



THE EFFECT OF DESIGNATED NURSING GUIDELINES FOR NURSES
ON THE INCIDENCE OF CIRRHOTIC COMPLICATIONS AMONG
PARACENTESIS PATIENTS

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ABSTRACT

Background: paracentesis is a common invasive method for managing patients with ascites; but it is associated with many potential complications. Nurses play a crucial role in preventing of complications by providing special care before, during and after the procedures. **Aim:** The study aimed to evaluate the effect of designated nursing guidelines for nurses on the incidence of cirrhotic complications among paracentesis patients. **Research design:** A quasi experimental research design was utilized in this study. **Setting:** This study was conducted in the internal medicine and Endemic diseases departments in Fayoum University Hospital. **Sample:** Convenient sample of all available nurses about (30) working at the internal medicine and Endemic diseases departments and purposive sample of 60 adult patients who are divided randomly into two equal groups pre and post implementation of nursing guidelines. **Tools:** Three tools were used for data collection An interview questionnaire to assess level of nurses' knowledge, observational checklist to assess level of nurses' practice and Patient complications assessment questionnaire. **Results:** The study results revealed that there was a highly significance improvement in total level of nurses' knowledge and practice regarding care of paracentesis patient after implementation of nursing guidelines than before in addition to incidence of paracentesis complications among paracentesis patient were less than before. **Conclusion:** The application of nursing guidelines about paracentesis care enriched nurses' knowledge, practice and decrease the incidence of complications among paracentesis patient. **Recommendation:** Continuous nursing education about paracentesis care is recommended to upgrade the knowledge and skills of nurses.

Keywords: Cirrhotic Complications, Designated Nursing Guidelines, Paracentesis.

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INTRODUCTION

Based on **Garbuzenko & Arefyev, (2019)** Ascites, the abnormal fluid accumulation in the abdominal cavity, occurs in about 60% of patients with compensated liver cirrhosis within 10 years after establishing the diagnosis. It is associated with poor prognosis and high mortality, which reaches 40% within a year and 50% within 2 years. In the case of refractory ascites, median survival does not exceed 6 months, which is due to the development of severe complications including hyponatremia and progressive renal failure.

Regarding **Aponte et al., (2020)** Abdominal paracentesis is a simple bedside or clinic procedure in which a needle is inserted into the peritoneal cavity and ascitic fluid is removed. Diagnostic paracentesis refers to the removal of a small quantity of fluid for testing. Therapeutic paracentesis refers to the removal of five liters or more of fluid to reduce intra-abdominal pressure and relieve the associated dyspnea, abdominal pain, and early satiety.

Based on **Biecker, (2011) and Fahmy et al., (2020)** Paracentesis has been shown to be a safe

and efficient method for treating patients with severe ascites that is resistant to nutritional and diuretic therapy, it can cause severe problems to the patient, and associated with some risks or complications. These complications can be divided into; systemic, local and intra-peritoneal complications. Systematic complications as (severe hypotension and infection), local as (abdominal wall hematoma and localized infection at the puncture site), and intra-peritoneal as (perforation of vessels and viscera, peritonitis).

Based on **Gerber et al., (2022)** Nursing intervention pre and during procedure through Informed consent is obtained, and a time-out is performed before each paracentesis. The patient is attached to a cardiac monitor and pulse oximetry. The procedure list a point-of care ultrasound to find the optimal site and marks the site of puncture. The skin around the marked site is prepared with chlorhexidine gluconate 2% and isopropyl alcohol 70% applicators. A fenestrated drape is used to form a sterile field and **National Clinical Paracentesis Guidelines, (2015)** Post procedure interventions include; applying a sterile dressing

and a pressure bandage at the puncture site to prevent leakage of fluid, continuing to monitor vital signs, assessing for hypovolemia, electrolyte shifts, and changes in mental status, giving prescribed albumin intravenously after large volume paracentesis and documenting the procedure.

SIGNIFICANCE OF THE STUDY

Cirrhosis is the final common pathway for most chronic liver diseases, affecting approximately 0.27% of the adult population and accounting for over 60,000 deaths in the United States each year. In the United States, more than half a million cirrhosis hospitalizations occur each year, at a rate that is rising much faster than other chronic illnesses (Volk, 2020). Half of the cirrhosis patients develop ascites within 10 years. After the occurrence of ascites, the survival decreases dramatically where 50% of the patients survive for 2–5 years. The 1- and 5-year survival without transplantation is 85 and 55%, respectively (Alsebaey et al., 2020).

