

Nurses' Knowledge Regarding Management of Liver Cirrhosis at Selected Hospital in Dhaka City

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Abstract

Background: Liver cirrhosis is a chronic and life-threatening liver condition that requires specialized nursing care. Nurses' play vital role in managing patients with liver cirrhosis through assessment, monitoring, patient education and preventive measures. **Aim:** The aim of this study was to assess the level of nurses' knowledge regarding management of liver cirrhosis at National Gastro-Liver Institute and Hospital (NGIH), Dhaka. **Methods:** A descriptive cross-sectional study was conducted among 50 nurses using a self-administered structured questionnaire from National Gastro-Liver Institute and Hospital (NGIH), Dhaka. Participants were selected using convenient sampling technique. The study was done between June 2025 to December 2025. The tool consisted of 20 knowledge-based questions covering four dimensions: concept, management, prevention, and complications. Descriptive statistics such as frequency, percentage, and mean scores were used to analyze data. **Results:** The mean age of participants was 30.3 years with the range of 26-30 years, and 98% were female. A majority (70%) had diploma in nursing, and none had received specialized training on liver cirrhosis. The overall mean score was 73.9%, indicating good level of knowledge. Specifically, nurses demonstrated good knowledge in the concept 78.3% (good), management 72.6% (good), prevention 77.3% (good) and Complications 83% (Very Good) of liver cirrhosis. However, knowledge gaps were noted in area of preventive measures such as salt restriction, paracentesis, ascites, and early symptom recognition. Additionally, 18% of nurses had poor knowledge overall. **Conclusion and Recommendation:** The study revealed that respondents of this current study had overall good knowledge level. On the basis of the findings, this study recommended that special training on liver disease including opportunity to attend workshop, seminar and awareness program

Keywords: Nurses', knowledge, Management, Liver Cirrhosis, Bangladesh

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I. Introduction

Background of the study

Liver Cirrhosis is a diffuse process of fibrosis and nodule formation (Ivanova. I. 2016). It's often referred as end stage or late stage of liver damage. It started to form degenerative disease when liver cells damaged. Nodules are fibrosis and collagen there make liver cirrhotic (Gupta. Long and Bai., 2019). Cirrhosis is the common and second cause of death amongst gastrointestinal disease. It is also the twelfth-leading cause of death worldwide (Fabrellas et al., 2020).

It carries the risk of life-threatening complications, partly due to a number of co-morbidities (Sabola et al., 2022). The Global Burden of Liver Disease in the world reported that, liver cirrhosis accounts for approximately 1 million deaths per year worldwide. Cirrhosis is within the top 20 causes of disability-adjusted life years and years of life lost, accounting for 1.6% and 2.1% of the worldwide burden (Asrani et al., 2019).

In 2019, Global Epidemiology of Cirrhosis showed the frequency of incident cases, deaths, and comparison between males (502,944) and females (14,408,336) respectively. From 2010 to 2019, the frequency of cirrhosis deaths increased by 9% in males and 12% in females. The global burden of cirrhosis is higher in males. However, incidence and death ASRs (Automated Storage and Retrieval systems) from NASH (Non-Alcoholic Steatohepatitis) cirrhosis in females are comparable to that of males (Tan et al., 2023).

The prevalence of Liver Cirrhosis varies across different regions. In Europe, the prevalence of liver Cirrhosis due to alcohol consumption ranges from 16% to 78%, while in Americas it ranges from 17% to 52%.

For Oceania, the prevalence of cirrhosis due to alcohol consumption is between 15% to 37% (Liu YB & Chen Mk, 2022). Cirrhosis affects an estimated 630,000 people in the US. Every year, cirrhosis costs the US economy between \$12 billion and \$13 billion in medical costs. (Smith et al., 2019).

The high-income Asia-Pacific area had the maximum age-standardized prevalence of together compensated [2455.0 (2344.9-2575.8) per 100000] and decompensated [267.4 (259.8-275.1) per 100000] cirrhosis, in 1917. Cause based statistics on the prevalence of cirrhosis are also now available. The prevalence of Liver Cirrhosis in Asia was 8-61%. In China, 68% of patients with cirrhosis had HBV (Hepatitis 'B' Virus) infection, whereas only 7% recounted HCV (Hepatitis 'C' Virus) infection (Liu, YB & Chen MK, 2022). A study conducted in Pakistan from 26th May, 2023 to 26th November, 2023 stated that among 115 Liver Cirrhosis patients 63.5% were aged between 40-60 years. They mostly lived in Urban areas. Females suffer more than males. Peoples who have secondary educational status affected by cirrhosis more than others (Gazder et al., 2024). The prevalence of liver cirrhosis in Nepal from 2020 to 2024 is approximately 39.9 per 100,000 population (WHO, 2019).

In Bangladesh, liver Cirrhosis is a significant health issue. The prevalence of Liver Cirrhosis varies across the country, with the highest incidence in the Sylhet division (76.5%) and the lowest in the Barisal (30%) for those who are affected by Hepatitis B virus. Hepatitis B Virus (HBV) is the leading cause of Liver Cirrhosis in Bangladesh, accounting for 41% of cases while hepatitis 'C' Virus (HCV) accounts for 5% cases and approximately 20.5% of cases are likely to be associated with fatty liver disease (Rahman et al., 2014).

Liver cirrhosis is a major health problem. Patients who are suffering from Liver cirrhosis had poor quality of life and prognosis. Nurses who take care liver cirrhosis patients can ensure safe and feasible services and help minimize complications. Nursing care direct focus on patients complications, educational support, counseling and guidance (Connell et al., 2023). Thus, this study was conducted to find out the level of nurses' knowledge regarding management of Liver Cirrhosis at National Gastro-Liver Institute and hospital in Dhaka city, Bangladesh.

Justification

Cirrhosis is the last stage of chronic liver disease. It is marked by the liver parenchyma being replaced permanently with fibrotic tissue and a regeneration module (Gulcicegi et al., 2023). Liver cirrhosis is the most significant risk factor for the development of Hepatocellular Carcinoma (HCC). Furthermore, it is currently unknown how much cirrhosis has spread among different liver diseases (Tarao et al., 2019). Every year, cirrhosis and chronic liver disease cause over 35,000 deaths in the United States. According to the Global Burden of Disease Survey, liver cirrhosis was responsible for 2% of all deaths and 1.2% of disability-adjusted life years worldwide in 2010. Moreover, liver cirrhosis is causing an increase in the death rate in West Europe, America, and other nations (Abbas et al., 2017).

Rahman et al. (2020) stated that liver cirrhosis is a serious and growing problem for Bangladesh's tertiary healthcare system. In Bangladesh, liver cirrhosis is one of the most common causes of hospitalization accounts for approximately 8-12% death in tertiary health care facilities. In Bangladesh, hepatitis 'B' and 'C' are prevalent; an estimated 5.4% of people have a chronic hepatitis 'B' infection and 0.84% have a chronic hepatitis 'C' infection. Both of these infections are major causes of liver cirrhosis (Akbar et al., 2018)

In this regard, nowadays one of the most challenging problems facing nurses is caring for patients with liver cirrhosis, it's includes early symptoms recognition, medication administration, dietary counseling, patient education, monitoring for complications such as hepatic encephalopathy, variceal bleeding and hepatocellular carcinoma and advanced critical care management. Begum and Akter (2019) conducted the study in Bangladesh, this study shows that nurses' confidence and competence in managing advance stage of liver cirrhosis are significantly lacking, that can negatively impact the quality of care provide. Furthermore, National Gastro-liver Institute and Hospital is a newly established specialized gastro-liver hospital in the Asian sub-continent. There most of the nurses are newly recruited, inexperienced and absence of specialized training. However, compared to other specialties, nursing education in liver disease has been limited, and nurses have not been adequately joined into multidisciplinary teams for the liver cirrhosis patients management (Fabrellas et al, 2020).

