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Nurses` Performance Regarding Care of Patients with Advanced Stage Liver Cirrhosis

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ABSTRACT

Background: Liver cirrhosis is the advanced phase of liver fibrosis resulting from various liver diseases and conditions, such as hepatitis and chronic alcoholism. **Aim of the study:** Asses nurses' performance regarding the management of patients with advanced-stage liver cirrhosis. **Design:** A descriptive exploratory design was utilized. **Setting:** This study was conducted in intensive care unit ICU1 (Endemic) and intensive care units 2 and 3 at Beni-Suef University Hospital. **Study Subject:** A convenient sample of all available nurses (50) was included in the study. **Data collection tools:** Data were obtained through three tools (tool I) nurses'' knowledge questionnaires, (tool II) nurses' observational checklists, and (tool III) the Likert rating scale for nurses' attitudes. **Result:** It was found that 72% of studied nurses had an unsatisfactory level of knowledge regarding care for patients with advanced-stage liver cirrhosis, and 70% of the studied nurses had an unsatisfactory level of practice regarding patients with advanced-stage liver cirrhosis. Meanwhile, 66% of the nurses in the study had a negative attitude toward the care of patients with advanced-stage liver cirrhosis. **Conclusion:** Less than three-quarters of studied nurses had an unsatisfactory level of knowledge regarding the care of patients with advanced-stage liver cirrhosis. Meanwhile, less than three-quarters of studied nurses had an unsatisfactory level of practice regarding patients with advanced-stage liver cirrhosis. Less than two-thirds of the nurses under study had a negative attitude toward the care of patients with patients with advanced stage liver cirrhosis. There was a statistically significant correlation between knowledge, attitude, and practice among the studied nurses $P<0.05$. **Recommendations:** Designing in-service training and educational program to improve nurses' knowledge and practice regarding advanced-stage liver cirrhosis.

Keywords: advanced stage, liver cirrhosis, Nurses` performance.

INTRODUCTION

Late-stage cirrhosis replaces healthy liver tissue with scar tissue. Chronic hepatitis causes this. Many factors cause hepatitis, liver inflammation. The liver scars to repair itself during inflammation. However, excessive scar tissue hinders liver function. The end is chronic liver failure. As scar tissue grows, cirrhosis worsens. First, the body compensates for reduced liver function; this is compensated cirrhosis. However, liver function declines and symptoms appear. This is decompensated cirrhosis. **(Roehlen et al., 2020).**

Cirrhosis is marked by liver fibrosis and nodule formation due to chronic damage,

disrupting the liver's normal lobular structure. Various factors, such as viral infections, toxins, genetic conditions, and autoimmune processes, can harm the liver. Initially, the liver compensates by forming scar tissue (fibrosis) without losing function. However, with ongoing damage, the majority of liver tissue becomes fibrotic, resulting in loss of function and progression to cirrhosis. This article examines the causes, assessment, and treatment of hepatic cirrhosis and emphasizes the interprofessional team's role in managing patients with this condition **(Tanwar et al., 2020).**

The most common causes of cirrhosis include alcohol liver disease, chronic hepatitis B and C, heroin abuse, non-alcoholic steatohepatitis (NASH), and advanced non-alcoholic fatty liver disease. Liver damage can develop from both heavy drinking over an extended time and heroin use over an extended time. A few less prevalent causes that hinder bile duct function are autoimmune hepatitis, primary biliary cholangitis, and primary sclerosing cholangitis. Liver congestion caused by chronic heart failure, Wilson's disease, and hereditary hemochromatosis are among the genetic disorders that can cause cirrhosis. **(Sharma& Arora, 2020).**

Cirrhosis often develops gradually, with symptoms taking time to manifest. Initial signs include weakness, fatigue, loss of appetite, nausea, and weight loss. Individuals may also experience discomfort in the right upper abdomen near the liver. As the condition advances, neurological symptoms may arise, such as cognitive impairments, confusion, memory loss, sleep disturbances, and personality changes. Progressive cirrhosis can lead to fluid accumulation in various body parts, such as the legs (edema) and abdomen (ascites). Additional indicators of worsening disease include itchy skin, easy bruising, dark urine, and yellowing of the skin **(Kaplan & Rosenblatt, 2022).**

From a morphological perspective, cirrhosis can be categorized as either micronodular, macronodular, or mixed. Alcoholism, hemochromatosis, chronic biliary obstruction, hepatic venous outflow obstruction, and jejunoileal bypass are the most common causes of micronodular cirrhosis. Primary biliary cholangitis, alpha-1 antitrypsin insufficiency, and hepatitis B and C are all risk factors for macrodular cirrhosis. When micronodular cirrhosis develops into macronodular cirrhosis, a condition known as mixed cirrhosis, which combines the two types of cirrhosis, occurs. Cirrhosis can have many different causes. Some of these include viruses like hepatitis B, C, and D, environmental pollutants like alcohol and drugs, autoimmune hepatitis, cholestatic conditions like primary biliary cholangitis and primary sclerosing cholangitis, vascular conditions like Budd-Chiari syndrome, sinusoidal obstruction syndrome, and cardiac cirrhosis, and metabolic disorders like hemochromatosis, Wilson's disease, alpha-1 antitrypsin deficiency, and cryptogenic cirrhosis. **(Takahara et al.,2019).**