According to study of (Molina,2021) about paracentesis complications revealed that Persistent leakage of ascites fluid from the puncture site was the most frequent complication (35%), followed by secondary bacterial peritonitis and hematoma of the abdominal wall at the puncture site (13% and 12% respectively). A third of the patients did not present any complications after the procedure (31%).

AIM OF THE STUDY:

The aim of this study is to evaluate the effect of designed nursing guidelines for nurses on the incidence of cirrhotic complications among paracentesis patients through the following objectives:

- Assess nurses' knowledge regarding nursing care for paracentesis patients.
- Assess nurses' practice regarding nursing care for paracentesis patients.
- Assess the incidence of complications among patients undergoing paracentesis before implementation of designated guidelines.
- Implement nursing guidelines regarding care of patients undergoing paracentesis for nurses.
- Evaluate the effect of provided designated nursing guidelines for studied nurses on level of knowledge and practice regarding care of patients undergoing paracentesis for nurses.
- Evaluate the incidence of complications among patients after applying designated nursing guidelines.

RESEARCH HYPOTHESES:

At the end of the study

- HI-The mean score of knowledge and practice regarding care of patients undergoing paracentesis for studied nurses will be improved after implementing the guidelines than before.
- HII- The incidence of cirrhotic complications among paracentesis patients will be decreased after implementing the designated guidelines.

THEORETICAL FRAMEWORK:

In this study the researcher used **Knowledge To Action (KTA) framework** that was developed in Canada by **Graham et al. (2006)** as presented by figure (1), in response to the confusing multiplicity of terms used to describe the process of transforming knowledge to action. The application of this framework has significantly and positively influenced clinical practice and patient outcomes.

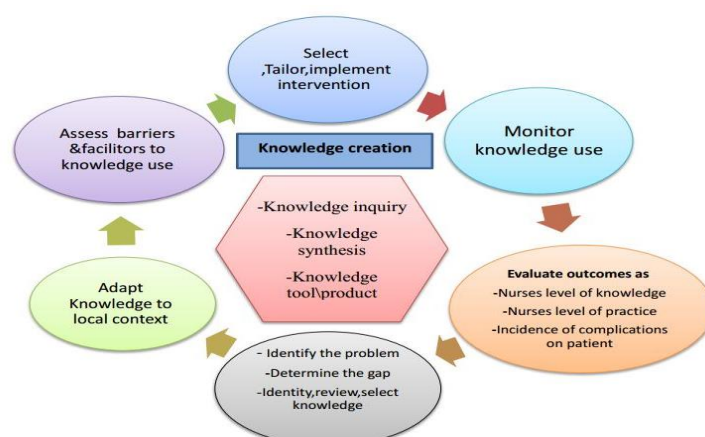


Figure (1): Knowledge-to-action cycle. Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map? *J Contin Educ Health Prof*, 26(1), 13-24. doi:10.1002/chp.47 (Modified by the researcher)

This framework proposes a dynamic and iterative process consisting of two interacting phases: (1) the knowledge-creation cycle and (2) the action cycle. The knowledge-creation cycle consists of three phases and involves distilling knowledge from its most basic form to create a collection of synthesized, appraised, and user-friendly products catered to the needs of researchers and clinicians alike. The action cycle is the process of translating's knowledge into practice comprising seven components: identifying the problem, adapting knowledge, assessing barriers, implementing, monitoring, and evaluating.

Application of this frame work in the current study; firstly in the knowledge-creation cycle; the researcher design an educational guidelines for nurses regarding care of paracentesis patient. This knowledge becomes more distilled, refined, and ultimately more usable to stakeholders. In the action cycle which describes a dynamic process of knowledge application, which is deliberately designed to change current ways of doing things, so that the innovative, evidence-based interventions are taken up and used in practice through the following phases according to the mentioned above framework; identifying the problem, in this study, it was the unsatisfactory level of knowledge and incompetent level of practice among nurses regarding care of paracentesis patient and increase level of paracentesis complication related to the defect in nurses knowledge and practice.

SUBJECTS AND METHODS:

Research design:

A quasi experimental pre and post research design was used in carrying out the study to evaluate the effect of designed nursing guidelines for nurses on the incidence of cirrhotic complications among paracentesis patients.

