Effect of Self Management Program on Health Outcomes of the Patients with Liver Cirrhosis

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Abstract

Background: liver cirrhosis defined as chronic hepatic disease characterized by diffuse destruction and fibrotic regeneration of hepatic cells. It is started by an asymptomatic stage "compensated cirrhosis", followed by "decompensated cirrhosis", which is marked by the development of complications **.Aim of the study:** was to evaluate the effect of self management program on outcomes of patients with liver cirrhosis. **Hypothesis**: H1- the level of liver cirrhosis patients' knowledge will be improved positively after the implementation of self management program, H2- the level of patients self management behavior will be improved positively after the implementation program, H3- the patients' health outcomes as HRQL and symptoms experience will be positively improved after the implementation of self management program. **Design:** Quasi- experimental research design was utilized in this study to achieve the aim of this study. **Setting:** The study was carried out in hepatology and gastrointestinal department at Benha University Hospital. **Sample:** A purposive sample of (58) patients from both sexes diagnosed with liver cirrhosis (third stage) for a period of 9 months. **Tool:** one tool was used divided into six section (1): patient's demographic data, (2): patient's medical history, (3): quality of life, (4) patient's knowledge questionnaire, (5) self-management behavior questionnaire, (6) patients' health outcomes assessment divided into two sections which health related quality of life (HRQOL) and patient's symptoms experience. **Results:** The study revealed that nearly all studied of patients had unsatisfactory knowledge and behavior score regarding self care management pre self care program implementation which improved immediately,1st and 2nd month post program implementation. **Conclusion:** Providing self care program has been shown to be effective on patients' knowledge, behavior and HRQOL. **Recommendation:** Providing liver cirrhotic patients with continuous education about self-care to overcome symptoms and complications of the disease and thus improve their quality of life

Keywords: Liver cirrhosis, self care program, HRQOL.

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Introduction

Liver cirrhosis is a late-stage liver disease in which healthy liver tissue is replaced with scar tissue and the liver is permanently damaged. The scar tissue blocks the flow of blood through the liver and slows its ability to process nutrients, hormones, drugs and natural toxins . It also reduces the production of proteins and other substances made by the liver. Cirrhosis eventually keeps the liver from working properly (**Feldman, Friedma & Brandt , 2021).**

It is the final result of chronic parenchymal distortion, cell loss, fibrous band formation, and nodule formation, with shrinkage of the liver . It is started by an asymptomatic stage "compensated cirrhosis", followed by "decompensated cirrhosis", which is marked by the development of complications **(Nanchal & Subramanian ,2018**) .There are many risk factors for cirrhosis as; drinking excess amounts of alcohol as it damages the liver by changing how the body breaks down food. Other risk factor is hepatitis infection that caused by viruses that are spread from exposure to the body fluids of an infected person lead to liver inflammation and injury especially hepatitis B and C, Nonalcoholic Fatty Liver Disease (NAFLD) is other risk factor for cirrhosis that a buildup of fat in the liver that is not caused by drinking alcohol. This type of hepatitis is associated with: diabetes, obesity, high triglyceride levels in the blood, coronary artery disease (CAD), Intestinal bypass surgery, long-term treatment with corticosteroids (**Atya, et al., 2019).**

The early stage of cirrhosis is called compensated cirrhosis, at this stage patient may have no symptoms at all. Patients with compensated cirrhosis often do not have signs or symptoms related to their cirrhosis, but often have symptomatic complications related to cirrhosis including those related to hepatic insufficiency (jaundice or hepatic encephalopathy) and those related to portal hypertension (ascites or variceal hemorrhage) (**Thornton, 2021).**

If the cause of cirrhosis persist (for example, if the person continues to drink alcohol, or if hepatitis or other causes of cirrhosis are not treated) patient progress to other type of cirrhosis called decompensated cirrhosis the pressure in the portal vein gets higher and the few remaining healthy liver cells are not able to do all the work for the entire liver. As the disease progresses symptoms become more severe and may be life threatening ***(*Cook, et al., 2019).**

Assessment of patient's knowledge about disease process is necessary. Planning short and simple self-care protocols has a significant effect on the patient's control of their disease and its side effects; and can improve their quality of life and life satisfaction (**Janani et al., 2018).**

Aim of the Study:

Evaluate the effect of self management program on outcomes of patients with liver cirrhosis.

Research hypotheses

To fulfill the aim of this study, the following research hypotheses were formulated

H1 -The level of Patients' knowledge will be improved positively after the implementation of self management program for patients with liver cirrhosis

H2-The level of patient's self management behavior will be improved positively after the implementation of self management program.

