

## Effect of Nursing Intervention on Health profile and Symptoms among Patients with Liver Cirrhosis

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**Abstract: Background:** Liver cirrhosis is characterized by poor life expectancy and is a leading cause of morbidity and mortality. It carries the risk of life-threatening complications, partly due to a number of co-morbidities. **Purpose:** to examine effect of a designed nursing intervention on health profile and symptoms among studied patients with liver cirrhosis. **Design:** A quasi-experimental research design was carried out .It conducted in outpatient clinic in Hepatology Department, National Liver Institute, Menoufia University, Egypt. A purposive sample of 80 patients with liver cirrhosis was included. Three instruments were used, a structured interviewing questionnaire including sociodemographic data and medical data, Duke Health Profile Index and Chronic Liver Disease Questionnaire. **Results:** There was a highly significant improvement in most of the different health score scales post intervention. After nursing intervention a significant improvement in the different symptoms of liver cirrhosis than that of the pre intervention was revealed. **Conclusion:** implementing of nursing intervention has a significant role in improving health profile and symptoms among studied patients with liver cirrhosis. **Recommendations:** Increase awareness to the public through T.V and mass media about definition, causes and symptoms of liver cirrhosis and encourage people to modifying their behaviors for acquiring healthy life styles.

**Keywords:** Nursing Intervention, Health Profile, Liver Cirrhosis Symptoms.

### Introduction

Liver cirrhosis has become one of the major causes of morbidity and mortality. The Global Burden of Liver Disease in the world reported that, liver disease accounts for approximately two million deaths per year worldwide, one million due to complications of cirrhosis and one million due to viral hepatitis and hepatocellular carcinoma (Asrani et al., 2019).

Cirrhosis is a late stage of chronic liver disease with extensive scarring replaces healthy liver tissue and impaired liver function lead to liver failure. Cirrhosis is currently the 11th most common cause of death globally and liver cancer is the 16th leading

cause of death; combined, they account for 3.5% of all deaths 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).

The growing prevalence of liver cirrhosis is due to the increasing burden of its risk factors. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are the two major causes of liver cirrhosis. Globally, 257 million people were infected with chronic HBV in 2015. Asia and Africa were the two highest endemic countries, with an overall prevalence of over 8%. The rising prevalence of HCV is also

an emerging issue for health in many regions. There were about 71 million people with HCV in 2015. The prevalence in highly endemic regions, including Central Asia and the Mediterranean was over 3.5% (Wong et al., 2019).

As a consequence, patients develop a number of complications that result in frequent hospital admissions and high morbidity and mortality. Patients with cirrhosis require constant and rigorous monitoring both in and outside the hospital (Marta et al., 2020). Cirrhosis of liver is an irreversible and a fatal disease arising from different chronic liver disorders and it is an advanced stage of liver fibrosis. It hampers patients' daily life as well as health related quality of life that mostly depend on nursing management, in which damaged tissues are replaced by collagen layers and lead to deficiency of the liver cell function. Decompensated cirrhosis may lead to hepatocellular carcinoma (Zhang et al., 2017).

Cirrhosis may have few or no symptoms and signs of liver disease. Some of the symptoms may be nonspecific, that is, they don't suggest that the liver is their cause. Some of the more common symptoms and signs of cirrhosis include: Yellowing of the skin (jaundice) due to the accumulation of bilirubin in the blood, fatigue, weakness, loss of appetite, itching and easy bruising from decreased production of blood clotting factors by the diseased liver (Djalalinia et al., 2017).

Nursing assessment focuses on the onset of symptoms and the history of precipitating factors, particularly dietary intake and changes in the patient's physical and mental status. It is also important to document any exposure to toxic agents encountered in the workplace or during recreational activities (Lewis et al., 2016).

Communicating with patients while supporting and educating them is essential. Patients sometimes lack the knowledge needed to manage their disease successfully and may require education on signs and symptoms and how they relate to the diagnosis and any complications. They may also require education on the special nutrition needs of cirrhosis, so involvement of a registered dietitian is beneficial especially since malnutrition occurs in over 80% of patients (Low et al., 2018).

The goal of treatment is to minimize the progression of the disease and to prevent complications. There is no specific cure for cirrhosis. It is well-established that good patient education has proven to be a key tool in disease management, providing significant benefit in knowledge and behavioral modifications. The wide variation in patient knowledge may affect patients' willingness to accept and adhere to medical interventions (Al Ghamdi & Shah, 2018).

The goals of nursing intervention for patient with liver cirrhosis may include increase participation in activities, improve nutritional status, improve skin integrity, decrease potential for injury, improve mental status, and absence of complications (Fabrellas et al., 2020).

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).

Egypt had the highest age-standardized death rate of cirrhosis in all years, 95%. The proportion of cirrhosis deaths due to alcohol-related liver

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disease was in Egypt specifically 4-8%. There were 10.6 million prevalent cases of decompensated cirrhosis and 112 million prevalent cases of compensated cirrhosis globally. There was a significant increase in age-standardized prevalence rate of decompensated cirrhosis. Causes of liver cirrhosis, hepatitis B caused the greatest proportion of cirrhosis deaths (29.0%) and prevalent cases of both decompensated (27.9%) and compensated (32.6%) cirrhosis. The age-standardized prevalence of compensated and decompensated cirrhosis increased more than for any other cause of cirrhosis (by 33.2% for compensated cirrhosis and 54.8% for decompensated cirrhosis) (Sepanlou et al., 2020).