Study design:

Setting:

This study was conducted in the internal medicine, Endemic diseases and endoscopic departments in Fayoum University Hospital. It is the only educational university hospital in Fayoum, and it receives patients from all areas of Fayoum governorate. It consists of two medical units: general medical unit and endemic medical unit. Each unit containing 30 beds and all of them are occupied with patients.

Subjects:

Convenient sample of all available nurses from the internal medicine and Endemic diseases departments (about 30): two head nurse, two charge nurses, 26 bed side nurses. The nurses to patients ratio is 1: 3. the second sample was purposive sample of 60 adult patients aged from 18

years and less than 65 years from both genders who was admitted to the previously mentioned setting during the study period, met the inclusion criteria and accept to participate in the study.

3-Tools of data collection:

The data collection tools that was used to achieve the purpose of the current study are two tools and include the following:-

Tool I: Self Administration Interview Questionnaire to Assess Level of Nurses 'Knowledge:

It consists of two main parts:

Part (1): Demographic characteristics of study sample (30 nurses), including unit, age, sex, education, training courses, marital status and years of experience (10 items).

Part (2): Nurses' knowledge assessment questionnaire about paracentesis care before, during and after paracentesis include; (definition of paracentesis, its indications, contraindications, possible complications and how to prevent them, needed supplies, nurses role before, during and after paracentesis procedure). It consists of 36 multiple choices questions, true or false questions and used for nurses before and after the implementation of educational nursing guidelines (36 items).

• **The scoring system:-**

Each item scored as **(one point)** for correct answer, and **(zero point)** for incorrect answer or unknown.

Rating scale of all questions was collected based on **El-Sayed et al., (2018)** .Total score was 44 grades. Total score represented 100%. It was evaluated as follows:

- Satisfied $\geq 75\%$ (33-44)
- Unsatisfied $< 75\%$ (0-33) .

Tool II: Nurses' Practice observational checklist regarding paracentesis care before, during and after paracentesis, adopted from **(National Clinical Paracentesis Guideline, 2015)** was used

as a pre and post- test for assessing the nurses' practices pre, during and post paracentesis procedure. The steps of care categorized into (not done, incompletely done, and completely done). (34 items).

• **The scoring system:-**

Each item scored as **(two point)** for done complete action, **(one point)** for done incomplete action, and **(zero point)** for not done action.

Rating scale of all questions was collected based on **El-Sayed et al., (2018)** .Total score was 68 grades. Total score represented 100%. It was evaluated as follows:

- Satisfied $\geq 75\%$ (51-68).
- Unsatisfied $< 75\%$ (0-51).

Tool III: Patient complications observational assessment sheet:

This tool was adopted from **Mobed et al. (2016)** and used to assess complications among Paracentesis Patients before and after implementation of nursing guidelines. The complications assessment sheet consisted of three parts:-

Part (1): Demographic data about the patient such as: patient's name, age, sex, level of education, occupation, marital status, residence and diagnosis (7 items).

Part (2): Severity of liver disease Is determined by Child Pugh Classification ,The Child-Pugh score is determined by scoring five clinical measures of liver disease as (total bilirubin, serum albumin, prothrombin time, ascites and hepatic encephalopathy)

Part (3): Assessment of paracentesis complications signs and symptoms which include hypotension and hypovolemia, persistent leakage of ascetic fluid, abdominal bruises or localized infection at the puncture site within one week, bleeding and intestinal perforation

Scoring system

One point was given for the present of paracentesis complications and the zero point in case of absent of paracentesis complications.

Ethical and legal consideration:

Ethical approval was obtained from the scientific ethical committee of Helwan University. In addition, written informed consent was obtained from each participant prior to data collection. The participants assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture and beliefs were respected.

Validity and reliability:

Face and Content validity were conducted to determine whether the tools covers the aim of the study or not.it was ascertained by a jury of 5 expertises: professor of medical surgical nursing from faculty of nursing, Cairo university, assistant professor of medical surgical nursing from faculty of nursing, fayoum university, assistant professor of medical from faculty of medicine, Fayoum university and two lecture of medical surgical nursing from faculty of nursing, Helwan university who review the tool for clarity, relevance, accuracy and comprehensiveness

reliability of developed tools was estimated using the Chronbach's alpha test to measure the internal consistency of the tools; it was found that the reliability questionnaire using Chronbach's alpha equation as illustrated in the following table:

Tool's name	Score	References
Sociodemographic data	0,78	Detsky et al(1987)
Nurses' knowledge assessment sheet about paracentesis	0,81	Statistics (Alpha Cronbach)
Nurses' Practice assessment sheet about paracentesis	0,78	Statistics (Alpha Cronbach)
Patient complications assessment questionnaire	0,88	Statistics (Alpha Cronbach)

Pilot study:

A pilot study was carried out on 10% of nurses total (3 nurses) and on 10% of patient total (6 patients) of the sample to test applicability and clarity of the tools. Minor Modifications were done according to the results of pilot study in patients tool,while in nurses tool there was no modifications .so Patients in the pilot study were excluded from the study group and replaced by others.

