

Effect Self-Care Learning Package on wound healing among Patients Undergoing abdominal surgery

Abeer, Y. MAhdey¹ and Sabah, S. Mohamed²

**asst .professor of Medical-Surgical Nursing, Faculty of Nursing, Benha University, Egypt*

***Lecturer of Medical-Surgical Nursing, Faculty of Nursing, Benha University, Egypt
E-mail sabah.abdlrazek@fnur.bu.edu.eg*

Abstract:

Management of surgical wounds is an important part of post-operative recovery should monitor the process of acute wound healing, prevent wound complications and treat appropriately if complications arise. **Aim** of this study was to evaluate the effect of self-learning package based on wound healing among Patients Undergoing abdominal surgery. **Design**, quiz experimental design was utilized. **Sample:** A purposive sample of 90 married Patients Undergoing abdominal surgery and randomly divided into study and control group. **Setting:** The study was carried out at surgical ward (male and female) and surgical outpatient unit in Benha University Hospital at Benha University. **Tools:** Data were collected through three main tools: A self-administered questionnaire to assess students' general characteristics and knowledge regarding cervical cancer prevention, health belief model, and questionnaire to assess intention to practice cervical cancer prevention behaviors. **Results:** There was highly statistically significant difference after self-learning package implementation observed between two groups regarding knowledge and patient activities about wound healing after abdominal surgery. The mean scores of wound healing assessment during first, second and third ten days were significantly higher in the study group compared to control group (p=.001). **Conclusion:** Based on the results of the present study, the self-learning package had appositve effect on Patients undergoing abdominal surgery which increase knowledge and activities to promote wound healing. These study findings were supported the study hypotheses. **Recommendation:** Dissemination of self-learning package based on wound healing among patients of abdominal surgery prevent delayed of wound healing.

Key Words: wound healing, abdominal surgery, Self Learning Package

Introduction

Surgical wounds account for the vast majority of skin injuries. We estimate that globally there are over 100 million surgical incisions a year, growing at 3.1% that require some wound management. Approximately 80% of these wounds use some form of closure product: sutures, staples, and tapes. Many employ hemostasis products, and use fabric bandages and surgical dressings (**Advanced medical technology, 2015**).

Surgical site infections are the second most common cause of hospital acquired infections. World Health Organization (WHO) estimated that surgical site infections develop in 2%-5% of the 16 million patients undergoing surgical procedures each year (**WHO 2012**). They account for about 24% of all nosocomial infections. The problem is aggravated in developing countries where resources are scarce and staffs are always in short supply (**Agarwal, 2014**). Also **Sanger, et al. (2014)** reported that surgical site infections occur in 3–5% of all surgical patients, and up to 33% of patients undergoing abdominal surgery.

The period of healing after surgical procedures presents a particularly critical concern for patients and their health care providers. (**Caldararo, Stein & Poggio 2016**). A wound healing is a dynamic and complex process that involves blood cells epithelial and connective tissue cells, extracellular matrix and a variety of cell mediators. The process is in general consisting of three phases – inflammation, granulation tissue formation, and tissue remodeling (**Berman et al, 2012**).

The basic requirements for all wounds to heal are a clean, adequately perfused wound environment free from infection, necrotic tissue and foreign material. Systemic factors such as nutritional and immunological status, stress, smoking and medical comorbidities such as renal failure and

diabetes all impact on wound healing. For optimal wound healing these factors must be managed effectively (**Vowden & Vowden, 2017**).

A number of factors can disturb normal wound healing processes, slowing them down or completely impairing them. These factors can be intrinsic or extrinsic. Intrinsic factors are health status, immune function, chronic disease as diabetes, age factors, body build, and nutritional status. Extrinsic factors are smoking, mechanical stress, debris, temperature, infection, and other factors as systemic medication, life style, and alcohol (*Dipietro, 2011*). Agents such as platelet-rich plasma and erythropoietin are modulators that have a positive effect on tissue regeneration and have been used successfully to enhance the healing of wounds.(**Burnouf et al 2013**)

Effective preoperative teaching has a positive impact on the first 24 hours postoperatively. Instruction allows the patients, and others who may be assessing those (*Rothman et al, 2013*). Instruction about the surgery itself includes informing the patient about what will be done during the surgery, and how long the procedure is expected to take. The patient should be told where the incision would be. Knowledge about what to expect during the postoperative period is one of the best ways to improve the patient's outcome. Also, increase compliance and help prevent complications. Some of the more common complications are wound infection, deep venous thrombosis , chest infection, joint stiffness and pressure sores (*Putrycus et al, 2013*).

Enlist the patient and their family and caregivers as part of the team. Patients can work with their family, doctor, the surgeon and the pre-operative team for optimal surgical preparation to reduce post-surgical complications. Each patient must be understood and approached as a

unique human being. The plan of care needs to be meaningful to the person within the context of their life (**Connie, etal. 2017**).