Prevention of variceal bleeding and hepatocellular carcinoma (HCC) screening should be part of a nurse's responsibility in treating patients with compensated cirrhosis. Setting up screening and monitoring endoscopies is part of the nurse's prophylactic role against variceal hemorrhage. At the time of the initial diagnosis, the first endoscopy ought to be completed. In addition to evaluating prescriptions and promoting drug adherence during initial visits as well as follow-up visits either in-person or through telehealth methods, nurses are crucial in identifying any variations found during the first endoscopy and arranging for a repeat procedure in three years if none. Patients should be counseled against using aspirin and non-steroidal anti-inflammatory medications (NSAIDs) as pain relievers during their initial appointment. As an alternative, acetaminophen (paracetamol) should be administered at doses of no more than 2 g per day **(Celik & Bektas., 2022).**

When caring for patients with cirrhosis, nurses should prioritize nutrition counseling, particularly in malnourished individuals or those showing inadequate responses to diuretics. Irrespective of the underlying cause of cirrhosis, Nurses caring for patients with compensated cirrhosis should emphasize the importance of a balanced diet rich in protein,

moderate in fat, and low in sodium and fiber. The needs of each patient should be considered when developing a dietary program. Ideally, patients with obesity or malnutrition should receive collaborative management involving a dietitian and participation in a specialized multidisciplinary primary care program **(Casler & Chaney, 2020).**

Nutritional counseling to maintain an ideal body weight and avoid protein and malnutrition is one important aspect of follow-up for patients with compensated cirrhosis that nurses should pay special attention to. On the other hand, individuals with decompensated cirrhosis should have regular check-ups to evaluate their condition. These check-ups can be done through in-person visits or phone calls. The nurse will closely observe the patient's blood pressure and provide oxygen if their oxygen levels drop. Additionally, the nurse will monitor for signs of fever or abdominal pain, which could indicate the beginning of bacterial peritonitis. **(Fabrellas et al., 2020).**

Enhancing health workers' comprehension of liver disease risks will facilitate the formulation of targeted prevention strategies for this population. This will be achieved by collecting data that can be utilized to design interventions aimed at promoting preventive behaviors among health workers. **(Abo El Ata. , 2021).**

Significance of the Study

Cirrhosis is the twelfth most common cause of death worldwide. The majority of the time, cirrhosis results from a combination of heavy alcohol use, hepatitis C or B infection, and non-alcoholic fatty liver disease (NAFLD), which gradually impair normal liver architecture and function. Cirrhosis is thought to be the cause of about 170,000 fatalities in Europe and 50,000 deaths in the US annually. The burden associated with cirrhosis is expected to rise in the coming decades due to the considerable global increase in the incidence of chronic liver disorders, especially NAFLD, even though hepatitis B and C control will positively impact the epidemiology of liver disease **(Fabrellas et al., 2020).**

Eight to ten million people worldwide are thought to have viral hepatitis, and from 1990 to 2017, Egypt had the highest age-standardized death rate from cirrhosis. Hepatitis B virus (HBV) prevalence (1.3%–1.5%) has decreased since the country's baby immunization program. Due to the fact that the percentage of HBV patients with immunoglobulin G (IgG) antibodies ranges from 8.3% to 43%, coinfection of HBV patients with HDV is widespread in Egypt. Following the implementation of several nationwide initiatives aimed at managing hepatitis C virus (HCV) infection, a newly reported HCV prevalence rate of 4.6% is lower than before **(Elbahrawy,2021).**

Aim of The Study

This study aimed to Assess nurses' performance regarding care of patients with advanced stage liver cirrhosis.

the aim of this study achieved through the following objective:

1- Identifying nurses' level of knowledge regarding care of patient with advanced stage liver cirrhosis.

2- Monitoring nurses' practice regarding care of patient with advanced stage liver cirrhosis.

3- Evaluating nurses' attitude toward care of patient with advanced stage liver cirrhosis.

Research questions

1-What is the level of nurses' knowledge regarding care for patient with advanced stage liver cirrhosis?

2-What is the level of nurses` practices regarding care of patients with advanced stage liver cirrhosis?

3-What is the level of nurses` attitude toward patient with advanced stage liver cirrhosis**?**

4-What is the correlation between sociodemographic characteristics and the variables

SUBJECTS AND METHODS

Research design.

A descriptive exploratory study was employed to accomplish this study's aim.

Setting

This study was conducted in intensive care unit ICU 1 (Endemic) on the fifth floor, which consisted of (8) beds and intensive care unit (2) on the fourth floor, which consisted of (15) beds and an intensive care unit (3) on the second floor which consisted of (15) beds at Beni-Suef University hospital. The above-mentioned areas were chosen because they have a higher rate of patients with advanced-stage liver disease and have a higher number of nurses.

Subjects:

Fifty nurses in the previously mentioned settings were conveniently selected from the total number of available nurses.

Inclusion criteria:

Nurses trained to care for patients with advanced stage liver cirrhosis.

Exclusion criteria:

Nurse's experience in ICU less than 6 months.

Tools of data Collection:

In this study, three tools were utilized, specifically:

Tool (I): Nurses' knowledge questionnaire:

It was adapted from **(Abo El Ata, Mohammed & Ahmed , 2021)** and were modified by researcher based on reviewing of recent literatures to assess nurses, regarding knowledge of care of patients with advanced stage liver cirrhosis it was filled by the nurses, and it included two part :

Part I: demographic characteristics data of nurses:

It consisted of 7 questions about the studied nurses` characteristics including Nurses` age, gender, marital status, and educational level ,years of experience, training courses and benefit from it .