For this reason, researchers was conducted this study.

Research Question

What is the level of Nurses' knowledge regarding management of liver cirrhosis at National Gastro-Liver Institute and Hospital in Dhaka?

Aim

The aim of this study is to assess the level of nurses' knowledge regarding management of liver cirrhosis at National Gastro-Liver Institute and Hospital in Dhaka.

Objectives

1. To assess the level of nurses' knowledge regarding concept of Liver Cirrhosis.
2. To determine the level of nurses' knowledge regarding management of Liver Cirrhosis
3. To find out the level of nurses' knowledge regarding preventive measures of Liver Cirrhosis.
4. To identify the level of nurses' knowledge regarding complications of Liver Cirrhosis.
5. To state the socio-demographic characteristics of the respondents.

Research Variables

A. Socio-Demographic variables

- Age
- Gender/ Sex
- Religion
- Marital status
- Educational qualifications:
 - Professional
- Total length of government services
- Special training on of liver disease
- Duration of Service period in the current place

B. Knowledge related variables

- Concept of Liver Cirrhosis
 - Meaning
 - Causes
 - Sign-symptoms
 - Diagnostic procedures
- Management of liver cirrhosis
 - Medical management
 - Surgical management
 - Nursing management
 - Palliative care
- Preventive measures of Liver Cirrhosis
- Complications of Liver Cirrhosis

Operational Definition

In this study nurses' refer to respondents who have licensed as registered nurse from BNMC and directly providing nursing care at National Gastro-Liver Institute and Hospital, in Dhaka, Bangladesh.

Knowledge (regarding Liver Cirrhosis):

Knowledge means knowing about something or having a basic understanding or awareness of a topic. (Khanam & Khan., 2016).

In this study knowledge refers to nurses' understanding regarding concept (meaning, causes, sign-symptoms, diagnostic procedure), management, preventive measures, and complications of Liver Cirrhosis.

II. Literature Review

The literature review is an important chapter in a research project. A chapter take actions with the required data to help of the study for moral approachable research, and the direction 'on which the questionnaire will be developed. This review involve a comprehensive search of peer-reviewed articles, theses and reported from databases that can be utilized to provide a better understanding of liver cirrhosis from the following outlines:

1. Definition of Liver Cirrhosis
2. Causative factors of Liver Cirrhosis
3. Clinical features of Liver Cirrhosis
4. Classification of Liver Cirrhosis
5. Stages of Liver Cirrhosis
6. Pathophysiology of Liver Cirrhosis
7. Preventive measures of Liver Cirrhosis
8. Diagnostic procedures of Liver Cirrhosis
9. Complications of Liver Cirrhosis
10. Management of Liver Cirrhosis
11. Incidence & prevalence of Liver Cirrhosis
12. Nurses' Knowledge Regarding management of Liver Cirrhosis

1. Definition of Liver Cirrhosis:

Liver Cirrhosis is defined as a diffuse process characterized by formation of regenerative nodules with fibrosis and conversion of normal liver architecture into structurally abnormal nodule (Yousuf, 2010).

2. Causative factors of Liver Cirrhosis:

A single patient may develop cirrhosis more quickly if many causal factors are present. There are many causes of liver cirrhosis; viral or infectious such as hepatitis 'B' virus or hepatitis 'C' virus, metabolic such as alcohol, toxins, medications and non-alcoholic steatohepatitis, cholestatic such as primary biliary cirrhosis or secondary biliary cirrhosis, vascular such as right heart failure, sarcoidosis and cystic fibrosis (Suva, 2014).

3. Clinical features of Liver Cirrhosis:

In early stage of cirrhosis there are usually no symptoms. Progressive condition it causes signs & symptoms like hepatomegaly, jaundice, ascites, loss of appetite, tiredness, nausea, weight loss, abdominal pain, spider like blood vessels, severe itching and palmar erythema (Gine's, et al., 2021).

4. Classification of Liver Cirrhosis:

Liver Cirrhosis can be classified according to etiology that is involved;

(a) Alcoholic cirrhosis

- Most common cause of cirrhosis
- Caused by continuous and prolonged alcohol abuse

(b) Post-necrotic cirrhosis

- Occurs after a massive event causes liver cell death
- Viral hepatitis

(c) Biliary cirrhosis

- Results from any disease that leads to Biliary obstruction

(d) Cardiac cirrhosis

- Caused by congestive heart failure leading to poor circulation

(e) Cirrhosis due to genetic disorder (f) Cirrhosis due to malnutrition (Search Wiki Doc, 2017)

5. Stages of Liver Cirrhosis:

Liver cirrhosis usually develops in four stages:

Stage I: Steatosis (Fatty Liver): Characterized by fat accumulation in liver cells, it can be frequently asymptomatic but curable with lifestyle modification.

Stage II: Fibrosis of the liver due to inflammation: Chronic inflammation leads to develop scar tissue, disrupting normal architecture of liver.

Stage III: Cirrhosis: Significant liver dysfunction arises from the replacement of health tissue by extensive scarring.

Stage IV: Liver Failure or advance liver disease or hepatic failure: When the liver fails at the final stage of the disease, it means that the liver is no longer working. This will require immediate medical attention, such as a liver transplant, in order to prevent death. (Medicine Net, 2024)

6. Pathophysiology of Liver Cirrhosis: Pathophysiological, hepatic stellate cells (HSCs) are activated by chronic liver injury and develop into myofibroblasts, which produce an excess of extracellular matrix components and cause fibrosis. Portal hypertension and other complications result from this disturbance of normal blood flow (Gine's, 2021).

7. Preventive measures of Liver Cirrhosis: In order to reduce the risk of liver cirrhosis, nurses need to be knowledgeable about evidence-based preventive measures:

- Lifestyle modifications.
- Vaccination & infection control
- Early screening and diagnosis.
- Patient education and
- Counseling.

8. Diagnostic Procedure of Liver Cirrhosis:

Blood Tests (liver enzyme level, bilirubin, albumin, and clotting factors.) These tests help determine how well the liver is functioning and whether there is ongoing inflammation or damage. Imaging studies (ultrasound, CT scans, or MRI) can reveal changes in liver size and texture, the presence of nodules, and signs of portal hypertension or ascites. A special type of ultrasound known as elastography can measure liver stiffness, which correlates with the extent of fibrosis. Liver biopsy may be performed to confirm the diagnosis and determine the stage of fibrosis. A small sample of liver tissue is taken and examined under a microscope to assess the extent of damage (Exon publications, 2025)

9. Complications of Liver Cirrhosis:

Complications of cirrhosis are extensive and can include portal hypertension, ascites, hepatic encephalopathy, hepatorenal syndrome, hepatopulmonary syndrome, and hepatocellular carcinoma (Premkumar & Anand, 2022).