Self-learning package (SLP) identified by *Sanrock (2009)* as a method used by the teacher (Facilitator) to provide or design instructional activities that guide the learner in independently achieving the objectives of learning. Self-learning method is an individualized method of learning. Face to face teaching is disappearing and distance mode of education is becoming popular. SLP are designed where the learner is free to choose what, how, when and where to learn. This flexibility is an importance characteristic in open learning process. The learner is getting familiar more and more to non-formal mode of education thereby shifting the preference to self-learning methods (**Sequeira, 2012**)

Significant of the study

Surgical site infections (SSI) are the second most common cause of hospital acquired infections. SSI may not present until at least 3 to 5 day postoperative. Most patients are discharged before that time, and more than half of wound infections are diagnosed after discharge, highlighting the importance of patient education regarding the daily wound care, the signs and symptoms of wound infection one of the most important role of the nurse. Despite, the early detection of SSI and the proper identification of it according to international criteria of SSI (**Zoabi, 2011**).

Bayat, (2013) reported that 77% of the deaths related to the surgical site infection and the majority (93%) were serious infections involving organs or spaces accessed during the operation. SSI increased a patient's hospital stay by approximately 10 days and cost an additional \$2,000 for each. And it was a huge problem that patients with post-operative infection were discharged and treated outside hospital without hospital notification especially in developing country.

The objectives of this study were to teach the patients how to deal with their wound and prevent any complication done to the wound. And the researchers examine if these objectives can be achieved through introduce self- learning package to abdominal surgical patients.

Aim of the study:

The present study aimed to evaluate the effect of Self-Care Learning Package on wound healing among Patients Undergoing abdominal surgery

Hypothesis

* Patients undergoing abdominal surgery and utilized the designed self-care learning package will be better wound healing than these who don't.

Subjects and methods:

Study design:

A quiz experimental descriptive study was utilized.

Setting:

This study was conducted in at Benha University Hospital, surgical ward (male and female) and surgical outpatient unit.

Subjects:

A purposive sample

Size: A total 90 patients undergoing abdominal surgery for six months was enrolled in the study, they were classified into control and study groups. The patients hospitalized for major elective abdominal surgery. Normally, for the elective operation, patients admitted for several days before the surgery and stay in the hospital for about two to five days after surgery before discharge.

inclusion criteria; male and female patients ,ability to participate in the self-learning program, ability to manage their wound , at least first grade education ,abdominal surgery; major upper abdominal surgery as

cholecystectomy, or hernia and major lower abdominal surgery as intestinal obstruction, and abdominal mass.

Exclusion criterion; No smoking, Patients' with chronic disease that interfere with their self-care activities as (cerebral stroke, paralysis, handicapped). Mentally retard, severe anemia (Hg. <7), Recurrent abdominal surgery, diabetes and obesity were excluded from the present study and patient with surgical history to avoid the impact of these variables.

Tools for Data Collection:

Four tools were piloted and used by the researcher to collect data including:

Tool I: Structured questionnaire regarding knowledge of post-operative self -care activities of clients undergoing abdominal surgeries; which was developed by the researcher, it is comprised of three parts:

- A- Socio-demographic characteristics of the patients including:** age, gender, marital status, educational level, residence, occupation, anthropometrics measures (weight, height, body mass index).
- B- Medical history** of the patients: to assess past and present medical history of the patients, present medical history included hospital admission date, diagnosis, date of surgery, name of surgery, needed of blood transfusion and presence of drainage.
- C- Patient knowledge ;** regarding pre and postoperative self-care activities of patient's undergoing abdominal surgery, It was entail items about preoperative self-care, postoperative self –care, complications of surgery, early ambulation, wound management as definition, types, questions concerned for wound assessment (color, size, etc....), factors that increase and decrease wound healing, nutrition that promote wound healing, and medication that affect wound healing.

Scoring system for knowledge; two grades were given when the response was completely correct, one grade was given when the response was incomplete, and zero was given when the response was unknown or incorrect. Total knowledge score were 56 grads. The general patients' knowledge was classified into two groups: as the following:-

- *Satisfactory* $\geq 60\%$

- *Unsatisfactory* $< 60\%$

Tool II: questionnaire related to patient activities for the basic postoperative skills

It was developed by the researcher after reviewing the related literature to assess the patient's activities after surgery such as exercise (breathing and leg exercise), early ambulation, controlling postoperative pain, nutrition faster wound healing, avoidance of postoperative problems, wound management, personal hygiene to prevent infection.

Scoring system; one grade were given when the practice was done, and zero was given when the practice was not done. The total patients' practice was 33 grads classified into two groups: as the following:-

- *Well done* $\geq 60\%$

- *Not done* $< 60\%$

Tool (III): Bates-Jensen Wound Assessment Scale:

Was developed by (Barbara-bates Jensen, 2001),it was used for assessment of wound healing.it had a different 13 items for assessment of wound healing including : Size ,Depth, Edge ,Under-mining, Necrotic tissue type, Necrotic tissue amount , Exudate type, Exudate amount, Skin Color Surrounding ,Wound, Peripheral Tissue Edema, Peripheral Tissue Induration, Granulation Tissue, and Epithelialization. This scale was used to assess wound healing at three different times, each one of the 13 item had a 5 indicators, ranking from (1-5). The higher total score, the more severe wound status.

