

# EFFECT OF PREOPERATIVE PREPARATION ON PATIENTS OUTCOME AMONG PATIENTS UNDERGOING SURGICAL OPERATIONS AT ALMIK NIMIR HOSPITAL – SUDAN



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## ABSTRACT

Preoperative preparations of the patients physically and psychologically are the cornerstone of the good outcomes. This prospective quasi-experimental hospital-based study was conducted in Sudan, Shendi city at Elmek Nimer university hospital to evaluate the impact of preoperative preparation on patients outcome among patients undergoing general surgery. In the period of June 2016 to May 2019.

The study was included a hundred patients undergoing general elective surgery, data were collected by interviewing questionnaire, anxiety scale, pain assessment tool, postoperative parameter, and patients satisfaction tool, data were collected in two phases (pre& postoperative). The data were analyzed by the computer software program (SPSS) version 20.

The results showed that more than two third (79.4%) of the patient had poor knowledge about the importance of preoperative preparations, but improve after implemented program and this was reflected on patient behavior and outcome in the postoperative phase. (70%) had reported no anxiety to mild in the postoperative phase. in regard of postoperative pain, majority of patients (70%) experienced moderate to severe level of pain in the first 4 hours, this level of pain reduce to mild to no pain level in (82%) of patients in next 12hours. Most of the patients had full to good satisfaction regarding preparations and outcome. The study support and justifies the effectiveness of the preoperative preparations on patient outcomes. The study recommended surgical nurses have to provide proper explanation and teaching for elective surgical patients to be adherence with the care plan to promote good surgical outcome.

## 1. INTRODUCTION

### 1.1. BACKGROUND

Surgical care is essential for managing various health conditions such as injuries, malignancy, infections, and cardiovascular disease. (Meara, etal.2015).surgery patients at risk for preoperative anxiety due to fear from unknown, postoperative pain and complications, this negative perception regarding the what happen after surgery can effect on recovery from anesthesia, which can lead to poor outcome and longer hospitalization, so is an important

nursing responsibility and care provider in preoperative phase to inform patient about surgery, pain control, postsurgical explanation. This can promote recovery and achievement of the optimal goal. (Gerlitz.2017; Powell.et al.2016). Patients who are physically and psychologically prepared for surgery tend to have better surgical outcomes. The patients were capable of managing postoperative pain more effectively. Patients who are more aware of what to expect after surgery and who have an opportunity to express their goals and opinions, often cope better with postoperative pain .so the Preoperative preparation is extremely essential before any surgical procedure. (Elkalashy and Masry.2018; Samnani.et al.2014). Evidence based practice has shown that, preoperative exercise therapy and information provision is effective on postoperative outcome, in reducing complication, length of hospital stay and improve patient satisfaction. (Grossweiler.2012 ; Thorell, et al.2016).

Education of surgical patient Preoperative patient education is a key part of nursing consideration aimed at helping patients to clarify information about their operation, and what happens after surgery, based on patient need, level of knowledge and patient condition. (Lobo.2016). Preoperative education has proven useful in decreasing postoperative complications and duration of stay as well as positively influencing recovery. Patients who are properly prepared with specific preoperative preparation deal more effectively with their surgical treatment and are better prepared to manage their pain and ability to perform postoperative activities.(Kaur, et al, 2007; Kruzik, 2009).The main purpose of this integrated approach is to reduce the psychological and physiological stresses associated with surgical illness. (Rizalar and Topcu, 2015). Most importantly, pre-operative education may reduce anxiety and pain level, study by (Yeola and Jaipuriya 2016) which investigated the “effect of different pre-operative education programs on the anxiety and pain levels of patients”, the patients in the group that had received routine care reported the highest level of pain, while patients on planning preoperative education had a low level of pain and anxiety. Preoperative teaching has been administered in various methods including written materials, audio-visual presentations, oral information in the form of one-to-one counseling or group discussion, or combinations of some or all of these. Previous studies have shown that each approach has both advantages and limitations. Additionally, due to an increasing trend toward shorter times between hospital admission and surgery, there has been a limited time that nurses can spend with patients before surgery. Thus, reliance on verbal information giving alone may not always be effective. The use of media such as booklet and videos can help to deliver information in a potentially more efficient and interesting way. A systematic review of randomized controlled trials concluded that the use of video and printed information for preoperative education has a positive impact on anxiety and knowledge. (Guo et al,2012; Sousa, et al, 2015.)