10. Management of Liver Cirrhosis:

General Principles-

- Management of liver cirrhosis focuses on treating the underlying cause, preventing disease progression, managing symptoms and complications, and improving quality of life
- Common causes include alcohol use disorder, nonalcoholic fatty liver disease, hepatitis 'B' and 'C'.

Prevention of Variceal Bleeding

- Nonselective β -beta-blockers (carvedilol or propranolol) are first-line therapies to prevent variceal bleeding and reduce the risk of decompensation or death in patients with portal hypertension

Ascites Management

- Combination therapy with aldosterone antagonists and loop diuretics is more effective for resolving ascites compared to sequential initiation, with lower rates of hyperkalemia
- Sodium-restricted diet and diuretics are standard; refractory cases may require procedures such as paracentesis or shunting

Hepatic Encephalopathy

- Lactulose is the mainstay of therapy, shown to reduce mortality and the risk of recurrent episodes Liver transplantation is considered for eligible patients with advanced disease or complications unresponsive to medical therapy

Hepatorenal Syndrome

- Terlipressin can improve the reversal rate of hepatorenal syndrome and is used in appropriate cases

Symptom Management

- Hydroxyzine may improve sleep dysfunction.
- Pickle brine and taurine can help reduce muscle cramps.
- Liver transplantation is considered for eligible patients with advanced disease or complications unresponsive to medical therapy (Tapper & Parikh, 2023)

11. Incidence and Prevalence of Liver Cirrhosis:

A study in 2021 indicate that at over 1.3 million people with cirrhosis from 86 countries. It found that 42% of the cases were caused by hepatitis 'B' virus (HBV) and 21% by hepatitis 'C' virus (HCV). HBV-related cirrhosis was more common in Africa and Asia, especially in China, where 68% of cases were due to HBV (Hepatitis 'B' virus). HCV (Hepatitis 'C' Virus) was more common in Europe and the Americas. In 2017, cirrhosis was most common in Europe, the Americas, and Oceania, and least common in Asia. The estimated prevalence of Hepatitis B in Bangladesh is 5.5%. Studies conducted in our Bangladesh have shown that the prevalence of risky behaviors is 7.96% among workers, 6.5% among thalassemic patients, 3.84% among tea gardeners, and 7-7.5% among injectable drug users. Liver cirrhosis affects more men than women, with a 4:1 male to female ratio. The age group most impacted is 37–48 years old (Mamoon et al., 2020).

12. Nurses' Knowledge Regarding management of Liver Cirrhosis-

A descriptive cross-sectional study was conducted by Abu El-Ata, Ibrahim and Mahmoud., (2021) at Ismailia university hospital, Ismailia general hospital and Port-Said general hospitals. The aim of this study is to assess nurses' knowledge regarding nursing care of patients with liver cirrhosis. Nurses' lack of essential knowledge required to provide effective care for patients with liver cirrhosis. The study involved 150 nurses and utilized questionnaires to gather data. The study findings revealed that 78.65% of nurses had unsatisfactory knowledge in caring for liver cirrhosis patients. While common symptoms like feeling tired, weakness, poor appetite, weight loss, nausea and vomiting are knew some respondents. But the majority of the respondents were not aware about abdomen distention, ascites, abdomen pain, muscle loss, itching and major cause of morbidity & mortality rate. The researchers concluded this study with there were obvious needs for conducted an educational and training programs to improve nurses' knowledge on nursing care of patients with liver cirrhosis among infected patients. A descriptive exploratory study was conducted by Ahmmed, Yousef and Mokhtar., (2024) at Beni-Suef University Hospital in Egypt with convenient sample 50 nurses to find out the level of nurses' knowledge regarding care of patients with advanced stage liver cirrhosis using a nurses' knowledge questionnaire. The study findings showed that 72% of respondents had an unsatisfactory level of knowledge regarding how to manage patients with advanced-stage liver cirrhosis. At the end of the study, the researchers found that less than three-quarters of studied nurses had an unsatisfactory level of knowledge regarding advanced-stage liver cirrhosis management. For this reason, studies suggested creating educational programs and in-service training to increase nurses' knowledge regarding advanced stage liver cirrhosis.

Mohamed et al. (2024) conducted a descriptive study with 60 nurses at the Liver and Gastroenterology Hospital in Elminia to assess their knowledge in caring for patients with liver cirrhosis undergoing paracentesis. In this study data were collected using self-administered questionnaire and an observation checklist. The study results showed that many nurses had poor knowledge about liver function tests (41.7%), liver cirrhosis (53.3%), ascites

(26.7%), and paracentesis (23.3%). Only a small percentage demonstrated competent practices before (36.7%), during (31.7%), and after (13.3%) the procedure. The study revealed that the overall knowledge regarding the care of patients with liver cirrhosis having paracentesis was highly significant. As a result, the researchers believe that nurses' knowledge and skills related to paracentesis care should be regularly assessed through in-service training programs.

A descriptive study was conducted by Gimenes (2016) at a Brazilian University Hospital in São Paulo state to develop a nursing assessment tool for adult hospitalized patients with liver cirrhosis. The study followed three stages: a literature review based on Wanda Horta's Conceptual Model, expert panel development of the tool, and pilot testing with patients. The final tool was a questionnaire that included open- and closed-ended questions.

Fabrellas et al. (2020) conducted a study in Spain focusing on nurses and their role in caring for patients with cirrhosis. This study aimed to improve how the patients manage with liver cirrhosis and to enhance the quality of life. The study highlighted the support of ELPA (European Liver Patients' Association), which strongly encouraged greater involvement of nurses in cirrhosis care. The result showed that nurses with specialised knowledge of liver disease should be part of the health care teams treating both inpatient and outpatient with liver cirrhosis. The study concluded that nurses play an essential role in managing and preventing disease complications, life, bridging the gap between primary care and hospital care, patient education, and clinicians and families.

Ferya (2021) conducted a systematic review and meta-analysis in Turkey to assess treatment and prevention methods used in the management of ascites in liver cirrhosis patients. In this study the researchers analyzed 11 randomized control trials out of 2,447 articles were included, all focusing on treatment, not prevention. About 50% of patients developed ascites within 10 years, affecting their daily life and increasing healthcare costs. Treatments like diuretics, mannitol, and paracentesis were effective in reducing fluid buildup, weight, and abdominal size. However, high costs and health limitations prevented many from receiving treatment.

III. Research Methodology

This chapter covers the following components: Study design, study period, study setting, study population, sample size, sampling technique, research instrument, validity and reliability of the instrument, ethical consideration, data collection method, data management, data analysis, interpretation, data presentation and grading criteria.

Study Design

A descriptive cross-sectional study was conducted to assess the level of nurses' knowledge regarding the management of liver cirrhosis at National Gastro-liver Institute & Hospital (NGIH).

Study Period

The study was conducted from June 2025 to December 2025.

Study Setting-National Gastro-Liver Institute and Hospital (NGIH) is a specialized government hospital and institute that was selected as the study place for conducting this research. It is the specialized gastro liver hospital in Bangladesh that officially opened in 2018, where all types of gastro and hepatology patients come from all over the country for better treatment. It has bed capacity 250 and approximately 400 senior staff nurses who are committed to providing comprehensive care including inpatient and outpatient services through dedication and co-operation.