Scoring system: (1-65) score

13 score: means the tissue health.

14-<25: good wound regeneration.

25-<40: moderate wound regeneration.

40-<60: poor wound regeneration.

≥60: wound degeneration.

Tool IV: Self-care learning package for patients about how to improve the wound healing:

It was developed and written in Arabic language by researcher after reviewing relevant literature as well as supplemented by photos and illustrations, pre and post-operative self-care. It was divided into *two major sections*:

Theoretical part:

It covered knowledge about objectives of self-care learning package, preoperative self-care, post-operative self-care, wound management, complications both early and late complications for wound, factor enhancement wound healing as excises and nutrition.

Practical part:

For patients with post abdominal surgical wound, it covered all skills which the patient should do after surgery to enhancement of patient condition and prevent deterioration such as deep breathing ,coughing, and leg exercises , hygiene and skin preparation to operation skills, bowel preparation to operation, nutrition and fluid pre / post-operative skills, positioning and turning out bed after surgery, pain relieve skills, measuring of drainage skills, wound care skill and personal hygiene skills.

Content Validity and Reliability:

The experts check the relevancy, clarity, comprehensiveness, and applicability of the tools. According to their opinions, appropriate modifications were done, by five professions and experts of medical-

surgical nursing in the faculty of nursing and medicine, at Benha University. Reliability was done by cronbach, alpha test (.882).

Pilot study:

It was carried out 10 of studied patients who fulfilling the selected criteria. The pilot study was carried out to check the clarity, relevance and applicability of the tools, and to estimate the time required for interviewing a patient. The patients included in the pilot study were excluded for the result.

Field Work:

- **Data were collected in the following sequence:** An official permission was obtained from the manager of previous Units at Benha University Hospital. A letter was issued to them from dean of the Faculty of Nursing, Benha University explaining the aim of the study to obtain the permission for data collection.
- Technique of data collection; Data were collected were collected 2 days per week for a period of six months, the patient admitted at the first three months were enrolled at the control group , and patient admitted at the other three months were enrolled at the study group.
- Structured interview was conducted individually for patients in order to explain the purpose of the study, assure confidentiality and to obtain informed consent. Data collection extended over a period of 6 months.
- At the first the researchers collected the data from control group for three months and make follow up in outpatient.
- Then the second three months the data collected from the study group after self-learning package given to patients
- A booklet was given to each patient in the study group to attract their attention, motivate them and help for reviewing at ward, home and support teaching and practice.

- Self-care learning package application comprised the following phases:

Assessment Phase:

This was the first phase in the program, where demographic data were collected from patients and from their current medical records as baseline data.

Planning Phase (program development):

General and specific objectives of proposed self-care learning package for wound care were designed based on preprogram assessment (data for control group), relevant literature, and opinions of the medical and nursing experts. This intervention was revised and modified based on the experts' comments, in order to be implemented using various methods including a booklet contained major headlines of the self-care learning package about wound care, which was designed by researchers, and written in a very simple Arabic language as well as supplemented by photos and illustrations.

Implementation Phase:

The implementation of self-care learning package was conducted as following; Implementation of the self-care learning package was done through group teaching. The group teaching comprised of three patients.

At the end of the program, the researcher was take feedback from subjects to assess patient knowledge of patients after intervention phase to identify progress in term of differences in their level of response from baseline.

Evaluation Phase:

After ten days of operation the researcher take the first evaluation of wound healing for study group, then after second ten days the

researcher take the second evaluation of wound healing and finally after one month the researcher take the last evaluation of wound healing for study group

Ethical consideration:

Ethical approval was obtained from the Scientific Ethical Committee of Benha University. The purpose of the study was explained to the patients and oral consent was obtained from them to participate in this study. They were given an opportunity to withdraw from the study without given a reason, they were assured that anonymity, and confidentiality of information was protected. Ethics, values, culture, and beliefs were respected.

Statistical analysis

Upon completion of data collection through the previously mentioned tool, data were computed and analyzed using the Statistical Package For Social Sciences (SPSS), version 22.0.0.0 for continuous variables (mean \pm SD) which was used for comparison and t test, paired t test were used for the detection of significant differences for the independent group, and for categorical variable comparison between groups a chi-square test was used.