H3- The Patients' health outcomes as HRQL and symptoms experience will be positively improved after the implementation of self management program.

Subjects and methods:

Research design: A quasi-experimental design was utilized to achieve the aim of the study.

Setting: The study was carried out in hepatology and gastrointestinal department at Benha University Hospital.

Sample: A purposive sample of (58) patients from both sexes diagnosed with liver cirrhosis (third stage) for a period of 9 months.

Tools of data collection

Tool I: Structured interview questionnaire

It was developed by the researcher after reviewing related recent literature. It covered items related to different aspects of patient' history, knowledge and self management and included the following six parts:-.

Part one: patients' demographic data, this part concerned with assessment of patients' demographic characteristics. It composed of six questions related to age, sex, educational level, marital status, occupation and residence.

Part two: Patient's medical history: It aimed to assess patients' complaint, included previous hospitalization and its causes, causes of current hospitalization, detection of disease, causes of liver cirrhosis, previous blood transfusion and its amount, associated chronic diseases, history of medication.

Part III: Quality of life: included questions about smoking, duration and number of cigarettes intake/ day.

Part IV Patient's knowledge questionnaire (pre and post test):

It was developed by the researcher through review of related recent literature. It aimed to assess patient's knowledge regarding liver cirrhosis and self management, it included 23 questions as following:

- Anatomy, function and definition of liver cirrhosis (three questions).
- Risk factors, causes, signs, symptoms and diagnosis of cirrhosis (four questions).
- Treatment of cirrhosis (two questions).- -Complications of cirrhosis and methods of its prevention (five questions).

-Precautions to relieve symptoms of cirrhosis as constipation, anorexia, indigestion, itching and insomnia (six questions).

-Dietary instructions for patients with liver cirrhosis (three questions).

Scoring system:

The correct answer was given one score and the incorrect answer was given zero, according to total scores of knowledge, it converted into a percent Then categorized as follow:

- ❖ Poor level (less than 50%) = less than 12 degrees
- ❖ Moderate level (50% to less than 80%) = 12 to less than 19 degrees
- ❖ High level (equal and more than 80%) = 19 to 23 degrees
- Total score of knowledge are: 23 degrees.

Part V: Self-management behavior questionnaire (pre and post test):It was adapted from (***Wang et al, 2015***) aimed to assess patient's level of self management behavior with liver cirrhosis. The questionnaire included – 30 items within four dimensions as follow:

- Diet management (10 questions).
- Daily life style (11 questions).
- Medication intake (4questions).

- Illness monitoring (5 questions).

Scoring system:

A five point Likert scale was used as follow:

- "All the time" (4 points);
- " Most of the time" (3 points);
- " Some of the time" (2 points);
- "Rarely" (1 point);
- "Never" (zero point).

Total score of self-management behavior are: 120 degrees .The total score was calculated and converted into percent, then categorized as follow:

- Good behavior (equal to or more than 80%) = 96 to 120 degrees
- Fair behavior (50% to less than 80%) = 60 to less than 96 degrees
- Poor behavior (less than 50%) = less than 60 degrees

Part VI: Patients' Health Outcomes Assessment: (pre and post program): It included two sections:

Section I: Health Related Quality of Life (HRQL) : It was developed by (***Ware et al. , 2000***) , aimed to evaluate the patients' health outcome regarding daily life and health wellbeing for patients with liver diseases , pre and post self-management program.

It consists of 36 questions, split into eight domains with two summary scores: the physical component

summary (PCS) and the mental component summary (MCS), eight domains scores: physical functioning, daily activities, bodily pain, general health, vitality, social functioning, and role emotional and mental health. The total sore for HRQL was: 112 score

The worst score are: 17 degrees, while the highest score are: 112 degrees.

Section II: Patient's Symptoms experience.

It was developed by the researcher through review of related literature. It aimed to assess and understand the experience of patients with their symptoms which influence their daily life, it include nine questions about: gastrointestinal symptoms, fatigue, joint pain, weakness, dyspnea , peripheral edema, weight loss and memory problem or psychosocial symptoms as depression and anxiety.

Scoring system:-

- Always (zero degree)
- Sometimes(one degree)
- Never (two degrees)

The total sore for patient's symptoms experience was: 18 degrees

Tool validity: The tool was reviewed by a panel of five experts from medical surgical nursing field at faculty of nursing Benha University to test the relevance, clarity of tools' content, comprehension, understanding, applicability and necessary modification was done accordingly.

Tool reliability: The reliability for self-administered questionnaire that used to assess patients' knowledge = 0.844, for patient' behavior was 0.801, for patient' feeling of symptoms was 0.920 and for patient' HRQOL was 0.814.

