

Assessment of Nurses' Knowledge and Practice for Patients Undergoing a Bronchoscopy [Suggested Nursing Care Guidelines]

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Abstract

Aim: to assess nurses' knowledge and practice for patients undergoing bronchoscopy procedures and design suggested nursing care guidelines for those nurses. **Design:** descriptive research design was utilized in this study. **Setting:** The study was conducted on 40 nurses at bronchoscopy unit of the chest department, at Assiut University hospital. **Tools:** A structured interview questionnaire sheet for nurses. Including: Demographic data, an observation checklist for nurses and develop suggested nursing care guidelines. **Results:** Fifty two of studied nurses had poor knowledge score, and regarding the total score of nurses' practice, (87.5%) of them was satisfactory. In addition, there was no correlation between nurses' knowledge and practice total scores and their demographic data except between good knowledge level score and their ages and marital status. **Conclusion:** the studied nurse practice level was satisfactory while their knowledge scores were not in the same line.

Keywords: *Knowledge, Practices, Bronchoscopy & Suggested Nursing Care Guideline*

Introduction

Bronchoscopy is a safe procedure for the majority of patients and a useful tool for both diagnostic and therapeutic purposes. Patients will require monitoring before, during and following the procedure. A proper preparation of patients before bronchoscopy is important, because effective preparation will facilitate a safe and successful procedure. The procedure should be fully explained to the patient; in addition, the preparation required, information about risks, benefits, and alternatives of the procedure should be obvious (Gunay et al., 2015)

The technique of bronchoscopes is extremely safe, with very low rates of complications, when performed by both; a properly trained bronchoscopist and highly qualified bronchoscopy nursing staff. The quality of nursing care depends on comprehensive and intelligent determination of the impact of nursing interventions on the health status of the patient where the patients are the concern of this determination (Cecchini et al., 2018).

The bronchoscopic nurse is responsible for providing a professional, holistic patient care in order to ensure patient's physical safety and psychological well-being before, during and after bronchoscopy procedures to prevent any hazards or avoidable complications. Safety measures for each patient should be considered as this carried out in three time periods "The pre-procedure period" which includes all contacts between the bronchoscopist, bronchoscopy nurses, and unit staff with the patient before the

administration of sedation or insertion of the bronchoscopy". The intra-procedure period" extends from the administration of sedation or insertion of the bronchoscopy to its removal". The postprocedure period" extends from the completion of the procedures to subsequent follow-up (Jones et al., 2018).

Significance of the study

This study will be the first nursing study for bronchoscopy of the chest department in Assiut university hospitals to assess nurses' knowledge and practice and minimize complications for patients undergoing bronchoscopy. In Assiut university hospitals through year 2017, it was found that there were (301) patients performed bronchoscopy according to Assiut university hospitals records. (Assiut Univrsity hospital records, 2017). The aim of the study was to assess nurses' knowledge and practice for patients undergoing bronchoscopy procedures and design suggested nursing care guidelines for those patients.

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Research questions

To fulfill the aim of the study, the following research question formulated: What are the nurses' knowledge and practice for patients undergoing bronchoscopy procedures?

Subjects & Methods

Research design

Adescriptive research design was utilized in this study.

Subjects

This study was conducted 40 nurses working at Bronchoscopy unit of the chest department, at Assiut University hospital.

Study Tools:

Three tools were used in this study:

Tool (I): A structured Interview Questionnaire for nurses working at bronchoscope unit:

This tool aimed to assess nurses' knowledge regarding nursing care for patients undergoing bronchoscopy.

This tool was developed by the researcher based on current, national and international literature, it was structured in the Arabic language and was consisted of two parts:

Part 1: Demographic data of the nurses:

This part included nurses' name, age, sex, marital status, qualification, years of experience, attaining previous training about bronchoscopy.

Part 2: Assessment of nurses' knowledge about nursing care of patients undergoing bronchoscopy:

This part was assessed nurses' knowledge about: definition of bronchoscopy, types, risk, complications, preparations, during & post bronchoscopy care, and discharge instructions.

