

Nurses' Performance Regarding Care of Liver Cirrhotic Patient's undergoing Paracentesis

Ibrahim Ahmed Mohamed¹, Baghdad Hussein Mahmoud², Shimaa Attia Ali³

- 1- B.Sc. In Nursing Science (2015)-Faculty of Nursing Elminia University, Egypt.
- 2- Assist. Professor of Medical Surgical Nursing, Adult nursing department, Faculty of Nursing -Helwan University, Egypt
- 3- Assist. Professor of Critical Care Nursing, Adult nursing department, Faculty of Nursing –Helwan University, Egypt

Abstract

Background: Nursing interventions throughout paracentesis procedure in professional way can be considered the main factor to achieve a safe and successful procedure for ascetic patients. The highly experienced patient preparing, positioning, and monitoring before, during and after paracentesis is very important and vital to avoid expected complications. **Aim:** assess nurses' performance regarding care of liver cirrhotic patients' undergoing paracentesis. **Design:** Descriptive exploratory research design was used in this study. **Setting:** Internal medicine, emergency and intermediate, intensive care units of Liver and Gastroenterology Hospital in Elminia. **Subject:** A convenient sample of all available nurses (60 nurses) from both genders working in previous mentioned settings. **Tools:** Two tools were used for data collection. Tool (I): Nurse's self-administrated interview questionnaire included (a) Nurse's demographic characteristics (b) nurse's knowledge assessment questionnaire. Tool (II): Practical observational checklist. **Results:** The study results reported that (41.7%, 53.3%, 26.7%, & 23.3%) of studied nurse had unsatisfactory level of knowledge about liver function tests, liver cirrhosis, ascites and paracentesis, respectively. Also, (36.7%, 31.7%, & 13.3%) of them had in competent level of practice at (pre, during, and post paracentesis procedure throughout care of liver cirrhotic patient, respectively. Additionally, there was a statistically significant relation between the demographic characteristics (educational level, working unit, and years of experience) and the total level of knowledge and practice regarding care of liver cirrhotic patient's undergoing paracentesis. **Conclusion:** There was a highly statistically significant correlation between the total knowledge and practice regarding care of liver cirrhotic patients' undergoing paracentesis. **Recommendations:** upgrade nurses' knowledge and skills throughout in-service training program with frequently evaluation about paracentesis care.

Keywords: Paracentesis, liver cirrhotic patient, nurses' performance,

Introduction

Liver cirrhosis is widely prevalent in both low-income and middle-income countries and in high-income countries, and is associated with high morbidity and mortality, being the 14th most common cause of death worldwide. Death rate of liver cirrhosis is 41.6% in Egypt and there was an increase in incidence and prevalence of liver cirrhosis. Increasingly, cirrhosis has been seen to be not a single disease entity, but one that can be sub classified into distinct clinical prognostic stages, with 1-year mortality ranging from 1% to 57% depending on the stage. Cirrhosis is a consequence of chronic liver inflammation that is followed by diffuse hepatic fibrosis, wherein the normal hepatic architecture is replaced by regenerative hepatic nodules, which eventually leads to liver failure (Sepanlou, et al., 2020).

Cirrhotic patients without any symptoms are termed to have compensated cirrhosis. As well, the onset of decompensated cirrhosis can develop with cirrhosis complications such as ascites, variceal bleeding, hepatic encephalopathy, or non-obstructive jaundice of any origin (Xu, et al., 2022).

In the presence of cirrhosis, superimposed hepatic injury (due to viral, drug-induced, or alcohol-associated hepatitis) or other complications, particularly bacterial infections, can lead to hepatic and extrahepatic organ failure a condition

known as acute-on-chronic liver failure that is associated with high short-term mortality most deaths in patients with decompensated cirrhosis result from hepatic and extrahepatic organ failure. deaths during the compensated stage are largely due to cardiovascular disease, malignancy, and renal disease (**Zaccherini, et al., 2021**).

Ascites is one of the major complications of liver cirrhosis and portal hypertension. Within 10 years of the diagnosis of cirrhosis, more than 50% of patients develop ascites. The development of ascites is associated with a poor prognosis, with a mortality of 15% at one-year and 44% at five-year follow-up, respectively. therefore, patients with ascites should be considered for liver transplantation, preferably before the development of renal dysfunction (**Zaccherini et al., 2021a**).

Ascites is considered an important landmark in the natural history of chronic liver disease that occurs in more than half of all patients with cirrhosis It is considered an excessive accumulation of fluid within the peritoneal cavity due to the increased plasma volume into the abdominal cavity Infected ascites leads to spontaneous bacterial peritonitis (SBP) which occurs in 10%-30% of patients with cirrhosis and is associated with high mortality rate (**Tapper & Parikh, 2018**).

Abdominal paracentesis or ascetic tap is a routinely performed bedside procedure involving removal of peritoneal fluid from the peritoneal cavity using a needle for diagnostic and/or therapeutic purposes. Normally the peritoneal cavity contains about 20 ml of fluid which is primarily secreted by the cells lining the visceral layer of the peritoneum. it helps in achieving frictionless motility of the bowels during peristalsis. excess accumulation of this fluid is known as ascites (**Nallapeta, et al., 2022**).