Part 2: Nurses 'knowledge about advanced stage liver cirrhosis:-

This part was concerned with assessment of nurses' knowledge regarding management for patients with advanced stage liver cirrhosis . It was divided into two sections: **The first section** includes 24 multiple-choice questions (MCQs) on liver anatomy, function, definition, causes, types, stages, clinical manifestations, complications, and nursing care for advanced stage liver cirrhosis patients.

The second section to assess nurses' knowledge regarding nursing care and nursing teaching for patients with advanced stage liver cirrhosis and consists of 11 questions in the form of true and false .

Scoring of nurses' knowledge:

The correct answers received one mark and the incorrect answers zero; the total scores were 35. Knowledge score converted into a percentage, and overall adequacy graded using the following criteria: Knowledge was satisfactory if the score was >75%. A score of <75% indicates unsatisfactory knowledge.

Tool (ll): Nurses' practice observation checklist:

It is used to assess nurses' level of practice regarding the management of patients with advanced-stage liver cirrhosis in their work. adapted from **(Joan et al., 2013; Timby & Smith, 2014 &Hinkle & Cheever, 2022)** and modified by a researcher who examined recent literature to evaluate the nursing practices related to the care of patients with liver cirrhosis. The procedures included are enema administration, measurement of central venous pressure (CVP), weight measurement, and assistance with paracentesis.

Scoring of nurses' practice:-

The score of each item was allotted "done correctly" which got one grade, and" done incorrectly" which got zero. If the score was >90% the level of nurses' practice considered

competent. If the score was < 90% the level of nurses' practice considered incompetent

Tool (llI): Nurses Attitude Likert scale .

It was adapted from **(Ahmed,A,E2018)** and was modified by researcher based on the related literature . and consisted of 14 statements to assess nurses' attitude during providing the care for the patients with advanced stage liver cirrhosis .

The Scoring system:-

Positive points at the scale were (1, 4, 6, 9, 10, 11, 14) had scoring system The score of each Item allotted "positive" which got one grade, while negative points at the scale were (2, 3, 5, 7, 8, 12, 13) which got zero grade. A total score for scale was 14 grades. Total score more than >60% it was considered positive attitude. If the score was less than <60% it was considered negative attitude.

- Operational design

The operational design includes preparatory phase, content validity, pilot study and field work.

Tools Validity and reliability

Content Validity:

A panel of five assistant professors specializing in medical surgical nursing assessed the tools based on their comprehensiveness, accuracy, clarity, and relevance.

Reliability:

The researcher used reliability for tools to ensure that the tools were internally consistent by giving them to the same participants in the same settings to check for consistency. The dependability of the tools' internal consistency was evaluated with Cronbach's alpha coefficient for each item. Mothers' reported practices related to accidental first aid for their children were (0.91), whereas the mothers' knowledge assessment sheet had a score of (0.93). This proves that the study tools are quite reliable.

Pilot study:

A pilot study on five nurses from the study subjects tested the tools' clarity, applicability, feasibility, and relevance and determined their application time. No changes were made to the pilot study nurses, so they were included in the sample.

Field Work:

The data were collected in the specified order:

- Approval was obtained from the relevant authorities in the Faculty of Nursing at Beni Suef University to conduct this study. • The director of Beni Suef University Hospital granted official permission to conduct the study after being informed about the purpose and nature of the research.
- The head nurses of the mentioned settings were interviewed to inform them about the purpose and nature of the study and ask for their assistance in facilitating the work. • Nurses and physicians were personally communicated with to clarify the purpose and nature of the study and obtain their cooperation. Furthermore, prior to commencing the data collection procedure, an oral consent was obtained from the participants after providing a detailed explanation of the study's purpose and nature. Additionally, an interview was conducted with the nurses under study to establish a positive rapport.
- An explanation was provided to the nurses to ensure their participation in the study by clarifying the purpose and nature of the study.
- Nurses were educated about the importance of privacy and confidentiality regarding their information, and they possess the autonomy to discontinue their participation in the study at any given moment.
- The researcher elucidated the objective of the study to the nurses who were included in the study.
- The study was initiated and concluded within a span of six months.
- Consent was obtained from the nurses to participate in the study through oral means, and each nurse was informed that their confidentiality would be maintained.
- The researcher collected data three times a week, during both morning and

afternoon shifts in the settings mentioned earlier.

- Initially, the researcher evaluated the nurses' practices by utilizing observational checklists. At most, three nurses were observed during the day while providing care for patients with advanced stage liver cirrhosis in their workplace.
- A Likert rating scale was utilized to evaluate the attitude of nurses while providing care to patients with advanced stage liver cirrhosis. The scale consisted of 14 statements. • Nurses were given a self-administered questionnaire in their workplace, which took approximately 30 to 45 minutes to complete.

Administrative design

The Dean of the Faculty of Nursing granted official approval for the study, providing a written letter that clearly outlines the study's purpose and setting. This letter was directed to the directors of the aforementioned setting.

Ethical considerations:

-The ethical research considerations in this study involved obtaining informed written consent from the nurses and patients before collecting data.

-The study was initiated after obtaining research approval. Prior to commencing the study, the researcher provided a clear explanation of the study's objectives and goals to the participating nurses.

-Additionally, the researcher guaranteed the nurses' anonymity and confidentiality throughout the study. The nurses participating in the study were notified of their option to choose whether or not to take part, and they possess the freedom to withdraw from the study at any point without providing justification.