Scoring system

Each complete correct answer was given two score, incomplete correct given one score while the wrong answer not given any score.

The number of questions was (8).The total score lay between (0-16).

Nurses were classified as having satisfactory level of knowledge if their total score was $\geq 70\%$, and were classified as having unsatisfactory level of knowledge if their total score was $< 70\%$ degree. (Onianwa et al., 2017).

Tool (II): An observation check-list for nurses' practice:

It was developed and modified by the researcher based on reviewing of literature to assess nurses' practices regarding nursing care of patient undergoing bronchoscopy procedure.

Scoring system: Each step was observed, categorized and scored as follow:

Total steps were (38) steps divided into;

(13) steps regarding nursing care of patient pre bronchoscopy procedure

(9) steps regarding nursing care of patient during bronchoscopy procedure

(16) steps regarding nursing care of patient post bronchoscopy procedure.

Two degrees for each step that was done correct, one degree for each step done but incorrect method and zero for step that was not done.

The total score for all the steps was (76);

Less than 53.2 degrees ($< 70\%$) were considered unsatisfactory (poor) practical level.

While 53.2 degrees or more ($\geq 70\%$) were considered satisfactory (good) practical level.

Nurses were classified as satisfactory practice level if their total score was $\geq 70\%$, and were classified as unsatisfactory practice level if their total score was $< 70\%$ (Walker et al., 2014).

Tool (III): Develop suggested nursing care guidelines:

These guidelines were developed by the researcher based on current, national and international literature according to the needs nurse knowledge and practice that can help nurses in provision a high quality nursing care and used to improve nurses awareness regarding care of patient undergoing bronchoscopy.

The suggested nursing care guidelines covered two parts

Part one: Theoretical part included

- knowledge about: definition, types, risk, complications, preparations, during & post bronchoscopy care and patient discharge instructions.

Part two: Practical part included

- patient and staff safety and considerations before (preparing and supporting) ,
- nursing care during (preventing cross infection)
- nursing care after procedure (patient care and safety measures to avoid complications and advice on discharge)

It was designed in a simplified Arabic language and was supported by photo illustrations and colored pictures.

After completion of the research every nurse receive one copy of the booklet and another copy given to the head of the department as a guide for every one who participate in caring of patients undergoing bronchoscopy.

Methods;

- Preparation of the data collection tools which was developed by the researcher in simple Arabic language based on reviewing the national and international related literature in the various aspects of the problem using books, articles, periodicals, and magazines was done.

- An official approval to conduct our study was obtained from the local ethical committee.

Tools content validity and reliability

- Present study content was valid and reliable, study tools and suggested nursing care guidelines were formulated after extension national and international literature review.

- Validity of the tool contents was revised and checked by a jury of 5 experts (2 staff of medical-surgical nursing department at Assiut university and 3 staff of chest disease medicine department at Assiut university hospitals) who reviewed the tools of data collection for clarity, relevance, comprehensiveness, understanding. Modifications were made accordingly, and then the tools were designed in their final format and tested.

Reliability: was estimated by Cronbach test. The tools proved to be reliable at (0.73, 0.71 and 0.81 respectively).

• **A pilot study:** was carried out in April / 2019 that was conducted on 10% of the nurses from the sample to check the clarity, feasibility, applicability and understanding of the study tools and the necessary modifications done prior data collection. This pilot sample was to estimate the time needed to answer the study tools. Pilot study sample added to the studied sample because the needed modifications were not effective.

Ethical consideration

The study followed the common ethical guidelines of clinical research according to the principles of **Helsinki Declaration, (2013)** for medical research.

- The research proposal was approved from the ethical committee in the faculty of nursing.
- There was no risk in study subject during application of the research.
- Written consent was obtained from nurses that are willing to participate in the study, after explaining the nature and purpose of the study.
- Data was assured for confidentiality.
- Study subject had the right to refuse to participate and / or withdraw from the study without any rational and at any time.
- Study subject privacy and anonymity were considered during data collection.