Ethical considerations:

Official permissions for data collection were generated from Hospital directors and head managers of the hepatology and gastrointestinal at Benha university hospital by the submission of a formal

letter from the dean of Faculty of Nursing at Benha University. Also, the study approval was obtained from the ethical committee of Faculty of Nursing before initiating the study work. Once the researcher was granted approval, patients' approval was taken after an explanation regarding the aim of the study; they were also informed that their participation is optionally, and that they have the right to withdraw at any time without any consequences. Then, patients' oral consent to participate in the study was obtained. The researcher was assured maintaining anonymity and confidentiality of data. All information was gathered used only for their benefit and for the purpose of the study.

Pilot study: A pilot study was conducted on 10% (6 patients) of all patients that were included in the study from the total number of patients (58) in order to test the clarity and applicability of the tools.

Field work:

After the study protocol has been approved, an official permission was taken from the director of Benha University hospital after explanation of the purpose of the study.

Preparatory phase included reviewing the recent related literatures of various aspects of the study using books, periodicals, magazines and internet…etc.in order to develop the data collection tool and nursing guidelines.

Assessment phase: each patients was interviewed using the structured interview questionnaire using (Tool I)

Planning phase: The program developed by the researcher according to patients' needs and deficiencies in their performance, teaching materials was prepared e.g. discussion, demonstration and booklet that helped in covering theoretical and practical information.

Implementation phase: The researcher gave the program booklet to patients immediately after data collection

Evaluation phase: The post test for patient' knowledge through self-administered questionnaire (part 4) ,behavior (part 5) and HRQOL (part 6) was done after giving the self care program to them.

Results:

Table (1): demonstrates that, 48.3%of the studied patients' age between 40-<50 years with a mean age of (51.84 ± 5.77), while 74.1% of them were males and married. Regarding educational level, 44.8% of them were read and write, 56.9% of them had manual work and 81% lived in rural areas.

Table (2): clarifies that mean score of studied patient' total knowledge about liver cirrhosis self-care practice was improved from 5.71 ± 2.21 pre program implementation to 20.16 ± 1.62 &17.16 ± 2.80 post immediate and 1st month post program implementation. In addition, there was statistically significant improvement in patients' knowledge regarding self care practice pre and average post program implementation with p- value (<0.001*).

Table (3): clarifies that mean and standard deviation of studied patient' total behavior about liver cirrhosis self-care practice was improved from 41.33 ± 6.78 pre program implementation to 71.62 ± 5.93&57.97 ± 5.91 on 1st and 2nd month post program implementation. Also, there was

statistical significant difference between patient' behavior about self-care pre and average post program implementation with p value (<0.001).

Figure (1) demonstrates that the mean %score of the studied patients' knowledge in pre self care program implementation was 23.8% which improved to 84.0% in immediate post self management program implementation and reached to 77. 7% on 1st month of follow up.

Figure (2) demonstrates that the total patients' behavior in pre self care program implementation was 41.33% which improved to 71.62% on 1st month post self management program implementation and decline on the 2nd month of follow up to 57.97%.

Figure (3) demonstrates that mean % score of patients' HRQOL related to self-care practice pre and post program implementation. illustrates that mean % score of the studied patients' regarding HRQOL in pre self care program implementation was 54.6% which improved to 58.2% on 1st month post self management program implementation and reached 51.4% on the 2nd month of follow up .

Table (4) shows that, mean and standard deviation of degree of patients' feeling of symptoms was (5.26 ± 1.55) pre program implementation which increased on the 1st month post program implementation to reach (11.72 ± 2.10) and on the 2nd month post program to be (10.03 ± 1.65) .in addition to, there was a high statistically significant differences in patient's feeling of symptoms pre and post self care practice program implementation (p <0.001).

Table (5) shows that there was high significant statistical relation between patients' total behavior and their sex in average post self care practice program implementation. Also, there was statistically significant relation between patients' total behavior and their marital status in average post self care practice program implementation.

Table (6) shows that there statistically negative correlation between total patients' knowledge and their symptoms in average post self care practice program implementation. Also, there was statistically significant negative correlation and statistically significant positive correlation (0.005*) between patients' behavior and their HRQOL in average post self care program implementation, respectively.