Statistical design

To obtain descriptive statistics for categorical variables, such as percentages and frequencies, the data were analyzed using SPSS 22.0, which is a statistical package for the social sciences. Continuous variables were analyzed using means and standard deviations. Measurement of the degree of association between numerical variables was accomplished using the Pearson correlation coefficient (r). The correlations between the categorical variables were determined using chi-square tests ($\chi 2$). With a p-value lower than 0.05, we set the significance level.

RESULTS

Table 1: showed that (84%) of studied nurses were aged between twenty and thirty years with mean age (26.54±4.71). Regarding their gender, (52%)of the studied nurses were female. For their marital status, (62%) of studied nurses were single. (84%)of studied nurses had technical nursing institute degree and(98%) did not attend training courses about advanced stage liver cirrhosis disease.

Table 2: illustrated that 56%of the studied nurses had satisfactory level of knowledge related to complications of patients with advanced stage liver cirrhosis and 62% had satisfactory level of knowledge related to hepatic coma as well as regarding total knowledge (28%).also, all nurses had unsatisfactory level of knowledge regarding anatomical position, stages of liver cirrhosis, care of patients with advanced stage liver cirrhosis and ascites and paracentesis (66%, 62%, 60, and 82%) respectively.

Table 3: showed that (76% , 88%, 76%,and 100%) respectively. of the studied nurses had unsatisfactory practice regarding enema Performance, weight measurement, CVP measurement and assisting with paracentesis respectively.

of the studied nurses had unsatisfactory practice regarding enema Performance, weight measurement, CVP measurement and assisting with paracentesis (76% , 88%, 76%,and 100%) respectively.

Table 4: revealed that (66 %) of the studied nurses had negative attitude regarding management of patients with advanced stage liver cirrhosis and (34%) of the studied nurses had positive attitude regarding management of patients with advanced stage liver cirrhosis.

Table (5): revealed that there was non-significant statistical relation between all studied nurses' personal characteristics and their knowledge.

Table (6): revealed that there was non-significant statistical relation between all studied nurses' personal characteristics and their practice.

Table (7): revealed that there was non-significant statistical relation between all studied nurses' personal characteristics and their attitude.

Table (8): displayed that there were significant statistical correlations between all variable.

Table (1): Frequency distribution of studied nurses' personal characteristics (n=50)

Personal characteristics	No.	%
Age (years)		
-20 < 30	42	84
-30 < 40	5	10
-40<50	3	6
Mean±SD	26.54±4.71	
Gender		
-Male	24	48
-Female	26	52
Marital status		
-Single	31	62
-Married	19	38
Nursing Qualifications		
-Nursing Diploma	2	4
-Nursing Technical Institute	42	84
-Bachelor of Nursing	6	12
Experience (years)		
-Less than 1	25	50
-1 < 5	25	50
Mean±SD	4.23±1.76	
Training courses on advanced stage liver cirrhosis disease		
-Yes	1	2
-No	49	98

Table (2): Frequency and percentage distribution of studied nurses regarding their knowledge levels about advanced stage liver cirrhosis (n=50).

Nurses' Knowledge Levels	Satisfactory		Unsatisfactory	
	No.	%	No.	%
I-Anatomical position	17	34	33	66
II-Advanced stage liver cirrhosis	25	50	25	50
III-Stages of cirrhosis	19	38	31	62
Iv-Complications of advanced stage liver cirrhosis	28	56	22	44

V-Care of patients with advanced stage liver cirrhosis	20	40	30	60
vI-Ascites and Paracentesis	9	18	41	82
vII-Hepatic coma	31	62	19	38
Nurses' Overall Knowledge Levels	14	28	36	72

Table (3) Frequency and percentage distribution of studied nurses regarding their practice levels about care of patient with advanced liver cirrhosis (n=50)

Nurses' Practice Levels	Incompetent		Competent	
	No.	%	No.	%
Enema performance	38	76	12	24
Weight measurement	44	88	6	12
CVP measurement	38	76	12	24
Assisting with paracentesis	50	100	0	0
Nurses' Overall Practice Levels	35	70	15	30

Table (4) Frequency distribution of studied nurses' attitude level toward care of patient with advanced stage liver cirrhosis (n=50)

Nurses' Attitude Levels	No.	%
Positive Attitude	**17**	**34**
Negative Attitude	**33**	**66**
Total	**50**	**100**

Table (5): Relation between studied nurses' personal characteristics and their knowledge about advanced stage liver cirrhosis (n=50).

Personal Characteristics	Knowledge Levels				χ^2	P-value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Age						
– **20 < 30**	**11**	**22**	**31**	**62**	**3.755**	**0.151**
– **30 < 40**	**3**	**6**	**2**	**4**		
– **40<50**	**0**	**0**	**3**	**6**		
Gender						
– **Male**	**6**	**12**	**18**	**36**	**0.206**	**0.650**
– **Female**	**8**	**16**	**18**	**36**		
Marital Status						
– **Single**	**9**	**18**	**22**	**44**	**0.043**	**0.836**
– **Married**	**5**	**10**	**14**	**28**		

Nursing Qualifications						
– **Nursing Diploma**	**0**	**0**	**2**	**4**	**0.869**	**0.648**
– **Nursing Technical Institute**	**12**	**24**	**30**	**60**		
– **Bachelor of Nursing**	**2**	**4**	**4**	**8**		
Years of Experience						
– **Less than 1**	**9**	**18**	**16**	**32**	**1.587**	**0.208**
– **1< 5**	**5**	**10**	**20**	**40**		
Training courses on advanced stage liver cirrhosis disease						
– **Yes**	**0**	**0**	**1**	**2**	**0.397**	**0.529**
– **No**	**14**	**28**	**35**	**70**		

Table (6): Relation between studied nurses' personal characteristics and their practice about advanced stage liver cirrhosis (n=50).