Data collection procedure

- The researcher collected data at the time of before bronchoscopy insertion until before patient discharge
- This occurs at morning and afternoon shifts every day except Friday.
- Data were collected through the period from 1 May 2018 to 31 July 2018
- At initial interview; the researcher introduced herself to initiate line of communication and explained the nature and purpose of the study.
- Once permission was granted to precede with the proposed study the researcher-initiated data collection.
- Nurses were asked to fill out the questionnaire sheet (**tool I**"1st and 2nd parts") to assess nurses`

knowledge completely and truthfully. Nurses spent (10-15) minutes to complete it.

- Each nurse was observed directly by the researcher while performing routine care of bronchoscopy patients using the observational checklist (**tool II**) taking (20-30 minutes).

- The questionnaire and observation checklist sheets entered into computer for data analysis by utilizing SPSS program.

- Based on the nurses' assessment, the researchers designed nursing care guidelines after reviewing the literature review. It aimed to improve nurses' knowledge and practice regarding nursing care of patient undergoing bronchoscopy.

Statistical analysis

Collected data were analyzed and tabulated. The researcher used an appropriate statistical method and tests for analysis of the result. The statistical Package for (SPSS) version (23) was used to analyze data. Descriptive statistics were used for the quantitative data in questionnaire and the demographic data. Descriptive statistics included frequencies, and percentages, Pearson Correlation (Correlation is significant at the 0.05 level). The level of significance for this study was set at ($p \leq 0.05$) to detect any indication of differences found in the data available.

Results

Table (1): Percentage distribution of demographic characteristics of the studied nurses (n=40).

Variables	Frequency	
	No. (n=40)	%
Gender		
- Male	2	5.0
- Female	38	95.0
Age		
- <25 years	13	32.5
- from 25> 35 years	11	27.5
- from 35 years and more	16	40.0
Mean ±SD	31 ± 6.879	
Level of education		
- Diploma in Nursing	19	47.5
- Instituted of Nursing	19	47.5
- Bachelor of Nursing	1	2.5
- Master	1	2.5
Experience year		
- <5 years	16	40.0
- From 5 - 10 years	5	12.5
- More than 10 years	19	47.5
Mean ±SD	2.07± 0.944 years of experience	
Training courses for bronchoscopy		
- Yes	0	0.0
- No	40	100

Table (2): Percentage distribution of the studied sample regards their total knowledge level about bronchoscopy.

Nurses' knowledge	N. =40	%
Satisfactory	5	12.5
Unsatisfactory	35	87.5
Total	40	100.0

Table(3): Frequency distribution of total nurses ' knowledge about bronchoscopy (N.= 40)

Nurses' knowledge	Correct		In complete Correct		Incorrect	
	N.	%	N.	%	N.	%
1. The definition of bronchoscopy.	7	17.5	13	32.5	20	50
2. The type of bronchoscopy.	9	22.5	0	0.0	31	77.5
3. The Indication of bronchoscopy.	8	20	29	72.5	3	7.5
4. The complication of bronchoscopy.	18	45	18	45	4	10
5. The nursing preparation for bronchoscopy.	24	60	16	37.5	1	2.5
6. The nursing care during the bronchoscopy.	11	27.5	7	17.5	22	55
7. The nursing care after bronchoscopy.	19	47.5	20	50	1	2.5
8. The nursing instruction before discharge.	17	42.5	16	40	7	17.5
Total Knowledge score = 16 Mean ± SD	8.6 ± 3.2					