All bodily systems are impacted by hepatic failure, and liver function is challenging. The nurse must have a thorough understanding of how the liver functions as well as sophisticated clinical evaluation and management skills in order to provide care for patients receiving diagnostic and therapeutic therapies. The nurse must also be knowledgeable about new medical technology used to treat liver diseases. viruses, obesity, insulin resistance, exposure to poisons like alcohol, tumors, and viruses are common causes of liver issues (**Chopyk & Grakoui, 2020**).

Consequently, nurse should have a role to decrease these complications; the role includes pre, during and post procedure implementation. pre procedure should be assessment for patient condition which include, check laboratory tests, taking consent for the patient, measure the vital signs especially blood pressure, prepare patient for the procedure application (**Fahmy et al., 2020**).

Nursing interventions throughout paracentesis procedure in professional way can be considered the main factor to achieve a safe and successful procedure for ascetic patients. the highly experienced patient preparing, positioning, and monitoring before, during and after paracentesis is very important and vital to avoid expected complications (**Atya, et al., 2019**).

Significance of the study

Universally, chronic liver disease is the fourth leading cause of death. Approximately 3.2 million Americans have hepatitis C, liver cirrhosis causes about 1.16 million deaths every year among people aged 45-64 years, the incidence of ascites is approximately 75,000 per 100,000 cirrhotic individuals, with a mortality rate of 50% within 3 years and ranging from 65% to 85% within 5 years of diagnosis (**Younossi, et al., 2023**).

In Egypt; ascites is a common health problem due to the high prevalence of hepatitis C virus. Its incidence was reported to reach 75 % among cirrhotic patients and associated with a 50%-80% mortality rate over two years. The majority (75%) of patients who present with ascites have underlying liver cirrhosis. (**Waked, et al., (2020)**).

According to Liver and Gastroenterology Hospital in Elminia medical record, the number of admitted patient for paracentesis at (2020 – 2021) were 1728 patient flow rate of ascetic patients.

According to Liver and Gastroenterology Hospital in Elminia medical record, the number of admitted patient for paracentesis at (2021–2022) were 2305 patient flow rate of ascetic patients.



Aim of the study

The aim of this study is to assess nurses' performance regarding care of liver cirrhotic patient's undergoing paracentesis. This aim was achieved through:

- Assess the level of nurses' knowledge regarding care of liver cirrhotic patient's undergoing paracentesis.
- Assess level of nurses' practice care of liver cirrhotic patient's undergoing paracentesis.

Research questions:

- What is the level of nurses' knowledge regarding care of liver cirrhotic patient's undergoing paracentesis?
- What is the level of nurses' practice regarding care of liver cirrhotic patient's undergoing paracentesis?

Subject and methods:

Subjects and Methods:

The subjects and methods for this study will be portrayed under the four main items as follows:

I-Technical item.

II- Operational item.

III- Administrative item.

IV- Statistical item.

I- Technical Item:

The technical item includes research design, setting, subjects and tools for data collection.

Research design: A descriptive exploratory design was used to conduct the study.

Setting: The study will be conducted at the internal medicine unit and intermediate, intensive care unit of Liver and Gastroenterology Hospital in Elminia.

Sampling: A convenient sample of all available nurses (60 nurses) from both sex working in the internal medicine unit and intermediate, intensive care unit accepted to participate in this study, available at the time of the study.

Tools for data collection:

Tool (I): self-Administration Interview Questionnaire to Assess Level of Nurses Knowledge: It consists of two main parts

- Part (I): Nurse's demographic Characteristics (6 items): It was included (gender, age, working unit, education level, experience years, and attending training course about paracentesis).
- Part (II): Nurse's Knowledge assessment Questionnaire regarding paracentesis of cirrhotic patients: including assessing the nurse's knowledge regarding (definition of liver cirrhosis, causes, precautions, indications, investigation, complication and definition of paracentesis procedure). This tool consists of (9) parts in form of 69 multiple choice questions (MCQ).

The scoring system:-

Each item scored as (2) for correct answer and (1) for incorrect answer. The total score of knowledge was 138 that calculated and classified as follows:

- Satisfactory knowledge if the score was $> 85\%$ (>117)
- Unsatisfactory knowledge If the score between $\geq 85\%$ (117)

Tool (II): Observational checklist for assessment of nurse's practices of paracentesis: It was adapted from (Riesenberg et al., 2013) and was modified by the investigator based on reviewing related literature to assess nurses' level of practice regarding care of cirrhotic patient undergoing paracentesis this tool used Arabic language and it consist of 3 parts (before, during and after) covering all the paracentesis procedure consisted of 25 items.

This part contains three main items as following: (A) before procedure which included pre-procedural preparation that consisted 9 items. (B) during procedure which included point of procedure that consist of two sub items first sub items nurse's implementation for procedure that contain 15 point and second sub-items nurse monitoring physician throughout procedure that contain 5 steps. (D) after procedure which included three sub items post procedural nursing role that contain (6 points), documentation which included (5 point) and patient education which included (6 points).

The scoring system:-

The total score of practices was derived from 25 questions. The scoring of each item was (2) for done action, and (1) for not done. The score of each item was summed up and then converted into a percent score. The total score ranged from 1-50. It was evaluated as follows:

- Competent practice if $\leq 85\%$ (43)
- Incompetent practice If $>85\%$ (43).

II- Operational Item:

It included preparatory phase, content validity and reliability, pilot study and field work

(A) Preparatory phase:

It will include reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection. During this phase, the investigator also visited the selected place to get acquainted with the personal and the study setting, the development of the tools was under the supervisor's guidance and experts' were considered.