Table (1): Table (1): Distribution of the studied patients regarding their demographic characteristics (n= 58)

Variables	Total (n= 58)	
	No.	%
Age (years)		
30 – < 40 years old	3	5.2
40 – < 50 years old	28	48.3
50 – 60 years	27	46.6
Mean ± SD.	51.84 ± 5.77	
Sex		
Male	43	74.1
Female	15	25.9
Education level		
Illiterate	22	37.9
Read and write	26	44.8
Intermediate qualification	6	10.3
High qualification	4	6.9
Marital status		
Single	1	1.7
Married	43	74.1
Divorced	5	8.6
Widowed	9	15.5
Occupation		
Manual work	33	56.9
Employee	13	22.4
Not working	12	20.7
Residence		
Rural	47	81.0
Urban	11	19.0

Table (2): Mean , standard deviation and significant difference of patients' knowledge related to self-care pre and post program implementation (n=58)

Variables	TS	Pre test	Post test			Fr (p)	Pretest vs. Post test		
			Immediate	1st month	Average		p_1	p_2	Z (p_3)
Anatomy, function and definition of liver cirrhosis									
Min. –Max.	**(0 – 3)**	0.0 – 3.0	1.0 – 3.0	0.0 – 3.0	1.0 – 3.0	90.742* (<0.001*)	<0.001*	<0.001*	6.565* (<0.001*)
Mean ± SD.		0.74 ± 0.74	2.57 ± 0.53	2.12 ± 0.84	2.47 ± 0.60				
Risk factors, causes, signs, symptoms and diagnosis of cirrhosis									
Min. –Max.	**(0 – 4)**	0.0 – 4.0	2.0 – 4.0	1.0 – 4.0	2.0 – 4.0	88.962* (<0.001*)	<0.001*	<0.001*	6.363* (<0.001*)
Mean ± SD.		1.22 ± 0.86	3.43 ± 0.68	2.93 ± 0.93	3.34 ± 0.74				
Treatment of cirrhosis									
Min. –Max.	**(0 – 2)**	0.0 – 2.0	1.0 – 2.0	0.0 – 2.0	1.0 – 2.0	80.821* (<0.001*)	<0.001*	<0.001*	6.275* (<0.001*)
Mean ± SD.		0.36 ± 0.52	1.74 ± 0.44	1.45 ± 0.65	1.72 ± 0.45				
Complication of cirrhosis and methods of prevention									
Min. –Max.	**(0 –**	0.0 – 4.0	3.0 – 5.0	1.0 – 5.0	2.0 – 5.0	103.084*	<0.001*	<0.001*	6.585*
Mean ± SD.	**5)**	1.31 ± 1.03	4.28 ± 0.81	3.74 ± 1.02	4.14 ± 0.85	(<0.001*)			(<0.001*)
Precautions to relieve symptoms of cirrhosis	**(0 – 6)**								
Min. –Max.		0.0 – 4.0	4.0 – 6.0	1.0 – 6.0	3.0 – 6.0	104.245* (<0.001*)	<0.001*	<0.001*	6.569* (<0.001*)
Mean ± SD.		1.41 ± 1.09	5.34 ± 0.74	4.50 ± 1.08	5.12 ± 0.80				
Dietary instructions									
Min. –Max.	**(0 – 3)**	0.0 – 2.0	2.0 – 3.0	0.0 – 3.0	1.0 –3.0	98.464* (<0.001*)	<0.001*	<0.001*	6.651* (<0.001*)
Mean ± SD.		0.66 ± 0.71	2.79 ± 0.41	2.41 ± 0.77	2.74 ± 0.48				
Total									

Min. –Max. Mean ± SD.	**(0–23)**	1.0 – 12.0 5.71 ± 2.21	17.0 – 23.0 20.16 ± 1.62	8.0 – 23.0 17.16 ± 2.80	13.0 – 23.0 18.88 ± 1.99	112.241* (<0.001*)	<0.001*	<0.001*	6.624* (<0.001*)

Table (3): Mean and standard deviation and significant difference of patients' behavior related to self-care pre and post program implementation (n=58)

