

Efficacy of Nursing Interventions of Multimodal Teaching Module of Self-care on Abilities and Quality of Life of Patients Undergoing Spinal Surgeries

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Abstract- Today, spinal disorders are a significant health problem contributing to disability requiring surgery. Previous research demonstrated the importance of patient teaching and follow-ups. **Aim:** This study aimed to evaluate the efficacy of nursing interventions in a multimodal teaching module on self-care on the abilities and quality of life of patients undergoing spinal surgeries. **Study design:** a quasi-experimental research design was used to conduct this study. **Setting:** The study was conducted at the Neurosurgery and Orthopedic inpatient and outpatient clinics of Tanta Main University Hospital, El Gharbia Governorate, Egypt. **Subject:** Randomly selected sampling of 100 adult patients undergoing spinal surgeries. **Tools:** Three tools were used: Tool I: Patients' assessment; Tool II: Patients' self-care abilities; and Tool III: the World Health Organization Quality of Life BREF Assessment questionnaire. **Results:** The study revealed that statistically significant changes in self-care abilities, and quality of life scores at the immediate postoperative hemodynamic stabilization phase and three months post teaching module implementation were detected in the multimodal teaching module study group patients, then the illustrated booklet study group patients, and finally the smart phone video developed study group patients compared to control group patients. **Conclusion:** A multimodal teaching module is the most effective method for enhancing patients' self-care abilities and quality of life level, followed by an illustrated booklet as the second best, a developed video as the third, and routine nursing interventions as the least effective method. **Recommendations:** A multimodal teaching module about self-care should be utilized as a collaborative teaching modality to improve post-operative outcomes and the quality of life of patients undergoing spinal surgeries. Patients need to be given an illustrated booklet or smart phone video developed as a teaching approach, but it is better not to use isolated methods.

Keywords- Multimodal teaching module, Nursing Interventions, Self-care abilities, Quality of life, low back pain, patients, Spinal surgeries.

I. INTRODUCTION

Spinal surgery has become one of the most common challenging surgical interventions, used to treat different disorders, either traumatic or non-traumatic, leading to disability, which reflects negatively on physical functioning, psychological wellbeing, social and economic involvement, family relationships, and environmental health [1, 2]. Despite ongoing advances in neurosurgical procedures, a significant number of patients undergoing spinal surgery fail to achieve pain alleviation, delay return to activities of daily living, and endure numerous follow-up procedures in an often-futile effort to relieve their everlasting discomfort and suffering, which consequently leads to reduced quality of life [3, 4]. The perioperative nursing management of patients undergoing spinal surgery is a multidisciplinary team effort that encompasses different phases, including assessment, planning, implementation, evaluation, and reassessment. Pre-operative nursing intervention is primarily focused on alleviating pain, neurovascular assessment, and ensuring dietary compliance. Nurses' roles include patient reassurance as well as teaching them about preoperative surgical planning and postoperative care. The patient's physical response to general anesthesia is related to early postoperative issues. Therefore, at this phase, the focus of care is on relieving post-anesthesia symptoms [5]. In the immediate postoperative phase, the nurse is responsible for observing the surgical incision, monitoring vital signs, and making assessment of pain severity, active range of limb motion, and sensory and bladder functions. Nurses have an essential role in teaching patients about self-care, wound care, postoperative exercises, and avoiding complications. Finally, nurses need to be aware of how much psychosocial factors affect patient recovery [6]. Patient teaching is a systematized short-term approach that is limited to a certain health condition and promotes self-care in light of a particular health issue. Self-care is a set of particular learned, informed, and appropriate actions and behaviors that a person engages in concrete situations of life, either by himself or with the assistance of his caregivers. Multimodal teaching style is considered a broad category involving the joint representations of different modalities, which enhances the diversity of the teaching and

learning process. Thus, health-related quality of life (HRQOL) is a growing and important consideration in evaluating the effectiveness of any surgical procedure, so it is important to use quality of life as a tool in complementary health care [7]. The World Health Organization (WHO) Group described quality of life (QOL) as "the individual's view of their position in life in relation to their own personal objectives, expectations, standards, and concerns, as well as the culture and value systems of where they reside" [8].