Field work:

I-First Phase (Assessment Phase):

A- Nurses' knowledge assessment about paracentesis care before, during and after paracentesis:

It was filled by the nurse, they were asked to respond to interview questionnaire using tool I. The questionnaire (pre-test) was administered to each nurse individually using the personal interview method. The interview was carried out in the separate space at the unit during break time. Sheet

filling took about 15 minute. The data were collected through interview sessions.

B- Nurses' Practice assessment questionnaire about paracentesis care before, during and after paracentesis:

It was filled by the researcher using the tool II. The nurses' performance assessed using the continuous observation method. Each nurse was observed throughout paracentesis procedure from its initiation till its termination at the morning and afternoon shift. Each observation sheet was filled immediately while observing the nurse during procedure.

C- Patient complications assessment tool:

It was filled by the researcher using the tool III. The researcher assess complications by using the continuous observation method for the patient to assess any complications during or post paracentesis procedure.

II-Second Phase (designated Phase)

- According to knowledge to action theory (KTA) the designated Phase was done through adapt knowledge to local context by review of literature , assess barriers and facillitors to knowledge use then designated nursing guidelines for nurses' adapted from guidelines Simplified for Paracentesis care (National Clinical Guideline Centre, 2015) after that the content of designated nursing guidelines was written in sample Arabic languageand consistent with the related literature references .moreover, met nurses' needs and their levels of understanding,the designated nursing guidelines booklet cover the knowledge and practice related to care of paracentesis patients,as well it is developed to be aguide and reference for medical departments nursing.

II-Third Phase (implementation phase)

- According to knowledge to action theory (KTA) the implementation phase done through select tailor,implement the intervention regarding care for paracentesis patient and monitor knowledge use into care process through theoretical and practical sessions.

The nursing designated guidelines was presented in theoretical and practical sessions Nurses were divided into small groups (8-10

nurses/session) each group perceived the same program content using the same teaching strategies and handout.

- The total number of sessions was one theoretical sessions and two practical sessions for each group.

IV-Fourth phases (Evaluation phase)

According to knowledge to action theory (KTA) the Evaluation phase was done through evaluate outcomes and sustain knowledge use through:

- Evaluation of nurses' knowledge using tool I, it was filled by nurses themselves two time; through interview with nurses and after implementing Designated Nursing Guidelines sessions. The time allowed for answer was one hour and then the researcher collect the sheet.
- Evaluation of nurses' performance was observed by the researcher using tool II. it was filled two time; pre and after implementation of designated nursing guidelines .
- Evaluation of incidence of paracentesis complications by the researcher using tool III. it was filled two time; pre and after implementation of designated nursing guidelines.

RESULTS:

Table (1): Demographic characteristics for studied nurses (n=30)

	N	%
Gender		
Male	10	33.3
Female	20	66.7
Age		
20 <30	25	83.3
30 or more	5	16.7
Mean±SD	25.51±3.16	
marital status		
Single	13	43.3
Married	16	53.3
Divorced	1	3.3
Academic qualification		
Nursing Technical Institute	14	46.7
Bachelor of Nursing	15	50.0
Postgraduate	1	3.3
Years of Experience		
<5	18	60.0
5- <10	8	26.7
10 or more	4	13.3
Mean±SD	6.25±2.84	
training courses regarding care of patient undergoing paracentesis		
Yes	3	10
No	27	90
Numbers of training courses regarding paracentesis		
One	1	3.3
Two	2	6.6
training courses topics		

Liver cirrhosis and paracentesis	1	33.3
Paracentesis procedure	2	66.7

>0.05 Non significant <0.05 significant <0.001** High significant*

Table (1): showed the distribution of studied nurses according to their demographic characteristics. More than half of studied nurses (53.3%) were from Endemic diseases departments. The majority (66.7%) of studied nurses were female. As regard, marital status, education and training courses more than half of studied nurses

are married (53.3%), (50.0%) had Bachelor degree of Nursing and (90%) had not abdominal paracentesis training courses. The majority of the studied nurses (60%) had the same experience less than 5 years of experience.