Study Population-The study populations were about 200 nurses who have been working in this area including OT (Operation Theater), Post-operative ward, Medical & Surgical ward, OPD (Outpatient Department) and Emergency at NGIH. All nurses (Male & Female) who met inclusion criteria.

Sample Size

For conducting this study, the sample size was 50 (Fifty) according to 25% proportion rate nurses from the total number of population (N = 200) (Polite & Back, 2008)

Sampling Technique

The researchers were used non probability convenient sampling technique for selected the sample of this study who were met the inclusion criteria.

Inclusion Criteria

Inclusion criteria for selecting study respondents include:

- Nurses who were working in the selected ward at NGIH.
- Nurses who were willing to participate voluntarily in this study.
- Nurses who were available in duty during data collection period.

Exclusion Criteria

- Nurses who didn't meet the inclusion criteria

Research Instruments/Tools

A structured questionnaire was developed by the researchers with consultation of respected guide teacher and subject teacher on the basis of research objectives and variables after literature reviewing.

The questionnaire consisted of two parts:

Part 1: Socio-Demographic Questionnaire - this part consisted of 08 items including age (in years, gender/ sex, religion, marital status, educational qualification (professional), total length of government services, special training on the management of liver diseases, duration of service period in the current place.

Part 2: Knowledge Related Questionnaire Regarding Liver Cirrhosis distributed of four (4) dimensions; I = concept of Liver Cirrhosis which contains 6 questions, II = management of Liver Cirrhosis which contains 09 questions, III = preventive measures of Liver Cirrhosis which contains 03 questions and IV = complications of Liver Cirrhosis which include 2 questions. Total knowledge related questions were 20. Each question consists of 04 options with one correct answer. Each correct answer carried out 5 marks and the total score were considered as 100% during analysis.

Validity

Validity of the tools were assessed by three experts (guide teacher & subject teacher, College of Nursing Mohakhali) and related field expert on hepatology department of Dhaka medical college Hospital (DMCH). Error and gaps were checked. Then it was accepted for data collection.

Reliability

The reliability of the questionnaire was determined by pretesting on the same group of population. A pretest was conducted among 10 nurses who were working in Hepatology Department at Dhaka Medical College Hospital (DMCH) and pre-test score was 74.4%. After reviewing and pretesting of the questionnaire the necessary corrections and error were done and finalize the questionnaire for data collection.

Ethical Consideration

Informed consent: A written permission was taken from principal, College of Nursing Mohakhali, Dhaka-1212, the respected authority (Director) of National Gastro-liver Institute and Hospital (NGIH), Dhaka.

Voluntary participation: Objectives of the study were explained to the respondents to participate voluntarily then written consent was taken from the respondents by the researchers.

Confidentiality, anonymity, and privacy: Participants were assured about human rights of them and confidentiality, anonymity and privacy were strictly maintained. They will be assured that accumulated data was utilized only for academic purpose.

No harm: Participants were assured that there is no any harm to participate in this study.

Right to withdrawn: The participants were assured that the participant could be withdrawn from the study at any time without any hesitation.

Data Collection Methods

A structured type of self-administered questionnaire was prepared in English for data collection. Each respondent was given verbal consent to the researchers when they agreed to participate in this study. The researchers used self-administered questionnaire to conduct and it was taken 15 to 20 minutes per respondent.

Data Management

After collecting data, data were managed by organizing, categorizing, coding, summarizing the data on master chart and compilation of tally and array by use of computer based on study objectives to facilitate analysis processing.

Data Analysis and Interpretation

A descriptive statistical approach was used to analyze the data. The outcome was displayed as a table, pie chart, and bar chart. The result was manually interpreted using descriptive statistics such as frequency, percentage, mean.

Data Presentation

The results were presented by using tables with interpretation

Grading Criteria

The researchers developed self-administered questions with equal scoring for each question in order to assess the nurses' knowledge. Those who properly answered every question receive a perfect score of 100 percent.

SL. No	Knowledge level (Grade)	Grading criteria
01.	Excellent	90-100%
02.	Very good	80 - 89%
03.	Good	70-79%
04.	Average	60 - 69%
05.	Poor	<60%

Excellent Knowledge: Respondents who scored between 90-100% on their answers were considered as having excellent knowledge.

Very Good Knowledge: Those who scored between 80-89% on their knowledge test were considered having very good knowledge.

Good Knowledge: Respondents with correct answer percentage of 70-79% were considered having good knowledge.

Average Knowledge: Respondents with a correct answer percentage of 60-69% were considered as having average knowledge.

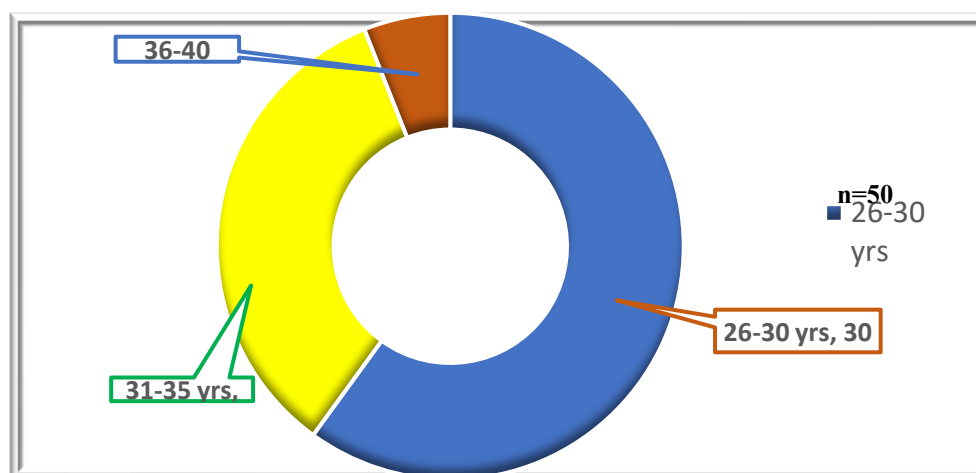
Poor Knowledge: Respondents with less than 60% correct answer were considered as having poor knowledge.

IV. Result

This chapter provides detailed description of the results with appropriate interpretation depending on the nature of the variables and objectives. The result of the demographic characteristics and nurses' knowledge regarding management of liver cirrhosis were presented as frequency, percentages, and mean by using column, pie chart and table.

Part -1: Socio-Demographic information

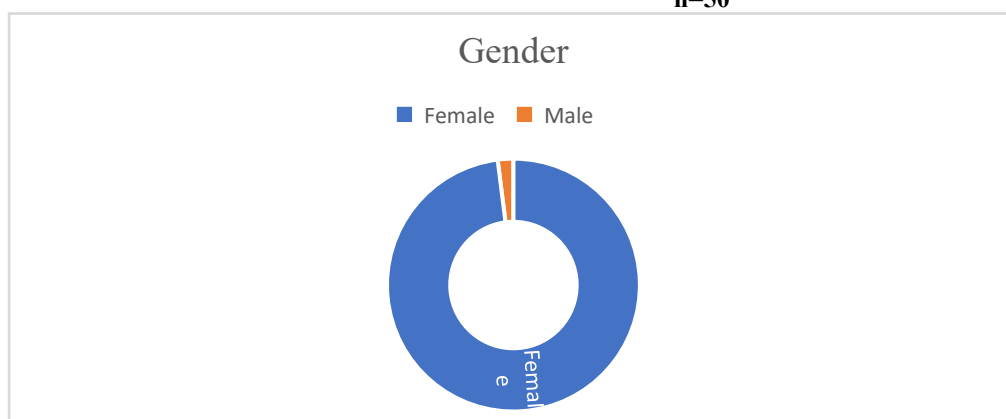
Figure no-01: Distribution of the respondents by



Description: Above figure results shows that only 6% respondents age group were between 36-40 years. 34% respondents age group were between 31-35 year. The majority (60%) of participants were between 26-30 years with the **mean age 30.3** years.

