treated by Internal Fixation Devices, it is consisted of two parts:

Part I: Employment and demographic characteristics of study sample included **7** items (age, gender, level of education, years of employment, years of experience in orthopedic ward, participating in training course and type of ward).

Part II: Observational Checklist: to evaluate nurses' practices toward diet instructions, this section consist of (13) items related to dietary eating foods that are of benefit to the patient**.** These items were rated according to the Likert scale {always (3), sometime (2), never (1)}. The observational checklist and the intervention program were reviewed and presented by (12) experts, which as (9) members at the College of Nursing / University of Baghdad, (2) expert Misan Health Directorate, (1) is a member at the College of Nursing/ University of Babylon**.**

The reliability was performed for the determination of the checklist, person correlation coefficient was computed for each determination, the result indicated that the correlation coefficient was r=0.87, therefore the instrument reliable to test research phenomenon**.**

Statistical Analysis: data analysis approaches were used in order to analyze and assess results of study under application of the statistical package (SPSS) ver. (23): Frequency distributions, percent and t-test.

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Results

Table (1): Distribution of Socio-demographical Data of Participants in in Orthopedic Wards

Variables	Characteristics	Participants	
		Freq.	%
Age (years)	23-26	17	56.6
	27-30	6	20.0
	31-34	2	6.7
	35-38	2	6.7
	39-42	2	6.7
	43-46	1	3.3
	Total	30	100
Gender	Male	16	53.3
	Female	14	46.7
	Total	30	100.0
Level of Education	Nursing Institute	23	76.7
	Secondary School Nursing graduate	7	23.3
	Total	30	100
Years of employment in the Nursing field	1-5 years	21	70.0
	6-10 years	7	23.3
	11 years & above	2	6.7
	Total	30	100
Years of Experience in orthopedic ward	1-5 years	16	53.4
	6-10 years	9	30.0
	11-15 years	4	13.3
	16-20 years	1	3.3
	Total	30	100
Place of work	Public	22	73.3
	Private	8	26.7
	Total	30	100

F: Frequency, %: Percentage

Table (1) showed that most of participants within age group (23-26 years) were 17(56.6%). In regarding to gender, 16(53.3) of nurses were male and 14(46.7) of nurses are female. In addition, regarding to the subjects' level of education, the results show that the majority of them has nursing institute graduates 23 (76.7 %). The majority of them has (1-5) years of employment in nursing 21 (70%). More than of the half of the samples have (1-5) years of experience in orthopaedic ward 16 (53.4%). In regarding to the subjects' type of ward, the majority of the study sample are public ward 22 (73.2 %).

Table (2): Evaluation of Nurses' Practices and Comparisons Significance between Pre-test and post- test Related to Instruction and Teaching to Nutritional Habits for the Patients with Internal Fixation

No.	Items	Test Response	Pre-Test			Post-Test			t-test	
			F	%	M. S.	F	%	M.S.	P-valu	Sig.
1	Recommendation for protein intake	Always	1	3.3	1.20 L	2	83.3	2.80 H	0.00	HS
		Sometime	4	13.		4	13.4			
		Never	2	83.		1	3.3			
2	Eat foods that contain fiber and vegetables to avoid	Always	2	6.7	1.20 L	1	53.4	2.30 M	0.00	HS
		Sometime	2	6.7		7	23.3			
		Never	2	86.		7	23.3			
3	Instruct him concerning importance of calcium	Always	0	0.0	1.00 L	2	66.7	2.67 H	0.00	HS
		Sometime	0	0.0		1	33.3			
		Never	3	100		0	0.00			
4	Instruction about sources of calcium, plant or animal	Always	0	0.0	1.00 L	2	80.0	2.80 H	0.00	HS
		Sometime	0	0.0		6	20.0			
		Never	3	100		0	0.00			
5	Adequate exposure to sunlight (10-30 minutes) is	Always	0	0.0	1.00 L	2	76.7	2.73 H	0.00	HS
		Sometime	0	0.0		6	20.0			
		Never	3	100		1	3.3			
6	Explain the importance of vitamin D and get it from	Always	0	0.0	1.03 L	2	70.0	2.60 H	0.00	HS
		Sometime	1	3.3		6	20.0			
		Never	2	96.		3	10.0			
7	Eat foods that contain vitamin C, such as citrus	Always	0	0.0	1.00 L	1	40.0	2.34 H	0.00	HS
		Sometime	0	0.0		1	53.3			
		Never	3	100		2	6.7			
8	Instruct the patient about avoiding foods that contain a	Always	0	0.0	1.03 L	9	30.0	2.23 M	0.00	HS
		Sometime	1	3.3		1	63.3			
		Never	2	96.		2	6.7			
9	Avoid foods that contain a high percentage of salt	Always	0	0.0	1.00 L	1	50.0	2.47 H	0.00	HS
		Sometime	0	0.0		1	46.7			
		Never	3	100		1	3.3			
10	Instructions to reduce red meat	Always	0	0.0	1.07 L	1	50.0	2.40 H	0.00	HS
		Sometime	2	6.7		1	40.0			
		Never	2	93.		3	10.0			
11	Avoid all kinds of smoking	Always	3	10.	1.70	3	10.0	2.90 H	0.00	HS
		Sometime	1	50.		2	90.0			
		Never	1	40.		3	10.0			
12	Avoid alcoholic drinks	Always	0	0.0	1.07 L	2	6.7	1.33 L	0.03	S
		Sometime	2	6.7		6	20.0			
		Never	2	93.		2	73.3			
13	Avoid carbonated beverages.	Always	1	3.3	1.27 L	2	90.0	2.90 H	0.00	HS
		Sometime	6	20.		3	10.0			
		Never	2	76.		0	0.00			