Table (2): Demographic data for patient that undergoing paracentesis procedure

	Pre N=30		Post N=30	
	N	%	N	%
Age (years)				
<40	6	20.0	5	16.7
40- <50	5	16.7	9	30.0
50- <60	15	50.0	13	43.3
60 or more	4	13.3	3	10.0
Mean±SD	50.9±11.3		49.63±10.67	
Gender				
Male	18	60.0	17	56.7
Female	12	40.0	13	43.3
marital status				
Single	2	6.7	3	10.0
Married	21	70.0	21	70.0
Divorced	6	20.0	6	20.0
Widow	1	3.3	0	0.0
Level of education				
Illiterate	15	50.0	11	36.7
Primary education	3	10.0	9	30.0
Secondary education	11	36.7	7	23.3
University	1	3.3	3	10.0
Residence				
Urban	20	66.7	21	70.0
Rural	10	33.3	9	30.0
Child Pugh Class				
A	3	10.0	3	10.0
B	10	33.3	9	30.0
C	17	56.7	18	60.0

N.B: the patient during pre-implementation of designated guidelines changed to another patients.

Table (2): describes Socio- demographic data for patient undergoing paracentesis procedure.it showed that (50% and 43.3%) of patient age pre and post implementation was(50- <60 years). More than half of

studied patient were male (60% and 56.7%). As regard marital status of studied patient pre and post implementation of designated guidelines are married

(70%), level of education was (50.0%and 36.7%) illiterate.

Table (3) distribution nurses total score of knowledge regarding care of patient general, before, during, and After paracentesis procedure

Items of knowledge	Pre No=30				Post No=30				Chi-square	
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		X ²	P-value
	N	%	N	%	N	%	N	%		
General information about paracentesis	10	33.3	20	66.7	25	83.3	5	16.7	15.429	<0.001*
Before paracentesis procedure	11	36.7	19	63.3	24	80	6	20.0	11.589	<0.001*
During paracentesis procedure	12	40	18	60.0	26	86.7	4	13.3	14.067	<0.001*
After paracentesis procedure	10	33.3	20	66.7	23	76.7	7	23.3	11.380	<0.001*

>0.05 Non significant <0.05* significant <0.001** High significant

Table (3) Showed distribution of nurses total score of knowledge in relation to care of patient general, before, during, and After paracentesis procedure there was highly statistically significant difference between pre and post implementing of designated

nursing guidelines in relation to total satisfactory level among studied nurse’s knowledge general, before, during, and After paracentesis procedure in all items with p-value<0.001.