Figure no-02: Distribution of respondents by gender:

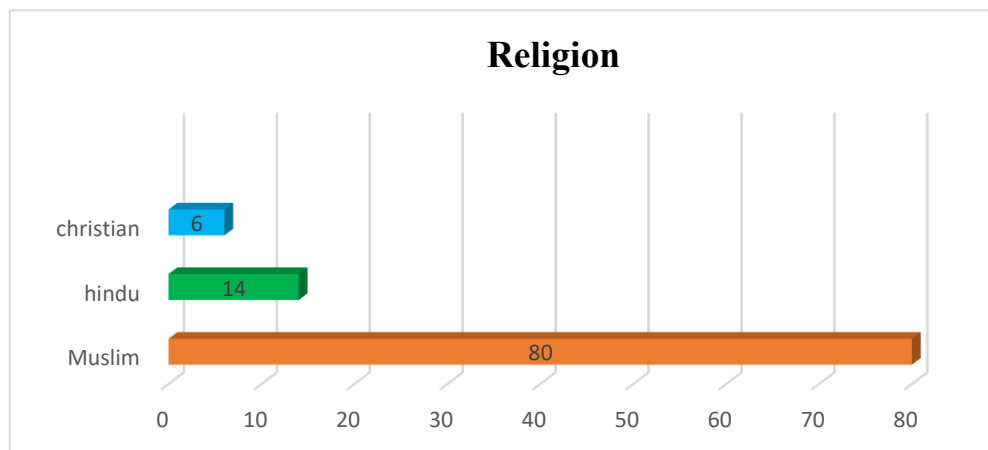
n=50



Description: The pie chart results estimate that the majority respondents were female (98%) and rest of 2% were male.

Figure no-03: Distribution of the respondents by religion

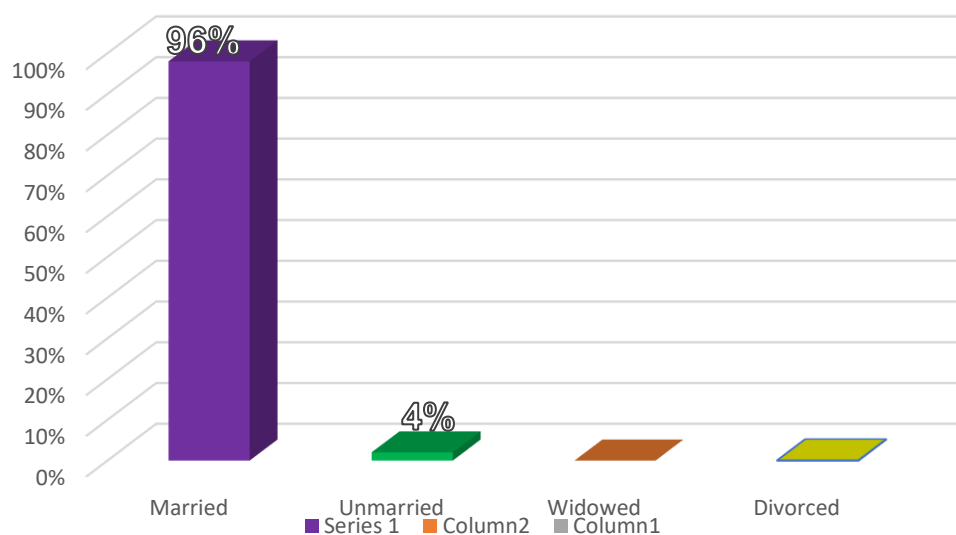
n=50



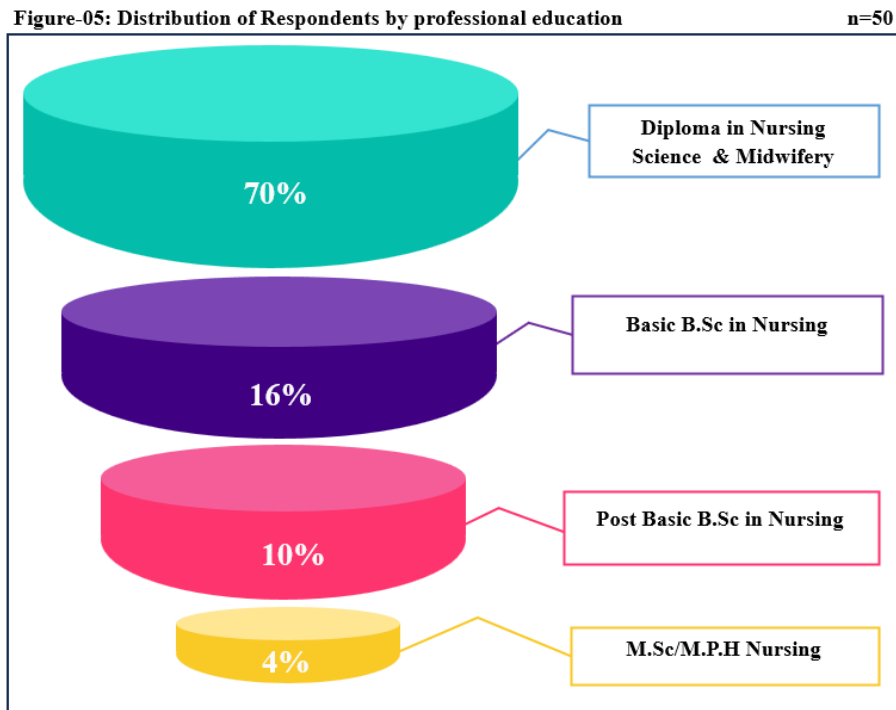
Description: The above figure results shows that majority (80%) respondents were Muslim. 14% respondents were Hindu and only 6% were Christian.

Figure-04: Distribution of Respondents by marital status:

n=50



Description: This figure results shows that the most of (96%) respondent were married and only (4%) were unmarried.



Description: Above pie chart results shows that the majority (70%) of the respondents had Diploma level education. 16% Basic B.Sc., 10% Post Basic B.Sc nursing & only 4% respondents were M.Sc or M.P.H degree holder. It indicate that there was less opportunity having higher education specially Master's level.



Description: The bar chart results indicate that there were present study respondents didn't get any specialized training on liver diseases although they work in a liver specialized hospital.

Table-01: Distribution of Respondents by total length of govt. service and length of working experience in current are -

Variables	Categories	Frequency (f)	Percentages (%)
Length of govt. service	1-3 years	9	18
	4-6 years	36	72
	7-9 Years	5	10
	>9 Years	0	0
Length of working experience in current area	1-3 years	11	22
	4-6 years	38	76
	7-9 years	1	2
	>9years	0	0

Description: Above table results shows that the majority of the respondents (72%) were 4-6 years to length of govt. service, 18% respondents were 1-3 years, 10% respondents were 7-9 years, Majority (76%) of the respondent's length of working experience in current area were 4-6 years and 22% respondents were between 1-3 years.