Variables	TS	Pre test	Post test			F (p)	Pretest vs. Post test		
			1st month	2nd month	Average		p_1	p_2	t (p_3)
Eating habits:									
Min. –Max.	**(0–40)**	8.0 – 22.0	16.0 – 33.0	16.0 – 27.0	17.0 – 30.0	131.973* (<0.001*)	<0.001*	<0.001*	12.847* (<0.001*)
Mean ± SD.		15.17 ± 3.58	23.64 ± 3.51	20.76 ± 3.05	22.47 ± 2.90				
Mean % Score		**37.93 ± 8.96**	**59.09 ± 8.77**	**51.90 ± 7.61**	**55.50 ± 7.26**				
Daily life style									
Min. –Max.	**(0–44)**	37.93 ± 8.96	16.0 – 33.0	15.0 – 32.0	17.0 – 31.0	198.780* (<0.001)	<0.001*	<0.001*	18.057* (<0.001)
Mean ± SD.		37.93 ± 8.96	26.28 ± 4.14	23.62 ± 4.03	25.19 ± 3.45				
Mean % Score		**32.99 ± 6.23**	**59.72 ± 9.40**	**53.68 ± 9.16**	**56.70 ± 7.88**				
Medication									
Min. –Max.	**(0–16)**	0.0 – 12.0	5.0 – 14.0	2.0 – 12.0	5.0 – 12.0	75.255* (<0.001)	<0.001*	0.001*	7.869* (<0.001)
Mean ± SD.		6.17 ± 2.42	9.60 ± 2.21	6.72 ± 1.99	8.40 ± 1.74				
Mean % Score		**38.58 ± 15.14**	**60.02 ± 13.80**	**42.03 ± 12.43**	**51.02 ± 10.89**				
Follow-up of disease									
Min. –Max.	**(0–20)**	2.0 – 11.0	7.0 – 17.0	2.0 – 13.0	6.0 – 13.0	216.544* (<0.001)	<0.001*	<0.001*	16.758* (<0.001)
Mean ± SD.		5.47 ± 2.05	12.10 ± 2.24	6.86 ± 2.32	9.72 ± 1.81				
Mean % Score		**27.33 ± 10.23**	**60.52 ± 11.19**	**34.31 ± 11.60**	**47.41 ± 8.70**				
Total behaviors									
Min. –Max.	**(0–120)**	27.0 – 55.0	57.0 – 84.0	46.0 – 69.0	56.0 – 74.0	439.724* (<0.001)	<0.001*	<0.001*	26.660* (<0.001)
Mean ± SD.		41.33 ± 6.78	71.62 ± 5.93	57.97 ± 5.91	65.05 ± 4.46				
Mean % Score		**34.44 ± 5.65**	**59.68 ± 4.94**	**48.30 ± 4.92**	**53.99 ± 3.69**				

Table (4): Mean and standard deviation of the studied patients' experience of symptoms pre and post of self-care program implementation (n= 58)

Variables	TS	Pre test	Post test			F (p)	Pretest vs. Post test		
			1st month	2nd month	Average		p_1	p_2	t (p_3)
Patient' feeling of symptoms									
Min. –Max.	(0–18)	2.0 – 9.0	6.0 – 16.0	5.0 – 14.0	6.0 – 15.0	282.003* (<0.001*)	<0.001*	<0.001*	19.483* (<0.001*)
Mean ± SD.		5.26 ± 1.55	11.72 ± 2.10	10.03 ± 1.65	11.14 ± 1.70				

Table (5): Relation between total patients' behavior and their demographic characteristic (n=58)

Demographic characteristic	N	Overall behavior	
		Pre	Average post
		Mean ± SD.	Mean ± SD.
Age (years)			
30 – < 40 years old	**3**	39.33 ± 11.85	65.67 ± 2.08
40 – < 50 years old	**28**	39.43 ± 6.24	65.18 ± 4.70
50 – 60 years	**27**	43.52 ± 6.35	64.85 ± 4.50
^{F}p		**0.069**	**0.937**
Sex			
Male	**43**	40.67 ± 6.62	64.37 ± 4.87
Female	**15**	43.20 ± 7.12	67.0 ± 2.04
^{t}p		**0.217**	**0.006***
Education level			
Illiterate	**22**	42.82 ± 6.07	65.14 ± 4.79
Read and write	**26**	39.92 ± 7.21	65.15 ± 4.32
Intermediate qualification	**6**	41.17 ± 5.91	64.67 ± 4.63
High qualification	**4**	42.50 ± 9.47	64.50 ± 4.93
^{F}p		**0.523**	**0.989**
Marital status			
Single	**1**	40.0	66.0

Married	**43**	40.98 ± 6.53	64.53 ± 4.26
Divorced	**5**	45.80 ± 8.53	70.40 ± 2.51
Widower	**9**	40.67 ± 7.31	64.44 ± 4.82
^{F}p		**0.502**	**0.042***
Occupation			
Manual work	**33**	42.0 ± 7.09	64.30 ± 4.56
Employee	**13**	42.15 ± 7.70	65.15 ± 4.47
Not working	**5**	39.20 ± 2.59	67.0 ± 5.20
Housewife	**7**	38.14 ± 5.11	67.0 ± 3.06
^{F}p		**0.476**	**0.365**
Residence			
Rural	**47**	41.53 ± 7.17	65.26 ± 4.48
Urban	**11**	40.45 ± 4.95	64.18 ± 4.45
^{t}p		**0.640**	**0.477**

Table (6): Correlation between total patients' knowledge, behavior, patients' feeling of symptoms and HRQOL (n=58)