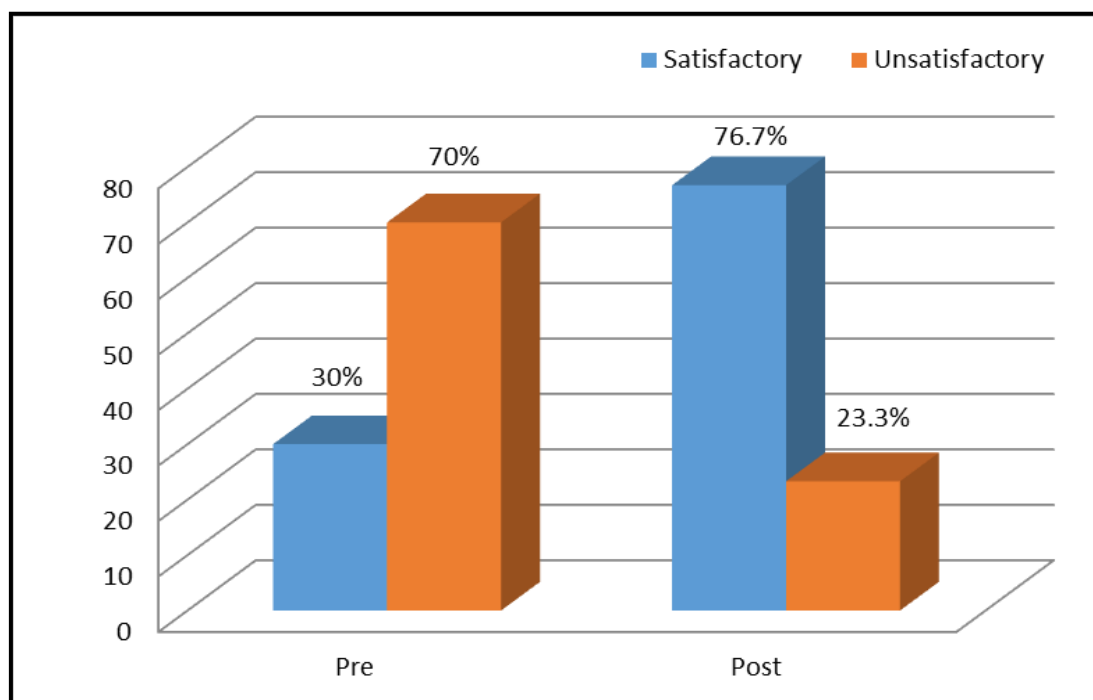


Figure (1): Distribution of nurse's practice about paracentesis procedure as general pre and post implementing of designated nursing guidelines

Figure (1) describe Distribution of nurse's practice about paracentesis procedure as general pre and post

implementing of designated nursing guidelines that shows the majority of the nurses have satisfactory

level after implementing of designated nursing guidelines.

Table (4): Rates of Complications among paracentesis pre and post implementing of designated nursing guidelines no (60)

Rates of complications	Pre		Post		Chi-square	
	N	%	N	%	X ²	P-value
Hypotension and hypovolemia	10	31.3	3	37.5	4.812	0.028*
Persistent leakage of ascitic fluid	8	25.0	1	12.5	6.405	0.011*
Abdominal bruises or localized infection at the puncture site (within 1 week)	7	21.9	2	25.0	3.268	0.071
Bleeding	6	18.8	2	25.0	2.308	0.129
Mean±SD	6.74±1.32		2.15±0.87		15.902	<0.001*

>0.05 Non significant <0.05* significant <0.001** High significant

Table (4) describe Complications rates of paracentesis pre and post implementing of designated nursing guidelines shows that the Mean±SD pre implementation of designated nursing guidelines was (6.74±1.32) in relation to post implementation was

(2.15±0.87) with highly statistically significant relation between Complications rates of paracentesis pre and post implementing of designated nursing guidelines when p-value <0.001*.

Table (5): Relation between socio-demographic data and nurse's knowledge pre and post implementing of designated nursing guidelines.

	Total knowledge											
	Pre						Post					
	Satisfactory		Unsatisfactory		Chi-square		Satisfactory		Unsatisfactory		Chi-square	
	N	%	N	%	X ²	P-value	N	%	N	%	X ²	P-value
Gender												
Male	5	50.0	5	50.0	1.148	0.284	8	80.0	2	20.0	0.000	1.000
Female	6	30.0	14	70.0			16	80.0	4	20.0		
Age												
20- <30	6	24.0	19	76.0	10.364	<0.001*	19	76.0	6	24.0	1.500	0.221
30 or more	5	100.0	0	0.0			5	100.0	0	0.0		
Marital status												
Single	0	0.0	13	100.0	13.852	<0.001*	11	84.6	2	15.4	0.673	0.714
Married	10	62.5	6	37.5			12	75.0	4	25.0		
Divorced	1	100.0	0	0.0			1	100.0	0	0.0		
Academic qualification												
Nursing Technical Institute	3	21.4	11	78.6	3.773	0.152	10	71.4	4	28.6	1.310	0.520
Bachelor of Nursing	7	46.7	8	53.3			13	86.7	2	13.3		
Postgraduate	1	100.0	0	0.0			1	100.0	0	0.0		
Years of Experience												
<5	0	0.0	18	100.0	26.232	<0.001*	13	72.2	5	27.8	1.962	0.375
5- <10	7	87.5	1	12.5			7	87.5	1	12.5		
10 or more	4	100.0	0	0.0			4	100.0	0	0.0		

>0.05 Non significant <0.05* significant <0.001** High significant

Table (5) describe Relation between socio-demographic data and nurse's knowledge pre and post

implementing of designated nursing guidelines shows that female gender more than 30 years old and post

graduated 10 or more years of experience have the best satisfactory level of knowledge and there was highly statistically significant relation between age, marital status, years of experience and nurses' knowledge on paracentesis pre implementing of

DISCUSSION:

Based on **Aithal et al., (2020)** Ascites is a pathological accumulation of fluid in the peritoneal cavity. Clinical manifestations largely depend on the volume accumulated, so ascites may present as a radiological finding or as an evident increase of abdominal perimeter. Although the most frequent cause of ascites is decompensated cirrhosis, there are a wide variety of diseases that may present with this symptom. About 20% of patients with cirrhosis have ascites at their first presentation, and 20% of those presenting with ascites die in the first year of the diagnosis .

