

## Assessment of Knowledge Regarding Hepatic Encephalopathy among Patients with Liver Cirrhosis

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**Abstract:** - Hepatic encephalopathy (HE) is one of the major complications of liver cirrhosis (LC). It's defined as a reversible neuropsychiatric event of liver cirrhosis. Up to fifty percent of cirrhotic patients will suffer from at least one attack of HE. **Purpose:** was to assess knowledge regarding hepatic encephalopathy among patients with liver cirrhosis. **Design:** a descriptive research design was utilized to achieve the purpose of this study. **Setting:** The current study was carried out at endemic diseases department and the outpatient clinics of Menoufia University Hospital as well as Liver Institute at Shebin El-Kom, Menoufia Governorate, Egypt. **Subjects:** A consecutive sample of 100 adult patients with liver cirrhosis. **Instruments:** One instrument was used for data collection: Structure interview questionnaire instrument. **Results:** about two thirds of patients were 50 to 60 years and male, the majority of them were married. Almost of patients (93% and 97%) had low total knowledge level about liver cirrhosis and hepatic encephalopathy and minority of them (1.0%) had good total knowledge level about diet of hepatic encephalopathy. The majority of patients (94.0%) had low total knowledge level. **Conclusion:** It was concluded that level of knowledge regarding hepatic encephalopathy was poor among study group. **Recommendations:** Continuous health teaching programs and colored illustrative booklet should be given to all liver cirrhosis patients and their family members to be oriented about liver cirrhosis, hepatic encephalopathy and preventive measures of hepatic encephalopathy.

**Key words:** *knowledge, Hepatic encephalopathy, Liver cirrhosis.*

### Introduction:

Hepatic encephalopathy (HE) has appeared in the last years as serious and life threatening complication of liver diseases and associated with increased morbidity and mortality among them. Up to 50% of patients with cirrhosis will experience hepatic

encephalopathy and a large proportion of these patients are at high risk of recurrent hepatic encephalopathy (Flamm, 2018).

Hepatic encephalopathy is a reversible syndrome observed in patients with advanced liver dysfunction especially

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liver cirrhosis. It is defined as a neuropsychiatric syndrome that results in a reversible impairment of brain function which occurs in patients of advanced liver disorders as a result of hepatic malfunction resulting from the accumulation of neurotoxic substances in the bloodstream and ultimately in the brain (Ferenci, 2018).

The exact cause of hepatic encephalopathy is unknown. However, it's usually triggered by the presence of neurotoxic substances in case of cirrhosis, portal hypertension, inflammation, modulation of cerebral blood circulation auto regulation and presence of ammonia. All these factors are fundamental to the progress of hepatic encephalopathy (Butterworth, 2019).

It may arise with liver dysfunctions spontaneously but more commonly will develop as a result of some precipitating factors such as infections as pneumonia, kidney problems, dehydration, hypoxia, immunosuppressive medications, eating too much protein, medications that suppress the central nervous system as barbiturates, benzodiazepine or tranquilizers, electrolyte imbalance, especially a decrease, potassium after vomiting and taking diuretics (Kahn, 2018).

Hepatic encephalopathy is a serious complication of liver cirrhosis. Its pathogenesis is a complex process with multiple substances causing malfunction of neuronal cells. Ammonia (NH<sub>3</sub>) has been considered the fundamental pathophysiologic mechanism which is an intestine-originated nitrogenous toxin created by

bacterial metabolism of urea resulting from proteins that are found in diet (Elwir & Rahimi, 2017).

In cirrhotic patients, liver malfunction reduces hepatic metabolism of NH<sub>3</sub> and portal hypertension leads to shunting of portal blood rich in NH<sub>3</sub> to the systemic circulation without undergoing any detoxification in the liver. In the brain, NH<sub>3</sub> crosses the blood-brain barrier and is metabolized in the astrocytes by glutamine synthetase, which converts NH<sub>3</sub> and glutamate to glutamine. Glutamine accumulation in astrocytes produce an osmotic gradient, which results in swelling of astrocytes and creation of reactive oxygen species, that in turn participating in the cerebral impairment that is seen in HE (Saber et al., 2019).