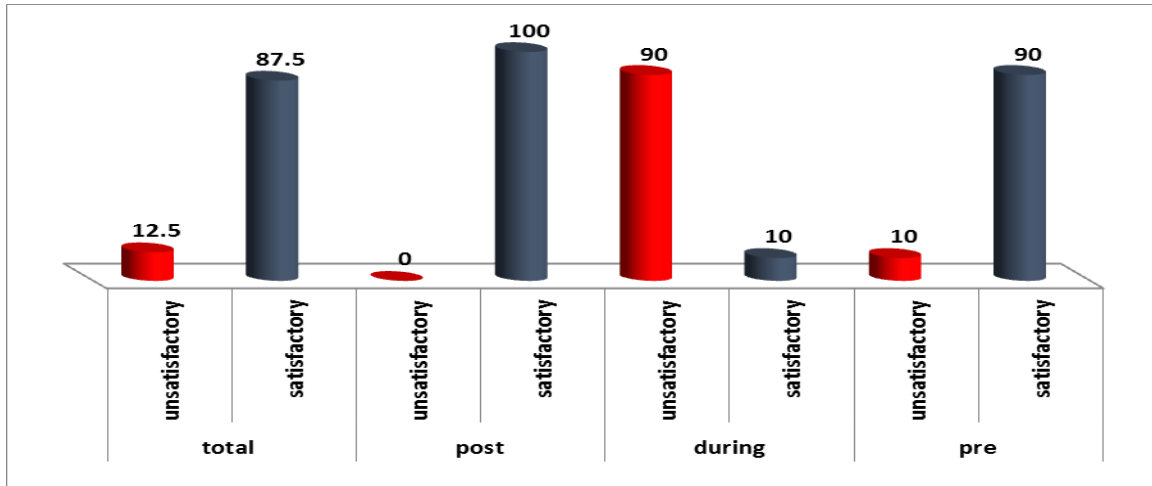


Figure (1): Frequency distribution of total nurses' practice regarding nursing care of patients undergoing bronchoscope (N.= 40)

Table (4): Relationship between nurses' knowledge and practice with demographic characteristics (N.=40).

Demographic variables	Total Knowledge		Total Practice	
	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory
Gender				
Male	0	2	1	1
Female	5	33	34	4
P.value	0.763		0.237	
Age group				
<25 years	0	13	12	0
from 25< 35 years	0	11	11	4
35 and more	5	11	12	
P.value	0.014*		0.127	
Education Level				
Diploma	3	16	15	4
institute	1	18	18	1
Bachelor	0	1	1	0
master	1	0	1	0
P. value	0.041*		0.481	
Experienc year				
>5 years	1	15	15	1
from 5 - 10 years	1	4	5	0
more than 10 years	3	16	15	4
P.value	0.602		0.279	
Training courses				
Yes	0	0	0	0
No	5	35	35	5

Independent T-test, * Significant difference at p. value<0.05

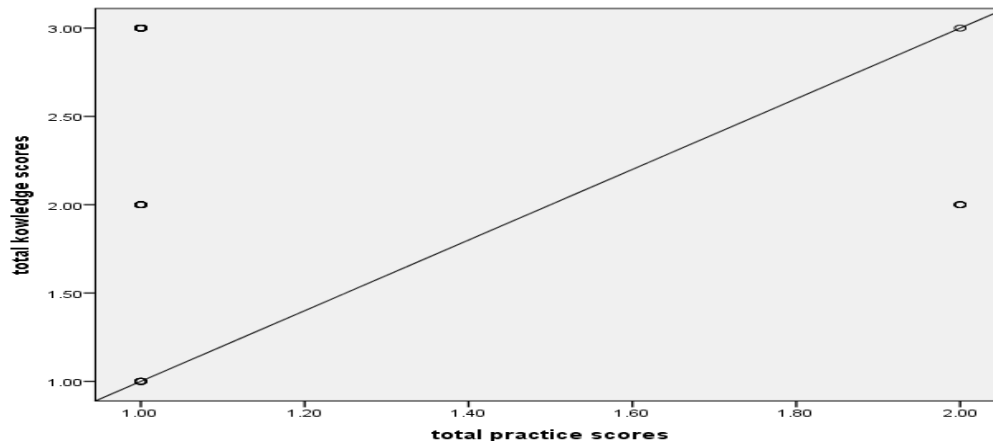


Figure (2); Correlation between nurses' knowledge and practice
(*P. Value = 0.507 r. = -0.108*).

Table (1): Showed the distribution of the nurses according to socio demographic characteristics, as regards gender 95% of the nurses were female. Regarding age 40% of nurses in the age group from 35 years and more, in relation to marital status the most of nurses were female with percentage 67.5%, nearly half of the group had diploma in nursing or instituted of nursing with percentage 47.5%. 47.5% of the group had more than 10 years' experience; all of nurses had not any training concerning bronchoscopy.