SIGNIFICANCE OF THE STUDY:

The worldwide prevalence of degenerative disorders and low back pain is about 266 million people (3.63%) annually, with the highest and lowest estimated incidences in Europe (5.7%) and Africa (2.4%), respectively [9]. According to the Global Burden of Diseases 2017 study, one of the most common contributors to disability for both sexes is low back pain, combined with the largest increase in low and middle-income countries. Further, the burden of these disorders on the government, health care systems, families, and patients is increasing globally [10]. It is imperative to note that designing teaching modules about self-care successfully improves symptoms, reduces complications, shortens the recovery period, minimizes hospital length, and minimizes the re-hospitalization rate [11, 12].

AIM OF THE STUDY: This study aimed to evaluate the efficacy of nursing interventions in a multimodal teaching module on self-care on the abilities and quality of life of patients undergoing spinal surgeries.

RESEARCH HYPOTHESES:

1. The study groups that will receive nursing interventions from the multimodal teaching module will exhibit greater improvement in their self-care abilities and quality of life than the control group.
2. The study group that will receive nursing interventions in a multimodal teaching module (illustrated booklet, smart phone video developed, power point presentation, and demonstration and re-demonstration) will exhibit more improvement in their self-care abilities and quality of life than other study groups that will receive nursing interventions in a mono-modal teaching module (illustrated booklet only or smart phone video developed only).

II. SUBJECT AND METHODS

A. Research design:

A quasi-experimental research design was used to conduct the current study.

B. Setting:

This study was conducted at the Neurosurgery and Orthopedic inpatient and outpatient clinics of Tanta Main University Hospital, El Gharbia Governorate, Egypt.

C. Subject:

A randomly selected sampling of 100 adult patients undergoing spinal surgeries who was divided into four groups:

Control Group (A): 25 adult patients undergoing spinal surgeries received routine hospital care.

Study Groups (B): It consisted of three subgroups, divided as follows:

Study group (B1): 25 adult patients undergoing spinal surgeries received nursing interventions in a mono-modal teaching module using an illustrated booklet only.

Study group (B 2): 25 adult patients undergoing spinal surgeries received nursing interventions in a mono-modal teaching module using only smart phone videos.

Study group (B 3): 25 adult patients undergoing spinal surgeries received nursing interventions in a multimodal teaching module using an illustrated booklet, a smart phone video developed, a power point presentation, and a demonstration and re-demonstration.

* Inclusion criteria:

1. Age group: 21–60 years old.
2. Able to cooperate and willing to participate in the study.
3. Patients underwent prescribed treatment and therapeutic regimens.

* Exclusion criteria:

1. Unconscious patients.
2. Mental handicapped.
- Tools for data collection:

Three tools were used to collect the necessary data.

Tool I: Patients' Assessment:

It was designed by the researcher. It is composed of two parts:

Demographic characteristics: It included data related to age, sex, marital status, educational level, current occupation, and monthly income.

- a) Two questions about having chronic diseases and previous spinal surgery.

Tool II: Patients' self-care abilities:

It was developed by the researcher and guided by Jain (2017) [13] to assess the self-care abilities of patients undergoing spinal surgeries. It is composed of two parts: Activities of Daily Living (ADLs) such as personal hygiene, toileting, bathing, dressing, grooming, eating, mobility, and locomotion, as well as instrumental activities of daily living (IADLs) such as shopping, food preparation, housekeeping activity, laundry, mode of transportation, and responsibility for own medications.

Scoring system:

Each category had three items: "completely dependent, need assistant and independent". The following were the scores and responses for each item: Completely dependent scored 0, needing an assistant scored 1, and independent scored 2. It was classified as follows:

- Completely dependent equals score 0-6.
- Need assistance equal to score 7-13.
- Independent equals 14-20.

Tool III: World Health Organization Quality of Life BREF Assessment Questionnaire (WHOQOL-BREF):

It was developed by WHO in June 1997 to assess quality of life and was modified in October 2005 [14] and February 2012 [15]. The WHOQOL-BREF is a 26-item assessment that is being developed as a short version of the WHOQOL-100 assessment. It has been

demonstrated to be a reliable and valid instrument for evaluating the QOL of patients with chronic diseases.

The WHOQOL-BREF includes each of the following four domains: physical (8 items), psychological (6 items), social (3 items) and environmental (8 items), in addition to global items relating to individuals' overall quality of life.