Hepatic encephalopathy is generally manifested by several neuropsychiatric disturbances such as psychomotor impairment, deteriorated memory, shortened reaction time, declined awareness, sensory abnormalities and weakened concentration. It is also accompanied by personality features changes, intellectual deterioration, and a diminished consciousness (Saber et al., 2019 & Shawcross et al., 2016).

Knowledge regarding to hepatic encephalopathy has a vital role in prevention of hepatic encephalopathy episodes that include educating the patient and the family about the disorder, its progression and potential complications. Also, maintaining a proper nutrition which is an important consideration in the patient with cirrhosis, prevention of precipitating factors. It has vital importance in the

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treatment of HE, as about 90 % of patients can be cured only by adjustment of the causative precipitating factors. The clinical course of hepatic encephalopathy can be interrupted in majority of patients by controlling these precipitating factors. Hence early and accurate diagnosis and proper identification of precipitating factors will help in initiating the appropriate treatment and thereby bringing down the morbidity and mortality, compliance with treatment and follow up, patients should understand the reasoning for taking the medications (Ali et al., 2023).

There are numerous research studies that show the importance of knowledge regarding to hepatic encephalopathy for liver cirrhosis patients that lead to improvements in patients' health, with better achievement of patients' outcomes, improve the quality of life and also may reduce the incidence of hepatic encephalopathy (Rodenbaugh et al., 2018). So, the current study's purpose was to assess knowledge regarding hepatic encephalopathy among patients with liver cirrhosis to minimize occurrence of hepatic encephalopathy.

### **Significance of the Study:**

Liver cirrhosis is chronic disease considered as an Egyptian health problem of wide prevalence. According to the latest WHO data published in 2018 Liver. Disease Deaths in Egypt reached 12.40% of total deaths. The age adjusted death rate is 116.08 per 100,000 of

population ranks Egypt in the world (WHO, 2018).

Development of hepatic encephalopathy is usually associated with higher rates of mortality. The survival possibility of hepatic encephalopathy is 23 % at three years and 42 % at one year of follow-up. Moreover, about thirty percent of patients who died due to end-stage liver disease undergo prominent encephalopathy, reaching to coma (Saber et al., 2019).

It is hoped that assessment of patients' knowledge may lead to reduce patient's complications, hospital stay, nurse's workload and cost burden on the patients and society that are associated with complications management by establishment of educational programs for cirrhotic patients regarding hepatic encephalopathy, its prevention and the prognosis of cirrhotic patients following episode of HE.

### **Purpose of the study:**

The purpose of the current study was to assess knowledge regarding hepatic encephalopathy among patients with liver cirrhosis.

### **Methods:**

#### **Research design:**

A descriptive research design was utilized to achieve the purpose of this study.

#### **Research Setting:**

The current study was carried out at endemic diseases department and the outpatient clinics of Menoufia University Hospital as well as Liver

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Institute at Shebin El-Kom, Menoufia Governorate, Egypt.

**Sampling:**

A consecutive sample of 100 adult patients with liver cirrhosis.

**Inclusion criteria:**

- Patients didn't receive any educational intervention regarding hepatic encephalopathy before.
- Free from hepatic encephalopathy at the time of data collection.
- Free from renal failure, diabetes mellitus and cancer to avoid any deterioration in patients' status especially intellectual and not to interfere with specific nursing education.
- Patients who aren't critically ill who able to communicate.

**Instruments of the study:**

**Instrument one: Structure interview questionnaire:**

It was developed by the researcher to assess baseline bio- sociodemographic data and patients' knowledge. It included three parts:

- **Part one: - Sociodemographic data:** It comprised of thirteen questions and included information about patient's age, sex, marital status, level of education and occupation.... etc.
- **Part two: - Medical data:** It comprised of twenty- eight questions related to past and present medical history such as etiology of liver cirrhosis, duration of illness, history of other chronic diseases, history of bleeding, esophageal varices, ascites and jaundice, dietary

regimens and prescribed medications.... etc.

