Assessment of Health-related Learning Needs among Patients undergoing Thoracic Surgery

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Abstract

Background: Thoracic surgery is one of surgical specialties that dealing with the diagnosis and treatment of congenital or acquired diseases of the thorax, including disease of the chest wall, pleura, lungs, airways, mediastinum, diaphragm, and esophagus. It was estimated that Approximately 530,000 general thoracic surgery cases are performed annually in the United States. Objective: Identify the health-related learning needs among patients undergoing thoracic surgery. Settings: This study was conducted at the cardiothoracic surgery department, Alexandria Main University Hospital of Egypt. Subjects: A convenience sample of 80 adult patients, males and females were admitted to the above-mentioned department undergoing thoracic surgery. Tools: Two tools were used by the researcher based on the review of recent related literature to collect the necessary data. Tool one: Thoracic surgery patients' socio-demographic characteristics and clinical data structured interview schedule. Tool two: Thoracic surgery patients' health-related learning needs scale. Results: All the studied patients had poor knowledge regarding to thoracic surgery health-related learning needs in the pre-, intra-, and postoperative periods, and the min-max of the total scores were 221.0-289.0 and the mean ± SD was 242.3 ± 14.29. Also, this result shows the min-max of the percent score was 17.50–30.58 and the mean ± SD was 21.59 ± 2.75. There was no statistically significant relation between thoracic surgery health-related learning needs and their age, marital status, level of education, area of residence, monthly income from the patient's point of view P = 0.382, 0.372, 0.381, 0.829, 0.057 respectively. Conclusion: All the studied patients needed knowledge in thoracic surgery health-related learning needs in the pre, intra, postoperative period. Recommendations: Establishing instructional guidelines on patients undergoing thoracic surgery before and after surgery, Cardiothoracic department should be supplied with a nursing protocol regarding care for patients undergoing surgical procedures and periodic scientific meetings must be conducted among multidisciplinary team to discuss patient's problems and establish a comprehensive plan to meet thoracic surgery patient's learning needs. The proposed perioperative nursing guidelines for patients undergoing thoracic surgery should be distributed and implemented in thoracic unit for nurses in all university hospitals, health insurance units, medical institutions, and private hospitals.

Keywords: Health, Learning needs, Thoracic surgery, Health assessment.

Health, Learning Needs, Thoracic Surgery, Health Assessment.

Introduction

Thoracic surgery is a one of surgical specialties that deals with the diagnosis and management of congenital or acquired diseases of the thoracic cage, including disease of the chest wall, pleura, lungs, airways, mediastinum, diaphragm, and esophagus. **(Buraihi & Mohammed, 2020)**

Lung cancer is the common disease encountered in thoracic surgeries and leading to death. The International Agency for Research on Cancer (IARC) shows that lung cancer remains the leading cause of cancer death, with an estimated 1.8 million deaths in 2020. **(World Health Organization [WHO], 2023)**

Thoracic surgery is a tragic event with a great source of stress to the patients and their families; which can produce many special problems related to physical, emotional disabilities and rehabilitation. **(Hasan et al., 2021)**

Patients learning needs are individualized based on personal characteristics, patient's preferences, the place and duration of education, and the availability of resources. The nurse should determine the educational methods and techniques based on these factors. The patient's learning needs include the disease prognosis, plan of treatment, daily living activities, medications, skincare, diet, exercises, wound self-care, pain management, prevention of complications, follow-up, and discharge home care. **(Kavakli et al., 2020)**

Successful thoracic surgery depends not only on the skills of the thoracic operating team but also on the quality of nursing interventions followed through the pre, intra and postoperative periods. Nurses assigned to care for thoracotomy patients must be familiar with the thoracic cage anatomy and physiology to recognize deviations from normal that may result from the patient's underlying disorders and from the operative procedures performed. **(Wells & Coonar, 2018)**

In addition, nurses should recognize any changes in the chest structure and functions that may be associated postoperative complications. Assessments of health-related learning needs of patients undergoing thoracic surgery are useful in a variety of ways, particularly in enabling the formulation of educational guidelines and standardized nursing protocols of care that meet patients parameters and professional emergency expectations and needs.