WHOQOL-BREF Scoring system:

Each item had five levels of respondent's responses (very poor was coded as (1), poor was coded as (2), neither poor nor good was coded as (3), good was coded as (4), very good was coded as (5), or (very dissatisfied, dissatisfied, neither dissatisfied nor satisfied, satisfied, very satisfied). Scores ranged from 26 to 130 on a scale of 100. Scores of less than 60% were considered poor quality of life, while scoring of more than or equal to 60% was considered good quality of life.

Administrative Design and Ethical Considerations:

The fieldwork was completed over a six-month period, beginning in September 2021 and continuing through February 2022, at the Neurosurgery and Orthopedic inpatient and outpatient clinics of Tanta Main University Hospital, El Gharbia Governorate, Egypt. The study was approved by the Research Ethics Committee (REC) and the Postgraduate Committee of the Faculty of Nursing at Tanta University, Egypt. Written informed consent was obtained from patients undergoing spinal surgeries after a description of the purpose of the study. The researcher-maintained participants' anonymity and confidentiality of data. Participating patients are given the right to participate or not, as well as the right to withdraw from the study.

Data Collection:

This study was carried out in four phases: assessment, planning, implementation, and evaluation, as follows:

- 1) Assessment phase: immediate preoperative teaching phase (one day preoperatively)

For all groups (control and study groups):

The researcher conducted interviews with each patient after his or her admission to the hospital to collect baseline demographic and medical data using Tool (I).

All patients were assessed for their self-care abilities using Tool II: Patients' Assessment.

All patients were assessed for health-related quality of life using tool III, the WHOQOL-BREF questionnaire.

- 2) Planning Phase:

For illustrated booklet study group (G B 1)

Designed nursing interventions mono-modal teaching module using an illustrated booklet only. The illustrated colored booklet covered the patient's knowledge about the spine column, a brief about spinal surgeries, post-operative complications, nursing interventions for self-care needs for patients undergoing spinal surgery, the patient's pre-discharge guidelines, as well as follow-up.

For smart phone video development, study group (G B 2)

Designed nursing interventions mono-modal teaching module using (smart phone video developed) only. The video tape focused on breathing exercises, turning and moving in bed following spinal surgery, postoperative back exercises, and proper use of body mechanics.

For the multimodal teaching module study group (G B 3)

Designed nursing interventions for the multimodal teaching module using an illustrated booklet, smart phone video developed, power point presentation, and demonstration and re-demonstration.

- 3) Implementation phase: (Immediate hemodynamic stabilization phase, 2nd to 7th postoperative days):

For control group (A)

All Patients of control group received only routine hospital care given by nurses.

For illustrated booklet study group (G B 1)

All patients of study group (G B1) received the researcher designed illustrated booklet.

For smart phone video developed study group (G B 2)

All patients in the study group (G B 2) received from the researcher designed smart phone video developed.

For the study multimodal teaching module study group (B 3)

The developed multimodal teaching module for nursing interventions for patients undergoing spinal surgery was implemented by the researcher (illustrated booklet, smart phone video developed, and power point presentation).

All patient groups were assessed for their self-care abilities using Tool II: Patients' Self-Care Abilities.

All patient groups were assessed for their health-related quality of life using Tool III, the WHOQOL-BREF questionnaire.

The multimodal teaching module

It was carried out in a group session, every patient attended at least 10 sessions individually, and every session took 20–30 minutes, depending on their attention and need to follow the suitable teaching contents.

At the start of the first session, an orientation to the health instruction and its objectives was presented.

A summary of the previous session's discussions was given at the beginning of each new session.

Each item and its objectives for self-care interventions were taught in one session, with consideration given to the level of the patients and the use of simple language.

The theoretical part was presented through group discussions using smart phone videos, an illustrated booklet, and a power point. The practical part was presented through demonstration and re-demonstration.

During teaching sessions, discussion, motivation, and reinforcement were used to enhance learning. All patients cooperated with the researchers, and at the end of each session, the patients participated in the discussion to correct any misunderstanding. The time of the following session was also communicated to them.

- 4) Evaluation phase (3-month follow-up phase)

All patient groups were assessed for their self-care abilities using Tool II: Patients' Self-Care Abilities.

All patient groups were assessed for health-related quality of life using tool III, the WHOQOL-BREF questionnaire.