Limitation of the study:

- 1- There is no scheduled time for done wound dressing
- 2- Deficiency of supplies and equipment for implementation of wound dressing.
- 3- Following the same patients pre and postoperative it is difficult
- 4- The rule of excluding variables that contained more missing data, although reasonable for the purposes of accuracy and disqualified

Result

Table (1) illustrates that distribution demographic characteristic for study and

control groups, this table showed that 48.8% for both study and control groups aged between $36 \geq 50$. Regarding the gender 53.5% for study group and 56.8% for control group were male. Concerning for educational level 58.1% for study 43.3% for control having primary school. Related to residence 53.5% for study 64.9% for control group live in rural area. Finally 62.8% for study 67.6% for control group were working. There were no significant differences between two groups

Table (2) Distribution medical status between study and control groups; this table showed that 48.8% of study group and 40.5% of control one had herniation surgery. In relation to blood transfusion administration 62.8% of study 59.5% of control not administered. Concerning for presence of drain 76.7% of study and 83.8% of control having drain. There were no significant differences between two groups

Table (3) Mean score of studied patients related to knowledge about wound healing for study and control group; this table illustrated that there were highly statistical significant differences between study and control groups ($p=.00^{**}$).

Table (4) Mean score of patient's activities related to basic postoperative skills for study and control group; this table illustrated that there were highly statistical significant differences between study and control groups ($p=.00^{**}$).

Table (5): Mean score of wound healing between study and control groups at the first times of assessment (first 10 days). This table illustrated that there were highly statistical significant differences between study and control groups ($p=.001^{**}$).

Figure (1): percentage distribution of total wound healing score among study and control group at the first time of assessment. This figure indicated that 95% of study group have good wound regeneration meanwhile 57.5% of control group have moderate wound regeneration in the first 10 days.

Table (6): mean score of wound healing between study and control groups at the second times of assessment (second 10 days). This table illustrated that

there were highly statistical significant differences between study and control groups ($p=.001^{**}$).

Figure (2) :): percentage distribution of total wound healing score among study and control group at the second time of assessment. This figure indicated that 52.5% of study group have good wound regeneration meanwhile 82.5% of control group have moderate wound regeneration in the second 10 days.

Table (7):): mean score of wound healing between study and control groups at the third times of assessment (third 10 days). This table illustrated that there were highly statistical significant differences between study and control groups ($p=.001^{**}$).

Figure (3): percentage distribution of total wound healing score among study and control group at the third time of assessment. This figure indicated that 47.5% of study group have health tissue meanwhile (zero) no any patient of control group reach to health tissue in the third 10 days of wound healing time.

Table (1): Distribution demographic characteristics of study and control groups.

<i>demographic characteristics</i>	Study group N=43		Control group N=37		X^2	P value
	No	%	No	%		
Age in years						
20 ≥ 35	10	23.3	11	29.7	1.631	.442
36 ≥ 50	21	48.8	20	48.8		
51 ≥	12	27.9	6	16.2		
Mean ±SD	41.53± 9.31		39.73 ± 7.014		t (-962)	.339
Gender					.086	.77

Male	23	53.5	21	56.8		
Female	20	46.5	16	43.2		
Educational level						
primary education	25	58.1	16	43.3	1.971	.373
Diploma	14	32.6	15	40.5		
University	4	9.3	6	16.2		
Residence						
Rural	23	53.5	24	64.9	1.062	.303
Urban	20	46.5	13	35.1		
Occupation						
Working	27	62.8	25	67.6	.199	.655
Not work	16	37.2	12	32.4		

Table (2) Distribution medical status between study and control groups

	Study group N=40		Control group N=40		X ²	P value
	No	%	No	%		
Type of surgery						
- Cholecystectomy	9	20.9	13	35.1	2.075	.557
- Intestinal operations	8	18.6	6	16.2		
- Herniation surgery	21	48.8	15	40.5		
- others	5	11.7	3	8.2		
Blood transfusion						
Yes	16	37.2	15	40.5	.093	.76
No	27	62.8	22	59.5		
Drainage						
Yes	33	76.7	31	83.8	.616	.433
No	10	23.3	6	16.2		

Table (3) Mean score of studied patients related to knowledge about wound healing for study and control group.

Items	Study		control		T	P value
	Mean	SD	Mean	SD		
-Preoperative self-care activity	6.395 ±1.217		2.5135 ± 1.12105		-14.74	.00**
-postoperative self-care activity	6.349 ± 1.212		2.5676 ± 1.14359		-14.27	.00**
-Wound management	6.511 ± 1.032		2.3243 ± .91451		-19.06	.00**
-Nutrition	5.279 ± .590		2.3514 ± 1.03323		-15.82	.00**
-Complications of post-operative period	6.535 ± 1.241		2.8649 ± 1.37764		-12.53	.00**
-early ambulation activities	6.721 ± 1.119		2.8649 ± 1.37764		-13.8	.00**
-Medication effect on wound healing	5.023 ± .707		2.4595 ± 1.14491		-12.23	.00**
-Total patient's knowledge	42.814 ± 5.058		17.9459 ± 7.32176		-17.86	.00**

Table (4) Mean score of patient's activities related to postoperative abdominal surgery skills for study and control group.