(B) Validity and reliability:

Validity:

Tools of study were revised by a jury of five experts: assistants professors of medical surgical nursing from faculty of nursing, Helwan university to review tools for clarity, relevance, comprehensiveness, understanding and applicability, modifications of tools were done according to the panel judgment on clarity of sentence, appropriateness of content, sequence of items and accuracy of scoring.

Reliability:

Cronbach's Alpha was used to determine the internal reliability of the tool. Reliability of the tools was tested to determine the extent to which the questionnaire items are related to each other and the result was (.898 & .881) for knowledge and practical observational checklist questionnaire.

(C) Pilot study

A pilot study was carried out on 10% of nurse's total (6 nurses) of the sample to test applicability and clarity of the tools. Nurses' tool there was no modifications .so Patients in the pilot study were excluded from the study group and replaced by others.

(D) Field work:

Filed work will include the following:

- An Approval was obtained from the study individual and scientific ethical committee in (13\2\2022), faculty of nursing at Helwan university using the written consent obtained from each participant prior to data collection.
- An Approval was obtained from the Director of Liver and Gastroenterology Hospital in El minia.
- The purpose of the study was simply explained to nurses under the study prior to data collection.
- The investigator was available in internal medicine unit, emergency unit and intermediate, intensive care unit of Liver and Gastroenterology Hospital in Elminia for 3 days per week (Saturday, Monday and Thursday) from 9 am to 1 pm to collect data from nurses.

- The investigator was start to collected this data in the morning and afternoon shift (3 days \ week).data collection started and completed within six months from the beginning of July (2023) until the end of December (2023).
- The observational check list was use prior to administration of self-administrate knowledge questionnaire to ensure the maximal realistic observation of the nurse’s performance and minimalize bias possibility.
- The observational check list direct and indirect observation for each nurse (before, during and after) covering all the paracentesis procedure and completed by the investigator and take time about 30 minutes.
- Then self-administrative questionnaire was filled in and completed individual by the nurses and Took from the nurse 15-20 minutes to be completed.
- The investigator was available to explain and answer any nurses question to clear data for them.
- Then self- administrative questionnaire was filled in and completed individually by nurse and took from the nurse 15-20 minutes to be completed.

III- Administrative Item:

Approval to carry out this study will be obtained from the directors of the University of Elminia Liver Hospital in which study will be conducted. A letter was issued to them from the faculty of nursing; Helwan University explains the aim of the study for obtaining the permission for data collection.

Ethical and legal consideration:

- The research approval was obtained from the ethical committee before starting the study.
- The researcher clarified the objective and aim of the study to nurses included in the study.
- The researcher assured maintaining anonymity and confidentiality of nurse’s data.
- Nurses were informed that they were allowed to choose to participate and they had the right to withdraw from the study at any time without giving any reason.
- The nurses (oral and written consent approval was obtained from them to participate in this study.

IV- Statistical analysis

Data entry and analysis were performed using SPSS statistical package version 25. Categorical variables were expressed as number and percentage while continuous variables were expressed as (mean \pm SD). Chi-Square (χ^2) was used to test the association between row and column variable of qualitative data. The fisher exact test was used with small, expected numbers.

Pearson correlation was done to measure correlation between quantitative variables. For all tests, a two-tailed p-value < 0.05 was considered statistically significant, P-value < 0.01 was considered highly, and p-value > 0.05 was considered not significant.

Results

Table (1): frequency and percentage distribution of the studied nurses’ demographic characteristics (n=60)

Demographic characteristics	N	%
Age/ years:		
• 20- > 25 years	38	63.3
• 25 ->30 years	22	36.7
• 30 or more	0	0.0
Age (Mean \pmSD)	23.88\pm2.52	
Gender:		
• Male	35	58.3
• Female	25	41.7
Educational Level:		
• Bachelor of Nursing	18	30.0
• Technical Institute of Nursing	42	70.0

<p>Years of experience:</p> <ul style="list-style-type: none"> • 1years > 3 years • 3 >5 years • 5 > 8years • < 8years 	42 15 3 0	70.0 25.0 5.0 0.0
<p>Attending training course about paracentesis:</p> <ul style="list-style-type: none"> • Yes • No 	9 51	15.0 85.0
<p>Working unit</p> <ul style="list-style-type: none"> • Internal medical unit • Internal surgical unit • Intermediate care unit • Intensive care unit • endemic disease unit 	8 14 9 20 9	13.3 23.3 15.0 33.4 15.0

Table (1) showed the distribution of studied nurse's demographic characteristics. 58.3 of the studied nurses were male for education and training courses 70.0 % of studied nurses had Technical Institute of Nursing and 85% had not attending training course about paracentesis. 70% of the studied nurses had the same experience less than 3 years of experience, 25% less than 5 years and 5% less than 8 years. Also 33.3% of studied nurse work Intensive care unit, 23.3% work in Internal surgical, 15% work in intermediate care unit and endemic disease unit and 13, 3% internal medicine unite.