Frequencies, %: Percentages, M.S.: Mean of Score; df=29, C.S.: Comparison Significant, Cut-off-point interval: 1-1.67 = Low; 1.68-2.33 = Moderate; 2.34-3.00 = High; NS: Non Significant at (P > 0.05); S: Significant at (P < 0.05-0.01); HS: High Significant at (P< 0.01)

The results of table (2) demonstrated that there are low mean of scores (below 1.67) in all items regarding orthopedic nurses' practices toward instructing the patients about nutritional habits at the pretest. Post to the nutritional program application, nurses' practices were improved and had high mean of score in the most of items except item (no.8) it was moderate M.S and item (no.12) has low mean of score. Statistically, there are high significant differences between pre-and posttest in all items for nurses' practices related to nutritional instruction by nurses.

Table (3): Effectiveness of the Intervention Program on Nurses' Practices related to Instructions and Teaching the Nutritional Habits for the Patients with Internal Fixation

Episodes		Mean	N	Standard Deviation	Standard Error Mean	t	D.f	P≤0.05	Sig.
Pair	Pretest	1.1205	30	0.13503	0.02465	-30.769-	29	0.000	HS
	posttest	2.4972	30	0.24853	0.04537				

S.D = standard deviation, df= Degree of freedom, t=t-test value, P= Probability level (P value ≤ 0.05), NS: Non-Significant at P ≥ 0.05, S: Significant at P ≤ 0.05, HS: Highly Significant at P < 0.01.

Result table (3) approves that the intervention program has enforced a significant improvement on nurses' practices related to instructing and teaching the patients with internal fixation about healthy nutritional habits.

Discussion

Table (1) show the study's sample consists of 30 orthopedic nurses. This table showed that most of participants are within age group of (23-26 years), 17(56.7%).

According to a previous study results that was done in Baghdad teaching hospital, the majority of nurses in orthopedic ward were at the age between (20-29) years (56%) [10].

Another descriptive study was carried out at orthopedic wards of Baghdad teaching hospital, (25.6%) of nurses are within the age group of (46 – 50 years) [11].

Regarding nurses' gender, (16) (53%) of nurses were males, this finding agrees with a study conducted at Baghdad Teaching Hospital and Ghazi Al-Hariri Martyr Hospital for Surgical Specialties among orthopedic nurses, (50%) of the orthopedic nurses were males [12].

Concerning nurses' education, more than two-third of them are graduated from nursing institute, 23 (76.7 %). and have diploma in nursing. This finding is not consistent with the study done at medical City Hospital which demonstrated that more than halve of are secondary nursing school's graduates [13].

With respect to the years of employment and experience, the majority of the nurses have (1-5) years of employment in nursing, 21 (70%). More than half of them have (1-5) years of experience in orthopedic ward 16 (53.2%). A study conducted in medical City Hospital revealed that the half of the nurses had less than five years of employment [14].

A recommendation from previous study, mentioned that nurses should be provided with training courses to improve their knowledge and practices. Good and correct practices lead to improve patient's outcome [15].

Regarding type of ward, the majority of the study sample work at general wards, 22 (73.2 %). In a previous study done at Misan governorate that have an objective of assessing nurses' practice toward care of patients with fracture treated by external fixation". This study founded that the majority of orthopedic nurses' work at general wards (72%) [16].

Table (2) shows that almost all items had low mean of score (less than 1.67) at the pretest. After receiving the program, the post-test, shows that nurses' practices witnessed a significant improvement as it was reflected by the mean of score of most of the items, more than (2.34).

Effectiveness of intervention program has been confirmed in the findings of table (3). Statistically, there are high significant differences between pre and posttest of nurses' practices related to their instruction about healthy nutritional habits for their orthopedic patients.

A conclusion of previous study included that educating nurses about their role in patients' discharge planning promotes positive behavioral changes and improving the the patient outcomes [17].

Patient feedback has highlighted that nurses need to provide more tailored discharge information for orthopedic patients to support recovery and prevent post discharge problems and hospital readmission [18].

Many studies recommended to provide nurses with continuous educational courses to improve nurses knowledge and practices [19] **(20).**

Diet for orthopedic patients after internal fixation surgery is a priority for health institutions, because the healing process depends so much on it.

In order to prevent complications, the patient who underwent the surgery while he was at home must adherence to these nutritional instructions.

Conclusion

Illustrated from the current study, the presented program has confirmed its effectiveness through the improvement in nurses' practices regarding nutritional instruction for their patients at the orthopedic wards.

Recommendations

The study recommends that the presented program can be used as a guide by all orthopedic nurses to update their skills with patients' instructions and teaching them about the healthy nutrition and dietary habits.

Conflict of Interest

None.

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