Aim of the Study

This study aimed to identify the health-related learning needs among patients undergoing thoracic surgery.

Research Question:

What are the health-related learning needs among patients undergoing thoracic surgery?

Materials and Method

Materials

Design: A descriptive exploratory research design was used to conduct this study.

Setting: This study was conducted at *the cardiothoracic surgery department, Alexandria Main University Hospital of Egypt.* This department is composed of seven rooms with a total of 41 beds: Three rooms for female patients with a total of 15 beds, three rooms for male patients with a total of 24 beds, In addition to one recovery room with two beds.

Subjects:

A sample of 80 adult patients, all undergoing thoracic surgery and were included in the study. The study sample was estimated based on the Epi info-7 program using the following parameters **(Dean et al., 2011).** Population size= 105 (Over 6 months who repeatedly visit the above-mentioned setting (Statistical record of Alexandria Main University Hospital at Alexandria, Cardiothoracic Surgeries Unit 2020), expected frequency= 50%, acceptable error= 5%, confidence coefficient= 95% and minimum sample size= 70.

Health, Learning Needs, Thoracic Surgery, Health Assessment.

Tools: Two tools were used to collect the necessary data in the present study:

Tool one: Thoracic Surgery Patients Socio-demographic characteristics and Clinical Data Structured Interview Schedule.

This tool was developed by the researcher in English language, after a review of revenant recent literature. **(Kavakli et al., 2020; Kruk et al., 2023)** It was used to assess the socio-demographic characteristics and clinical data of the studied patients.
It consists of two parts:

Part I: Thoracic Surgery Patients Socio-demographic characteristics: This part included information about the study patients' general characteristics such as age, gender, level of education, area of residence, marital status occupation, monthly income from the patient's point of view, and the accompanying living family members.

Part II: Thoracic Surgery Patients' Clinical Data Structured Interview Schedule:

This part was designed to obtain information related to the patient's present medical and past history, previous hospitalization, patient complaints, the onset of symptoms, family history about the thoracic disease, current diagnosis, current consumption of medication, type of surgery, and treatment modalities.

Tool two: Thoracic Surgery Patients' Health-related Learning Needs Scale
This tool was adapted from **(Lorig, 2001; Redman, 2003; Falvo, 2004; Lewis et al., 2016)** in English language. It was used to identify the health-related learning needs among patients undergoing thoracic surgery. It was used to identify the health-related learning needs among patients undergoing thoracic surgery in the preoperative, intraoperative, and postoperative periods. The patient was asked about items that he/she needed to know, from his/ her point of view, whether they were important or not, *as the following*

Part I: Thoracic Surgery Patients' Health-related Learning Needs in the preoperative period.

Part II: Thoracic Surgery Patients' Health-related Learning Needs in the intraoperative period *included.*

Part III: Thoracic Surgery Patients' Health-related Learning Needs in the postoperative period *included.*

Method

A written approval to carry out the study was obtained from the Research Ethical Committee of the Faculty of Nursing, Alexandria University. Official permission from the Faculty of Nursing, Alexandria University was obtained. An official letter was submitted from the Faculty of Nursing, Alexandria University, to the head of Cardiothoracic Unit of Alexandria Main University Hospital to obtain their approval for conducting the study, after explaining the aim of the study. The developed and the adapted tools were submitted to the jury members of five experts specialized in the field of Medical-Surgical Nursing and surgical specialists to assure their contents validity, appropriateness, completeness, clarity of its items, and comprehensiveness. Every jury member was informed about the aim of the study. Comments and suggestions of jury were considered and the tools were modified accordingly. A pilot study was conducted on eight patients that represented *10% of the total studied patients* (8 patients) to ascertain the clarity, feasibility, and applicability of the study tools, and then the necessary modifications were done. Patients included in the pilot study were excluded from the total number of study subjects. The reliability of the two tools; the developed (tool I) and the adapted tool (tool II) was tested by using Cronbach's Alpha Statistical Test. The reliability coefficient value was 0.9 which is acceptable. Data were collected throughout a period of nine months from the

beginning August 2022 of to the end of April 2 0 2 3 .