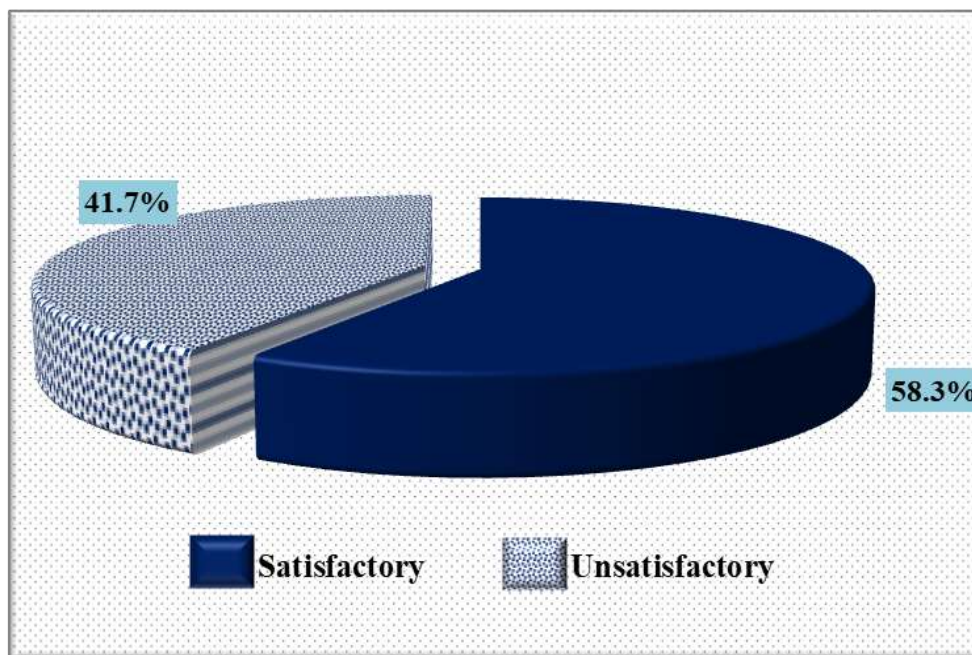


Figure (1): Percentage distribution of the studied nurse's total knowledge about liver function tests (n=60)

Figure (1) clarifies that, 58.3% of the studied nurses had satisfactory level of knowledge about liver function tests.

Table (2): Frequency and percentage distribution of the studied nurse’s knowledge about ascites, complications of ascites and care for a patient with ascites (n=60):

knowledge about ascites	Correct		Incorrect	
	N	%	N	%
Definition of ascites.	52	86.7	8	13.3
Causes of ascites.	50	83.3	10	16.7
Symptoms of ascites.	48	80.0	12	20.0
Types of ascites.	42	70.0	18	30.0
Diagnosed of ascites.	43	71.7	17	28.3
Complications of ascites.	46	76.7	14	23.3
Treatment of ascites.	47	78.3	13	21.7
knowledge about complications of ascites				
Meaning of the spontaneous bacterial peritonitis.	54	90.0	6	10.0
Signs and symptoms of spontaneous bacterial peritonitis.	56	93.3	4	6.7
Prevention of complications of spontaneous bacterial peritonitis.	41	68.3	19	31.7
Diagnosis of spontaneous bacterial peritonitis.	49	81.7	11	18.3
The complications of spontaneous bacterial peritonitis.	44	73.3	16	26.7
Definition of hepatic encephalopathy.	14	23.3	46	76.7
Causes of hepatic encephalopathy.	50	83.3	10	16.7
Complications of hepatic encephalopathy.	51	85.0	9	15.0
Diagnosis of hepatic encephalopathy.	44	73.3	16	26.7
Prevention of hepatic encephalopathy.	42	70.0	18	30.0
knowledge about nursing care for a patient with ascites				
Care of patient with ascites and peripheral oedema who at risk for impaired skin integrity.	46	76.7	14	23.3
Nursing care for patient with advanced cirrhosis and sever ascites.	28	46.7	32	53.3
Appropriate positions for a client with severe ascites.	48	80.0	12	20.0

Table (2) shows that, (93.3%, 90.0% and 86.7%) of the studied nurses had correct answer regarding the signs and symptoms of spontaneous bacterial peritonitis, meaning of the spontaneous bacterial peritonitis and definition of ascites respectively. While, (76.7% and 31.7%) of them had incorrect answer regarding definition of hepatic encephalopathy and Prevention of complications of spontaneous bacterial peritonitis, respectively. **Also**, 80.0 % of the studied nurses had a correct answer regarding appropriate positions for a client with severe ascites. While, 53.3% of them had incorrect answers about nursing care for patient with advanced cirrhosis and sever ascites, respectively.

Table (3): Frequency and percentage distribution of the studied nurse’s knowledge about paracentesis (n=60)

knowledge about paracentesis	Correct answer		Incorrect answer	
	N	%	N	%
Definition of paracentesis.	50	83.3	10	16.7
Indications of paracentesis.	55	91.7	5	8.3
Contraindications of paracentesis.	38	63.3	22	36.7
Complications of paracentesis.	54	90.0	6	10.0
Prevention of paracentesis complications.	54	90.0	6	10.0
The pre-preparation that must be checked before paracentesis.	49	81.7	11	18.3
Preparation of the patient for the procedure.	45	75.0	15	25.0
The correct place for the needle to be inserted.	30	50.0	30	50.0
There is no gas or bloating in the patient abdomen.	33	55.0	27	45.0
The correct position for the patient during the paracentesis.	40	66.7	20	33.3
The complications that may occur during the procedure	48	80.0	12	20.0
Prevention of complications that occur during paracentesis.	51	85.0	9	15.0
The nursing observation that must be followed during the procedure:	48	80.0	12	20.0
The correct position for the patient after the procedure.	41	68.3	19	31.7
The prevention of a leakage after paracentesis.	48	80.0	12	20.0
The investigation that performed after the paracentesis.	51	85.0	9	15.0
The symptoms that should be reported to the doctor after the paracentesis.	46	76.7	14	23.3
The causes of leakage after paracentesis.	51	85.0	9	15.0
Compensation after taping more than 5 liters according to the doctor’s instructions.	48	80.0	12	20.0
The symptoms of affective paracentesis.	48	80.0	12	20.0