Personal Characteristics	**Practice Levels**				χ^2	**P-value**
	Competent		**Incompetent**			
	No.	**%**	**No.**	**%**		
Age						
– **20 < 30**	**13**	**26**	**21**	**42**	**0.272**	**0.873**
– **30 < 40**	**1**	**2**	**4**	**8**		
– **40<50**	**1**	**2**	**2**	**4**		
Gender						
– **Male**	**9**	**18**	**15**	**30**	**1.236**	**0.266**
– **Female**	**6**	**12**	**20**	**40**		
Marital Status						
– **Single**	**9**	**18**	**22**	**44**	**0.036**	**0.849**
– **Married**	**6**	**12**	**13**	**26**		
Nursing Qualifications						
– **Nursing Diploma**	**0**	**0**	**2**	**4**	**4.082**	**0.130**
– **Nursing Technical Institute**	**15**	**30**	**27**	**54**		
– **Bachelor of Nursing**	**0**	**0**	**6**	**12**		
Years of Experience						
– **Less than 1**	**6**	**12**	**19**	**38**	**0.857**	**0.355**
– **1< 5**	**9**	**18**	**16**	**32**		
Training courses on advanced stage liver cirrhosis disease						
– **Yes**	**0**	**0**	**1**	**2**	**0.437**	**0.508**
– **No**	**15**	**30**	**34**	**68**		

Table (7): Relation between studied nurses' personal characteristics and their attitudes toward care of patient with advanced stage liver cirrhosis (n=50).

Personal Characteristics	Attitude Levels				χ^2	P-value
	Positive		Negative			
	No.	%	No.	%		
Age						
– 20 < 30	11	22	31	62	8.471	0.014*
– 30 < 40	3	6	2	4		
– 40<50	3	6	0	0		
Gender						
– Male	9	18	15	30	0.252	0.616
– Female	8	16	18	36		
Marital Status						
– Single	11	22	20	40	0.080	0.777
– Married	6	12	13	26		
Nursing Qualifications						
– Nursing Diploma	0	0	12	24	1.086	0.581
– Nursing Technical Institute	15	30	27	54		
– Bachelor of Nursing	2	4	4	8		
Years of Experience						
– Less than 1	9	18	16	32	0.089	0.765
– 1< 5	8	16	17	34		
Training courses on advanced stage liver cirrhosis disease						
– Yes	0	0	1	2	0.526	0.468
– No	17	34	32	64		

Table (8)

Correlation matrix between studied nurses' knowledge, practice, and their attitude regarding care of patient with advanced liver cirrhosis (n=50)

Variables		Total Practice	Total Attitude
Total Knowledge	***r***	0.351	0.394
	P-Value	0.012*	0.005**
Total Practice	***r***		0.317
	P-Value		0.025*

***r*:** Pearson Correlation Coefficient.
** Correlation is significant at the 0.01 level (2 tailed).
* Correlation is significant at the 0.05 level (2 tailed).

DISCUSSION

A serious condition that increases morbidity and mortality is liver cirrhosis. When it is not well managed, severe problems occur. It is clear that long-term

The importance of nurses in the care of patients with cirrhosis has not received adequate attention, and there is a scarcity of information regarding nursing care for patients with cirrhosis in comparison to other chronic illnesses. To effectively manage patients with cirrhosis, it is essential to include nurses who possess specialized expertise in liver diseases as part of the multidisciplinary teams. These nurses should be involved in the care of both inpatients and outpatients **(Fabrellas et al., 2020).** So, the aim of the current study was to assess nurses' performance regarding management for patient with advanced stage liver cirrhosis.

Concerned with demographic characteristics of the nurses under the study:

According to the study's results, the bulk of the nurses studied were in the age group of 20 to <30, with a mean ± SD of 26.54±4.71. This could be because the nurses were recently graduated and responsible enough to handle the workload and responsibilities of working with critically ill patients in a highly specialized area with a critically ill patients who need specific nursing care and older nurses were usually assigned for administrative positions .Beside , near two thirds of nurses diploma and technical study ended at 20 years . This result was consistent with that of **Aziz (2020),** who noted in a study titled "Assessment of Nurses' Performance Regarding the Implementation of Patient Safety Measures in Intensive Care Units" that the majority of the nurses under study were between the ages of 20 and 30.

This result was consistent with the findings of **Saad (2021),** who was mentioned in the article "Impact of Educational Program for Hepatic Encephalopathy on Nurses Performance and Patients Outcomes." revealed that the majority of the study's sample, were under thirty years old, could handle the demanding nature of their jobs, and were still in their prime of fitness and power.

This finding is inconsistent with **Abd-Elrhaman & Ghoneimy (2019)** who assessed "Effectiveness of Educational Program Regarding Professional Nursing Ethics on Workplace Civility "which conducted at ICU units at Benha University Hospital; found that; the majority of the nurses ages ranged from 25-35 years.

The current study's gender analysis revealed that more than half of the studied nurses were female. This could be attributed to the higher percentage of female nurses in Egypt as well as the fact that, until a few years ago, only females were allowed to study nursing in Egyptian universities. It could also be related to the fact that a greater proportion of female school nurses than male graduates complete their education. This result was consistent with a study conducted by **Al-Ajarmeh (2022)** on "Nurse–nurse collaboration and performance among nurses in intensive care units," which found that most of the participants (n = 103, 66.5%) were female.