Ethical considerations:

Oral informed consent was obtained from each study subject before data collection after explain the aim of the study, confidentiality of patient's data was assured, the anonymity and privacy of the study participants were assured and the patients were informed that their participation was voluntary and they have the right to withdrawal from the study at any time.

Statistical Analysis

Data were coded, computerized and analyzed using the statistical package for social science (SPSS) version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using numbers and percentage. Quantitative data were described using mean, median, standard deviation and range (minimum and maximum). The normal distribution was verified using the Kolmogorov-Smirnov test. After the completion of data collection, the student t-test and one-way ANOVA were used to identify the health-related learning needs among patients undergoing thoracic surgery.

Results

Table 1 presents frequency distribution of the studied patients according to their socio-demographic characteristics. Regarding the socio-demographic characteristics of the studied patients, the results of the study revealed that 43.8% were in the age group (20<30), while 23.8% were in the age group (30<40). Also, more than two-thirds of the studied patients (68.8%) were males and less than half (48.7%) were married. In relation to patients' educational level, the results showed that 35% of the studied patients had a secondary level of education, 23.8% read and write, while a minority of them (10%)

had a bachelor's degree. Regarding the patients' areas of residence, more than half (52.5%) was from urban areas, while 47.5% were from rural areas.

Table 2 demonstrates frequency distribution of the studied patients according to their clinical data. Regarding the family history of respiratory diseases, it was found that most of the studied patients had no family history of respiratory diseases about 98.8%, while only 1.2% had family history of respiratory diseases. According to family history of ischemic heart diseases, it was found that 2.5% of patient's family had ischemic heart diseases.

Table 3 shows frequency distribution of the studied patients according to overall thoracic surgery patients' level health-related learning needs in the preoperative period. Regarding the level of knowledge of patients, including the surgery day preparation, smoking cessation, physical preparation, preoperative teaching, psychological needs, and preparation. It was observed that all of the studied patients (100%) had poor knowledge. Also, this table represents that most of the studied patients 98.8% of them had a poor knowledge level of surgery day preparation, psychological needs, and preparation, while 1.2% had a fair knowledge level.

Table 4 reveals frequency distribution of the studied patients according to overall thoracic surgery patients' level health-related learning needs during the intraoperative period. In relation to the intra-operative knowledge level period, the table shows that most of the studied patients (97.5%) had a poor knowledge level, while 2.5% had a fair knowledge level. It was observed that the total score of the min-max was 10.0–30.0 and mean± SD 19.17 ± 3.54, and the mean percent score was 22.94 ± 8.84.

Table 5 shows frequency distribution of the studied patients according to overall thoracic surgery patients' level health-related learning needs in the postoperative

period. According to the level of knowledge related to medication administration, diet, nutritional therapy, physical activity and exercises, hygienic care, management of legs edema, travel and driving in the postoperative period, the entire studied patients100% had poor knowledge level. Table also shows that regarding wound self-care, chest stretching exercises, shoulder and trunk exercises and breathing exercises, it was noticed that 97.5% of the studied patients had a poor knowledge while 2.5% of them had fair knowledge. Regarding the level of knowledge of chest tube self-care and management of pain, the results showed that most of patients (92.5%) had poor knowledge, while 7.5% had fair knowledge.

Table 6 reveals frequency distribution of the studied patients according to their overall thoracic surgery health-related learning needs. In relation to thoracic surgery patients' overall health-related learning needs in the pre-, intra-, and postoperative period. The table reveals that all the studied patients had poor knowledge. Regarding overall thoracic surgery knowledge, it was observed that min-max of the total score was 221.0–289.0 and mean ± SD was 242.3 ± 14.29. Also, this table shows that the min-max of the percent score was 17.50–30.58 and the mean ± SD was 21.59 ± 2.75.