Nurses play an important role in the multidisciplinary team because they perform comprehensive and continuous patient care. Nursing-sensitive patient outcomes and select specific nursing interventions to achieve the desired goals, to meet comprehensive and complex patient needs in an efficient and safe way, nurses need to have critical thinking skills to accurately diagnose. In patients with liver cirrhosis, nursing care goals may include prevention of complications; promotion, maintenance, and restoration of health (facilitating optimal functional ability in the patients' desired roles, maximizing well-being, and promoting patient satisfaction (Abo El Ata et al., 2021).

### **Purpose:**

The present study aims to examine the effect of nursing intervention on health profile and symptoms among patients with liver cirrhosis.

### **Research Hypotheses:**

1. Patients with liver cirrhosis who will receive nursing intervention

will have improvement in health profile scores than pre nursing intervention.

2. Patients with liver cirrhosis who will receive nursing intervention will have improvement in symptoms than pre nursing intervention.

### **Methods**

#### **Research design**

Quasi-experimental (pre and post) research design was carried out to achieve the aim of the study.

#### **Setting**

The study was conducted in outpatient clinic in Hepatology and Gastrointrodology Department, National Liver Institute in Menoufia University, Shebin Elkom city, Egypt.

#### **Sampling**

Purposive sample of 80 patients with liver cirrhosis was included in the study.

#### **Sample size and power analysis:**

#### **Sample equation**

Sample size  $n = \frac{[DEFF * Np (1-p)]}{[(d^2/Z^2(1-\alpha/2)^2 * (N-1) + p * (1-p))]}$

Results from Open Epi, Version 3, open source calculator—SSPropor

We used 95% confidence intervals, with a sample size of 80 liver cirrhosis patients.

Population size (for finite population correction factor or fpc) (N): 1000  
Hypothesized % frequency of outcome factor in the population (p): 40% +/- 5  
Confidence limits as % of 100 (absolute +/- %)(d): 5%

Design effect (for cluster surveys-DEFF): 0.3. We used Epi website (Open Source Statistics for Public Health)\*.

### **Inclusion criteria**

**The subjects were recruited based on the following criteria:**

- Patients age from 20 – 60 years. Patients diagnosed with liver cirrhosis according to Pugh et al., (1973) and Lucey et al., (1997) - class A and B which indicates a moderate hepatic impairment and patients of both sex was included.

### **Exclusion criteria**

Patients with diabetes, chronic renal failure, stroke, hepatic cells carcinoma (hcc) and any malignancy, heart disease and psychiatric diseases were excluded, because previous diseases affects the findings outcome .

### **Data collection Instruments**

**The study included the following instruments:**

**Instrument 1: A structured interviewing questionnaire** prepared by the researchers which included:

- **Part one:** Socio-demographic data of the patients such as age, sex, level of education, occupational, income, place of residence, telephone number, marital state and family members.
- **Part two:-** Medical data such as; diagnosis of cirrhosis according to child Pugh calcification, duration and detection of the disease, frequency of previous hospitalization and causes of hospitalization. Physiological measurement such as; weight, abdominal circumference, degree of ascites and skin condition and laboratory investigations related to liver cirrhosis patients such as; bilirubin total and direct, albumin, liver function test, kidney function test, prothrombin concentration,

complete blood count, hepatitis C virus and hepatitis B virus.

### **Instrument II: Duke Health Profile**

**Index** (Parkerson, 2002)

The Duke Health Profile (DUKE) is intended as a brief and practical measure to evaluate patient reported functional health status in primary care settings. The DUKE is a 17-item generic health status profile from which six scales measure function: physical, mental, and social health, general health, perceived health, and self-esteem. Regarding assessing the cirrhotic patients about Duck Health Profile (DHP), the researcher follow “Manual Scoring for the Duke Health Profile Copyright (1994-2017) by the Department of Community and Family Medicine, Duke University Medical Center, Durham, N.C., U.S.A.

### **Scoring system**

The questionnaire contained 17 items, divided into six subscales which measure function. These six subscales are physical health, mental health, social health, general health, Perceived health score, and self-esteem score. Physical health score composed of 5 items (8th, 9th, 10th, 11th, and 12th), each with a Likert scale of 0 to 2 where 0 = No, doesn't describe me at all, 1 = Somewhat describes me, and 2=Yea, describes me exactly. The patient ‘physical score was evaluated by sum of the 5 questions, then multiply the later by 10. The mental health score composed of 5 items (1st, 4th, 5th, 13th, and 14th), each with a Likert scale of 0 to 2. The patient ‘mental score was evaluated by sum of the 5 questions, then multiply the later by 10. Concerning the social health score, it composed of 5 items (2nd, 6th, 7th, 15th, and 16th), each with a Likert scale of 0 to 2. The patient ‘social score was evaluated by sum of the 5 questions, then multiply the later

by 10. Regarding the general health score, it composed of summing total score of physical health, mental health, and social health + 3. Perceived health score was calculated as item 3 \* 50. Concerning self-esteem score, it composed of 5 items (1st, 2nd, 4th, 6th, and 7th), each with a Likert scale of 0 to 2. The patient 'self-esteem score was evaluated by sum of the 5 questions, then multiply the later by 10. For all the six subscales, 100 indicates the best health status, and zero indicate the worst health status.