The current study's findings regarding the marital status of the nurses it studied revealed that less than two third of them were single. These findings were consistent with those of **Alshammari (2024),** who noted in a study titled "Attitudes and Perceptions of ICU Nurses in Caring for COVID-19 Patients" that less than two-thirds of the nurses were female and single.

In contrast, **Ahmed (2018)** observed that more than half of the nurses in the study were male and unmarried, which contradicted the findings of the study titled "Nurses' Performance Regarding

Management of Patients with Hepatic Encephalopathy."

Regarding the degree of education, the current study's findings showed that most of the nurses under investigation were nursing technical institute graduates. This result was consistent with the study by **Mahmoud (2021)** "Impact of educational program for hepatic encephalopathy on nurses' performance and patient's outcomes," which found that most of the nurses under study were technical institute nurses.

In contrast, **Al-Ajarmeh (2022)** found that "nurse–nurse collaboration and performance among nurses in intensive care units" were not supported by this data. and discovered that baccalaureate nursing degrees were held by the majority of the nurses included in the study.

The current study found that nearly half of the study population had experience ranging from one to fewer than five years in critical care units. This result could be explained by the fact that most of the nurses under study were recent graduates. In a study titled "Nurses' Performance Regarding Care of Patients Post Percutaneous Endoscopic Gastrostomies in Critical Care Unit," **Mohammed (2023)** noted that less than two-thirds of the study sample had experience ranging from one to less than five years. This finding was consistent with that study.

In contrast, **Aktar's (2023)** on the "Attitude of nurses caring critically ill patients admitted in the ICUs of AIIMS Hospital" revealed that over half of the nurses in the study had more than two years of experience, which contradicted the findings of this study.

Concerning nurses` knowledge regarding patients with advanced stage liver cirrhosis.

Regarding nurses' expertise, the results of this study showed that most of the nurses under investigation had total unsatisfactory level of knowledge regarding patients with advanced liver cirrhosis. This could be because senior staff members were uninterested in pushing nurses to become more knowledgeable, and the majority of nurses' education was based on technical nursing diplomas. The hospital's authorized administrative personnel do not offer specialized courses to nurses or encourage them to pursue further education. This may also be because the majority of nurses who work in critical care units don't have the time to attend seminars, conferences, or training sessions to stay current and improve their knowledge on managing patients with advanced liver cirrhosis.

This result was consistent with that of **Abo-El Ata (2021),** who conducted research on "nurses' knowledge and practice regarding nursing care of patients with liver cirrhosis" and found that over almost three quarters of them knew nothing at all about patients with advanced liver cirrhosis.

This result matched that of a study by **Saad (2021)** titled "Impact of Educational Program for Hepatic Encephalopathy on Nurses Performance and Patients Outcomes." It reported that the overall degree of knowledge possessed by more than almost three quarters of the nurses under study about the pre-implementation of planned programs is inadequate. After the program, the level of knowledge among nurses improved. There were notable differences in the satisfactory level of knowledge at the pre-program (11.4%), post-program (93.4%).

Conversely, this finding was inconsistent with the study conducted by **Alwesabi (2023)** who conduct a study on" The Level of Knowledge Among Nurses Regarding Care of Patients with Hepatic Encephalopathy at Najran Hospitals, Saudi Arabia". and reported that the participants demonstrated a good level of knowledge . On the other hand, this is inconsistent with the study conducted by **Sohal (2021)** who reported a gap in level of nurses' knowledge toward HE cares.

Concerning total nurses' practice regarding management of patients with advanced stage liver cirrhosis

The results of this study showed that nurses generally had a poor grasp of how to care for patients with advanced liver cirrhosis. One possible explanation is that the

examined nurses' inadequate knowledge is influencing their practice in a negative way.

Another possible explanation is that the majority of the nurses in the study were recent graduates from technical nursing institutes; however, in public hospitals, nurses with bachelor's degrees were more likely to work as head nurses rather than in the front lines of patient care. There may have been a shortage of certain supplies, such as sterile gloves and suction catheters, or there may have been a high volume of temporary nurses working under the influence of their own knowledge and experience, leading to varying degrees of performance.

In addition, there may be a number of factors contributing to this, such as the following: a lack of an orientation program for new nurses, an excessive amount of work for the few nurses already on staff, a lack of available guideline books, an absence of supervision and ongoing evaluation, a lack of interest and motivation on the part of the majority of nurses, inadequate financial compensation, an absence of in-service training, complaints from nurses about non-nursing tasks overlapping with their nursing responsibilities, inefficient time management, and an unclear job description.

Concerning the nurses' practice for enema administration, the current study revealed that, more than three quarter of studied nurses had unsatisfactory level of practice. Regarding this item due to that they didn't do steps of enema especially documentation, record time of enema and most of nurses under study had not put on or removed person protective equipment placed a waterproof pad under the patient's hip. This findings in the same line with **Elbqry et al. (2022)** who conduct a study on" Evaluation of A Nurse-led Training Program on Administering a Recurrent Large-Volume Cleansing Enema in Hepatic Encephalopathic Patient". stated that the preparation for administering a large-volume cleansing enema was deemed satisfactory by 27.8% of participants during the pre-phase, 100% during the post-phase, and 95% during the follow-up phase.

This finding was in the same line with **Mahmoud (2021)** who conduct a study on" Impact of educational program for hepatic encephalopathy on nurses 'performance and patient`s outcomes" and reported that the implementation of the educational program showed an improvement in the studied nurses' level of practice regarding retained enema administration.