Discussion

Patients learning needs are individualized based on personal characteristics, patient's preferences, the place and duration of education, and the availability of resources. The nurse should determine the educational methods and techniques based on these factors. The patient's learning needs include the disease prognosis, plan of treatment, daily living activities, medications, skincare, diet, exercises, wound self-care, pain management, prevention of complications, follow-up, and discharge home care. **(Kavakli et al., 2020)**

Regarding the demographic characteristics of the studied patients, the results of the study revealed that most of the patients aged from 21<30 years. This result was consistent with **(Leiderman et al., 2018; Elkhouly & Hagagg, 2023)** while this result disagreed with **(Shackcloth et al., 2022; Tait, 2023)** Related to gender, the current results showed that the majority of the studied patients were males and married. This finding agreed with **(Mathangasinghe et al., 2020; Seada & Fathallah, 2021)**

In relation to the area of residence, the present results showed that the majority of the studied patients were urban, lived with their families, and had an income that met their expenditures. This finding is in agreement with **(Cairns et al., 2020; Kavakli et al., 2020)** while disagreeing with **(Mohammed et al., 2023)**

Regarding the level of knowledge of patients in the preoperative period the current study revealed that overall knowledge of the studied patients had poor knowledge. The findings agreed with **(Stokes et al., 2019; Anwar Al et al., 2022)** who stated that the majority of the studied patients had unsatisfactory levels of knowledge of preoperative period. on the other hand, this result is contradicted with **(Mohammed et al., 2023)** who reported that the majority of the studied patients had a fair level of knowledge pre evidence-based nursing program implementation, while all of them had a good level immediately post-program implementation. In relation to the intra-operative phase, the present study showed that most of the studied patients had a poor knowledge level in such subjects as signing the written informed consent of surgery approval and the involved risks, informing with the anesthesiologist any medical history, current prescription and over-the-counter drugs, previous reactions to anesthesia, allergic reactions from previous medications, identifying side effects that may occur from anaesthesia and taking

sedation before the surgery. This agreed with **(Jovanovic et al., 2022)** who stated that most patients had poor knowledge and fears regarding anesthesia in the intraoperative period and that the personal knowledge of an anesthesiologist regarding anesthesia was inadequate and underappreciated. Also, this study is in the same line as **(Atinyagrika et al., 2017; Alsabban et al., 2020)** who illustrated that most of the patients' need information during the intraoperative phase and the information received were insufficient. However, this result is different to that published by **(Mohan et al., 2017)** who illustrated that most patients had fair knowledge and were satisfied with the information received regarding concerns and fears of the intraoperative phase. In relation to patients' overall thoracic surgery health-related learning needs in the pre-, intra-, and postoperative periods. The result of the current study showed that all the studied patients had poor knowledge coincides with **(Batchelor et al., 2019;Anwar Al et al., 2022)** who stated that overall, the knowledge of thoracic surgery among the study patients had unsatisfactory level of knowledge towards pre-and postoperative care similar to **(Kavakli et al., 2020; Mohammed et al., 2023)** who revealed that in his study the vast majority of the patients had insufficient and unsatisfactory knowledge before having thoracic surgery.

So, the aim of this study is to develop instructional guidelines for the thoracic surgery patient pre-, intra-, and postoperatively based on this identification of the learning needs of the studied patients to improve patients' knowledge and patients' outcome physical parameters that improve their quality of life.

Conclusion

The results of the present study concluded that all of the studied patients had a poor level of knowledge in thoracic surgery health-related learning needs in the pre, intra and postoperative period. Almost all surgeons, nurses, and educators from the nursing and medical fields agreed about the instructional patient guidelines required for pre-and postoperative thoracic surgical patients.

Recommendations

• Establishing instructional guidelines on patients' undergoing thoracic surgery before and after surgery, Cardiothoracic Surgeries Departments should be supplied with a nursing protocol regarding care for patients undergoing surgical procedures.

• Education programs should be planned on a regular basis for patients on the Cardiothoracic Surgeries Unit, and each one is able to attend these programs after an explanation about the positive outcomes of these educational sessions in the pre, intra, and postoperative periods.

• Preparing and providing colorful, printed booklet in Arabic about the educational needs of thoracic surgery patients and distributing them to all patients.

Health, Learning Needs, Thoracic Surgery, Health Assessment.