**Instrument III: Chronic Liver Disease Questionnaire:** (Younossi, 2016) It is designed to measure the chronic liver disease symptoms related to liver cirrhosis. The CLDQ included 29 items in the following six domains: (abdominal symptoms, fatigue, systemic symptoms, activity, emotional function and worry). It was modified by the researcher to 11 items. Each domain including items: abdominal symptoms included 3 items, systemic symptoms included 5 items and activity symptom included 3 items.

### **Scoring system**

The scores for each item were summed to create a total score from worst to best. Types of answers ranging from "most of time" to "none of the time".

### **Validity**

The validity of the tool was ascertained by group of experts (medical & nursing staff) one medical medicine staff, two community nursing staff and tow medical surgical nursing staff who were reviewed the tool for content accuracy and internal validity. They were asked to judge the items for completeness and clarity (content validity).

### **Reliability**

Reliability was applied by researcher for testing the internal consistency of

tool. It was done through the administration of the same tool to the same participants under similar conditions on two or more occasions. Scores for repeated testing was compared to test consistency of results over time (test – retest reliability) reliability of A structured interviewing questionnaire it reached 83% (R = 0.83% which is considered reliable. Reliability of Knowledge Assessment Questionnaire it reached 83% (R = 0.83% which is considered reliable. Reliability of duke health profile index it reached 85% (R = 0.85% which is considered reliable. Reliability of chronic liver disease questionnaire it reached 86% (R = 0.86% which is considered reliable. Reliability of fatigue impact scale it reached 86% (R = 0.86% which is considered reliable.

### **Administrative Approval and Ethical Consideration**

An approval of ethical commit was obtained to carry out the current study; an official permission was obtained from the head of Hepatology and Gastrointrodology Department in National Liver Institute in Menoufia University by submission of a formal letter from the dean of faculty of nursing, Menoufia University.

Written consent was taken from every patient before inclusion in the study. Patients was assured that all their own data are highly confidential; anonymity is also assured through assigning a number for each patients instead of names to protect their privacy. Data is only available to the researchers. The ethical issues consideration included explaining the purpose and natural of the study, stating the possibility to withdraw at any time.

### **Pilot study**

A pilot study was carried out on eight (10% of the total sample) and they were excluded from the total studied

patients in order to test the clarity, feasibility, correctness, and applicability of the study tools. It also, provided an estimate of the time needed for answering the questionnaire sheets. Then, the reliability of the study tools was assessed to measure the internal consistency of the study tools.

### **Data Collection Procedure**

#### **Preparatory phase:**

The researcher prepare a structured interview questionnaire after:

Review of literature. Gain permission from the head of Hepatology and Gastrointrodology Department in National Liver Institute, Menoufia University was obtained for carrying out the current study. Gain permission from the dean of faculty of nursing was obtained for carrying out the current study. Prepare study tools and check validity and reliability of tools from experts of nursing staff and medical staff.

#### **Implementation phase:**

- Each patient who agreed to participate in the study and fulfilled the inclusion criteria are interviewed individually by the researcher.
- In outpatient clinics at liver institute department, the researcher introduced herself, and explained the aim of the study to the studied patients.
- Data was collected for the current study started from October, 2018 and completed at the end of 2021.
- Gathering data was between 8.30am and 12.30 md in order to reduce variability among patients and time of outpatient clinics department.
- At initial interview, the researcher introduced herself to initiate the line communication, explain the nature, purpose of the study, during a

monthly periodic follow up visit for liver cirrhotic patients, the researcher fill out the five tools of the study as a base line assessment and scheduled with them the educational sessions.

- The researcher demonstrated the contents of the designed protocol of nursing intervention in the form of small group of patients teaching sessions, three sessions in addition to preliminary session, these sessions were repeated to groups, the duration of each session ranged from 30 - 45 minutes, including 15 minutes for discussion and feedback, each session usually started by a summary of what had been taught in the previous session and the objectives of the new session.
- The first session started by acquiring a designed part of knowledge related to liver anatomy, functions, types of viral hepatitis, liver cirrhosis causes, signs and symptoms, and its complications as well as measures related to enhance health profile score.
- An open channel communication was achieved between the researcher and patients to assure understanding, answer any question and to confirm information.
- The component of nursing intervention was implemented to studies patients that contained an integrated package of instructions and guidelines related to management of liver cirrhosis and involved the following items: liver cirrhosis definition, causes. diagnosis ,liver cirrhosis symptoms and its nursing management, healthy and restricted diets, healthy life styles and daily activities .
- The second session concerning with teaching the patient about healthy and restricted diet for different types of liver cirrhosis.

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- The third session of teaching, the patient gain measures that manage their disease related symptoms e.g. how to manage fatigue, pruritus, how to decrease muscular cramps and dry mouth. Medications regimen that can be taken to relieve symptoms associated with patients and contraindicated medications.
- All sessions were conducted by the researcher in a simple Arabic language considering low educated patients using lecture, group discussion and brain storming. Posters, handout and educational videos was used to grantee of their attention and cooperation.
- Each patient obtained a copy of the designed illustrated nursing intervention booklet included all content.
- A follow up phase was performed weekly for cirrhotic patients under study by telephone calling to answer any enquiry to patients. The intervention took three months duration.

### **Evaluation phase:**

- After implementation of a designed nursing intervention the researcher collect post intervention data by using the previous mentioned tools after 3 months.

### **Statistical Analysis**

Data was entered and analyzed by using SPSS (Statistical Package for Social Science) statistical package version 22. Graphics were done using Excel program.

Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using paired t- test for comparison between pre and post intervention. However, Repeated Friedman Test (type of Chi square test for repeated procedures for qualitative data) was used for comparison between

the two time points of intervention in patients participating in the study.

Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square ( $\chi^2$ ) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used (if the table was 4 cells), or Likelihood Ratio (LR) test (if the table was more than 4 cells). Level of significance was set as P value <0.05 for all significant tests.

### **Results:**

**Table (1)** demonstrates that approximately half of studied cirrhotic patients 45% aged between 50 - 60 years with mean of  $52.1 \pm 8.3$  years, 42.5% Illiterate and 20% of them were read and write. Concerning job, one fifth of them 20% had no work, while only 30% were manual works, and 37.5% were housewives. Regarding income majority of studied patients 87.5% had enough income. Regarding residence, majority of studied patients 77.5% were live in rural areas.

**Table 2** shows that majority of studied patients 75% were Grade A Child-Pugh classification of cirrhosis, 40% discovered cirrhosis since 1 - < 3 years, 87.5% did not suffering from other chronic disease, while 12.5% suffered from other chronic diseases and 60% of them had chest diseases and 40% had hypertension. Concerning taking liver cirrhosis drugs, 95% of studied patients taken on continuous basis. Regarding the current diet and liquid intake, 55% of them had normal diet, and 27.5% of them had little salt & much vegetables.

**Table (3)** reveals that the majority of the studied cirrhotic patients demonstrated "some while describe me" in each subscales' items of "General Information, today would you have any physical trouble or difficulty on:, during the last week: How much trouble have you had with,

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during the last week how often did you, and during the last week how often did you” before intervention. However, no one of them choose “Does not describe me at all” for I am basically a healthy person, or I am happy with my family relationships, or I am comfortable being around people (zero % for each). On the other hand, post intervention results revealed a highly significant improvement ( $p<0.0001$ ) in most of the different health scales items. This result approves the third hypothesis in the current study which mentioned that” Patients with liver cirrhosis who will receive nursing intervention will have an improvement in health profiles score than pre nursing intervention.

**Table (4)** reveals the efficacy of the designed nursing intervention program for the Duke Health Profile Index (DHPI) of the patients with cirrhosis. Post intervention findings revealed a highly significant improvement ( $p<0.0001$ ) in the different health scales. For each of physical health score, mental health score, and social health score, the best category of Duke health profile’s scales were increased from (40%, 32.5%, &22.5% respectively pre intervention) to (51.2%, 57.5% &52.5% respectively post intervention) and the differences were high statistically significant ranged from 0.01 to 0.0001. In addition, the general health score best

category increased from 47.5% pre intervention to 63.8% post intervention and  $p<0.0001$ . This result approves that, the third hypothesis in this study which mentioned that” Patients with Liver cirrhosis who will receive nursing intervention will have improvement in health profiles score than pre nursing intervention.

**Table (5)** demonstrates the effect of the designed nursing intervention on symptoms of chronic liver disease among the studied patients before and after intervention. Post intervention revealed a significant improvement ( $p<0.000$ ) in the different symptoms of chronic liver disease than that of the pre intervention, and which ranged between  $P=0.027$  to  $P=0.0001$ . However, there were two symptoms which did not have the same pattern and there were insignificant difference between pre and post intervention regarding “experienced bodily pain” ( $P=0.12$ ), and experienced abdominal pain” ( $P=0.72$ ).

**Table (6)** highlights the laboratory data of studied cirrhotic patient’s pre and post intervention. Although there were improvement in mean value of patient’s laboratory data, there was no significant difference between all items of laboratory data pre and post intervention ( $P>0.05$  for each.) This result may be due to the short duration between pre and post intervention.



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**Table (1): Percent of the studied patients with liver cirrhosis according to the socio-demographic characteristics (N =80)**

Socio demographic characteristics	No.	%
<b>Age (Years):</b>		
20 - <30 Y	4	5
30 - < 40 Y	20	25
40 - < 50 Y	20	25
50 - 60 Y	36	45
<b>Mean ± SD</b>	<b>52.1 ± 8.3 years</b>	
<b>Gender:</b>		
Male	30	37.5
Female	50	62.5
<b>Marital status:</b>		
Single	4	5
Married	72	90
Widowed	4	5
<b>Education:</b>		
Illiterate	34	42.5
Read & Write	16	20
Basic education	16	20
Intermediate education	8	10
University	6	7.5
<b>Job:</b>		
No work	16	20
Manual work	24	30
House wife	30	37.5
Others (Farmer & Retirement)	10	12.5
<b>Family members:</b>		
3 to 5	70	87.5
≥ 6	10	12.5
<b>Income:</b>		
Not enough	10	12.5
Enough	70	87.5
<b>Residence:</b>		
Rural	62	77.5
Urban	18	22.5
<b>Total</b>	<b>80</b>	<b>100</b>

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**Table (2): Percent of medical data of studied liver cirrhotic patients (N=80)**