Statistical Analysis of the Data

The collected data were structured, tabulated, and statistically analyzed using IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp.). Data were fed to the computer and analyzed using IBM SPSS software package version 20.0 (Armonk, NY: IBM

Corp.). Qualitative data were described using numbers and percents. The normality of the distribution was confirmed using the Kolmogorov-Smirnov test. Data were presented in tables using numbers, percentages, mean, standard deviation, X², P-value, and r-test. The significance level was adopted at p ≤ 0.05.

III. RESULTS

Table 1 shows that more than half of the control group (G A) and smart phone video-developed group (G B2) (52.0%) have an age range of 40–50, compared to 48.0% and 40.0% among the illustrated booklet group (G B1) and the multimodal teaching module group (G B3), respectively. In addition, more than half of the control group (G A) and smart phone video-developed group (G B2) (52.0%) are female, compared to 40.0% and 28.0% among the illustrated booklet group (G B1) and multimodal teaching module group (G B3), respectively.

As for educational level, it was observed that nearly one-third of the control group (A) and smart phone video-developed group (G B2) (32.0%), as well as 40% of the study group (G B1), could read and write. Meanwhile, nearly one-quarter (24.0%) of the multimodal teaching module group (G B3) is illiterate. The same ratio (68.0%) of the control group (G A), smart phone video-developed group (G B2), illustrated booklet group (G B1), and multimodal teaching group (G B3), respectively, is married.

Regarding residency, the majority of the study groups (G B1, G B2, and G B3) (92.0%, 88.0%, and 84.0%, respectively) live in rural areas. On the other hand, it is noted that 12%, 16%, 20%, and 16% of patients in the control group (G A), illustrated booklet group (G B1), smart phone video-developed group (G B2), and multimodal teaching module group (G B3), respectively, are not working. Concerning income, 60.0%, 68.0%, and 64.0% among the control group (G A), G B2, and G B3, respectively, while nearly three-quarters (72.0%) of G B1 mention that their income is sufficient.

Concerning clinical data, table 2 showed that (56.0%, 68.0%, 60.0%, and 76.0%) among the control group (G A), illustrated booklet group (G B1), smart phone video developed group (G B2), and multimodal teaching module group (G B3) are suffering from previous diseases consecutively. However, having had previous surgery is noticed equally among (24.0%) of the control group (G A) and study group (G B1), respectively. Otherwise, study groups (G B2) and (G B3) report having had previous spinal surgery by 16.0% and 28.0%, respectively.

Table 3 clarifies the mean scores of both the control and study patient groups based on their self-care abilities. The mean overall assessment of self-care abilities of the control group (GA), illustrated booklet group (GB1), smart phone video developed group (GB2), and multimodal teaching module group (GB3) are (31.16±15.07, 32.92±13.93, 33.68±12.75, &32.40±11.57), (33.72±9.64, 37.32±9.13, 36.44±8.64, &40.48±7.33), and (66.32±10.53, 69.96±10.73, 68.04±8.30, &73.92±9.27), respectively, during preoperative, postoperative, and 3 months after implementing the teaching module.

Table 4 shows the distribution of the studied groups undergoing spinal surgeries in both the control and study groups according to their quality-of-life levels. It shows that the majority

Table 1: Distribution of the studied patients undergoing spinal surgery in both control and study groups according to their socio-demographic characteristics (n=100).

LIMITATION OF THE STUDY:

The Corona epidemic and its subsequent difficulty in data collection were one of the challenges the researcher encountered in this study.