Part-02: Knowledge based findings

Table-2 : Distribution of nurses knowledge regarding concept of Liver Cirrhosis n=50

Sl no.	Items	Correct Answer		Incorrect Answer	
		(f)	(%)	(f)	(%)
01.	Liver cirrhosis is Scarring of the liver tissue	26	52	24	48
02.	Causes of liver cirrhosis is chronic alcohol abuse	31	62	19	38
03.	Ascites may indicate advance liver cirrhosis	44	88	6	12
04.	Jaundice is a common early symptom of liver cirrhosis	45	90	5	10
05	Liver biopsy is needed to confirm liver cirrhosis	41	82	9	18
06.	The common cause of liver cirrhosis is Chronic Hepatitis B or C infection	48	96	2	4

Description: Above table results shows that the respondents (52%) provide correct answer to the meaning of liver cirrhosis, 62% respondents provide correct answer to the causes of liver cirrhosis, 88% respondents provide correct answer to the indication of advance liver cirrhosis, 90% respondents provide correct answer to common early symptoms of liver cirrhosis, 82% respondents provide correct answer to confirmation diagnosis of liver cirrhosis, 96% respondents provide correct answer to the common causes of liver cirrhosis due to chronic hepatitis B and C infection. On the other hand, respondents (48%) provide incorrect answer to the meaning of liver cirrhosis, 38% respondents provide incorrect answer to the causes of liver cirrhosis, 12% respondents provide incorrect answer to the indication of advance liver cirrhosis, 10% respondents provide incorrect answer to common early symptoms of liver cirrhosis, 18% respondents provide correct answer to confirmation diagnosis of liver cirrhosis, 4% respondents provide incorrect answer to the common causes of liver cirrhosis due to chronic hepatitis B and C infection.

Table 2.1: Level of respondents knowledge regarding concept of Liver Cirrhosis n=50

Variable	Level	Grading criteria	Frequency (f)	Percentage(%)	Obtained Score	Mean score
Concept of liver cirrhosis	Excellent	90-100%	12	24	360	30
	Very good	80-89%	19	38	475	25
	Good	70-79%	-	-	-	-
	Average	60-69%	13	26	260	20
	Poor	<60%	6	12	80	13
Total			50	100	1175	23.5
Mean of total score= 23.5 (78.3%) overall level of nurses' knowledge is good						

Description: Table 2.1 results represents that among all of the respondents 38% had very good knowledge ,26% had average knowledge, 24% had excellent knowledge, 12% had poor knowledge on the concept of liver cirrhosis. The entire mean score of knowledge regarding concept of liver cirrhosis was 23.5%.

Table -03: Distribution of respondents knowledge regarding management of Liver Cirrhosis n=50

Sl no.	Items	Correct Answer		Incorrect answer	
		(f)	(%)	(f)	(%)
07.	Complete alcohol cessation is recommended for patients with alcohol related liver cirrhosis	34	68	16	32
08.	Antibiotics and diuretics are appropriate management of liver cirrhosis	32	64	18	36
09.	Liver Transplant is the surgical management of chronic liver cirrhosis	50	100	00	0
10.	Paracentesis is performed if diuretics are ineffective in management of ascites due to liver cirrhosis	23	46	27	54
11.	Pain management and symptoms relief is an important aspect of palliative care for patients with advanced liver cirrhosis	30	60	20	40
12.	Diuretic is used in patients with liver cirrhosis to reduce fluid retention and manage ascites	34	68	16	32
13.	NSAIDs drug should be avoided in patients with liver cirrhosis	48	96	02	4
14.	NSAIDs contraindicated in cirrhosis as they impair renal function and increase bleeding risk	34	68	16	32
15.	Providing education and support is the nurses role in managing patient with liver cirrhosis	41	82	09	18

Description: Table 3 results shows that 100% respondents provided correct answer about surgical management of liver cirrhosis, 96% respondents provided drug should avoid in liver cirrhosis patients, 82% respondents provided correct answer about nurses role in managing patients with liver cirrhosis, 68% respondents provided correct answer to the first step management of modified lifestyle for alcoholic liver cirrhosis, drug should be used for medical management in liver cirrhosis patient and contraindication of drug for management in liver cirrhosis patients,64% respondents provided correct answer about appropriate drug used for management in liver cirrhosis patients,60% respondents provided correct answer to the palliative care management for liver cirrhosis patients,46% respondents provided correct answer about ascites management procedure.

Table-3.1 Level of respondents knowledge regarding management of liver Cirrhosis n=50

Variable	level	Grading criteria	(f)	(%)	Obtained Score	Mean score
Management of Liver Cirrhosis	Excellent	90-100%	04	8	180	45
	Very good	80-89%	13	26	520	40
	Good	70-79%	09	18	315	35
	Average	60-79%	12	24	360	30
	Poor	<60	12	24	260	21.66
Total			50	100	1635	32.7
Mean of total score= 32.7 (72.6%) good level of knowledge						

Description: Table 3.1 results showed knowledge regarding management of liver cirrhosis. Out of 50 (Fifty) respondents 26% had very good knowledge, 18% had good knowledge, 24% had average knowledge, 24% had poor knowledge and only 8% had excellent knowledge. Total mean score of knowledge regarding management of liver cirrhosis was 32.7

Table-04 :Distribution of the respondents knowledge regarding preventive Measures of liver Cirrhosis

Sl no.	Items	Correct Answer		Incorrect Answer	
		(f)	(%)	(f)	(%)
16.	Hepatitis 'A' and 'B' vaccine are recommended to prevent liver cirrhosis	44	88	6	12
17.	Low sodium and balanced diet rich in fruits, vegetables can help to prevent liver cirrhosis	36	72	14	28
18.	Salt restriction is important in cirrhosis to prevent ascites and swelling	4	8	46	92

Description: Above table findings showed among all respondents 88% provided correct answer about vaccine recommended for liver cirrhosis, 72% respondents provided correct answer about dietary modification needed to prevent liver cirrhosis, 8% respondents provided correct answer about salt restriction to prevent liver cirrhosis. On the other hand 12% provided correct answer about vaccine recommended for liver cirrhosis, 28% respondents provided correct answer about dietary modification needed to prevent liver cirrhosis, 92% respondents provided correct answer about salt restriction to prevent liver cirrhosis.

Table-4.1 Level of respondents knowledge regarding preventive measures of Liver Cirrhosis n=50

Variable	Level	Grading criteria	(f)	(%)	Obtained Score	Mean score
Preventive measures of liver cirrhosis	Excellent	90-100%	22	44	330	15
	Very good	80-89%	-	-	-	-
	Good	70-79%	-	-	-	-
	Average	60-69%	22	44	220	1510
	Poor	<60%	6	12	30	255
Total			50	100	580	11.6
Mean of total score= 11.6 (77.33%) good level of knowledge						

Description: Table 4.1 results represents the knowledge about preventive measures of liver cirrhosis. Out of 50 (Fifty) respondents 44% had excellent knowledge, 44% had average knowledge and 12% had poor knowledge. The total mean score was 11.6 regarding preventive measures of liver cirrhosis.