Medical history	No.	%
<b>Child-Pugh classification of cirrhosis:</b>		
CA :	60	75
CB :	20	25
<b>Cirrhosis discovered since:</b>		
< 1 year	12	15
1 - < 3 years	32	40
3 – < 5 years	12	15
≥ 5 years	24	30
<b>Suffering from other chronic disease</b>		
Yes	10	12.5
No	70	87.5
<b>If Yes, which diseases (n=10)?</b>		
Chest disease	6	60
Hypertension	4	40
<b>Taking liver cirrhosis drugs: on continuous basis</b>		
Yes	76	95
No	4	5
<b>Takng any other drugs</b>		
Yes	10	12.5
No	70	87.5
<b>If yes, what are the diseases(n=10)</b>		
<b>Chest disease</b>	6	60
<b>Hypertension</b>	4	40
<b>Admitted to hospital before?</b>		
Yes	18	22.5
No	62	77.5
<b>Reasons for hospital admission, (n=18)</b>		
Hypertension	2	11.1
Chest infection	2	11.1
Increase bile in blood	6	33.4
Bleeding stomach	4	22.2
Appendectomy	2	11.1
Splenectomy	2	11.1
<b>The current diet and liquid intake</b>		
Normal diet	44	55
Little fat & much vegetables	10	12.5
Little salt & much vegetables	22	27.5
On diet	4	5
<b>HCV</b>		
<b>Positive</b>	18	22.5
<b>Negative</b>	62	77.5
<b>HBV.....</b>		
<b>Positive</b>	14	17.5
<b>Negative</b>	66	82.5
<b>Total</b>	<b>80</b>	<b>100</b>

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**Table (3): Percent of the studied patients with liver cirrhosis according to their Duke Health Profile pre and post intervention (N = 80)**

Duke Health Profile Index (DHPI)	Pre intervention			Post intervention			Test of sig.	P- value
	Yes, describes me exactly	Somewhat describes me	No, doesn't describe me at all	Yes, describes me exactly	Somewhat describes me	No, doesn't describe me at all		
	%	%	%	%	%	%		
<b>General Information</b>								
1- I like who I am	22.5	25	52.5	0	2.5	97.5	51.2	<0.0001
2- <b>I am not an easy person to get along with</b>	12.5	77.5	10	32.4	46.3	21.3	0.76	0.38
3- I am basically a healthy person	15	85	0	0	25	75	114	<0.0001
4- <b>I give up too easily</b>	20	37.5	42.5	30	37.5	32.5	2.9	0.08 NS
5- <b>I have difficulty concentrating</b>	42.5	50	7.5	30	55	15	5.3	<0.02
6- I am happy with my family relationships	90	10	0	2.5	0	97.5	181	<0.0001
7- I am comfortable being around people	95	5	0	0	10	90	189	<0.0001
<b>Today Would You Have Any Physical Trouble Or Difficulty On:</b>	<b>None</b>	<b>Some</b>	<b>A Lot</b>	<b>None</b>	<b>Some</b>	<b>A Lot</b>		
8- Walking up a flight of stairs	5	55	40	17.5	65	17.5	15.6	<0.0001
9- Running the length of a football field	2.5	15	82.5	42.5	47.5	10	98.0	<0.0001
<b>During The Last Week: How much trouble have you had with</b>	<b>None</b>	<b>Some</b>	<b>A Lot</b>	<b>None</b>	<b>Some</b>	<b>A Lot</b>		
10- Sleeping	15	85	0	10	70	20	14.9	<0.0001
11- Hurting or aching in any part of your body	55	45	0	10	68.8	21.2	58.3	<0.0001
12- Getting tired easily	7.5	60	32.5	10	53.8	36.2	0.06	0.79 NS
13- Feeling depressed or sad	77.5	22.5	0	10	27.5	62.5	116.1	<0.0001
14- Nervousness	77.5	17.5	5	10	48.8	41.2	87.2	<0.0001
<b>During The Last Week: How often did you</b>								
15- <b>Socialize with other people (talk or visit with friends or relatives)</b>	2.5	80	17.5	41.2	48.8	10	29	<0.0001
16- <b>Take part in social, religious, or recreation activities</b>	10	77.5	125	40	47.5	12.5	11.6	<0.001
<b>During The last Week: How often did you</b>	<b>None</b>	<b>1-4 Days</b>	<b>5-7 Days</b>	<b>None</b>	<b>1-4 Days</b>	<b>5-7 Days</b>		
17- Stay in your home, a nursing home, or hospital because of any health problem.	45	10	45	5	26.2	68.8	29.1	<0.0001

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**Table (4): Effect of the designed nursing intervention on groups of Duke Health profile's scales among studied cirrhotic patients pre and post intervention (N=80).**

Duke health profile's scales	Pre intervention				Post intervention				X <sup>2</sup> *	P value
	Worst		Best		Worst		Best			
	No.	%	No.	%	No.	%	No.	%		
Physical health score	48	60	32	40	39	48.8	41	51.2	4.9	<0.01
Mental health score	54	67.5	26	32.5	34	42.5	46	57.5	13.4	<0.0001
Social health score	62	77.5	18	22.5	38	47.5	42	52.5	12.7	<0.0001
**General health score	42	52.5	38	47.5	29	36.2	51	63.8	9.8	<0.0001
Perceived health score	68	85	12	15	20	25	60	75	23.6	<0.0001
Self-esteem health	38	47.5	42	52.5	29	36.3	51	63.8	8.7	<0.001

\* $\chi^2$ : Using Repeated Friedman Test (type of Chi square test for repeated procedures for qualitative data) for comparison of (Duke health profile levels) between the two time points of intervention in patients participating in the study. \*\* General H. score= Physical H. score + Mental H. score+ Social H. score + 3. (tool reference).