| Socio-demographic characteristics | Study Groups | | | | | | | |
|-----------------------------------|----------------------------|------|---|------|---|------|--|------|
| | Control Group (G A) (n=25) | | Illustrated booklet group (G B1) (n=25) | | Smart phone video developed group (G B2) (n=25) | | Multimodal teaching module group (G B3) (n=25) | |
| | No. | % | No. | % | No. | % | No. | % |
| Age (Years) | | | | | | | | |
| 20 <30 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 4.0 |
| 30 < 40 | 8 | 32.0 | 5 | 20.0 | 7 | 28.0 | 8 | 32.0 |
| 40 < 50 | 13 | 52.0 | 12 | 48.0 | 13 | 52.0 | 10 | 40.0 |
| 50 - 60 | 4 | 16.0 | 8 | 32.0 | 5 | 20.0 | 6 | 24.0 |
| Sex | | | | | | | | |
| Male | 12 | 48.0 | 15 | 60.0 | 12 | 48.0 | 18 | 72.0 |
| Female | 13 | 52.0 | 10 | 40.0 | 13 | 52.0 | 7 | 28.0 |
| Educational Level | | | | | | | | |
| Illiterate | 7 | 28.0 | 6 | 24.0 | 9 | 36.0 | 8 | 32.0 |
| Read & write | 8 | 32.0 | 10 | 40.0 | 8 | 32.0 | 6 | 24.0 |
| Primary or Preparatory Level | 4 | 16.0 | 5 | 20.0 | 5 | 20.0 | 6 | 24.0 |
| Secondary Level | 1 | 4.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Baccluric level | 4 | 16.0 | 4 | 16.0 | 3 | 12.0 | 5 | 20.0 |
| Master degree | 1 | 4.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Doctorate degree | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Marital status | | | | | | | | |
| Single | 2 | 8.0 | 5 | 20.0 | 2 | 8.0 | 5 | 20.0 |
| Married | 17 | 68.0 | 16 | 64.0 | 17 | 68.0 | 16 | 64.0 |
| Others | 6 | 24.0 | 4 | 16.0 | 6 | 24.0 | 4 | 16.0 |
| Residence | | | | | | | | |
| Urban | 6 | 24.0 | 2 | 8.0 | 3 | 12.0 | 4 | 16.0 |
| Rural | 19 | 76.0 | 23 | 92.0 | 22 | 88.0 | 21 | 84.0 |
| Occupation | | | | | | | | |
| Manual work | 4 | 16.0 | 7 | 28.0 | 4 | 16.0 | 7 | 28.0 |
| Office work | 8 | 32.0 | 4 | 16.0 | 6 | 24.0 | 4 | 16.0 |
| Skilled work | 1 | 4.0 | 1 | 4.0 | 0 | 0.0 | 1 | 4.0 |
| House wife | 9 | 36.0 | 9 | 36.0 | 10 | 40.0 | 9 | 36.0 |
| Not working | 3 | 12.0 | 4 | 16.0 | 5 | 20.0 | 4 | 16.0 |
| Income | | | | | | | | |
| Enough | 15 | 60.0 | 18 | 72.0 | 17 | 68.0 | 16 | 64.0 |
| Not enough | 10 | 40.0 | 7 | 28.0 | 8 | 32.0 | 9 | 36.0 |

of multimodal teaching module study group patients (GB3) have an overall good quality of life level three months postoperatively compared to (32.0%) immediately postoperative hemodynamic stabilization and only (4.0%) before surgery. Regarding smart phone video-developed study group patients (GB2), only 4.0%, 24.0%, and 72.0% had an overall good quality of life level preoperatively, immediately postoperative hemodynamic stabilization, and 3 months after implementation of the teaching module, respectively. Moreover, 8.0%, 16.0%, and 44.0% of the

control group (GA) were noticed to have an overall good quality of life level in the immediate preoperative phase, immediate hemodynamic stabilization phase, and 3-month follow-up, respectively. Nearly three-quarters (72.0%) of the study group (GB1) achieved an overall good quality of life level in the follow-up phase; 28.0% immediately postoperative hemodynamic stabilization, while only 4.0% preoperatively.

Table 2: Distribution of the studied patients undergoing spinal surgery in both control and study groups according to their clinical data (n=100).

| Socio-demographic characteristics | Control Group (G A) (n=25) | | Study Groups | | | | | |
|-----------------------------------|----------------------------|------|---|------|---|------|--|------|
| | No. | % | Illustrated booklet group (G B1) (n=25) | | Smart phone video developed group (G B2) (n=25) | | Multimodal teaching module group (G B3) (n=25) | |
| | | | No. | % | No. | % | No. | % |
| <u>Previous diseases</u> | | | | | | | | |
| No | 11 | 44.0 | 8 | 32.0 | 10 | 40.0 | 6 | 24.0 |
| Yes | 14 | 56.0 | 17 | 68.0 | 15 | 60.0 | 19 | 76.0 |
| <u>Previous spinal surgery</u> | | | | | | | | |
| Yes | 6 | 24.0 | 6 | 24.0 | 4 | 16.0 | 7 | 28.0 |
| No | 19 | 76.0 | 19 | 76.0 | 21 | 84.0 | 18 | 72.0 |