Table (2): Revealed that, more than half of group had unsatisfactory (poor) knowledge level about bronchoscopy with percentage 87.5%, and only 12.5% were satisfactory (good) level.

Table (3): Showed the distribution of the nurses' answers regarding their knowledge, regarding the question about the nursing preparation for bronchoscopy, more than half of nurses answered completely satisfactory level with percentage (60%). In addition, the majority incomplete satisfactory level when asking about the indication of bronchoscopy (72.5%). The majority of incorrect answers with percentage 77.5% when asked about the type of bronchoscopy, with mean \pm Sd (8.6 \pm 3.2).

Figure (1): Total nurses' practice scores regarding bronchoscopy (N.=40).

This figure illustrated that, the distribution of the nurses' pre-procedure practice level, majority (90.0%) of nurses had satisfactory level. The distribution of the nurses' during-procedure practice level, majority (90.0%) of nurses had unsatisfactory level. The distribution of the nurses' post-procedure practice level, all (100.0%) of nurses had satisfactory level. The distribution of the nurses' total-procedure

practice level, majority (87.5%) of nurses had satisfactory level.

Table (4): Showed that, relation between nurses' knowledge and practice with demographic data, there was no statistically significance deference between nurses' knowledge and practice with their demographic characteristics except regarding marital status with p-value 0.028 and age group while, the good level of knowledge was among the age group more than 35 years old and married nurses.

Figure (2): Showed that there was no significant correlation between total nurses' knowledge and practice.

Discussion

Bronchoscopy procedures provide direct visualization of the upper and lower respiratory tract for the diagnosis and management of inflammatory, infectious and malignant diseases of the lungs. The flexible bronchoscope may be passed trans nasally, by mouth, or through an endotracheal or nasotracheal tube, or tracheostomy or stoma. Bronchoscopy allows sampling of the respiratory tract secretions and cells, and biopsy of the airway, lung, and mediastina (Wood, 2019).

The aim of the present study was to assess nurses' knowledge and practice for patients undergoing bronchoscopy procedures and design suggested nursing care guidelines for those patients.

Discussion of the present study results will cover the following items: the demographic characteristics of the nurses, the knowledge and practice level regarding nursing care of patients undergoing, bronchoscopy.

The present study emphasizes that nurses should be equipped with relevant training in patients

undergoing bronchoscopy procedure and integrated with nurses' activities in the future agenda. Moreover, the researcher will design suggested nursing care guidelines for those patients.

The present study revealed that regarding nurses' knowledge, regarding the question about the nursing preparation for bronchoscopy, more than half of nurses answered completely correct. In addition, the majority incomplete correct answers when asking about the indication of bronchoscopy. The majority of incorrect answers when asked about the type of bronchoscopy, with mean \pm SD 8.6 \pm 3.2. As well **Ost et al., (2016)** who demonstrated that the majority of subjects had good knowledge and none of the subjects had very good knowledge.

Generally, the present study indicates that the most of nurses had a satisfactory practice level and around ten percentages of them had poor practice score. The researcher opinion is the participants with more than 10 years of clinical experience and most nurses stated that their knowledge and experience gained while working with patients undergoing bronchoscopy procedure.

Benger et al., (2018) found that the total practice score was poor regarding nursing care of patient undergoing bronchoscopy, who explained that may be due to the limited working time in direct patient care, shortage of nursing staff, absence or ignorance of clear job description, and changes in hospital policy, this agreed strongly with **Applegate, (2018)**.

But **Duncan et al., (2016)** found the level of nursing care in is fair level because the participants described how the restricted strategies had affected them as individuals, as members of nursing teams, and as employees. In each of these aspects of their work lives, relationships became less integrated, their work activities became less controllable, and the changes compromised their ability to deliver effective care.

However, the study of **Carroll & Susan (2016)** demonstrated that nurses must be accountable and responsible for the assessment, planning, intervention, teaching supervision and evaluation of care to ensure that the patient will receive safe care. Also **Johnson et al., (2016)** originated that in order to maintain and improve the quality of patient care; continuous data collection, documentation and analyzing patient information is essential.