## 2. PROBLEM STATEMENT

Approximately 312.9 million surgical procedure are performed worldwide yearly (Weiser, et al.2015; Esquivel, et al.2015). The incidence rate of major complications following inpatient surgical procedures has been reported as up to 22% with a mortality of up to 0.8%. and about seven million patients yearly will experience serious problems as a result of surgical procedure and around one million patients can pass away as a result of complications after surgery. (Glaysher and Cresswell.2017) Regarding the surgery outcome in Africa, the previous studies from 25 countries for all in-patient surgeries reported that one in five surgical patients in Africa developed a perioperative complication, and one in ten patients died. (Biccard, et al.2018). Sudan considered under low economical counters, so it suffers from a lack of development of the health system, especially in the surgical approaches, the patient's problem in surgical treatment may be lack of adequate preoperative preparations which is the effect on patient physiologically and emotionally. And also effect on postoperative patient's outcome and incidence rate of mortality.

## 3. METHODOLOGY

**Design:** Prospective quasi-experimental hospital-based study conducted to evaluate the effectiveness of the preoperative preparation on patient outcome among patients undergoing elective surgical operations done during the period which extended from June 2016 to May 2019.

**Study area:** The study was carried out at Shendi town which is 176km north to Khartoum and 110 km south to Elddamer, the capital of River Nile State; Shendi town is lies on the eastern bank of the River Nile with a total area of about 14596 Km<sup>2</sup>. The total population of Shendi locality is estimated at about 197589 of whom 116713 live in rural

areas and 80876 in urban areas, most of them are farmers. Shendi city now is one of the rich cities in health care facilities and education institution, it contains four main hospitals which are Elmak Nimir University hospital; Shendi teaching hospital and military hospital, and also there are Hosh bannaga hospital and Elmiseiktab hospital.

**Setting:** This study was carried out at Elmeck Nimer University hospital. This hospital was established since 2002. And it's the second university hospital in Sudan. The hospital provides most types of medical services (medicine, surgery, Obs/Gyne, and pediatric). Besides these there is cardiac, renal center). In the hospital, there is a big two-theater complex in which most type of general operations. The hospital system for work,

for nursing staff, morning shift for 8 hours in duration, and 16 hours, and is the distribution of nursing staff according to need of hospital departments, nurses rotate frequently without fixed intervals according to the need. The surgery department within the hospital is divided into two sections. include preoperative and postoperative ward occupying 17 beds and 20 nurses rotated according to hospital policy, they work shift morning; afternoon night shift per day.

The general elective surgical procedures were done according to department schedule in fixed two days per week (Sunday; Tuesday), by rate of (8-10) surgical procedure/day. Also, the surgical department it contains outpatient clinic with a dressing room and laboratory.

**Study population:** This study includes all patient's admitted in Elmak Nimer university hospital for elective surgery during the time of the study. While Excluded Psychiatric & emergency surgical Patients.