Concerning the nurses' practice for central venous pressure measurement(CVP) the current study revealed that, more than three quarter of studied nurses had unsatisfactory level of practice. the present study revealed that the majority of nurses didn't do steps while measuring center venous pressure, which might be due to a lack of training and knowledge and a lack of equipment. This finding came in accordance with **Jaish (2023)** who conducted a study entitled " The Effect of the Teaching Program on Nurses' Practices Regarding the Implementation of Patient Care and Safety Measures during Central Venous Pressure Measurement in the Critical Care Units in Syria" stated that the knowledge and competence of the nurses in measuring central venous pressure (CVP) was mediocre and inadequate prior to the implementation of the teaching program. However, their competence significantly improved following the program.

Furthermore, **Abo El Ata et al., (2021)** found that "Nurses' Knowledge and Practice Regarding Nursing Care of Patients with Liver Cirrhosis" aligned with this finding. They found that most nurses did not follow protocol while taking central venous pressure. This could have been caused by inadequate equipment, training, or expertise. In contrast, hand hygiene should be practiced with the proper product for the prevention and control of CVC-associated infection. Among the five strategies based on evidence. (highest sterile barrier measures, chlorhexidine uses for skin washing, suitable catheter site selection, daily catheter site control) to lower the risk of infection. was doing the hand washing.

Concerning the nurses' practice for weight measurement the current study

revealed that, the majority of the nurses examined exhibited an unsatisfactory level of practice, possibly attributable to their failure to adhere to proper nursing protocols when measuring patients' weight and neglecting to document the recorded weight. on the same horizontal line. This findings in the same line with **Wijedasa (2020).** who conducted a study entitled " Practice and Attitudes of Taking Anthropometric Measurements for Nutritional Assessments Among Nurses" stated that Most of the nurses have experience in measuring weight. Nevertheless, most nurses lack knowledge regarding weight measurement. The majority of nurses in the current study have indicated that the primary factor impeding the taking of anthropometric measurements is a "lack of time." They have mentioned an excessive amount of work that nurses need to complete within a limited timeframe during their working hours. Most nurses possess knowledge regarding anthropometric measurements. Bachelor of Nursing graduates possess a notably superior level of knowledge in comparison to both government and private nurses holding diplomas.

The results of the current study about the nurses' assistance with paracentesis practice showed that nearly all of the nurses under investigation had inadequate practice. This was mostly because nurses felt that since paracentesis was a medical treatment rather than a nursing technique, they had no part in it. Furthermore, there were insufficient instructional resources, standards of care within the units, and paracentesis care training programs for newly hired staff nurses. This discovery bears resemblance to a study titled "Effect of Educational Nursing Guidelines about Paracentesis Procedure Care on Nurses' Performance," **Fahmy (2020)** found that there was a significant lack of practice among nurses prior to the implementation of the guidelines, including before, during, and after the procedure. Notably, 82.5 percent of the nurses had low-performance levels prior to guidelines education.

Nurses attitude toward management of patients with advanced stage liver cirrhosis:

Results showed that fewer than two thirds of the nurses surveyed had a negative attitude toward managing patients with advanced liver cirrhosis, which is indicative of the overall attitude of nurses. This finding could be due to many factors, including a lack of understanding of advanced liver cirrhosis, an absence of critical care experience, an absence of in-service training and educational courses regarding evidence-based guidelines, and an ignorance of the significance of providing emotional support to patients in this stage of the disease.

This finding agreed with **Perri (2018)** conducted a study on" A survey of knowledge and attitudes of nurses about pain management in end-stage liver disease in a geriatric palliative care unit" and found Nurses exhibit a deficiency in knowledge and hold a negative attitude towards pain management in patients with end-stage liver disease. It is recommended to implement focused educational programs and quality improvement initiatives in pain management for patients with end-stage liver disease (ESLD) in order to improve the knowledge and attitudes of nurses working in the palliative care unit (PCU).

These findings are in the same line with **Efil (2023).** who conducted a study entitled " Relationship Between Intensive Care Nurses' Attitudes and Behaviors Toward End-of-Life Care and Ethical Attitudes." stated that a positive correlation between nurses' attitudes and behaviors toward end-of-life care and their ethical attitudes in the care process.

On the opposite side **Aktar (2023)** who mentioned in a study entitled Attitude of nurses caring critically ill patients admitted in the ICUs of AIIMS Hospital "reported that majority (81.7%) of the nurses were having favorable attitude, whereas none of the nurses were having unfavorable attitude toward caring the critically ill patients. The mean score was 144.35 ± 11.05 SD.

Relation between nurses' knowledge and their demographic characteristics:

The present study found no statistically significant relationship between nurses' knowledge and their demographic characteristics, including age, gender, years of experience, marital status, training courses, and educational level.

This finding agreed with **Alwesabi (2023)** reported that the association between knowledge and specific training courses was not statistically significant. Age and years of experience did not yield significant correlations with knowledge levels.

This finding disagreed with **Elbqry (2022)** who mentioned in study entitled "Evaluation of A Nurse-led Training Program on Administering a Recurrent Large-Volume Cleansing Enema in Hepatic Encephalopathic Patients" reported that there was a statistically significant relationship between the nurses total level of knowledge and age at the pre and follow-up phases (p=0.02 and p 0.000, respectively). Likewise, there was a statistically significant relationship between the total level of knowledge and the demographic data (educational degree, years of experience).