▪ **Part three: - Patients' knowledge:**

It comprised of four questions about liver cirrhosis: definition, causes, signs & symptoms and complication. Also it included questions about hepatic encephalopathy: definition, causes, risk factors, signs & symptoms, stages, complications, diagnostic studies, its treatment and prevention. Moreover, it contained questions to assess patient's knowledge about allowed and prevented food, salt substitutes and food cause distention. The total questions were seventeen.

**Scoring system:-**

Each answer was given two marks if the patient reported completely correct answer, one mark if he /she reported incompletely correct answer and zero if the answer was incorrect or I don't know. All answers were summed to give a score ranged from zero to thirty-four. The higher score, the higher knowledge level. The total score was converted into percentage score and was categorized as follow:-

- i. A score less than 50% denoted poor knowledge (from zero to sixteen marks).
- ii. A score from 50 % to less than 70% denoted fair knowledge (from seventeen to twenty- three marks).
- iii. A score of 70% or more denoted good knowledge (from twenty- four to thirty- four marks). These were standardized categories as

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mentioned by Al-Khaled et al., (2011).

**Procedure:-**

**Written approval:**

Permission to carry out the study was taken from responsible authorities after explanation of the purpose of the study.

**Instrument development:**

The instrument was developed by the researcher. The instruments was tested for face and content validity by five academic experts in the field of Medical Surgical Nursing. The experts revised the instrument for clarity, relevancy, comprehensiveness, simplicity and applicability. Minor modifications were done accordingly to ascertain relevance and completeness.

**Reliability:**

The instrument was tested for reliability using Cronbach Alpha reliability analysis. Its value was 0.801 for this instrument

**Pilot study:**

A pilot study was conducted prior to data collection on 10% of the study sample (10 patients) to test the feasibility, clarity and applicability of the instruments and determine the needed time to fill it, then necessary modifications were done so these patients were excluded from the actual study.

**Ethical Consideration:**

A written approval from ethical and research committee of Faculty of Nursing, Menoufia University was obtained. Also written agreement was obtained from the authorities of endemic diseases department, outpatient clinic of Menoufia University Hospital and Liver Institute. Each patient was asked for their informed consent to participate in the study after being informed of its purpose. Concerning collected data, secrecy was taken into account. The researchers accentuated that data would be confidentially preserved. Furthermore, respondents' anonymity was certain by coding data. Patients were also informed that they can withdraw from the study at any time without penalty and refusal to participate wouldn't affect their care.

**Data collection:**

- ❖ Data collection was extended over a period of 10 months from June 2022 to March 2023.
- ❖ Patients who agreed to participate in the study and fulfilled the inclusion criteria were interviewed individually by the researcher in Endemic Diseases Department at Menoufia University and National Liver Institute.
- ❖ The researcher took about 20-30 minutes for each patient which include:
- ❖ Each patient was assessed for bio - demographic characteristics using part one and two of instrument I. It took about 5-10 minutes.

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- ❖ All patients were assessed for their knowledge about liver cirrhosis, hepatic encephalopathy and their diet using part three of instrument I. It took about 15-20 minutes.

**Limitation of the study:**

There was insufficient number of patients at Endemic department in Menoufia University Hospital for data collection so the researcher added another setting (National Liver Institute) and the data was collected from both settings.

**Statistical analysis:**

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category.

**Results:**

**Table (1):-** This table shows that, about two thirds were 50 to 60 years (70%) and male (66%). Concerning marital status, the majority of them were married (85%). As regard level of education, about one third (36%) had secondary education. In relation to occupation, 30% didn't work. The highest percentage (79%) were from rural area, in relation to work status, 76.6% had partial work time after disease.

**Table (2):-** This table shows that, almost of patients had low total knowledge level about liver cirrhosis (93.0%) but non of them had good total knowledge level (0.0).

**Table (3):-** This table reveals that, non of patients had good total knowledge level about hepatic encephalopathy (0.0%) but almost of them had low total knowledge level about hepatic encephalopathy (97.0%).