Table 3: Mean scores of both control and study groups in relation to assessment of patient's self-care abilities during the immediate preoperative teaching phase, immediate postoperative hemodynamic stabilization, and follow-up phase for 3 months of implementing teaching module of self-care of patients undergoing spinal surgeries (n=100).

| Self-care abilities items | Overall patient's self-care abilities | Control Group (G A) (n=25) | Study groups(n=75) | | |
|---|---------------------------------------|----------------------------|---|---|--|
| | | | Illustrated booklet group (G B1) (n=25) | Smart phone video developed group (G B2) (n=25) | Multimodal teaching module group (G B3) (n=25) |
| | | | | | |
| Immediate preoperative teaching phase | | 31.16±15.07 | 32.92±13.93 | 33.68±12.75 | 32.40±11.57 |
| Immediate postoperative hemodynamic stabilization phase | | 33.72±9.64 | 37.32±9.13 | 36.44±8.64 | 40.48±7.33 |
| 3 months Follow up phase | | 66.32±10.53 | 69.96±10.73 | 68.04±8.30 | 73.92±9.27 |

Table 5 illustrates the correlation between patients' overall self-care abilities and quality of life in both control and the overall study groups of patients undergoing spinal surgeries during three different phases (immediate preoperative phase, immediate hemodynamic stabilization phase, and 3-month follow-up). There is a statistically positive correlation between self-care abilities and the overall quality of life of the overall study and control group patients preoperatively, immediately postoperatively, and three months after the implementation of the teaching module.

Table 4: Distribution of the studied groups undergoing spinal surgeries in both control and study groups according to

quality-of-life level during three different phases (immediate preoperative phase, immediate hemodynamic stabilization phase, and 3 months Follow up) World Health Organization Quality of Life BREF Assessment questionnaire (WHOQOL-BREF) (n=100).

| Quality of life domains | Overall patient's Quality of life level | Control Group (G A) (n=25) | Study groups(n=75) | | | |
|---|---|----------------------------|---|---|--|--|
| | | | Illustrated booklet group (G B1) (n=25) | Smart phone video developed group (G B2) (n=25) | Multimodal teaching module group (G B3) (n=25) | |
| | | | | | | |
| Immediate preoperative teaching phase | Poor (<60) | No. 23 % 92.0 | No. 24 % 96.0 | No. 24 % 96.0 | No. 24 % 96.0 | |
| | Good (≥60) | No. 2 % 8.0 | No. 1 % 8.0 | No. 1 % 8.0 | No. 1 % 8.0 | |
| Immediate postoperative hemodynamic stabilization phase | Poor (<60) | No. 21 % 84.0 | No. 18 % 72.0 | No. 19 % 76.0 | No. 17 % 68.0 | |
| | Good (≥60) | No. 4 % 16.0 | No. 7 % 28.0 | No. 6 % 24.0 | No. 8 % 32.0 | |
| 3 months Follow up phase | Poor (<60) | No. 14 % 56.0 | No. 7 % 28.0 | No. 7 % 28.0 | No. 4 % 16.0 | |
| | Good (≥60) | No. 11 % 44.0 | No. 18 % 72.0 | No. 18 % 72.0 | No. 21 % 84.0 | |

Table 5: Correlation between overall self-care abilities and quality of life in both control and the overall study groups patients undergoing spinal surgeries during three different phases (immediate preoperative phase, immediate hemodynamic stabilization phase, and 3 months follow up) (n=100).

| Study Group | Overall patient's quality of life | r | Overall patient's self-care abilities | | |
|-----------------------------|-----------------------------------|--------|---------------------------------------|---|--------------------------|
| | | | Immediate preoperative phase | Immediate hemodynamic stabilization phase | 3 months follow up phase |
| | | | p | p | p |
| Control group (n=25) | | 0.436* | 0.593* | 0.514* | |
| Overall Study groups (n=75) | | 0.372* | 0.400* | 0.569* | |
| | | 0.029* | 0.002* | 0.009* | |
| | | 0.001* | <0.001* | <0.001* | |

IV. DISCUSSION

According to study results in Table 3, there was marked improvement in the self-care abilities of the overall study group patients after three months of implementing the self-care teaching module followed by an immediate postoperative hemodynamic stabilization phase compared to the immediate preoperative teaching phase. This suggests that the teaching module improved the independence of patients undergoing spinal surgery. These results are consistent with the first study's hypothesis.