**Sampling method:** All patients whom admitted to the hospital for elective general surgery were enrolled. (112) patients were admitted to the hospital for elective surgery for three months and were met the inclusion and agreed to participate. seven patients were discarded because of cancelation in the day of surgery, and however, five patients refused to follow participations. (100) patients were included in the study using simplified formula for determine sample size " the yamane formula " (Israel, 1992) as follow:

$$n = N1 + N(e)^2 = 8801 + 880(0.1)^2 = 89$$

n = the sample size

N = the population size

e = the level of confidence

So, the minimum sample size for patients = 89 patients

**Data collection tools:** Four tools were used: I. Structured questionnaire. II. State Anxiety Inventory form (Akinsulore et al,2015; Jafar and Khan 2009). III. Universal pain assessment tool (Menabde, etal.2017). 1.V. Satisfaction scale form (Karen instrument form) (Andersson and Lindgren,201)

Pilot test: The data collection tools were pilot tested using (12) patient undergoing general surgery at the hospital by the researcher to test the applicability of the tools of data collection and find out unclear or ambiguous questions, and to estimate the time required for filling each form. Data from the pilot study has been analyzed and we found that 10% of the questions need to be modified in accordance with patients understandings. The Cronbach,s alpha of study tools was ( 0.88)

**Data collection technique:** The data was collected in two phases of surgery pre& postoperative phases.

In preoperative phase data was collected after consenting for the surgery by patient or relative, enough verbal explanation was given after describing the study objectives, then written consent was taken. demographic and health profile data were collected, then section two from a questionnaire filled to assess patient knowledge regarding important of preoperative preparation, postoperative exercise. And preoperative anxiety was assessed using the State Anxiety Inventory Scale. After this, each patient had been interviewed separately and given full preoperative teaching program by using (booklet, boosters, videos) and demonstrating postoperative exercise (deep breathing, cough exercise, and leg exercise, turning and lifting) by using the observational checklist as guidance to steps of each exercise.

**The preoperative preparation program:** Planned preoperative education has been designed by researcher based on preoperative nursing preparation and strategies of enhancing postoperative recovery in light on literature review.

The preparation program has been established in simple Arabic language to facilitate patient understanding and cover the patient question and need in all phases of surgery (pre\intra\and postoperative) also others teaching methods such as demonstration, short videos, booster have been used. The preparation program has consisted of preparations related to the preoperative phase as physiological assessment, bowel, bladder, skin, and preoperative fasting. Addition to the information about the environment of the theater room and sterilization technique.

The final part of preparation included information about postoperative phase as preparation the patient for postoperative exercise, instruction about the wound of operation, adaptation for pain control and information related to discharge from hospital. The program has been implemented in the day before the surgery, each patient was interviewed separately through 40 -45 minutes and given sufficient information and then the patient was trained on postoperative exercises. In Postoperative phase (post I) after patient returned from surgery to postoperative ward, vital sign parameters (blood pressure, pulse, respiratory, temperature) was evaluated immediately and the pain was assessed by using the numerical rating scale after 4hours. During the postoperative phase, the patients were encouraged to execute deep breathing and coughing, early mobilization and leg exercise post-II Then after patient fully recovering from anesthesia the postoperative anxiety was assessed by using the same tool. Vital sign parameter was recorded and the pain was assessed by using the same tool after 8hours later. After that, during follow up phase the patient had been evaluated for any complication present. Post III was conducted on discharge day, satisfaction level regarding preparation and outcomes was evaluated by using the "Karen instrument", and length of hospital stay was recorded.

**Ethical considerations:** The study was approved by the ethical committee of the college and the institutional research board of the university. Before conducting the study, permission was taken from the hospital general manager. Before obtaining the patients' consent, they were informed about the purpose and nature of the study. The researcher assured them that the data collected from the questionnaire and other tools will remain confidential and it's not allowed for any person to identify it. Responders were explained that they could refuse to participate in the study, and withdraw from it at any time. with no effect on their care. Clarification of the aim of the study to each of the patients had been explained verbally, and then written consent has been taken.

**Data management (Statistical design):** After the data was collected, then transferred into a specially designed format so as to be suitable for computer feeding, following data entry, checking and verification process was carried out to avoid any errors during data entry. Frequency analysis, correlation, cross tabulation, and manual revision were all used to detect any errors and through SPSS program version 20.