Table-05 Distribution of the respondents knowledge regarding complications of liver cirrhosis

Sl no.	Items	Correct Answer		Incorrect Answer	
		(f)	(%)	(f)	(%)
19.	The common complication of liver cirrhosis is hepatic encephalopathy	40	80	10	20
20.	HCC (Hepatocellular carcinoma) is the late complication of liver cirrhosis if untreated	37	74	13	26

Description: Table 5 results showed that among 50 (Fifty) respondents 80% provided correct answer about common complication of liver cirrhosis, 74% provided correct answer about late complication of liver cirrhosis. On the other hand 20% provided correct answer about common complication of liver cirrhosis, 26% provided incorrect answer about late complication of liver cirrhosis.

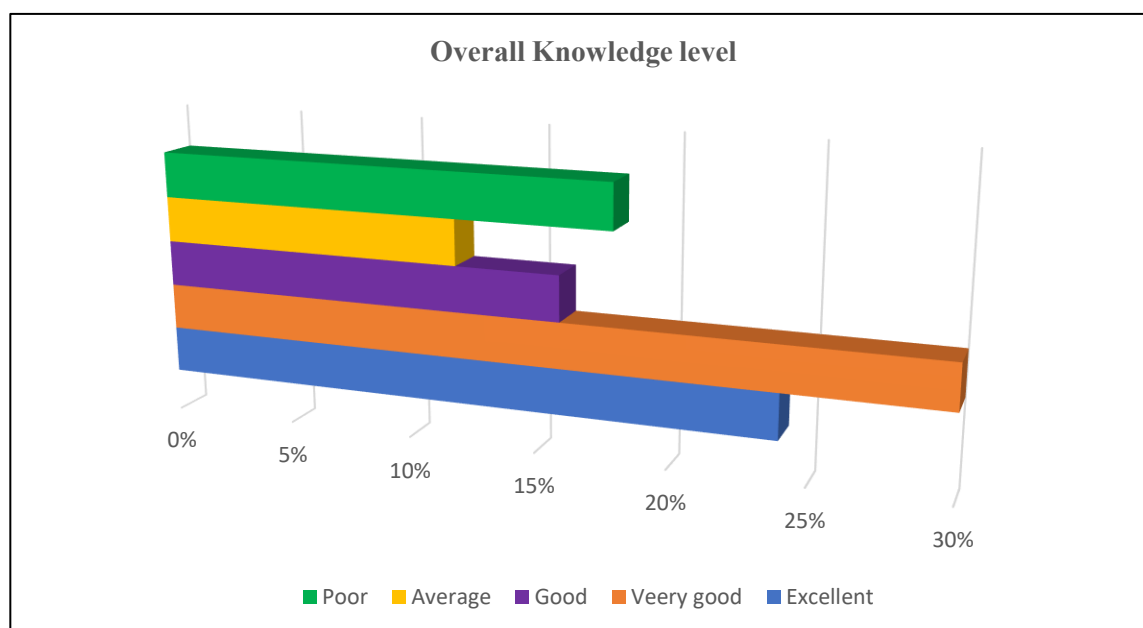
Table-5.1 Level of respondents knowledge regarding complications of Liver Cirrhosis n=50

Variable	Level	Grading criteria	(f)	(%)	Obtained Score	Mean score
Complications of liver cirrhosis	Excellent	90-100%	33	66	330	10
	Very good	80-89%	-	-	-	-
	Good	70-79%	-	-	-	-
	Average	60-69%	-	-	-	-
	Poor	<60%	17	34	85	42.5
Total			50	100	415	8.3
Mean of total score=8.3 (83%) very good level of knowledge						

Description: Table 5.1 results represents complication of liver cirrhosis. Out of 50 (Fifty) respondents 66% had Excellent knowledge and 34% had poor knowledge. The total mean score was 8.3 regarding complication of liver cirrhosis.

Figure-7: Overall level of respondents knowledge regarding liver cirrhosis.

n=50



Total mean score was 73.9 out of 100.

Description: Above results represents the respondents' overall level of knowledge regarding liver cirrhosis. Among all the respondents' 30% had very good level of knowledge, 24% had excellent knowledge, 18% had poor knowledge, 16% had Good knowledge, and only 12% had average level of knowledge regarding liver cirrhosis. Total mean score of liver cirrhosis was =73.9 out of 100 which indicate that respondents had good level of knowledge in current study.

Table 6: Distribution of respondents overall knowledge regarding liver cirrhosis by professional qualifications:

Variable	Categories	(f)	(%)	Mean
Level of professional qualifications	Diploma in Nursing Science & Midwifery	35	70	74.28
	Graduate nurse (Post Basic B.Sc in Nursing/PHN, Basic B.Sc in Nursing, MSN/MPH	15	30	78.33

Table-6 results showed the respondents' overall knowledge regarding liver cirrhosis by education. Those respondents, who had completed graduation degree their total mean score of knowledge 78.33 and only diploma nurses had **total mean score of knowledge 74.28**. So, this table indicates that graduate nurses are more knowledgeable regarding liver cirrhosis than diploma nurses.

V. Discussion

A descriptive cross-sectional study was designed to assess the level of nurses' knowledge regarding management of liver cirrhosis at National Institute of Gastro liver Hospital, Dhaka. In this study total 50 respondents were selected by convenient sampling technique for data collection to find out the knowledge regarding liver cirrhosis management through the self-administered structure questionnaire which was consist of two parts; (I) Socio-demographic information and (II) knowledge-based information.

Socio-demographic information

According to the study's results, more than half of the respondents (60%) were in the age group of 26 to 30 years, with the mean age of 30.3 years among all respondents. Most of the respondents (98%) were female and only (2%) were male. Among all respondents (80%) were Muslim, whereas the 20 % were Hindu & Christian. In professional education more than half of the respondents had diploma in Nursing (70%), Basic B.Sc. in Nursing 16%, Post Basic B.Sc. in Nursing 10% and only (4%) respondents were M.P.H or M.Sc. degree holder. In this study, working experience of the respondents 76% in current area were 4 to 6 years and present study respondents (50) had no special training on liver diseases.

Abo El-Ata et al. (2021) was conducted on nurses 'knowledge regarding nursing care of patients with liver cirrhosis' showed that 47.5% of the participating nurses were between 20 and under 30 years of age, while only 1.25% were in the 50 to 60-year age group. The majority of the nurses (90%) were female. Additionally, 58.7% of the nurses held a secondary school diploma in nursing. The study also reported that 26.25% of the nurses had between 1 and less than 5 years of experience, and 90.7% had not attended any training programs or courses related to cirrhosis; which is near to similar to the present study.

Another study on "Nurses' Performance Regarding Care of Patients with Advanced Stage Liver Cirrhosis" was conducted by Ahmmed et al. (2024) revealed that (84%) respondents were age between 20 (Twenty) to 30 (Thirty) years with the mean age of 26.54 years. Regarding their gender, 52% were Female and 48% were Male.

Additionally, only 4% respondents had Nursing Diploma, Bachelor of Nursing 12%. Working Experience of the respondents (50%) were less than 1 to 5 and Maximum respondents (98%) had no training facilities; which near similar to current study results.