Regarding **Fyson et al., (2018)** Paracentesis is an invasive procedure that may be associated with complications and technical problems. Although these occur infrequently when performed by trained operators, patients must be informed during the consent process. Written consent should be documented clearly in the clinical record. Death is a rare complication. In one prospective study conducted by the other reported that 0.4% of patients with cirrhosis undergoing paracentesis died due to a major procedure-associated complication as bowel perforation.

Regarding Socio-demographic data of the studied nurses, The current study showed that more than half of the studied nurses worked at Endemic diseases departments. The majority of them were female. Concerning marital status, education and training courses more than half of studied nurses are married, had Bachelor degree of Nursing and majority of studied nurse had not abdominal paracentesis training courses regarding care of patient undergoing abdominal paracentesis and had experience less than 5 years.

Concerning personal data for patient that undergoing paracentesis procedure, it showed that the majority of patient age pre and post implementation was (50- <60 years) and The majority of studied patient were male. As regard, marital status, level of education more than half of studied patient pre and post implementation of designated guidelines are married and illiterate. The majority of the studied patient residence and child pugh class were urban areas and child pugh class C.

The current study finding showed that there was highly statistically significant difference between pre and post implementing of designated nursing guidelines in relation to total satisfactory level nurse's knowledge general, before, during, and After paracentesis procedure in all items, its may be due to lack of education and information about ascities and paracentesis care at under

designated nursing guidelines with p -value < 0.001. and there was non statistically significant relation between socio-demographic data and nurses' knowledge on paracentesis post implementing of designated nursing guidelines.

graduate, why this before implementation of guidelines but after implementation of guidelines was improved. This finding was in the same line with **Reyad et al. (2022)** whose study in Faculty of Nursing, Helwan University entitled " Assessment of Nurses' Knowledge and Practice Regarding Intra- Abdominal Pressure Measurement and Abdominal Compartment Syndrome Prevention" the total level of nurses' knowledge it was determined that the majority (80%) of the studied nurses had an unsatisfactory level of total knowledge.

As regard Distribution of nurse's practice about paracentesis procedure as general pre and post implementing of designated nursing guidelines that showed the majority of the nurses have satisfactory level after implementing of designated nursing guidelines, **this could be as a result of** lack in training programs regarding paracentesis care and procedure for new staff nurses and improve of practice after implementation of guidelines.

This finding agreed with **Fahmy et al. (2020)** who conducted a study in Faculty of nursing-minia University entitled " Effect of educational nursing guideline about paracentesis procedure care on nurses' performance" nurses were believing that they had not any role in paracentesis procedure considering it a medical procedure not as a nursing. In addition there was a lack in training programs regarding paracentesis care for new staff nurses, teaching aids and standards for care inside the units.

As regard Complications Assessment for paracentesis procedure, the current study statistically significant difference between pre and post implementation of designated paracentesis guidelines in relation to hypotension and hypovolemia, **As a result of** removing a large amount of fluid accumulated in the abdomen, while not constantly monitoring blood pressure during paracentesis

This finding agreed with **Garbuzenko and Arefyev (2019)** whose study in Russia entitled " Current approaches to the management of patients with cirrhotic ascites" who revealed that the most dangerous consequence of large volume paracentesis (LVP) is paracentesis-induced circulatory dysfunction (PICD) which is an important independent indicator of an adverse outcome It is characterized by severe hemodynamic disturbances.

As regard Complications Assessment for paracentesis procedure, the current study statistically significant difference between pre and post implementation of designated paracentesis

guidelines in relation to persistent leakage of ascitic fluid, **As a result of** ascitic fluid Leaks can occur if large skin incision has been made, or if a large-bore needle is used and may be due to decrease pressure or removal of dressing post procedure directly.

This finding agreed with **Khan and Dushay (2019)** whose study in USA entitled "Autologous Blood Patch for Persistent Ascites Leak from Non-Closing Paracentesis Tracts" that revealed Leaks can occur if a Z-tract has not been properly performed during the procedure, a large skin incision has been made, or if a large-bore needle is used. Though leaks can be medically managed.