**Table (5): Percent of the studied patients regarding to liver disease symptoms as well as measuring of fatigue related to liver cirrhosis symptoms before and after intervention (N = 80)**

Symptoms of chronic liver disease	Most of the time		Some of the time		A little of the time		None of the time		P value	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	X <sup>2</sup>	P
	%	%	%	%	%	%	%	%		
<b>Abdominal Symptoms</b>										
<b>How much of the time during the last two weeks?</b>										
1- Have you been troubled by a feeling of abdominal bloating?	15	5.5	38.8	32.5	12.5	31.3	23.7	33.7	8.2	=0.004
2- Have you experienced abdominal pain?	15	5	35	32.5	32.5	42.4	17.5	5	0.13	=0.72
3- Have you been troubled by a feeling of abdominal discomfort?	20	5	42.5	31.3	30	36.3	7.5	27.4	30.7	=0.0001
<b>Systemic symptoms</b>										
<b>How much of the time during the last two weeks</b>										
1- Have you experienced bodily pain?	25	15	32.5	17.5	42.5	37.5	15	15	2.4	= 0.12
2- Has shortness of breath been a problem for you in your daily activities?	20	10	32.5	25	5	7.5	42.5	57.5	6.8	= 0.009
3- Have you had muscle cramps?	25	2	45	27.5	27.5	33	2.5	37.5	53.8	=0.0001
4- Have you had a dry mouth?	20	12.5	37.5	20	10	12.5	32.5	55	46.3	=0.0001
5- Have you been troubled by itching?	12.5	2.5	22.5	20	17.5	15	47.5	62.5	31.1	=0.0001
<b>Activity symptoms</b>										
<b>How much of the time during the last two weeks</b>										
1. Have you not been able to eat as much as you would like?	10	7.5	65	35	17.5	37.5	7.5	20	19.8	=0.0001
2. Have you had trouble lifting or carrying heavy objects?	27.5	17.5	37.5	32.5	27.5	40	7.5	10	4.9	=0.027
3. Have you been bothered by a limitation of your diet?	42.5	20	35	35	20	37.5	2.5	7.5	16.3	=0.0001

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**Table (6): Distribution of studied patients according to their mean of laboratory data pre and post intervention (N=80)**

Laboratory data	Pre intervention		Post intervention		P- value
	Mean	± SD	Mean	± SD	
<b>Total bilirubin (mg/dL)</b>	1.08	0.52	0.90	0.36	t= 1.1, P=0.36
<b>Direct bilirubin (mg/dL)</b>	0.32	0.22	0.30	0.12	t= 0.83, P=0.92
<b>Prothrombin concentration (%)</b>	82.81	13.71	81.20	13.4	t= 0.80, P= 0.94
<b>Hb / RBC (g/dL)</b>	12.32	1.88	12.50	1.41	t= 0.10 , P=0.86
<b>WBC (10<sup>3</sup>cells/μL)</b>	5.65	2.17	6.33	2.1	t= 0.95, P=0.16
<b>PLT (10<sup>3</sup>cells/μL)</b>	160.61	89.56	161.61	74.0	t= 1.0, P=0.32
<b>Albumin (g/dl)</b>	3.53	0.66	4.1	0.5	t= 1.2, P=0.46
<b>ALT (U/L)</b>	32.68	15.46	31.2	12.3	t= 0.85, P=0.73
<b>AST (U/L)</b>	31.88	11.72	31.7	10.2	t= 0.76, P=0.19
<b>Kidney function test (mg/dL)</b>	0.85	0.16	0.84	0.11	t= 0.93, P=0.27

**Discussion:**

Regarding socio-demographic characteristics of the current study, it reported that; approximately half of studied cirrhotic patients (45%) aged between 50 - 60 years with mean of  $52.1 \pm 8.3$  years while Atya et al., (2019) found that 60- to less than 65 were studied cirrhotic patients while the mean age was  $59.16 \pm 6.04$  years. The results from data collected in present study showed more than half of studied patients were females. This result was not agreed with Al Ghamdi & Shah, (2018) who conducted study entitled "An Educational Needs Assessment for Patients with Liver Disease in Tertiary liver center" and reported that more than half of patients were males. Likewise, EL-Shafei et al., (2017) conducted study titled "prevalence of reflux esophagitis in Egyptian patients with liver cirrhosis" at Al azhar University Egypt, it revealed that slightly more than two thirds of patients were males. According to occupation, marital status, the present study revealed that only one fifth of studied patients were not work, and the majority of them were married

.This result was agreed with Atya et al., (2019) who reported that, the highest percentages of male patients were not work. As regarding to educational level around two thirds of them were illiterate and the majority of them were married. This findings was in line with a study conducted by Atya et al., (2019) who revealed that, the majority of both study and control group patients were married, housewives, and illiterate. As regards to the place of residence, findings from the current study showed that the majority of patients were lived in rural areas. This finding was supported by Khalil et al., (2015) who conducted a study entitled "Liver Cirrhosis: Effect of Suggested Nutritional Regimen on Patient Outcomes," Doctoral thesis, faculty of nursing, Assuit university, Egypt. Similarly, Atya et al., (2019) reported that, the highest percentage of cirrhotic patients lived in rural area. In addition, Bhattarai et al., (2017) conducted study entitled "Demographic and Clinical Profile in Patients with Liver Cirrhosis in a Tertiary Care Hospital in Central Nepal" found that

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(56.4%) patients were from rural areas. Similarly, a higher prevalence of cirrhotic (70.1%) were from rural background.