Knowledge related information

The present study was conducted among 50 respondents. The study consists of 4 dimension including concept part, management part, preventive measures and complications part.

Concept part of Liver Cirrhosis:

The study results showed that less than (20%) respondents had poor level of knowledge and less than one-third of the (30%) had very good level of knowledge regarding concept of liver cirrhosis. Among all of the respondents 52% correctly identified that liver cirrhosis means scarring of the liver, 62% correctly said that causes of liver cirrhosis, 88% knew that jaundice is a symptom of liver cirrhosis and 66% understood that a liver biopsy helps confirm the disease, which is similar to a study was conducted in Egypt, this study results stated that 38.2% of respondents had poor knowledge about their total knowledge on concept of liver cirrhosis (Abu-El Ata et al., 2021).

Management of Liver Cirrhosis:

This study results revealed that less than one quarter (24%) respondents had below average knowledge level and only (8%) respondents had excellent knowledge level among all of the respondents regarding management of liver cirrhosis patients, 46% respondents gave correct answer regarding procedure of ascites management due to liver cirrhosis, 64% respondents gave correct answer regarding medical management of liver cirrhosis with antibiotics and diuretics, whereas the present study all respondents gave correct answer to the surgical management with liver transplantation. Researcher assumed that current study respondents works only gastro liver specialized hospital those who had more experience to manage the liver cirrhosis patients that's why majority of the respondents gave correct answer in this area. In contrast study was conducted by Mohamed et al. (2024) in Elminia reported that about (73.3%) respondents gave unsatisfactory answer to the area of ascites management and (76.7%) provided satisfactory answer to the procedure of paracentesis with liver cirrhosis patients. Another study conducted by Ahmed et al. (2024) in Egypt, found that less than three- quarters (72%) of studied nurses had an unsatisfactory knowledge level regarding care of patients with advanced stage liver cirrhosis, that indicates the good level of knowledge. Which is similar to a current study results.

Preventive measures part of Liver Cirrhosis:

The present study results illustrated that less than one-quarter (12%) had poor level of knowledge and less than half of the respondents (44%) had average knowledge level regarding the preventive measures of liver cirrhosis, only (8%) respondents gave correct answer regarding the prevention of ascites and swelling due to liver cirrhosis through salt restriction, whereas the majority of the respondents (88%) provided correct answer regarding the vaccine can prevent liver cirrhosis. Researchers believe that the majority of respondents provided accurate answers in this section because they exclusively work in gastro liver specialty hospitals those who had more experience. Kumari et al. (2022) was conducted on "Nurses' Knowledge Regarding Prevention of Liver Cirrhosis" revealed that nurses had a moderate level of knowledge about how to prevent hepatitis B, which is a major cause of liver cirrhosis. A study results found that if preventive measure followed by nurses properly; it can dramatically improve adherence to health status from 13% to 79% within a year.

Complications of Liver Cirrhosis:

According to the study results, less than half of the respondents (34%) had poor level of knowledge and more than half of the respondents (66%) had excellent knowledge level regarding complications of liver cirrhosis among all of the respondents, 74% respondents provided correct answer regarding the late complication of liver cirrhosis and 80% respondents correctly identified that regarding common complication of liver cirrhosis. In contrast study was conducted by Abo El-Ata et al. (2021) in Egypt, they found that (41.8%) of the total nurses knowledge level had unsatisfactory on complications of liver cirrhosis. Another study showed that 56% of the respondents had satisfactory knowledge level related to complications of patients with advanced stage liver

cirrhosis and 62% had satisfactory knowledge level (Ahmed et al., 2024). Both the study showed dissimilarity as attributed to differences in study settings, sample characteristics, or the availability of in-service educational programs.

Overall Knowledge of nurses on liver cirrhosis:

In current study, less than (20%) had poor level of knowledge, 30% respondents had very good level of knowledge, less than (25%) respondents had excellent level of knowledge, more than (10%) had good level of knowledge and only near about (10%) respondents had average level of knowledge regarding overall knowledge on liver cirrhosis of nurses among the 50 respondents. The mean score of overall knowledge level is 73.9% which indicated good level of knowledge of the respondents. A descriptive cross-sectional study involved 150 nurses' was conducted in Egypt, the study findings showed that (78.65%) of respondents had unsatisfactory knowledge that is poor level of knowledge score regarding liver cirrhosis Abu El-Ata et al. (2021), which is dissimilar to the present study results. Although current study showed that among all of the respondents overall knowledge regarding liver cirrhosis was good level but their knowledge level is poor in some area like meaning of liver cirrhosis (52%) , Ascites management procedure (46%), prevention of ascites and swelling (8%) concerning 3 (Three) dimensions of liver cirrhosis (Concept, Management & Preventive measures) Mohamed et al.(2024), was conducted a contrast study in Elminia reported that 53.3% (poor) respondents had unsatisfactory knowledge level regarding liver cirrhosis. Present study showed good knowledge level overall but the other study showed poor or unsatisfactory knowledge level which is dissimilar to present study.

Limitation of the Study

The limitation of the study that the researchers faced some challenges while conducting the research-

1. This study was conducted as a descriptive cross-sectional study only one hospital at National Gastro-liver Institute & Hospital (NGIH) that's why this result may not be generalized by researchers to all the settings in Bangladesh.
2. This study only focused on the assessment of knowledge but not the practice, performance or attitudes of nurses. So, this study did not fully explore how liver cirrhosis is managed in reality.
3. The study had a small sample size of only 50 participants, so the findings may not represent a larger population.

VI. Conclusion & Recommendation

This chapter presents the conclusion and recommendations of the study based on the research findings.

Conclusion

This descriptive cross-sectional study was conducted to identify the level of nurses' knowledge regarding liver cirrhosis. The total 50 respondents were recruited from National Gastro-liver Institute & Hospital (NGIH). Respondents knowledge was assessed by a structured questionnaire. Overall knowledge of respondents on liver cirrhosis was less than half (30%) respondents were considered as very good knowledge, also 18% respondents were considered as poor knowledge and only (12%) had as average knowledge which was the minimum. The mean score of the knowledge level was = 73.9 which was indicate the good level of knowledge. From this discussion it is clear that liver cirrhosis is a global public health crisis. Therefore, on the basis of study finding, the level of nurse's knowledge towards liver cirrhosis requires improvement. So, the study was conducted to assess the level of nurses' knowledge which literally influenced the quality of care and there is a need of higher education and special training regarding liver cirrhosis for nurses to ensure effective nursing management.

Recommendation of the Study

The following recommendations are organized based on the results after study in order to recover the nurses' knowledge regarding liver cirrhosis.

1. Gastroenterology related training can be arranged for newly appointed nurses
2. Provide specialized training on liver cirrhosis to improve nurses' knowledge regarding management of liver cirrhosis as well as proper care to the patients.
3. Arrange workshop, seminar and awareness programs for hepatology nurses to facilitate advance information regarding liver cirrhosis management.
4. Health education programs can be arranged in all health care settings with posters displayed and leaflets distributed.
5. Develop a nursing care practice in each are of hepatology unit.
6. Continue in-service refresher training programs and education programs to be highlighted for nurses to patient care on liver cirrhosis management.
7. Further study is needed to explore nurse's knowledge, attitude, & practice regarding Liver Cirrhosis.

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