Table (3) represented that, (91.7 %, 90.0 % and 90.0 %) of the studied nurses had a correct answer regarding Indications of paracentesis, complications of paracentesis and prevention of paracentesis complications, respectively. While, (50.0%, 45.0% and 31.7%) of them had incorrect answers about the correct place for the needle to be inserted, there is no gas or bloating in the patient abdomen and contraindications of paracentesis, respectively.

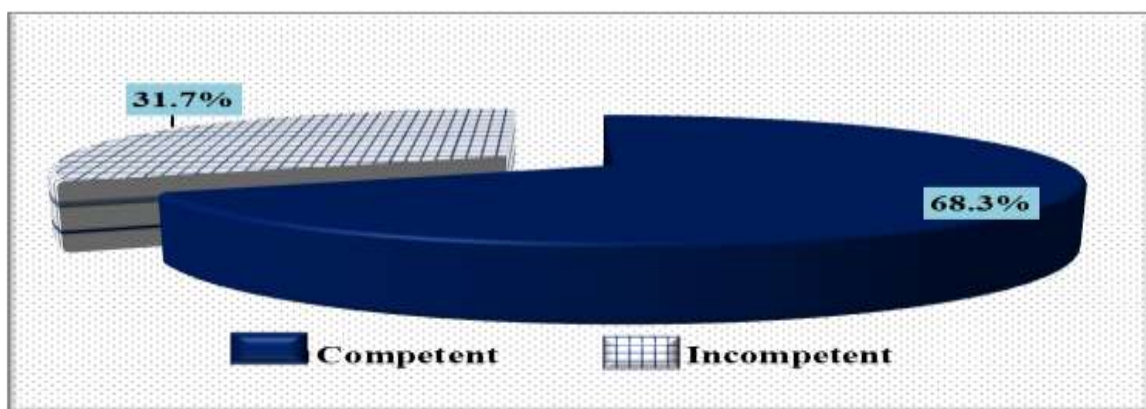
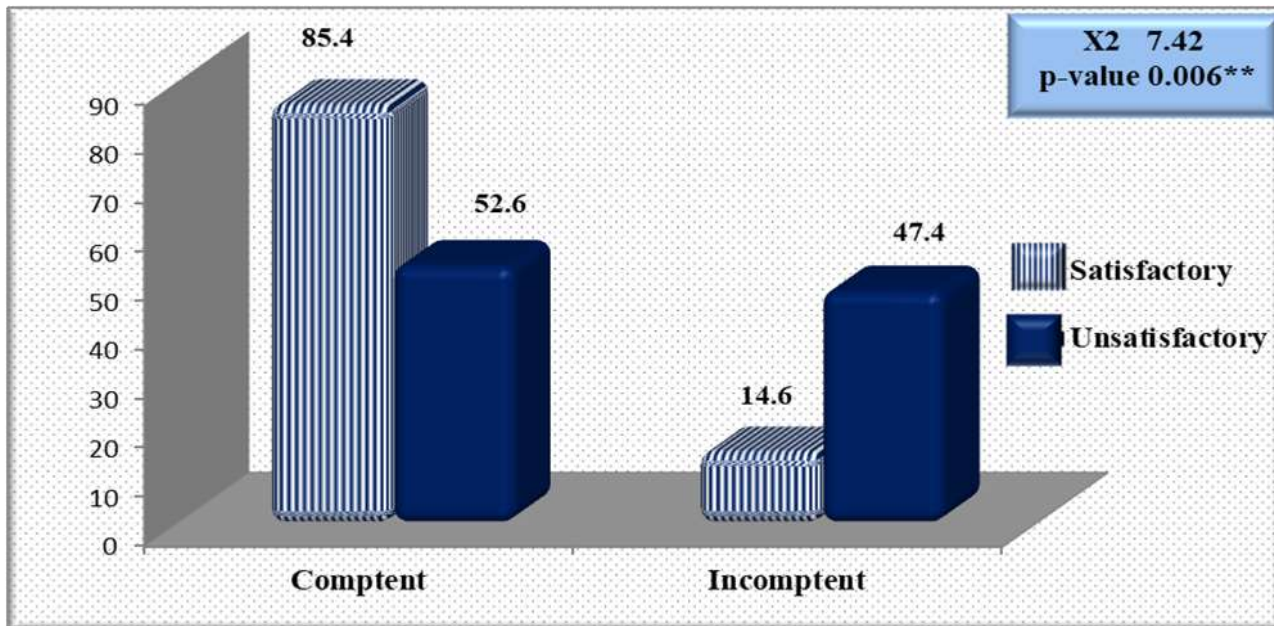


Figure (2): Percentage distribution of the studied nurses’ according to their total practices (during the procedure preparation) about care of liver cirrhotic patient’s undergoing Paracentesis.