		Total knowledge		Total behaviors	
		Pre	**Average post**	**Pre**	**Average post**
Patient symptoms	**r**	0.038	-0.069	0.170	0.092
	p	0.778	0.606	0.201	0.493
Health related quality of Life	**r**	0.115	0.094	-0.211	-0.360*
	p	0.392	0.483	0.111	0.005*

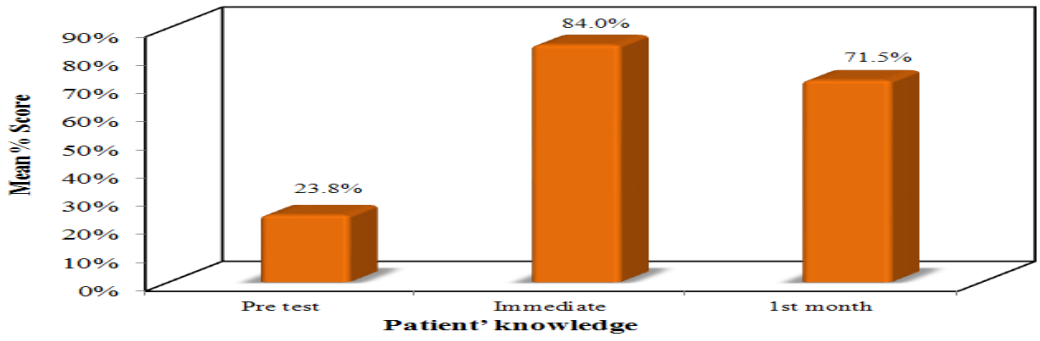

Figure (1): Mean % score of patients' knowledge regarding to self-care practice pre and post program implementation (n=58)

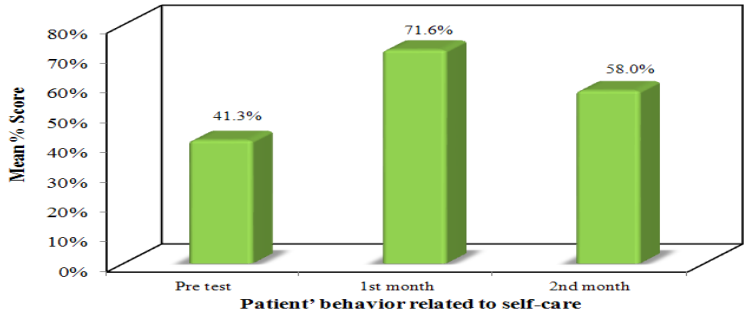

Figure (2): Mean and standard deviation of patients' behavior related to self-care pre and post program implementation (n=58)

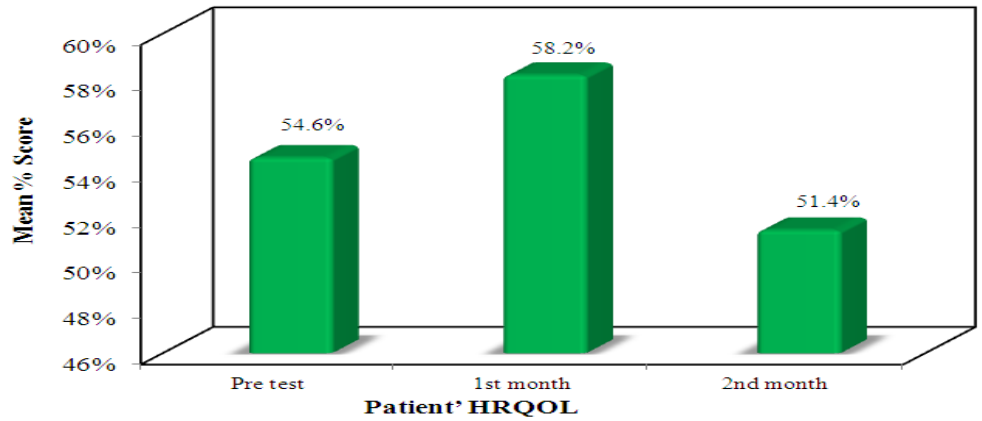

Figure (3) Mean % score of patients' HRQOL related to self-care practice pre and post program implementation (n=58)

Discussion

Liver cirrhosis is a chronic hepatic disease characterized by diffuse destruction and fibrotic regeneration of hepatic cells. As necrotic tissue causes fibrosis which alters the liver structure and normal vasculature, impairs blood and lymph flow and ultimately causes hepatic insufficiency .Cirrhosis characterized by diffuse nodular regeneration and collapse of liver structures together causing pronounced distortion of hepatic vascular architecture. ***(Tandon & Montano-Loza, 2019).***

The present study revealed that near half of patients' age between forty to less than fifty years with mean age (51.84 ± 5.77) years. From researcher point of view this might be related to liver disease is common in middle and old age than young age or might due to aging increase the risk for chronic illness. This finding was in agreement with ***Roshdy et al., (2019)***, who studied "Impact of early pulmonary rehabilitation on post liver transplantation " and reported that the mean age of the participants was (49.2 ±7.12years) .