Moreover, the finding of the present study was in line with Taha et al., (2015) who study in Internal Medical Department in Minia University Hospital and found that the majority of study patients were married, housewives, illiterate, and come from rural areas (88%, 72%, 80%, respectively)

In one study entitled "Knowledge of Patient with Liver Cirrhosis Regarding Ascites Self-Management: Instructions Nursing Guideline" that conducted by Abdel Reham et al., (2017), was consistent with the present study, who found, around half from study sample were aged equal and less than 60 years Mean  $\pm$  SD 52.4  $\pm$  12.7 year and were married & illiterate male constituted (95%, 95%, 63.3%) respectively. As regarding occupation and residence of study sample, results shows that highest percentage from them were hadn't work and lived in rural area while the lowest percentage from them were employee and housing in urban area.

The Child-Pugh score can help predict all-cause of mortality risk and development of other complications from liver dysfunction, such as variceal bleeding, as well. The present study shows that, the majority of studied patients were diagnosed as Grade A Child-Pugh classification of cirrhosis. This result was not in line with Tsoris & Marlal, (2019) who found that, overall mortality for cirrhotic patients at one year was 0% for Child class A, 20% for Child class B, and 55% for Child class C.

On the other hand, the finding of the present study was inconsistent with Volk et al., (2013) who study "Patient Knowledge about Disease Self-Management in Cirrhosis" and found that the majority of study patients were Child-Pugh class A (70%) and about one third was B (27%) and only C about (3%) respectively.

Regarding to medical data; the results of the present study revealed that, most of studied cirrhotic patients were free from hepatitis B and C (negative). This result was consistent with only one study conducted by Jamil & Durrani, (2018). The study entitled "Assessing the outcome of patients with liver cirrhosis during hospital stay: A comparison of lymphocyte/monocyte ratio with MELD and Child-Pugh scores" in Islamabad, Pakistan. The study reported that the most common cause of hepatic cirrhosis in the study population was due to chronic infection with hepatitis C.

On the other hand, this results was contradicted with many studies. It was not agreed with Atya et al., (2019) who found that, the majority of patients had diagnosed with hepatitis C as a cause for liver cirrhosis. While, Salam et al., (2011) not supported the previous finding as they stated that, majority of patients had cirrhosis due to chronic hepatitis C.

Similarly, this finding was inconsistent with Handady et al., (2015) who studied the "Precipitating Factors of Hepatic Encephalopathy among Sudanese Patients with Liver Cirrhosis, Sudan, who reported that regarding etiology of liver cirrhosis nearly half of cases had viral hepatitis B. Finally, this results was not supported with a study conducted by Kamal et al., (2018)

As regarding presence of chronic diseases, the present study revealed that, the majority of cirrhotic patients under study were free from chronic diseases while minority with chronic diseases (60% chest diseases and 40% hypertension).

The current study reported that the main causes of hospital admission due to comorbidities were stomach bleeding, followed by increase bile in blood, then hypertension, and finally diabetes mellitus. These findings were supported by Abd Elkader et al., (2014) who studied that the "Patients' knowledge assessment regarding factors aggravating esophageal variceal bleeding at a university hospital in Egypt,

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who reported that nearly half of patients presented with hematemesis.

Also, Chang et al., (2015) studied "Epidemiology and clinical evolution of liver cirrhosis in Singapore", reported that diabetes mellitus, hyperlipidemia and hypertension were present in more than one third of patients while renal impairment was reported in minority. Regarding present health history; the present study revealed that more than fifty of patients had gastrointestinal bleeding and more than thirty of them had excess.

On the other hand, this result was inconsistent with Atya et al., (2019) found that diabetes mellitus, hypertension and cancer were present in minority of patients and all of studied patients hadn't renal disease. Likewise, it was agreed with Kuo et al., (2017) who studied "Factors associated with medication non-adherence in patients with end-stage liver disease" in California, San Francisco. The study reported that regarding to medical comorbidities: 48% of patients had hypertension.

Regarding laboratory data, there were an improvement in all of mean score of patient's laboratory data that was agreed with Malky et al., (2016) who carried out study entitled "The Effectiveness of Nursing Intervention Program on Emotional Distress, Self-Efficacy, and Liver Enzymes Among Hepatitis C Virus Patients Undergoing Antiviral Treatment Therapy (Sovaldi Medication) in Liver Institute at Shebin El kom District, Menoufia Governorate, who found a significant reduction of liver enzyme post intervention than pre-intervention .

The present study revealed that there was significant reduction of liver enzyme post program than pre-program. This result was consistent with Foster GR et al., (2015) who studied "Sofosbuvir + peginterferon/ribavirin for 12 weeks vs sofosbuvir + ribavirin for 16 or 24 weeks in genotype 3 HCV infected patients and treatment-experienced cirrhotic patients with genotype 2 HCV: the BOSON

study." In London, Queen Mary University, Barts Health, the findings revealed that the mean Asparate Aminotransferase and Alanine Aminotransferase were increased before applying the nursing intervention while with a significant improvement after applying the nursing intervention. Moreover, it was in agreement with Alavian , et al., (2006), who studied "Preliminary report of Interferon Alfa 2b in combination with Ribivirin for 48 weeks for treatment of Iranian patients with chronic hepatitis C: A quasi-experimental study." In Shiraz E-Medical Journal, who stated that; "nursing intervention for patients with liver diseases has a number of positive effects on physical responses including laboratory findings".