Figure (2) illustrates that, 86.7% of the studied nurses had competent level of practices (post procedure preparation) care of liver cirrhotic patient's undergoing paracentesis.



Pearson Chi-Square test

(**) highly statistical significant difference

Figure (3): Correlation between the studied nurses' total knowledge and practices about care of liver cirrhotic patient's undergoing paracentesis (n=60).

Figure (3) illustrates that there is a highly statistically significant positive correlation between the total knowledge and practices regarding care of liver cirrhotic patient's undergoing Paracentesis among the studied nurses at $P = 0.006$.

Discussion:

Ascites is one of the most common pathological conditions in developing countries especially Egypt known as an excessive accumulation of extracellular fluid within the peritoneal cavity, which usually develops because of cirrhosis of the liver. Paracentesis is the main procedure for removing ascetic fluid from the peritoneal cavity via a temporary ascetic drain. Prevention and reducing the incidence of potential paracentesis complications is a major role of nurses (*Jackson et al., 2021*).

The current study revealed that less than two third of nurses was male; perhaps the nursing profession in Egypt has become more popular among males. Because studying the field of nursing was limited to females until only a few years ago, due to the national and international demand for highly qualified nurses, male was encouraged to join nursing profession among the requirements for traveling abroad are work in critical places such as intensive care and critical cases, and three to five years of experience. From researcher point of view, this may be due to the opening of special nursing schools for males and the nature of the hard work especially intensive care units that requires physical strength and the need to work at night duties.

This finding in the same line with **Priyadarshani et al. (2023)** who conducted a study entitled " Rising of a Global Silent Killer: Critical Analysis of Chronic Kidney Disease of Uncertain Aetiology (CKDu) Worldwide and Mitigation Steps." reported that the most of the studied sample were males. From researcher point of view, 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. In addition, this may be because males cover night duties while a female does not.

While this finding was in the contrast line with **Elsayed et al. (2018)** who conducted a study entitled "Applying nursing safety measures to prevent complications for a liver cirrhotic patient undergoing paracentesis" and found that the majority of studied nurses were females. As well **Elsayed (2023)** who revealed a study entitled "Assessment of nurses'



knowledge and practice regarding care of post paracentesis patients." reported that this might be because the profession of nursing in Egypt is more specialized and private to females; because the study of nursing field was exclusive to females until 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 disagrees with **Joukar et al. (2017)** who revealed a study entitled "Nurses' knowledge toward hepatitis B and hepatitis C in Guilan, Iran.", and found that the majority of participants more than nine tenths were female and less than one-tenth men.

As regards nurses' ages, more than half of the studied nurses were younger than 25 years, from researcher point of view, this would be due to that the young nurses constituted the main work power in the hospitals and confined to provide the direct nursing care to patients, while the older nurses assumed the administrative roles and the nursing administration at the hospital is keen on managing learning in critical places by learning on-the-job for several reasons, including the ease of teaching new graduates, because there is initial information about most procedures, and the new graduates are keen to work with critical cases, which will increase knowledge and practice and improve competence when dealing with various situations that require high skill and speed in performance, which will begin to form their abilities in the future and the ability to work under high pressure easily.

This finding was similar to that was revealed by **Mobed et al., (2019)**, who conducted a study entitled "Impact of Designing Nursing Instructions on Knowledge and Activity of Daily Living for Cirrhotic Patients With Ascites." 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.

However, this finding disagreed with **Sadaf et al. (2018)**, who conducted a study entitled "Nurse's knowledge and practice regarding prevention of surgical site infection at allied hospital Faisalabad." who revealed that studied nurses' age ranged between 24 and 45 years considering the years of experience.

With regard to the level of education, the current study found that more than two-thirds of them have a nursing Technical Institute degree while almost a third of the trained nurses have a bachelor's degree in nursing. This result may be due to the fact that the technical Nursing Institute supplies society with a large number of nurses. Due to the high demand of students to study at technical nursing institutes, because the years of study are less, and after graduation and obtaining a license to practice nursing they can work, complete their studies and get a bachelor's degree in nursing.

This finding was similar to **Fahmy et al. (2020)** who conducted a study entitled "Effect of educational nursing guideline about paracentesis procedure care on nurses' performance." ,Who reported that the study revealed that more than two-thirds of the studied nurses had technical nursing education.

This in contrary with **Reyad et al. (2022)** who conducted a study entitled "Assessment of nurses' knowledge and practice regarding intra-abdominal pressure measurement and Abdominal Compartment Syndrome Prevention." who reported that all of the nurses in their study had a Bachelor's degree as well this fact was consistent with **Elsayed (2023)** who revealed that the majority of studied nurses had Bachelor degree of Nursing.

Considering years of experience, the majority and more than two third of studied nurses had less than 3 years of experience which might be related to their young age and new graduation. This result is due to the fact that the hospital is newly opened and new nursing batches are appointed there.

This result was consistent with **Elsayed (2023)**, who revealed that less than one-half of the studied nurses had experience less than 5 years. This fact was consistent with **Mahmoud and Abdelrasol (2019)** who conducted a study entitled "Obstacles in employing evidence-based practice by nurses in their clinical settings: a descriptive study ", and revealed that the majority of studied nurses had experienced less than 7 years.