Table (1): Frequency Distribution of the Studied Patients according to their Socio-demographic Characteristics

Patient's Socio-demographic Characteristics	No.	%
Age in years		
a. 20 < 30	35	43.8
b. 30 < 40	19	23.8
c. 40 < 50	13	16.2
d. 50 ≤ 60	13	16.2
Gender		
a. Male	55	68.8
b. Female	25	31.2
Marital status		
a. Single	36	45.0
b. Married	39	48.7
c. Divorced	4	5.0
d. Widow	1	1.3
Level of education		
a. Illiterate	12	15.0
b. Read and write	19	23.8
c. Primary	13	16.2
d. Secondary	28	35.0
e. Bachelor's degree	8	10.0
Area of residence		
a. Rural	38	47.5
b. Urban	42	52.5

Table (2): Frequency Distribution of the Studied Patients according to their Clinical Data

Thoracic surgery patients' clinical data	No.	%
Family history		
1-Respiratory diseases		
a. Yes	1	1.2
b. No	79	98.8
2-Cardiovascular diseases		
a. Yes	2	2.5
b. No	78	97.5
3-Patients' past medical history		
A-Presence of other comorbidities		
a. Yes	16	20.0
b. No	64	80.0
If yes #		
-Hypertension	5	6.3
-Diabetes mellitus	6	7.5
-Chest infection	7	8.7

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-Ischemic heart diseases	2	2.5
a. Acute	7	8.7
b. Chronic	13	16.2
4-Previous hospitalization		
a. Yes	25	31.2
b. No	55	68.8

n: Number of studied patients   #: More than one answer

Table (3): Frequency Distribution of the Studied Patients according to Overall Thoracic Surgery Patients' Level Health-related Learning Needs in the Preoperative Period.

Preoperative health – related learning needs	Poor (< 50%)		Fair (50% ≤ 64%)	
	No.	%	No.	%
Smoking cessation	80	100.0		
Preoperative physical preparation and preoperative teaching	80	100.0		
Preoperative physical preparations (surgery day preparations)	79	98.8	1	1.2
Psychological needs and preparations	79	98.8	1	1.2
Overall preoperative learning needs	80	100.0		

Table (4): Frequency Distribution of the Studied Patients according to overall Thoracic Surgery Patients' Level Health-related Learning Needs during the Intraoperative Period.

Intra-operative health-related learning needs	No.	%
Intra-operative care		
Poor (<50%)	78	97.5
Fair (50% ≤ 64%)	2	2.5
Total Score (10 – 50)		
Min. – Max.	10.0 – 30.0	
Mean ± SD.	19.17 ± 3.54	
Median	19.0	
% Score		
Min. – Max.	0.0 – 50.0	
Mean ± SD.	22.94 ± 8.84	
Median	22.50	

SD: Standard deviation

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Table (5): Frequency Distribution of the Studied Patients according to overall Thoracic Surgery Patients' Level Health-related Learning Needs in the Postoperative Period.

Postoperative health-related learning needs	Poor (<50%)		Fair (50% - 64%)		Good (≥65%)	
	No.	%	No.	%	No.	%
1-Medication administration	80	100.0				
2-Diet and nutritional therapy	80	100.0				
3-Physical activity and exercises	80	100.0				
4-Hygienic care	80	100.0				
5-Management of legs edema	80	100.0				
6-Travel and driving	80	100.0				
7-Wound self-care						
Overall wound self-care	78	97.5	2	2.5		
8-Chest stretching exercises						
Overall, chest stretching exercises	78	97.5	2	2.5		
9-Shoulder and trunk exercises	78	97.5	2	2.5		
10-Breathing exercises	78	97.5	2	2.5		
11-Chest tube self-care	74	92.5	6	7.5		
12-Management of pain	74	92.5	6	7.5		
13-Prevention, early detection, and management of illness/ postoperative complications	65	81.3	13	16.3	2	2.4
14-Coughing exercises	79	98.8	1	1.2		
15-Resuming sexual activities	18	22.5	5	6.2	57	71.3

Table (6): Frequency Distribution of the Studied Patients according to their overall Thoracic Surgery Health-related Learning Needs.

Thoracic surgery health-related learning needs	No.	%
Poor <50%	80	100.0
Total Score (130 – 650)		
Min. – Max.	221.0 – 289.0	
Mean ± SD.	242.3 ± 14.29	
Median	240.5	
% Score		
Min. – Max.	17.50 – 30.58	
Mean ± SD.	21.59 ± 2.75	
Median	21.25	

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