Also, it was supported by Rusu , et al. (2013) who studied that the "Effects of lifestyle changes including specific dietary intervention and physical activity in the management of patients with chronic hepatitis C – a randomized trial" in National Institute of Diabetes, Nutrition and Metabolic Diseases-Bucharest, Romania .It showed that, the mean Asperate and Alanine Aminotransferase were decreased after patient's education and this alteration was statistically significant. Moreover Hauschild et al., (2008) supported the findings and revealed that there were highly statistically significant between total blood investigation of patients at pre intervention program and post intervention program which one quarter of clients was normal changed to three quarter of clients after nursing intervention.

In accordance, Patrick, (2014) in California, studied "Effects of lifestyle changes including specific dietary intervention and physical activity in the management of patients with chronic hepatitis C". They reported that; "intervention program had significant improvements on liver function testes"

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Concerning the effect of a designed nursing intervention on health profile scores, the current study revealed a highly significant improvement in the different physical health score, mental health score, and social health scales items (Duke Health Profile Index (DHPI). Total score of Duke Health profile increased post intervention. This finding was congruent with Taha et al., (2015) who found that the patient's mean score for total quality of life was low and considered that patients have worse quality of life at base line assessment for patient with liver cirrhosis. The result of the current study was also matched with Bianchi et al., (2003) and Cordoba, (2005) who studied that "Quality of life and congestive function in hepatitis C at different stages of liver disease" they stated that chronic liver disease (CLD) had negative effect on QOL and QOL worsened as the severity of disease increased.

In Egypt, in one study conducted by Youssef et al., (2015) who studied "Factors associated with health-related quality of life among patients with liver cirrhosis in Egypt" found that, patients had low HRQOL, these findings highlight the needs of patients with liver cirrhosis in Egypt. Engaging the patients' family in care planning may decrease patients' burden and improve their HRQOL. This study also provides a rationale to develop future research in symptom management to enhance HRQOL.

The current study also, was in line with McSweeney et al., (2020) who conducted a study entitled "Health-related quality of life and patient-reported outcome measures in Non-alcoholic steatohepatitis -NASH-related cirrhosis" and showed that, patients with NASH-cirrhosis are reported to suffer from lower HRQoL than patients with non-cirrhotic NASH and the general population with respect to physical health/functioning, emotional health and worry, and mental health.

Likewise, the present study was supported by Janani et al., (2017) who conducted a

study entitled " Health-related quality of life in liver cirrhosis patients using SF-36 and CLDQ questionnaires and showed that ,liver cirrhotic patients had significantly lower SF-36 HRQOL scores compared to the healthy population ( $p < 0.0001$ ) for all domains.

The present study findings revealed a significant improvement ( $p < 0.000$ ) in the different symptoms of liver cirrhosis post intervention than that of the pre intervention, which ranged between  $P=0.027$  to  $P=0.0001$ . However, there were insignificant difference between pre and post intervention regarding "experienced bodily pain" and experienced abdominal pain".

Taha et al., (2015) who studied "Assessment of educational health problems among liver cirrhosis patients to improve their Quality Of Life in Minia University Hospital", as regards the domain of abdominal symptoms, the majority of the patients in the study sample felt abdominal bloating a little of time, pain and discomfort most of time during the last two weeks in the time of data collection. Also Furate et al., (2013) who studied "The Impact of Self-Care Instructional program on Quality of Life of Patients with Liver cirrhosis at El-Kasr EL Ainy Cairo University Hospital" found that, In relation to the domain of abdominal symptoms, the majority of the patients in the study sample felt abdominal distension, pain and discomfort most of time during the last two weeks in the time of data collection, more than one third of them felt abdominal pain and discomfort all time, while the minority of them felt it little of time.

These findings are supported by Garcia & Lim, (2009) who studied the "Management & Treatment of Patients With Cirrhosis and Portal Hypertension" showed that, symptoms of cirrhosis may develop gradually, when symptoms do occurs they can include abdominal bloating, abdominal indigestion or pain, nausea and vomiting, swelling or fluid



buildup of the legs, and in the abdomen (ascites), vomiting blood, or blood in stool, weakness and weight loss.

### **Conclusion:**

**In the light of the present study findings, it can be concluded that:**

Implementing Nursing intervention has a significant role in enhancing patient health outcomes including lowering symptoms severity and improving health scores among studied patients with liver cirrhosis

### **Recommendations:**

Based on the results of the present study, it can be suggested that:

- Activate periodic checkup for the public especially adults regarding liver investigation and laboratory data to guarantee healthy liver.
- Providing continuous education programs about self-care for liver cirrhotic patients in hepatology units to overcome symptoms and complication of the disease.
- Conducting periodic surveys and medical campaigns under supervision of Ministry of health and Ministry of higher education, including universities to discover new cases of hepatitis B, C viruses to control infection and before occurrence of complications.
- Increase awareness to the public through T.V and mass media about definition, causes and symptoms of liver cirrhosis and encourage people to modifying their behaviors for acquiring healthy life styles and prevent exposure to infection
- Continuous educational training programs for hepatological nurse symptoms management related liver cirrhosis e.g abdominal pain, bodily pain, dry mouth, muscle cramp and itching.
- Further studies are needed to determine whether more educational interventions can effectively carried

out to improve outcomes in patients with cirrhosis particularly those that involve patient self- management for symptom –related- liver cirrhosis.

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