This result was in agreement with [16], who found no significant differences in the overall barthel index item score between the control and study groups before nursing intervention compared to post-nursing intervention implementation. On the same line, [17] mentioned that median self-reported function was

found to be better at hospital admission for patients who underwent a pre-rehabilitation intervention compared to routine care; however, no differences between groups were reported for timed up and go or sit to stand scores.

Also, [18] highlighted that there was significant improvement in daily living activities, including sleeping, among patients with discectomy. This can be attributed to the effect of nursing interventions in the teaching module regarding self-care that maximize normal spinal stability, coordination, mobility, and decrease pain, leading to a positive effect on sleep quality. Therefore, using a multimodal teaching module related to self for patients undergoing spine surgery is evidenced to be more effective than a mono-modal teaching module or standard care. A major finding of the present study in Table 4 is that patients of the study groups had marked improvement in terms of their quality-of-life level immediately and three months after surgery compared to control group patients. This could be related to the fact that perioperative teaching regarding self-care for spine surgery patients has a positive effect on their clinical, psychological, and economic outcomes as well as contributes to improving their quality of life. Statistically significant differences were discovered between the studied patients in the control and study groups. So, these results also support the first study's hypothesis.

In this context, [19] was in accordance with this result, as he concluded that study group patients had better health-related quality of life three months after surgery compared with the control group, and there was only a statistically significant difference between the two groups in terms of physical function, role limitation due to physical function, vitality, social function, and general health. On the other hand, Burgess et al. (2019) reported no variations in postoperative problems, quality of life, ability to return to work, or physical indicators.

The findings also demonstrated in Table 4 that patients in the multimodal teaching study group had a better quality of life level than the illustrated booklet group and the smart phone video-developed group immediately following surgery and three months after teaching module implementation. This result supports the second study hypothesis. Accordingly, [20] was consistent with current findings as he claimed that video-based instructional methods are helpful for enhancing short-term knowledge or educational outcomes; however, multimodal teaching interventions delivered over a prolonged period of time may assist in enhancing longer-term results. It could be related to the content taught by each teaching method and the fact that printed material and/or developed videos contain fewer elements compared to multimodal teaching methods. The content of the teaching method should depend on the patient's learning abilities and needs in order to meet the demands of a more diverse group of patients and achieve higher learning effectiveness. Therefore, these findings support the second study hypothesis that the multimodal teaching method is a preoperative health teaching approach for patients undergoing spinal surgeries.

In contrast [21] disagreed with that result of this study, who illustrated that compared with the print materials and routine verbal education groups, the use of videos either recorded or animated reduced patients' levels of pain and anxiety, strengthened their coping abilities, and facilitated patients'

knowledge assimilation and practices related to surgery and recovery.

In the present study, as shown in Table 5, a significant positive correlation was discovered between overall self-care abilities, quality of life level of control, and study groups during the three phases of the teaching module, indicating that coping with disease and becoming independent in performing their basic activities of daily living contribute to improving their quality of life. This result was supported by [22], who concluded that there was a statistically significant correlation between the overall coping level of the studied patients and dependency levels.

In this context, [23] stated that the teaching program was effective and that the outcomes regarding lumbar disk herniation, patient practice, and satisfaction were significantly improved. Finally, the current study found in tables 3 and 4 that postoperative spinal surgery patients experienced better expected self-care abilities domains and overall quality of life scores among the multimodal teaching group, followed by the illustrated booklet group, and finally the smart phone video developed group compared to the control group. This could be attributed to the influence of nursing interventions in the multimodal teaching module of self-care implementation, which has a reasonable effect on the patient's quality of life.

V. CONCLUSION

The current study concluded that patients undergoing spinal surgeries and receiving nursing interventions and teaching modules regarding self-care showed a considerable improvement in the average scores of their self-care abilities and quality of life levels. The multimodal teaching group had significant differences regarding all items of self-care abilities, resulting in better quality of life, followed by the illustrated booklet group, then the smart video group, compared to the control group.

RECOMMENDATION

The result of this study projected the following recommendations:

- Nursing interventions in a multimodal teaching module regarding self-care should be utilized as a collaborative teaching modality for patients undergoing spinal surgeries.
- Patients need to be given an illustrated booklet or smart phone video developed as a teaching approach, but it is better not to use isolated methods.
- Replication of this research on a large probability sample is recommended for generalization.

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