Items	Study	Control	T	P value
	Mean ± SD	Mean ± SD		
Deep breathing and leg exercise	3.09 ± .426	1.76± .76	-9.86	.00**
Hygiene and skin preparation to operation	2.79 ± .41	1.89 ± .81	-6.39	.00**
Bowel preparation to operation	2.69 ± .51	.84 ±.69	-13.8	.00**
Nutrition and fluid pre and post-operative	3.26 ± .58	1.22 ± .82	-12.9	.00**
Positioning and turning out bed after surgery	3.34 ± .61	1.0 .66	-16.4	.00**
Pain relieve skills	2.72 ± .503	.84 ± .69	-14.09	.00**
Personal hygiene after surgery	3.02 ± .67	1.32 ± .85	-9.96	.00**
Measurement of drainage	2.69 ± .51	.837 ± .68	-13.81	.00**
Wound care skills	3.11 ± .59	1.108 ± .73	-13.56	.00**
Total activities	26.72 ± 3.18	10.81 ± 3.52	-21.2	.00**

Table (5): Mean score of wound healing assessment between study and control groups at the first times of assessment (first 10 days)

Items	Study group	Control group	Independent t test	P value
	Mean ±SD	Mean ±SD		
Size	2.9750±.57679	3.5750±.50064	-4.968	<0.001**
Depth	2.7000±.56387	3.4750±.50574	-6.471	<0.001**
Edge	2.6000±.67178	3.2500±.63043	-4.462	<0.001**
Under-mining	2.6000±.63246	3.2500±.74248	-4.215	<0.001**
Necrotic Tissue Type	2.5000±.64051	3.2000±.56387	-5.188	<0.001**
Necrotic Tissue Amount	2.5750±.54948	3.4000±.67178	-6.012	<0.001**
Exudate Type	2.5250±.64001	3.2250±.53048	-5.326	<0.001**
Exudate Amount	2.3750±.58562	2.8500±.66216	-3.398	<0.001**
Skin Color Surrounding Wound	2.3750±.58562	2.8500±.73554	-3.195	<0.001**
Peripheral Tissue Edema	2.3750±.58562	3.3250±.61550	-7.072	<0.001**
Peripheral Tissue Induration	2.5750±.67511	3.3500±.53349	-5.696	<0.001**
Granulation Tissue	2.5750±.63599	3.0500±.71432	-3.141	<0.001**
Epithelialization	2.4500±.63851	3.0500±.78283	3.756	<0.001**

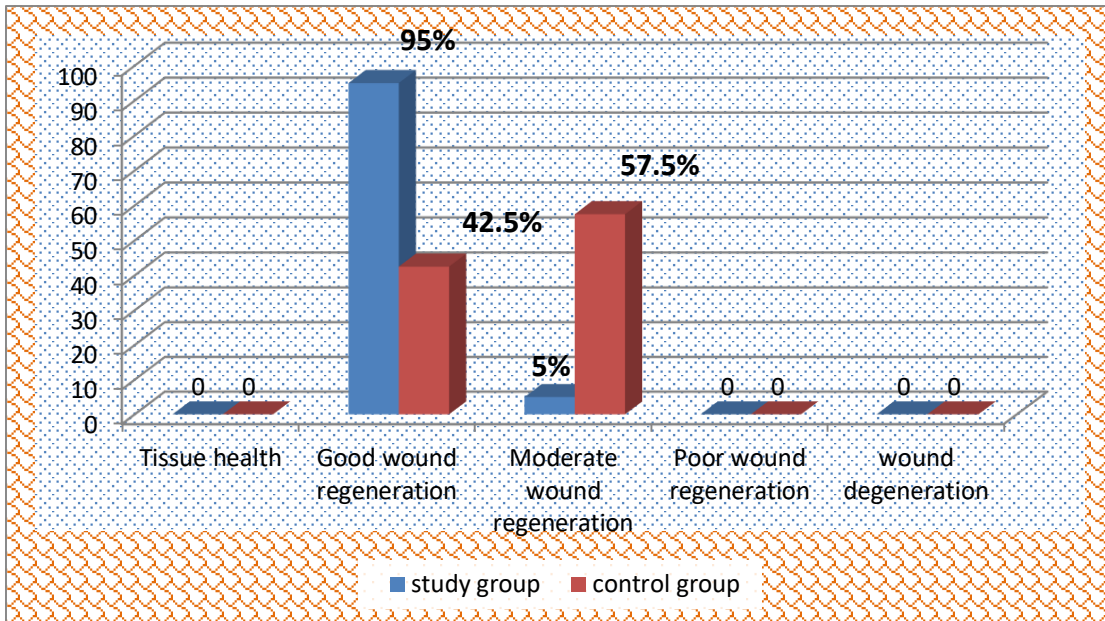


Figure (1): percentage distribution of total wound healing score among study and control group at the first time of assessment.

Table (6): mean score of wound healing between study and control groups at the second times of assessment (second 10 days).