Also, this result in the same line with ***Totti et al. , (2020)***, who studied" The observational retrospective study on patient lifestyle in the pre transplantation and post-transplantation period in the Emilia-Romagna region, Italy" and reported that the mean age of liver transplantation recipients was (50 ± 6 years).

As regard to sex, the current study revealed the present study results showed that nearly three quarters of studied patients were males. From researcher point of view, this might be due to liver disease is common in males than females. This finding is agreed with ***Shedeed, (2021)*** who studied "Home health care model to improve quality of life among post liver transplant recipients"and reported that more than three fifths of the studied patients were males. . In contrast ***Ismail , Morgan & Faragb, (2018)*** mentioned in their study about "Assessment of auditory function in chronic hepatitis C patients treated by sofosbuvir" that more than half of the studied samples were females.

As regard to educational level, the present study findings revealed that less than half of studied patients were read and write. From researcher point of view, this might be due to their rural culture that not interested in education and they put their interest and effort to learn technical professions .This result was in the same line with **Zhu et al., (2016),** who studied "Explore the depression in patients with chronic hepatitis B and cirrhosis is closely associated with the severity of liver cirrhosis" and reported that liver cirrhosis is more common in patients with middle school education.

On the other hand this result disagreed with ***Mohammed , (2019),*** who reported that more than half of the studied patients were illiterate in his study about" Impact of implementing self-care ot protocol on improving quality of life of patients with liver cirrhosis".

As regard to patient' marital status, the current study revealed that In relation to marital status about three quarters of the studied patients were married. This might be due to cultural aspect of the studied sample. This finding was supported by ***Abdullah, Abd El-aziz & Medhat, (2021),*** who studied " Quality of life among elderly patients with chronic liver diseases at Al-Rajhy liver Hospital, Assiut University" and reported that the majority of the studied sample. and reported that the majority of the studied sample were married. Also, this finding was compatible with ***Abd El Rahman, Esmat& Abd Ellatef, (2018),*** who conducted study entitled" Knowledge, practice and satisfaction of clients with hepatitis c virus regarding sovaldi therapy " and reported that most of the sample were married.

Concerning occupation, the results of the present study showed that more than half of the studied patients worked manual work, this might be due to their level of education and their residence as most of them were from rural areas. This result was in accordance with ***Abdel Rehaim & Mohamed, (2017),*** who performed study about "Knowledge of patient with liver cirrhosis regarding ascites self-management: instructions nursing guideline" and reported that the majority of patients worked as employers and farmers (workers).

In contrast, ***Al-Johani , Aljehani & Alzahrani, (2018)***, who studied" Assessment of knowledge about liver cirrhosis among Saudi population " and

reported that two-thirds of the participants were employees. Also, this finding is in contrast with a study conducted by ***Shamsaeefar et al., (2020),*** who studied "Quality of life among liver transplantation recipients before and after surgery , a single-center longitudinal study, Shiraz, Iran, " and stated that more than half of studied patients sample were unemployed.

Concerning residence, the present study showed that the majority of the studied patients were lived in rural areas. From researcher point of view, this might be due to living in rural area in which individuals have a various life style factors such as nutrition and water intake, contact with pollutions, infection exposure, can one precipitating risk for liver cirrhosis development. This finding was in the same line with ***Abdullah (2020)***, who mentioned that most of studied patients were living in rural areas. In contrast ***Majeed& Atiyah (2015)*** who studied "Impact of liver cirrhosis upon adult patients' daily living activities at Baghdad Teaching Hospitals" and clarified that more than half of studied sample were from urban areas.

The study revealed that there was an improvement in mean scores of studied patients' total knowledge regarding self care management post program implementation compared to pre program implementation. From researcher point of view this might be attributed to theoretical sessions that were provided to patients which cover all aspects of liver cirrhosis and explanation of the self care program. These results come in accordance with a study conducted by ***Elshamy ,Mohamed & Maan, (2018), report***ed that there was an improvement in the studied patients knowledge post instruction application.