#### 4. RESULTS

**Table 1:** Demographic characteristic of the study group

Items	Frequency	Percent	Total
<b>Gender:</b>			
▪ Male	43	43%	100%
▪ Female	57	57%	
<b>Age:</b>			
▪ 18-30 years	19	19%	100
▪ 31-40 years	24	24%	
▪ 41-50 years	14	14%	
▪ 51- 60 years	11	11%	
▪ Above 60 years	32	32%	
<b>Education:</b>			
▪ Illiterate	32	32%	100
▪ Primary	29	29%	
▪ Secondary	32	32%	
▪ Graduate	6	6%	
▪ Post graduate	1	1%	
<b>Marital status:</b>			
▪ Single	25	25%	100
▪ Married	74	74%	
▪ Widow	1	1%	

<b>Occupation:</b>			
▪ Employee	12	12%	
▪ Free worker	30	30%	
▪ Retried	3	3%	
▪ House wife	42	42%	100
▪ Job less	13	13%	100%
<b>Place of residence:</b>			
▪ Suburban	11	11%	
▪ Shendi city	45	45%	100
▪ Rural	44	44%	100%
<b>bad habits:</b>			
▪ Smoking	14	14%	
▪ Tobacco	7	7%	100
▪ Never	79	79%	100%

**Table 2:** Clinical characteristics of the study group

Items	Frequency	Percent	Total
<b>Chronic diseases:</b>			
▪ Diabetic	19	19%	
▪ Hypertensive	11	11%	
▪ Asthma	1	1%	
▪ Thyroid disease	3	3%	
▪ Rheumatoid disease	1	1%	100
▪ No chronic disease	65	65%	100%
<b>Previous Minor Surgery:</b>			
▪ Once	9	9%	
▪ Twice	3	3%	
▪ Three times	1	1%	
<b>Previous Major Surgery</b>			
▪ Once	17	17%	100
▪ Twice	6	6%	100%
<b>No previous surgery</b>	64	64%	
<b>Types of anesthesia:</b>			
▪ General	83	83%	100
▪ Spinal	17	17%	100%

**Table 3:** mean of patients anxiety level pre-& post-operative:

Level of anxiety	Frequency	Percent	Total	Mean	SD
<b>Pre-operative</b>					
▪ No	8	8%	100		
▪ Low	23	23%	100%	2.86	0.88785
▪ Moderate	44	44%			
▪ High	25	25%			
<b>Post-operative anxiety</b>					
▪ No	17	17%	100		
▪ Low	53	53%	100%	2.14	0.69660
▪ Moderate	29	29%			
▪ High	1	1%			

**Table 4:** level of pain 4hr and 12hr postoperatively

Items	Frequency	Percent	Total	Mean	SD
<b>Pain level (after 4hours)</b>					
▪ No pain	5	5%		2.93	0.85582
▪ Mild	25	25%			
▪ Moderate	42	42%	100		
▪ Sever	28	28%	100%		
<b>Pain level (after 12 hours)</b>					
▪ No pain	20	20%		1.98	0.61922
▪ Mild	62	62%	100		
▪ Moderate	18	18%	100%		
▪ Sever	0	0%			

**Table 5:** Distribution of study group according to the length of postoperative hospital stay:

Length of postoperative stay	Frequency	Percent	Total	Mean	SD
▪ 1 – 3 days	54	54%	100	1.48	0.54086
▪ 4 – 7 days	44	44%	100%		
▪ More than 7 days	2	2%			

**Table 6:** Correlation between level of postoperative exercise benefits gained and "level of preoperative instructions benefits, Knowledge regarding the importance of exercise

Variables	Level of benefits gained from postoperative exercise		r. value	sig
	Mean	Std. Deviation		
▪ Level of benefits gained from preoperative instructions	1.28	0.47312	-.454**	0.000
▪ Knowledge regarding importance of postoperative exercise	2.80	0.35836	-0.238*	0.017