Items	Study group	Control group	Independent t test	P value
	Mean \pm SD	Mean \pm SD		
Size	2.4000 \pm .59052	2.8000 \pm .88289	-2.382	<0.001**
Depth	1.8500 \pm .48305	3.0250 \pm .80024	-7.950	<0.001**
Edge	1.7500 \pm .66986	2.9000 \pm .74421	-7.264	<0.001**
Under-mining	1.9750 \pm .57679	2.8500 \pm .83359	-5.459	<0.001**
Necrotic Tissue Type	1.7000 \pm .64847	3.2000 \pm .56387	-11.040	<0.001**
Necrotic Tissue Amount	2.1750 \pm .59431	2.7750 \pm .80024	-3.807	<0.001**
Exudate Type	2.2500 \pm .74248	2.7250 \pm .67889	-2.986	<0.001**
Exudate Amount	1.9750 \pm .53048	2.5250 \pm .64001	-4.185	<0.001**
Skin Color Surrounding Wound	1.8000 \pm .68687	2.4250 \pm .71208	-3.995	<0.001**
Peripheral Tissue Edema	1.9500 \pm .81492	2.5500 \pm .59700	-3.756	<0.001**
Peripheral Tissue Induration	1.8000 \pm .79097	3.0750 \pm .69384	-7.664	<0.001**
Granulation Tissue	1.6250 \pm .80662	2.8750 \pm .75744	-7.145	<0.001**
Epithelialization	1.7250 \pm .75064	2.6750 \pm .72986	-5.739	<0.001**

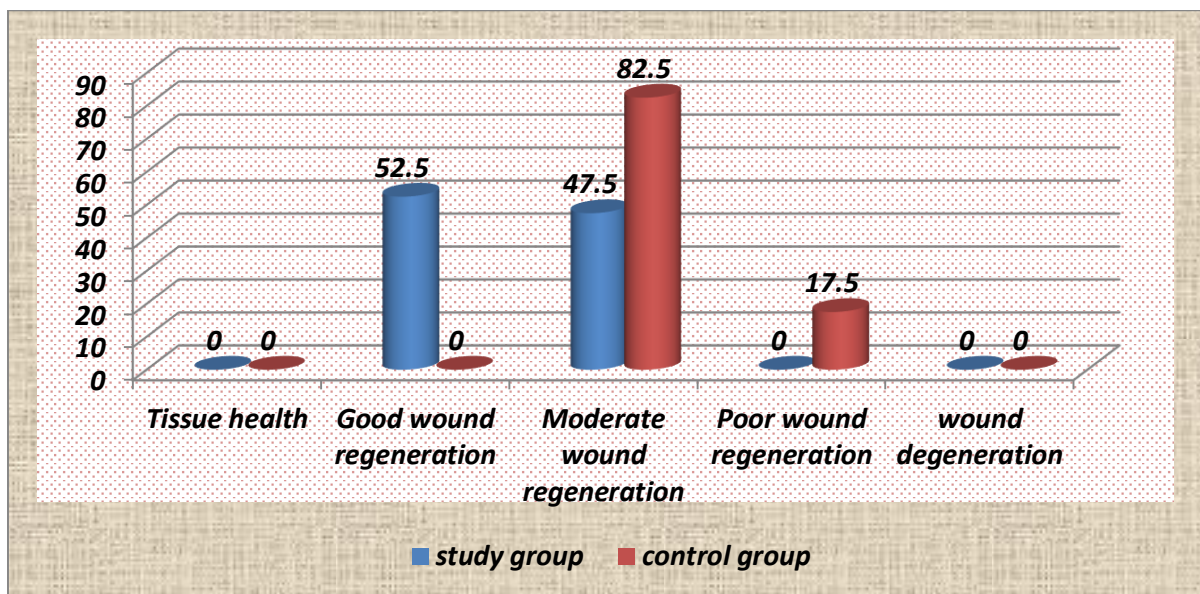


Figure (2): percentage distribution of total wound healing score among study and control group at the second time of assessment

Table (7): mean score of wound healing between study and control groups at the third times of assessment (third 10 days).

Items	Study group	Control group	Independent t test	P value
	Mean \pm SD	Mean \pm SD		
Size	1.1500 \pm .36162	1.9250 \pm .36162	5.798	<0.001**
Depth	1.1250 \pm .33493	1.3750 \pm .49029	-2.663	<0.001**
Edge	1.0750 \pm .26675	1.4500 \pm .50383	-4.160	<0.001**
Under-mining	1.0750 \pm .26675	1.3000 \pm .46410	-2.658	<0.001**
Necrotic Tissue Type	1.1500 \pm .36162	1.6500 \pm .48305	-5.241	<0.001**
Necrotic Tissue Amount	1.1250 \pm .33493	1.3250 \pm .47434	-2.178	<0.001**
Exudate Type	1.1000 \pm .30382	1.4750 \pm .50574	-4.020	<0.001**
Exudate Amount	1.2000 \pm .40510	1.7050 \pm .4641	5.133	<0.001**
Skin Color Surrounding Wound	1.1000 \pm .30382	1.3250 \pm .47434	-2.526	<0.001**
Peripheral Tissue Edema	1.0750 \pm .26675	1.5250 \pm .50574	-4.978	<0.001**
Peripheral Tissue Induration	1.0750 \pm .26675	1.5250 \pm .50574	-4.978	<0.001**
Granulation Tissue	1.0500 \pm .22072	1.4250 \pm .50064	-4.335	<0.001**
Epithelialization	1.0250 \pm .15811	1.3750 \pm .49029	-4.297	<0.001**