Additionally, **Moqbel et al., (2015)** who noticed that barriers cited by all participants were role design and lack of resources do not support this. A study carried out in Yemen pointed that the most obstacles to post bronchoscopy care were lack of supplies, shortage of staff.

Regarding to relationship between nursing practice and their demographic characteristics there were no

statistical significant that not in the same with **El-Sol and Badawy, (2016)** who found a significant difference between nurses practice scores and the age, years of experience and previous training. Where these variables effect on the performance level and relation to age, majority of nurses aged between 30-40-years old, they had higher mean in total practice score, and there was a statistical difference between the satisfactory and unsatisfactory scores and age group.

Furthermore, **Mohsen et al., (2016)** found that; baccalaureate degree and less than 5 years old of experience had higher total score of performance than diploma nurses.

Regarding the relation between nurses' knowledge and practice with demographic data, the exciting study showed that there was no statistically significance deference between nurses' knowledge and practice with their demographic characteristics except regarding marital status and age group while, the good level of knowledge was among the age group more than 35 years old and married nurses. This might be due to nurses who have more experience responsible for administrative activities and the younger newly graduated who recently attained training programs and fresh knowledge.

This study in agreement with **Higgs et al., (2018)** findings who documented that the highest mean knowledge scores among younger nurses those who have the less experience regarding nursing care of patient undergoing bronchoscopy. **Williams et al., (2017)** Showed in his study that bachelor educated RN were significantly better patient outcomes after bronchoscopy procedure, that not in same line with the present study results which found that there was no statistical significant between nurses' knowledge and there level of education.

This finding disagreed with the result of **Sun et al., (2017)** who found that the knowledge score level of nurses who attaining training courses were higher than those who did not attained any training courses.

The present study documented that there was no significant difference relationship between knowledge and practice Pearson Correlation Coefficient (**P. Value = 0.507 r. = -0.108**). This does not mean that knowledge does not play a role in practice. This could be most likely because of the attitude of nurses towards the practice of nurses regarding bronchoscopy procedure

Ogoina et al., (2015) reported similar results regarding correlation between knowledge and practice. In the other hand, **Lee et al., (2016)** who found that there was no correlation between knowledge and practice. In addition, **Frankel & Pgcms, (2019)** reported a weak, negative relationship

between knowledge and practice regarding infection control among doctors and nurses.

Each organization and profession must set standards and objectives to guide individuals and practitioners in performing safe and effective care. Also, not only must standards exist, but leader and managers also must see that subordinates know and understand the standards and employee must be aware that their performance will be measured in terms of their ability to meet the established standards, (Ballantyne, 2017).

Finally, Nurses play significant a role in bronchoscopy preparedness, response/ recovery and evaluation, especially in reducing complication of it. A continuous training related to nursing care of patient undergoing bronchoscopy was required for all nurses. Defining nurses' roles in preparedness and post-bronchoscopy care must take into account with continuous training at various levels.

The current study results are in accordance with the findings of study held by **Leung et al., (2016)** found that guideline recommendations for routine preventive care are not always followed so the continuous education is very important.

Conclusion

The total scores of nurses' knowledge regarding care of patients undergoing bronchoscopy, shows that majority of studied nurses had unsatisfactory knowledge score ,and the total score of practice shows satisfactory practice score. In addition, there was no correlation between nurses' knowledge and practice total scores and their demographic data except between satisfactory knowledge level score and their ages and marital status. Also observed no correlation between the total score of nurses' knowledge and practice with statically significant differences ($p < 0.05$).

Recommendations

Based on the results of the present study, the following recommended

Continuous nursing education and in-service training programs at chest and bronchoscopy units should be organized within Assiut University Hospital and equipped with the necessary educational facilities and materials necessary to upgrade the knowledge and practice of nurses, which will improve nursing care offered and patients' outcome.

Nurses should add to their routine duties the regular reading to update their performance. They should always be encouraged to attend scientific meetings and conferences to keep pace with the rapid growing plenty of knowledge and practice necessary for proper effective nursing service.

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