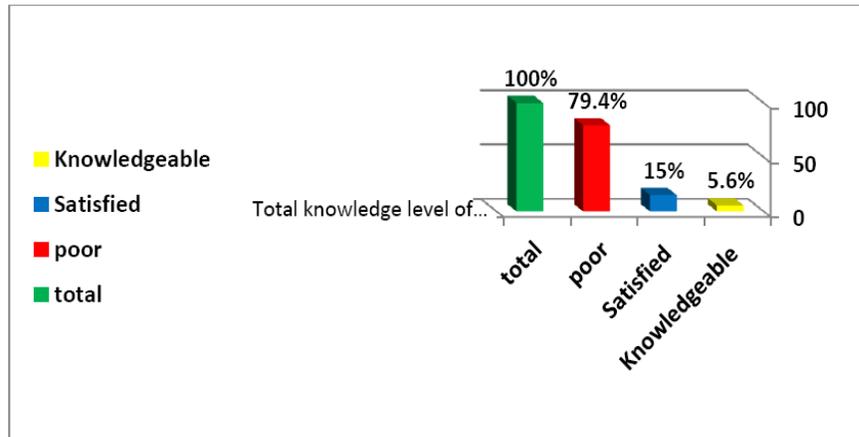
\*\*Correlation is highly significant at the 0.01 level.

\*. Correlation is significant at the 0.05 level.

**Table 7:** Correlation between level of satisfaction and preoperative instructions benefits degree gained from preoperative instructions:

Variables	Mean	Std. Deviation	r	Sig.
▪ Level of satisfaction	4.47	0.55877	-.121	0.231
▪ Level of benefits gained from preoperative instructions	1.28	0.47312		

\*\* . Correlation is highly significant at the 0.01 level, \* significant at 0.05



**Figure 1:** Distribution of study group according to the knowledge regarding the importance of preoperative preparation.

## 5. DISCUSSION

Preoperative education empowers patients to decrease postoperative complication, increase patient satisfaction, reduce anxiety, and shorten the length of hospitalization. (Adogwa et al,2017).The Study was included (100) patient, more than half (57%) of them were females and 43% were meals, more than half (57%) of the age above the fifty years, and less than half 43% below fifty years. Most of them were married (74 %). One third 32% of them were illiterate, a majority (77%) of them were prepared for major surgery. The present study reflected that majority 79% of patients had no bad habits effect on anesthesia, more than half 65% of patients had no disease that needs special preparations. The evaluation of patient physiological status is essential to determine the need for special preparation mainly patient how to have the chronic disease. The study reflected that varying anxiety level on preoperative phase which found that 69% of patient had reported moderate to high level of anxiety, and significant reduction on anxiety level was shown in postoperative phase, which found more than two-thirds 70% had reported no to mild anxiety. This reduction on anxiety level indicates that preoperative information provided had a significant impact to reassure and support patient psychologically. This finding is agreed with the line of conclusions of studies was conducted in Nigeria and India by (Akinsulore et al, 2015; Lobo.2016) concluded to the provision of adequately information help patient to reducing anxiety. In addition to that, this study revealed that, significant negative correlation between postoperative anxiety and level of education, (sig = 0.03) the explanation, patients who receive little chance of education confront difficulty for understanding and adherence with preoperative instruction and perform the exercise. the findings consistent of a study conducted by (Nigussie et al 2014). on other hand, our study finding contradicted with the result of the study in Pakistan by (Jafar and Khan 2009) "mentioned that positive correlation between anxiety and high level of education".The study reflected that, more than two thirds (79.4%) of patients had poor knowledge about important of preoperative preparation such as fasting, bowel, bladder, skin, and exercise in the postoperative phase; this has a connection with the lake of experience of previous surgery and illiteracy state. In addition to that, the present study finding shown a significant negative weak association between benefited gained from postoperative exercise and patients knowledge; preoperative education content had improved patients awareness and skills on postoperative exercise; this finding agree with a line of result study by