Also, the study` results revealed that more than Five-sixths of the studied nurses had any in-service training courses related to the paracentesis procedure care; from researcher point of view, this may be attributed to their hospital focusing on courses related to infection control rather than courses related to improving the quality of nursing care.

This result was the same line with **Elsayed (2023)**, who revealed that less than three quarters of the studied nurses had no course related to the paracentesis procedure care. This finding was consistent with **Mobed et al. (2019)** who found that less than one-third of studied nurses had in-service training courses related to paracentesis procedure.



According to the studied nurses working unit, the current study revealed that more than one half of nurses work Intensive care unit, these results agree with **Sodhi et al. (2023)**, who conducted a study entitled " Knowledge and awareness of infection control practices among nursing professionals: A cross-sectional survey from South Asia and the Middle East." found that the majority of studied nurse work intensive care unit.

These results disagree with **Morton et al. (2020)**, who conducted a study entitled "Job satisfaction of registered nurses in a private critical care unit in the Eastern Cape: A pilot study. Health SA Gesondheid, 25", and reported that more than two third of nurses leave work in Intensive care unit.

The study finding illustrated that, about two-thirds of the studied nurses had a satisfactory level of knowledge regarding liver function tests. From researcher point of view, these results may be due to as a result of the continuous repetition of liver function tests for all patients admitted to the hospital. This finding agreed with **Masha et al. (2023)** who study entitled "Factors Affecting Nurses' Attitude Regarding Care of Patients with Liver Transplantation." and reported that more-than two thirds of the studied nurses had satisfactory level of knowledge liver tests.

This finding not supported by **Abd Qahtan & Al-Mosawi, (2023)** who study entitled "Evaluation of Nurses Practices toward the Prevention of Hepatitis C Virus among Children at Hemodialysis Units." and reported that near than three-quarters of nurses had unsatisfactory level of knowledge liver functions tests.

Regarding to Frequency and percentage distribution of the studied nurses according to their knowledge about nursing care for a patient with ascites, more than two-thirds of the studied nurses had a correct answers regarding appropriate positions for a client with severe ascites. This is due to the fact that most nurses participating in the study were recent graduates and had direct exposure to treating ascites patients.

This result agreed with **Anwar et al. (2023)** who conducted a study entitled "Effect of Instructional Guidelines Based on Short Message Service on Nursing Performance Regarding Complications after Paracentesis for Cirrhotic Patients." who found that more than two-third of the studied nurses had a correct answer regarding appropriate positions for a client with severe ascites.

This result was not supported by **Valery et al. (2022)** who study entitled "Poor Disease Knowledge is associated with Higher Healthcare Service Use and Costs among Patients with Cirrhosis: An Exploratory Study" and reported that more than half of the studied nurses had an incorrect answers about appropriate positions for a client with severe ascites.

Regarding to nursing care for patient with advanced cirrhosis and sever ascites, more than half of the studied nurses had incorrect answers, this finding in the same line with **Sabola et al. (2022)** who found that more than half of the studied nurses had incorrect answers regarding nursing care for patient with advanced cirrhosis and sever ascites.

Also, this finding is consistent with **Rodenbaugh et al. (2020)** who study entitled "Nursing Management of Hepatic Encephalopathy." and reported that inappropriate behavior of the studied nurses about nursing care for patient with advanced cirrhosis and sever ascites.

These results disagreed with **Atya et al. (2019)** who found that more than one-third of the nurses had correct answer regarding nursing care for patient with advanced cirrhosis and sever ascites.

As regards percentage distribution of the studied nurses according to total knowledge about ascites, this finding illustrated that about three-quarters of the studied nurses had satisfactory level of knowledge liver Cirrhosis. This finding agreed with **Taha and Moghazy (2024)** who found that more than three-quarters of the nurses had satisfactory level of knowledge liver Cirrhosis. And also similarly with **Mobed et al. (2019)** who reported that about three-quarters of the studied nurses had satisfactory level of knowledge liver Cirrhosis.

While, these results not similar with **Hussien et al. (2020)** who study entitled "Nurses' Performance Regarding Caring for Patients with Esophageal Variceal Bleeding" and reported that nearly three-quarters of the studied nurses were having unsatisfactory total level of knowledge liver cirrhosis.

Regarding to Frequency and percentage distribution of the studied nurses according to their knowledge about paracentesis, more than three-quarters of the studied nurses had a correct answer regarding Indications of paracentesis, This result was in the same line with **Reyad et al. (2022)** who conducted a study entitled "Assessment of Nurses'



Knowledge and Practice Regarding Intra-Abdominal Pressure Measurement and Abdominal Compartment Syndrome Prevention", and found that about three-quarters of the nurses had a correct answer regarding Indications of paracentesis.

Also, this result was in the same line with **Regli et al. (2019)** who conducted a study entitled "Ventilation in patients with intra-abdominal hypertension: what every critical care physician needs to know." and reported that more than half of critical care nurses had information about indications of paracentesis. While, this result inconsistent with **Azeem et al. (2023)** who reported that nearly three-quarters of both studied groups had poor subtotal knowledge level about indications of paracentesis.

The finding revealed that more than three-quarters of the studied nurses had a correct answer regarding complications of paracentesis, this finding agreed with **Sall et al. (2018)** who study entitled "Paracentesis Simulation: A Comprehensive Approach to Procedural Education." and reported that more than two-thirds of gastroenterology nurse practitioner had positive information regarding complications of paracentesis.