**Table (4):-** This table presents that, minority of study group had good total knowledge level about diet of hepatic encephalopathy (11.0%)

**Table (5):-** This table shows that, the majority of patients (94.0% had low total knowledge level.

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**Table (1): Socio demographic data (n=100)**

Socio demographic data	No.	%
<b>Age</b>		
30-<40 years	6	6.0
40-< 50 years	24	24.0
50-60 years	70	70.0
<b>Mean ± S.D</b>	54.66±7.91	
<b>Gender</b>		
Male	66	66.0
Female	34	34.0
<b>Marital status</b>		
Single	2	2.0
Married	85	85.0
Widowed	10	10.0
Divorced	3	3.0
<b>Education level</b>		
Illiterate	25	25.0
Read and write	6	6.0
Basic education	16	16.0
Secondary education	36	36.0
University education and post graduate studies	17	17.0
<b>Occupation</b>		
Manual work	21	21.0
Administrative work	26	26.0
Don't work	30	30.0
Housewife	23	23.0
<b>Place of residence</b>		
Urban	21	21.0
Rural	79	79.0
<b>Work status after disease (n=47)</b>		
Total work time	11	23.4
Partial work time	36	76.6
Joined a new job	0	0.0

**Table (2): Distribution of total and subtotal knowledge level about liver cirrhosis (n=100)**

Total and subtotal knowledge level about liver cirrhosis		No.	%
<b>Definition</b>	Complete correct answer	10	10.0
	Incomplete correct answer	44	44.0
	Don't know	46	46.0
<b>Causes</b>	Complete correct answer	0	0.0
	Incomplete correct answer	50	50.0
	Don't know	50	50.0
<b>Manifestation</b>	Complete correct answer	5	5.0
	Incomplete correct answer	56	56.0
	Don't know	39	39.0
<b>Complications</b>	Complete correct answer	1	1.0
	Incomplete correct answer	39	39.0
	Don't know	60	60.0
<b>Total knowledge score</b>	<b>Good</b>	0	0.0
	<b>Fair</b>	7	7.0
	<b>Low</b>	93	93.0

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**Table (3): Distribution of total and subtotal knowledge level about hepatic encephalopathy (n=100)**

Total and subtotal knowledge level about hepatic encephalopathy		No.	%
<b>Definition</b>	Complete correct answer	3	3.0
	Incomplete correct answer	53	53.0
	Don't know	44	44.0
<b>Causes</b>	Complete correct answer	0	0.0
	Incomplete correct answer	44	44.0
	Don't know	66	66.0
<b>Manifestation</b>	Complete correct answer	0	0.0
	Incomplete correct answer	52	52.0
	Don't know	48	48.0
<b>The basis for the staging</b>	Complete correct answer	0	0.0
	Incomplete correct answer	6	6.0
	Don't know	94	94.0
<b>Stages</b>	Complete correct answer	0	0.0
	Incomplete correct answer	25	25.0
	Don't know	75	75.0
<b>Complications</b>	Complete correct answer	3	3.0
	Incomplete correct answer	47	47.0
	Don't know	50	50.0
<b>Diagnosis</b>	Complete correct answer	0	0.0
	Incomplete correct answer	27	27.0
	Don't know	73	73.0
<b>Treatment</b>	Complete correct answer	0	0.0
	Incomplete correct answer	21	21.0
	Don't know	79	79.0
<b>Method of prevention</b>	Complete correct answer	0	0.0
	Incomplete correct answer	52	52.0
	Don't know	48	48.0
<b>Total knowledge level</b>	<b>Good</b>	0	0.0
	<b>Fair</b>	3	3.0
	<b>Low</b>	97	97.0

**Table (4): Distribution of total and subtotal knowledge level about diet (n=100)**

Total and subtotal knowledge level about diet of hepatic cirrhosis		No.	%
<b>Allowed foods</b>	Complete correct answer	10	10.0
	Incomplete correct answer	63	63.0
	Don't know	27	27.0
<b>Prohibited foods</b>	Complete correct answer	20	20.0
	Incomplete correct answer	73	73.0
	Don't know	7	7.0
<b>Salt substitutes</b>	Complete correct answer	19	19.0
	Incomplete correct answer	65	65.0
	Don't know	16	16.0
<b>Foods that cause flatulence and indigestion</b>	Complete correct answer	32	32.0
	Incomplete correct answer	57	57.0
	Don't know	11	11.0
<b>Total knowledge level</b>	<b>Good</b>	1	1.0
	<b>Fair</b>	73	73.0
	<b>Low</b>	26	26