As regard Relation between socio-demographic data and nurse's knowledge pre and post implementing of designated nursing guidelines shows that female gender more than 30 years old and post graduated 10 or more years of experience have the best satisfactory level of knowledge and there was highly statistically significant relation between age, marital status, years of experience and nurses' knowledge on paracentesis pre implementing of designated nursing guidelines with $p\text{-value} < 0.001$. and there was non statistically significant relation between socio-demographic data and nurses' knowledge on paracentesis post implementing of designated nursing guidelines.

The current study findings that **the majority of nurses were females**; this might be due to the fact that the profession of nursing in Egypt is more specialized and private to females; because the study of nursing field was exclusive to females till only few years ago. In addition, male nurses in contrast to females prefer to travel to work abroad due to the higher salaries and better opportunities.

This finding was in the same line with **Elsayed et al. (2018)** who conducted a study entitled "Applying nursing safety measure to prevent complications for liver cirrhotic patient undergoing paracentesis" at Mansoura University and **Gouda et al. (2019)** who conducted a study entitled "Factors Affecting Postoperative Nursing Performance in The Surgical Units" Department of Medical Surgical Nursing, Faculty of Nursing, Ain Shams University, and reported that This is may be due to the greater fraction of the nurses in Egypt were females and may also related to the studying of nursing in Egyptian university were exclusive for females only till few years ago.

While In contrast of **Ghonemy et al. (2016)** who conducted a study in Zagazig University entitled "Epidemiology and risk factors of chronic kidney disease in the El-Sharkia Governorate, Egypt." reported that the most of the studied sample were males and viewed that this result may reflect a social background, keeping women away from this job and due to the fact that most of female nurses are appointed to care for maternal and child health care. Also, this may be due to

the fact that males cover night duties while a female does not.

Regarding to studied nurses Age, the finding of the present study illustrated that half of studied nurses aged from 20 to < 30 years with. this could be as a result of The State of the World's Nursing (SOWN) estimates 4.7 million "new" nurses will have to be educated and employed just to replace those older nurses who retire. In addition, there is the need to meet the challenge of the nurse shortage,

This study supported with (**Buchan et al., 2022**) whose study in USA entitled "The global nursing workforce and the covid-19 pandemic" the young nurses constituted the main work power in the hospitals and were confined to provide the direct nursing care to patients, while the older nurses assumed the administrative role or retire.

The previous study finding was in the same line with (**Mobed et al., 2016**) whose study in faculty of nursing –assuit university entitled (Effect of Designed Nursing Guidelines on Nursing Intervention to Reduce Complications for Cirrhotic Patients Undergoing Paracentesis) and reported that two thirds of participants were from the age group less than 25 years with a mean \pm SD of 23.77 ± 1.14 years.

As regard level of education the current study relation revealed that the post graduated level of education is for nurses knowledge this could be as a result of Postgraduate nursing information and knowledge; the best access to scientific research and the new trend nursing methods.

The previous study finding was in the same line with **Al-Yateem et al. (2021)** whose study in United Arab Emirates entitled (Nursing in the United Arab Emirates: Current challenges and opportunities) and revealed that Development of postgraduate nursing programs to match the growing needs of the population and national and international standards for providing quality healthcare services is also slow.

CONCLUSION:

Based on the findings of the present study, it can be concluded that Nurse's knowledge regarding care of paracentesis patient in internal medicine unit and tropical unit are inadequate and have unsatisfactory level of practice about paracentesis procedure, that improved after Receiving nursing educational designated guidelines about paracentesis procedure showed a statistically significant improvement in their total level of knowledge and practice than before, and this is supported the research hypothesis, Moreover Patient undergoing paracentesis exposed for several complications; that decreases after implementation of designated nursing guidelines, and there was highly statistically significant Correlation between total complications and total nursing knowledge and practice

pre and post implementing of designated nursing guidelines.

Recommendations:

On the light of these findings, the study recommended that:

A- Recommendation for Clinical Nursing Practice

1. Periodic monitoring for nurses' adherence to paracentesis guidelines and to evaluate the level of nurses' performance.
- 3- Complete manual procedures should be developed in Arabic language to be easily used and available to all nurses.

B- Recommendation for education

1. More attention must be paid to paracentesis procedure and its care in the curriculum for all educational categories of nursing students.

C- Recommendation for further study

- 1- Follow up study is suggested to confirm the long term impact of the intervention program.
- 2- The study may be replicated using a strong randomize control of clinical trial with blind assessment of the outcome for more evidence of its positive impact.

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