While, this result inconsistent with **Azeem et al. (2023)** who reported that more than three-quarters of both studied groups had poor subtotal knowledge level about complications of paracentesis.

The study findings revealed that more than three-quarters of the studied nurses had a correct answer regarding prevention of paracentesis complications, this finding concurs with **Rajasurya & Surani, (2020)** who study entitled "Abdominal compartment syndrome: Often overlooked conditions in medical intensive care units." and showed that near than three-quarters of the nurses had a correct answers regarding prevention of paracentesis complications.

This result disagreed with **Sun et al. (2021)** who study entitled "Intra-abdominal hypertension and increased acute kidney injury risk: a systematic review and meta-analysis." founded that near than two-third of nurses had a correct answer regarding prevention of paracentesis complications.

This study revealed that half of nurses had incorrect answers about the correct place for the needle to be inserted, this result agreed with **Soliman et al. (2018)** who study entitled "Early Nursing Preparation: its effect on knowledge and Anxiety level among Liver Cirrhotic Patients who Undergoing Paracentesis." and reported that during a paracentesis about two-third of the study group nurses had incorrect answers regarding a needle inserted.

This result inconsistent with **Ali et al. (2021)** who study entitled "The Awareness of Oncology Nurses about Chemotherapy Based-Extravasation Care." and revealed that about two-thirds of the nurses had a correct answer regarding a needle inserted in paracentesis.

The present study revealed that more than one-third of the nurses had incorrect answers about there is no gas or bloating in the patient abdomen, this result concurs with **Emad et al. (2023)** who study entitled "Assessment of Nurses' Performance Regarding Care of Children Undergoing Liver Transplantation." and reported that near than one-third of nurse's had incorrect answers about gas and bloating of the abdominal cavity.

The current study revealed that about one-third of nurses had incorrect answers about contraindications of paracentesis, this result concurs with **Biggins et al. (2021)** and found that up to one third of nurses regarding contraindications of paracentesis.

This result not supported by **Fabrellas et al. (2020)** who study entitled "Nursing Care of Patients with Cirrhosis: The Liver Hope Nursing Project." and reported that more than two-thirds of participants about contraindications of paracentesis.

As regards percentage distribution of the studied nurses according to total knowledge about paracentesis, the study finding revealed that more than three-quarters of the studied nurses had satisfactory level regarding to total knowledge about paracentesis, due to hospital is specialized in liver cirrhosis and paracentesis. This result agreed with **Anwar et al. (2023)** who reported that more than half of the studied nurse's had a satisfactory knowledge level of the paracentesis procedure.

The current study finding revealed that about one-quarter of the studied nurses had unsatisfactory level of knowledge and this may be due to lack of education and information about ascites and paracentesis care at undergraduate.

This study is consistent with **Anwar et al. (2023)** who reported that less than one-fifth of nurses having a satisfactory level of knowledge about ascites and paracentesis.



The study results revealed that more than two-thirds of the studied nurses had satisfactory level regarding to care of liver cirrhotic patient's undergoing Paracentesis, this results agreed with **Elsayed et al. (2018)** who found that about two-thirds of the nurse's knowledge toward care for liver cirrhosis and paracentesis. This study not supported by **Elsayed et al. (2023)** who reported that more than half of the studied nurses had unsatisfactory level of total knowledge.

As regards percentage distribution of the studied nurses according to their total their practices (during the procedure preparation) care of liver cirrhotic patient's undergoing Paracentesis, this study illustrates that near than two third of the studied nurses had incompetent level of practices during procedure to monitoring physician throughout procedure for cirrhotic patients undergoing paracentesis.

This finding was similar to **Fahmy et al. (2020)** who reported that more than two-thirds of the studied nurses had incompetent level of practice regarding paracentesis. And this finding was not similar to **Aithal et al. (2021)** who study entitled "Guidelines on the Management of Ascites in Cirrhosis." reported that about half-healthcare provider had correct level of performance for paracentesis.

The current study revealed that a highly statistically significant positive correlation between the total knowledge and practices regarding care of liver cirrhotic patient's undergoing Paracentesis among the studied nurses.

This result was the same line with **Reyad et al. (2022)**, who conducted a study entitled "Assessment of nurses' knowledge and practice regarding intra-abdominal pressure measurement and abdominal compartment syndrome prevention." and found that highly statistically significant correlation between the studied nurses' total knowledge and practices about care of liver cirrhotic patient's undergoing Paracentesis, This results agree with **Mohamed et al. (2019)**, who revealed that a positive correlation was found between knowledge and practice scores of the study subjects significantly.

Conclusion:

Based on the findings of the present study, it can be concluded that assessment Nurse's knowledge regarding care of liver cirrhotic patient's undergoing Paracentesis in internal medicine unit and tropical unit are unsatisfactory level of nurses' knowledge and practice about paracentesis care and procedure and there was highly statistically significant correlation between total nursing knowledge and practice.

Recommendation:

1. Periodic monitoring for nurses' adherence to paracentesis procedure and to evaluate the level of nurses' performance.
2. Designing competency check list about care of paracentesis patient to be used as reference guide in their practice.
3. upgrade nurses' knowledge and skills throughout in-service training program with frequently evaluation about paracentesis care
4. Develop a continued nursing education programs for newly hired nurses about standardized guidelines of care ascetic patients undergoing paracentesis.

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