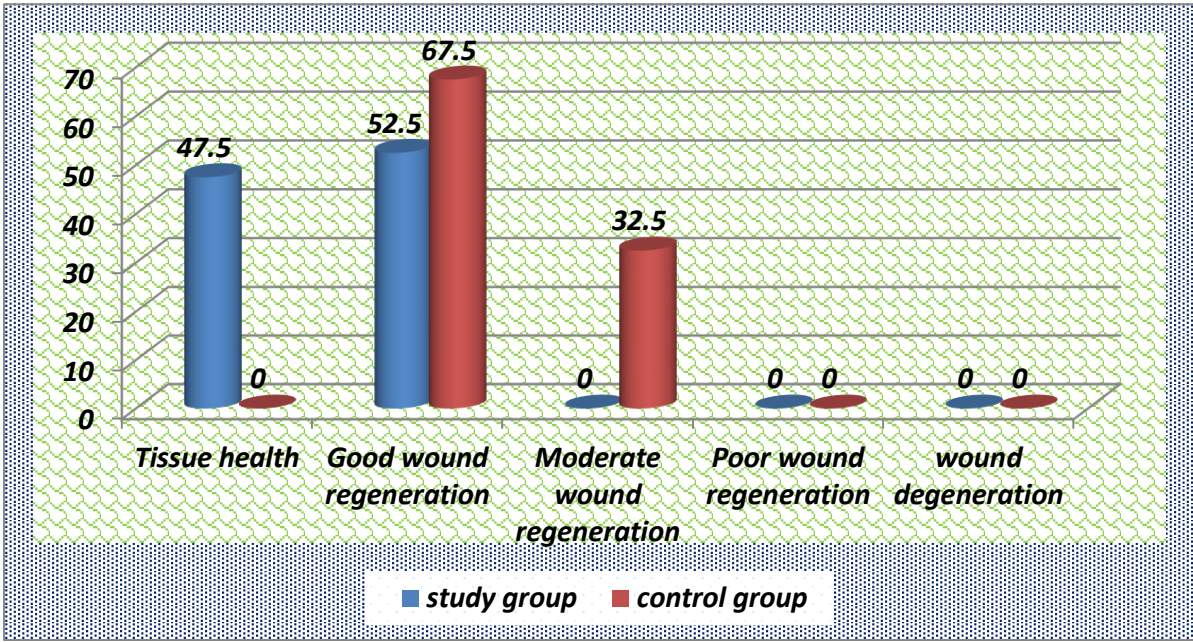


Figure (3): percentage distribution of total wound healing score among study and control group at the third time of assessment.

Discussion

The period of healing after surgical procedures presents a particularly critical concern for seniors and their health care providers. However, wounds and their management are a significant problem affecting approximately 2% of the general population, accounting for up to 4% of total health care expenditure and approximately 68% of nurses (**Gethin, et al. 2014**).

Therefore, the purpose of the present study was to evaluate the Impact of Self-Care Learning Package wound healing among Patients Undergoing abdominal surgery .To fulfill this purpose a pre and postoperative assessment sheets were constructed by the researcher and an interview was used to complete patient's data collection. The discussion of the findings will cover three main parts: the first section concerned with patients' sociodemographic characteristics, and health history. The second section deal with the finding that related to the patient's knowledge and practice for study and control groups. The third section deal with the outcome of self-learning package on wound healing for patients (control and study groups).

The present study illustrated that more than one third of study and control patients were between $46 \geq 50$ years old. The researchers think the period of age the person can make self-activities and can follow the instructions. In the same line **Gajdos, (2013)** who stated that there is a positive correlation between age and 90-day mortality rates after major abdominal surgery in patients aged 65 years.10 More studies have found that postoperative mortality, overall morbidity, and probability of mortality after postoperative complications all increase with advancing age. Meanwhile **Long, 2010** sated that the majority of patient's age falls down in the late adult age (50 – 69 years old)

The present study showed that more than half (53.5%) for study and (56.8) for control groups were male and living in rural area. Also the current study showed that more than third (43.2%) of control group having primary school while more than half (58.1%) of study group having primary school and there was no significant deference between study and control group. This result was agreeing with **Long, (2010)** who showed that there were more men (53.1%) undergoing abdominal surgery than women (46.9%), 51% of participants had completed general education (primary, secondary, or high school). For occupation, farmer was the most common occupation of the samples (42.2%).