This result was in conflict with that of **Fahmy (2020),** who noted in a study titled "Effect of educational nursing guideline about paracentesis procedure care on nurses' performance" that there was a significant relationship between the ages of nurses and their knowledge scores at the third follow-up test, with the older categories of nurses having a higher level of satisfactory knowledge than the younger ones with (P. value 0.022).

This result was in contrast to that of **Anwar (2023),** who carried out a study titled "Effect of Instructional Guidelines Based on Short Message Service on Nursing Performance Regarding Complications after Paracentesis for Cirrhotic Patients" and found that nurses' age and demographic characteristics were highly correlated with their level of knowledge of pre- and post-instructional guidelines.

Relation between nurses' practice and their demographic characteristics:

The present study found no statistically significant relationship between nurses' practice and most demographic characteristics, including age, gender, years of experience, marital status, educational level, and training courses.

This finding agreed with **Jaish (2023)** reported that no significant correlation was found between nurses' practice scores and their socio-demographic characteristics.

This finding disagreed with **Anwar (2023)** conducted a study on" assessment of nurses' knowledge and practice regarding care of paracentesis patients." there was a highly significant correlation between demographic characteristics and nurses' level of knowledge and practice in pre- and post-instructional guidelines mainly in the items of gender, and educational qualification .

This finding disagreed with **Elsayed (2023)**, who conducted a study on the" Effect of Instructional Guidelines Based on Short Message Service on Nursing Performance Regarding Complications after Paracentesis for Cirrhotic Patients "and reported that there was a highly statistically significant relation between age, marital status, years of experience and nurses' knowledge and practice.

Regarding the relation between nurses' attitudes and their demographic characteristics:

the finding of the present study revealed that there was no statistically significant relation between nurses' attitudes and all items of demographic characteristics.

This finding was in the same line as **Aktar (2023)**, depicting that there was no statistically significant association of the attitude score with the selected personal variable at $P < 0.05$. revealed that there is no statistically significant relationship between age and attitude; it was indicated that there was no association between any in-service training done their attitude.

This finding disagreement with **Mahmoud et al. (2022)**, who conducted a study on" A Survey Study: Nurses' Knowledge and Attitudes regarding Hepatitis C Virus" and found There was no statistically

significant difference between demographic data and nurses' attitudes regarding patients with hepatitis C virus p. value (1.033*).

Regarding the correlation between total level knowledge and practice items among the studied nurses:

there was a significant correlation between the total level of the nurses' knowledge mean scores and nurses' scale for weight measurement, enema administration, assisting paracentesis, CVP measurement

This finding was in line with **Mohammed (2021)**, who conducted a study on the" Effect of Intervention Program on Critical Nursing Management Regarding Hepatic Encephalopathy" and depicted that there was a statistically significant positive correlation between nurses' knowledge scores and their practice scores.

These results are consistent with the findings of **Elbqry et al. (2022),** who observed a statistically significant correlation ($p \leq 0.05$) between the overall level of nurses' knowledge and their overall level of practice in administering a recurrent large-volume cleansing enema during the study phases.

Regarding the correlation between the total level of practice and attitude items among the studied nurses:

there was a significant correlation between the total level of the nurses' practice and attitude

This result was Likewise, **Yu (2023)** found that ICU nurses' attitudes and practices regarding hypoactive delirium A countrywide cross-sectional study" and shows that, accordingly, there was a good mindset and acceptable behavior.

In contrast to **Taşkıran's (2023)** study on "The relationship between the ethical attitudes and holistic competence levels of intensive care nurses," it was discovered that there exists a weak and negative correlation between the Holistic Nursing Competence Scale and the total mean score of the Ethical Attitude Scale for Nursing Care among nurses.

Regarding the correlation between the total level of knowledge and attitude items among the studied nurses:

A strong correlation existed between the overall level of knowledge and attitude of the nurse.

These results are consistent with the findings of **Yoo (2020),** who conducted a study on the "Knowledge and Attitude of Nurses towards Post-Liver Transplantation Diabetes Mellitus." Yoo reported a statistically significant positive correlation ($r=0.21$, $P=0.027$) between knowledge of PLTDM and attitude among nurses.

This finding corroborated the study conducted by **Kim (2020)** titled "Knowledge, attitude, confidence, and Educational Needs of Palliative Care in Nurses Caring for Non-cancer Patients." Kim reported a significant correlation between knowledge and attitude ($r = .29$, $p = .003$).

CONCLUSION

Based on the findings of the current study, it was concluded that:

Many of the nurses surveyed lacked sufficient knowledge to care for patients with advanced liver cirrhosis effectively. In addition, none of the nurses surveyed demonstrated sufficient competence in caring for patients with advanced liver cirrhosis, and just over 60% held a negative view of this treatment. All of the demographic variables (gender, age, years of experience, marital status, training courses, and educational level) were found to have no statistically significant relationship with nurses' knowledge in this study. Researchers discovered a link between nurses' attitudes, knowledge, and practice when caring for patients with advanced liver cirrhosis.

RECOMMENDATIONS

recommendations of the current study, the following were suggested relating to nursing education, nursing practice, and further nursing research:

Recommendations related to intensive care nursing education:

- Provide periodic in-service educational programs regarding management for patients with advanced-stage liver cirrhosis.
- Create a concise booklet on managing advanced stage liver cirrhosis patients, covering essential knowledge and practices.

Recommendations related to intensive care nursing practices:

Direct and constant oversight and on-site instruction are necessary to ensure that the nurse delivers high-quality care.

Recommendations related to further nursing research :

Replicating the study on a large sample in different hospitals will help generalize the results.

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