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**Table (5): Distribution of total knowledge level (n=100)**

Total knowledge level	No.	%
Good	0	0.0
Fair	6	6.0
Low	94	94.0

**Discussion:**

Hepatic encephalopathy is a serious complication of liver diseases that manifests as a wide range of neuropsychological clinical findings ranging from minimal HE to coma. So assessing patients knowledge is particularly important in prevention of HE (Peng et al., 2021).

This discussion covered the following parts: Bio- sociodemographic characteristics of the studied sample, patient's total knowledge.

**Sociodemographic characteristics:**

Regarding to age, the current study revealed that; the mean age was  $54.66 \pm 7.91$  and This finding was supported by Atya et al., (2019) who showed that the mean age of the patients in study group was  $59.16 \pm 6.04$  years and in control group was  $59.23 \pm 6.27$  years.

Concerning sex, the present study found that about two thirds were males. These results agreed with many studies and review of literature which found that more than half of patients were male as Al Ghamdi & Shah, (2018) & EL-Shafei et al., (2017) they revealed that slightly more than two thirds of patients were male.

Concerning marital status, the majority of patients were married. This finding was supported by Atya et al., (2019) who reported that the majority of sample were married. Also the result

on the same line with Mahmoud et al., (2021) who found that the majority of studied patients were married. From the researcher point of view, this may be related to the majority of the age group of the present study usually be married.

Regarding educational level, about one third of patients had secondary education. This finding was consistent with the study done by Thuy, (2019) stated that more than one third of studied groups had secondary education. But this result is contradicted with Taha et al., (2020) who revealed that the majority of patients were illiterate. Also disagrees with Mahmoud et al., (2021) that reported more than one third of studied groups were illiterate. From the researcher point of view, this may be related to Menoufia government had high percentage of educated personals. Concerning place of residence, the present study found that more than two thirds of were from rural areas which come in line with Mahmoud et al., (2021) who found that more than half of their studied patients were rural. Also this finding is supported by Ali et al., (2023) who found that there was more than half of the study group were from rural areas.

In relation to occupation, findings of present study revealed that one third of

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didn't work. On the same line, Mahmoud et al., (2021) reported that more than one third of studied groups didn't work.

On the other hand, this finding didn't agree with Abdel Reham and Mohamed, (2017) who found that the majority of male patients were worked as employers and farmers

### **Knowledge assessment:**

Regarding patients' total knowledge level the findings of the present study revealed that the majority of patients had low total and subtotal knowledge level regarding liver cirrhosis, hepatic encephalopathy and diet. These findings are consistent with the study done by Ali et al., (2023) who mentioned that the majority of studied patients had unsatisfactory knowledge. Moreover these findings are in the same line with Saad et al., (2021), who revealed that more than three quarters of the studied patients have unsatisfactory level of total knowledge. Also these findings are consistent with the study done by Atya et al., (2019) who found that there was unsatisfactory total mean knowledge scores of the studied patients. This finding also agrees with Mohammed et al., (2021) who stated that the total knowledge level was poor in all patients before application of intervention program.

Moreover these results were in agreement with Volk et al., (2019) who found that cirrhosis patients lack adequate knowledge about important information needed to self-manage their disease. Also this finding was supported by Taha et al., (2015) who reported that there was low in total

knowledge score of studied groups before intervention. This result agrees with Sabola et al., (2022) who stated that there was lack in studied patient's knowledge

### **Conclusions:**

Based on the findings of the current study, it can be concluded that level of knowledge regarding hepatic encephalopathy was low among study subjects.

### **Recommendations:**

Continuous health teaching programs and colored illustrative booklet should be given to all liver cirrhosis patients and their family members to be oriented about liver cirrhosis, hepatic encephalopathy and preventive measures of hepatic encephalopathy

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