Regarding to knowledge about wound healing between study and control groups; the present study revealed that there were highly statistical

significant differences between study and control group. The researcher experiences those participants received handouts may retain and using that information. This theme reflects differences in prior knowledge from previous surgeries, which affect patients' information needs. In the same line **Jakie, Rosie, and Monique, (2015)** reported that the effective care and management of individuals with wounds is dependent upon a systematic and holistic approach. It should be based upon the knowledge of anatomy and physiology, wound healing, holistic assessment, specific wound management and appropriate selection of wound management products.

Also **Sanger,etal. (2014)** knowledge for self-care and self-monitoring, ten participants reported not receiving adequate information or education during the discharge process. They attributed their anxiety and some wound complications to this failure to teach appropriate management and monitoring skills before going home. The Participants noted that lack of information about wound care, poor physical/cognitive state, and physical limitations due to surgery contributed to their need for additional support at home.

Concerning of patient's activities related to wound healing postoperative procedures for abdominal surgery such as exercise, hygiene, nutrition, pain relieve skills and wound healing skills. The present study revealed that there were highly significant statistical differences ($p=0.00$) between study and control groups. This result mean the patients whom read and carry out the most of procedure which found in the learning package and also who are compliance to do the most of procedures able to manage themselves than patients didn't take it (control group) . Also these patients were less complications and more increase of wound healing. Because the patients know the importance of these procedure.

In the same line **Williams, (2008)** who was conducted study on “Supporting self-care of patients following general abdominal surgery. It

was to determine the information received to people following general abdominal surgery is sufficient for them to be able to care for themselves at home in the community. Patients who received information on wound management, activity, nutrition and complications generally felt that it was sufficient at the point of discharge and still felt informed up to three weeks following discharge. Up to 50% of patients did not receive information or received inaccurate information. The majority of the patients who were given information about pain and wound management did not experience any concerns following discharge. However, many of the patients who did not receive information on pain and wound management experienced concerns that required them to make a non-routine visit to a health care facility after discharge.

Also **Almeida,etal.(2010)** conducted on “Nursing outcomes classification applicability on patients with self-care deficit bathing/hygiene” The objective of this study was to explore the Nursing Outcomes Classification applicability on hospitalized orthopedic patients diagnosed with Self-care Deficit: bathing/hygiene. This is a quantitative, descriptive study developed in a university hospital with patients submitted to total hip replacement. 25 patients bathing on first and third post-operative day were observed. Ethical aspects were respected. In 21 cases there was significant statistical variation between average scores from first to second bath.

In relation to wound healing assessment among study and control groups at first ten days the current study illustrated that the major (95%) study group had good regeneration compared to more than one third of control group had good wound regeneration also there were highly significant statistical differences between two groups ($p=0.001$) . In the same line **Finlayson , etal.(2017)** reported there were differences in healing outcomes between the two subgroups . The researchers found that patients in the severe subgroup had a significantly longer time to ulcer healing ($P 0.046$). Specifically patients in the severe subgroup on enrollment to the study took a median of 24 weeks (95%) to heal after enrollment, compared with 16 weeks (95%) for

those in the mild subgroup (unadjusted).($P < 0.001$) confirmed that patients in the severe subgroup were significantly less likely to heal ($P 0.037$), after controlling for evidence-based treatment.

Regarding to wound healing the current study illustrated that the majority of the study group had good wound healing in the first ten days compared to more than one third of control group. Also after assessment of wound healing for patients in second and third ten days of post-operative period. The wound healing assessment was found as nearly half (47.5) of study group reach to healthy tissue while no one of control group reach to healthy tissue. In the same line **Sanada, (2010)** healing rate assessed by design score is summarized. The design scores were 12.3 (4.4), 10.6 (4.8), and 9.0 (5.4), respectively in the introduced group at one, two, and three weeks after the start of observation. In the control group, scores were 15.2 (4.4), 14.2 (4.3), and 13.1 (5.3), respectively. After adjusting for baseline design score there was a significant interaction between time and group ($F = 3.28$, $P < .001$). In addition, tests for multiple comparisons revealed significant differences between the two groups at one week ($P < .001$), two weeks ($P < .001$), and three weeks ($P < .001$).

Conclusion

Based on the results of the present study, the self-learning package had a positive effect on Patients undergoing abdominal surgery which increase knowledge and activities to promote wound healing. These study findings were supported the study hypotheses.

Recommendations:

Based on the findings of the current study, the following recommendations can be suggested:

- Dissemination of self-learning package based on wound healing among patients of abdominal surgery prevent delayed of wound healing.
- Family members and other significant persons should actively participate in planning care of surgical patients, so they can support and encourage them manage their condition.
- Further researches: replication of the research on a large probability sample is recommended to achieve more generalization

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