In relation to patients' behavior related to self care pre and post program implementation, the present study revealed there was statistically significant difference between patients' behavior pre and average post program implementation with p value (<0.001). It is in the same line with ***Alfauomy, Elshazly& Abd EL Moneam, (2020),*** whose study was about "Effect of nursing interventions on self-management behaviors of female geriatric patients with liver cirrhosis "and reported that, there was a statistical significant difference between pre and post interventions in the study group than control group (p=0.001) with the mean score of overall self management behaviors for the study group was (38.40±5.17) pre interventions increased to (56.40±11.17) post interventions , while the mean score for the control group was(41.08±6.08) pre interventions compared to (43.80±7.63) post interventions with no statistical significant difference between pre and post interventions in the control group (p=0.179).

In relation to patients' feeling of symptoms the present study revealed that there was a significant decrease in feeling of symptoms and discomfort first and second month post self care program implementation compared to pre-implementation. From researcher point of view this might be due to patients follow healthy behaviors in different aspects of daily life which reflect on them on decreasing discomfort symptoms of disease. The findings of the present study were congruent with ***Israelsen , Gluud & Krag , (2017)***, who reported that there was a significant decrease in abdominal symptoms as nausea and vomiting after the educational intervention in the case group, while the control group didn't show any significant

change in their study about " Acute kidney injury and hepato renal syndrome in cirrhosis".

Regarding HRQOL the study revealed that there was a statistical significant improvement in patients' total HRQOL post program implementation compared to pre program implementation. This might be due to effect of following healthy behavior and monitoring of disease which reflect on their quality of life. These results come in accordance with a study conducted ***by Gazineo et al., (2021)***, in their study entitled "Health-related quality of life in outpatients with chronic liver disease: a cross-sectional study" and reported that before receiving education, patients in the study group, scored low to moderate quality of life which improved after one month of receiving the educational program, while remains the same in the control group.

Additionally, these results come in the same line with ***Ghaemnia, Baraz & Shariati (2016) ,***who studied "The effect of self-care program on the quality of life in patients suffering from unstable angina pectoris" and revealed that, there was a significant improvement in health-related quality of life in the study group after educational program, while there was no statistically significant improvement in the control group.

Regarding the relation between studied patients' total behavior score and their demographic characteristics, the current study showed that there was The present study revealed that there was statistically significant relation between patients' total behavior regarding self care management and their sex and marital status in average post self care program implementation. This result was in the same line with these study findings were consistent with ***Gezginc, et al., (2019),*** who studied "The relationship between depression and healthy lifestyle behaviors of patients with history of transplant, Istanbul, Turkey", and found that there were statistically significant relation between the total score of healthy lifestyle behaviors and patients marital status, gender, educational level and income.

Concerning correlation between total patients' knowledge, behavior, patients' feeling of symptoms and HRQOL the study revealed that there was statistically negative correlation between total patients' knowledge and their symptoms in average post self care program implementation. Also, there was statistically significant negative correlation and statistically significant positive correlation between patients' behavior and their HRQOL in average post self care program implementation. These results were consistent with ***Besely et al., (2022)*** , who studied " Effect of educational nursing interventions program on the severity of extra hepatic manifestations among patients with chronic hepatitis C virus " and revealed that enrichment of patients with nursing intervention and knowledge about chronic hepatitis C, seemed to have positive effects on improving patients' knowledge about diseases and managing their symptoms and self-care modalities that reflected by improvement of patients complains especially fatigue level.

In addition to, ***Alavinejad et al., (2019),*** who mentioned in their study "The effect of nutritional education and continuous monitoring on clinical symptoms, knowledge, and quality of life in patients with cirrhosis" that there was significant relation between studied patients attitude and their quality of life also, illustrated

that the intervention had positive effects on quality of life in patients with liver cirrhosis. By improving quality of life, their attitude to treatment can be more promising and have better effects.

Conclusion

Based on the findings of the current study, it can be concluded that:-

The majority of the studied patients had unsatisfactory level of knowledge, behavior and HRQOL regarding self care, while the majority of the studied patients had high statistically significant improvement in their knowledge, behavior and HRQOL post self care program implementation that supported the study hypotheses.

Recommendations

Based on results of the present study, the following recommendations can be suggested:

For further researcher:-

-Make further research on effect of self care protocol on patients self efficacy.

-Assess effect of educational program on occurrence of complication.

For patients:-

-Providing liver cirrhotic patients in hepatology units with continuous education about self-care to manage their symptoms and complications of the disease which reflect on improve their quality of life.

-Distribution of the developed self-care program to liver cirrhotic patients in hepatology units through the responsible personal.

For health care facility:-

-Increase awareness of general population about causes of liver cirrhosis such as, hepatitis B&C viruses and encourage people to take a more active role in preventing exposure to these viruses and modifying their behavior that permit transmission.

-Replication of the study in different hospital settings for generalization of the results

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