(Priya, et al.2017) reported; the preoperative instruction gains patient knowledge and improve the performance of the postoperative exercise. The present study illustrate that, more than two-third 70% was experienced moderate to severe pain in first 4huors after surgery, after reassessment in next eight hours the pain level was reduction marked by most 82% of patients had reported no pain to mild level of pain and few 18% was reported moderate pain, moreover majority 87% of patients had pain medication one to two times during the first 24huors;the preoperative instruction provided on pain control and compliance of patients with exercise after surgery such as deep breathing help patients to be able to control pain, this finding was consistent with findings of studies by (Oshodi,2007; O'donnell,2015;Chou et al,216;Tew,2018, Youssef and Hassan,2017). "stated the provision information on preoperative exercise and demonstrated patient about exercise effectiveness on reducing postoperative pain".

Moreover, the recovery after surgery is the main nursing aspect, so the monitoring vital signs are most important during postoperative nursing care, the current study showed that increase in respiratory rate and blood pressure during the immediate postoperative phase. anesthesia and surgery may be responsible for this abnormality. After 8hure later the most of patients had been reported normal vital signs parameters. May due to pain controlled and the patient is full recovery from the effect of anesthesia. postoperative complication considered as an important change in the recovery of the patient, this study showed that most (93 %) of patients did not develop any postoperative complication. This finding is a good indicator for the effect of the preoperative information provided and demonstrating patient on postoperative exercise to reducing the potential complication. A similar finding was reported in the previous study, conducted by (Lobo.2016) to investigate the effectiveness of preoperative teaching in promoting postoperative outcome, which showed most 98.4% of patients did not develop to postoperative complication. Furthermore, the current study found that more than half 54% of patients were discharged whiten 3days, and less than half 46% were discharged on 4 to7 days. This finding agree with line of studies by (Shenson, et al,2017; Auer et al.201; Gustafsson et al,2018; Hussein and Taha,2018) reported, preoperative instruction of patients had reduced the hospital stay after surgery. On another hand, our study results disagree with study finding by (Kalogianni, et al,216) indicated "the preoperative teaching minimize the postoperative complication but did not effectiveness on length" of hospital stay ". Finally, the findings of our study had explained that half 50% of patients had full satisfaction, 47% had a good satisfactory level. in addition, most of the patients had gained a lot of benefits and rest reassured, this finding justifiable, enough information and explanations provided in the preoperative phase encouraged patient to be compliance with information. so, the patient has satisfaction and benefited after surgery. So is an important nursing responsibility to achievement optimal satisfaction level and benefits. This finding supported with previous studies (Fasulo et al.2018; Best, etal,2018; White,2015) suggest to, the provision preoperative education positively increase patient satisfaction and outcome. On the other hand, the study stated by (Varghese,2009) reported that "the poor satisfaction level can prompt poor adherence to treatment with therefore poor results. Which is not agree with our present study

## 6. CONCLUSION

Majority of patients have poor knowledge about the importance of preoperative preparation and postoperative exercise. But most of them were gained a lot of benefit after the educational program. - preoperative teaching program had a positive effect on reducing the severity of anxiety level. Preoperative instruction and demonstrating postoperative exercise effective on reduction postoperative pain - Preoperative preparations effectiveness on patient satisfaction and

Length of hospital stay after surgery. Most 93% of patients did not develop to postoperative complication. - A significant statistical negative relationship between postoperative anxiety and level of education. Significant negative weak relationship between postoperative mobilization and level of education.

## 7. RECOMMENDATIONS

Surgical nursing staff should provide proper explanation and counseling to be adherence with the care plan and promote outcome for elective surgical patient's. Hospital administrative should provide a facility for preoperative counseling and exercise demonstrating by simple methods to improve patient knowledge and behaviors. The

hospital should establish regular conference and training program about preoperative preparations for surgical nurses to improve quality of nursing care and patient satisfaction. studies are needed to evaluate the effectiveness of preoperative education program on specific types of surgery.

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## CONFLICT OF INTEREST

The author have declared that no competing interests exist.

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