
IMPACT OF PSYCHOSOCIAL INTERVENTION ON THE QUALITY OF LIFE FOR THE PATIENTS WITH HEPATITIS C RECEIVING INTERFERON AND RIBAVIRIN THERAPY

1 Azza Ibrahim Abd El-raof, 2 sanaa habashy shaheen,
3 El-sayed Abdel latif El-Naggar , 4 Amany Mohamed Shebl &
5Gamal El-sayed shiha

1 Psychiatric and mental health Nursing, Faculty of Nursing, Mansoura University,

2 Psychiatric and mental health Nursing, Faculty of Nursing, Alexandria University.

3 Prof. of Psychiatriy, Faculty of Medicine, Mansoura University.

4 Prof. of Medical-Surgical Nursing, Faculty of Nursing –Mansoura University.

5Prof. of Medicine, Faculty of Medicine, Mansoura University.

E-mail of the corresponding author: azza_ibrahim96@yahoo.com

Abstract:

Background: Hepatitis C virus is a chronic medical condition that has broad implications for a person's physical and mental wellbeing. In order for people with hepatitis C virus (HCV) infection to effectively deal with this condition, it is vital that they get great therapeutic care and support from many different sources as possible medical professionals, family and friends, and others living with hepatitis C. The purpose of this study was to evaluate the impact of psychosocial intervention on the quality of life in patients with chronic hepatitis C virus infection. **Methods:** A quasi-experimental study was conducted in this study. Results: The experimental and control groups were the same concerning the effective factors on the quality of life, such as age, sex, etc ($P > 0.05$). There was no significant difference between QOL mean score of both groups before the intervention, however the QoL significantly improved in the experimental group after the intervention ($P= 0.001$), while the QoL decreased in control group. Conclusion: The results of this study confirmed the beneficial effects of psychosocial intervention on the health related quality of life. Therefore, all hepatitis C patients should be counseled and encouraged to participate in educational programs at the time of diagnosis to reduce unnecessary behavioral changes and stigmatization perceptions to improve quality of life.

Keywords: Hepatitis C; Interferon therapy; Quality of Life; psychosocial intervention

Introduction:

Mental disorders are common and can cause significant impairment among patients with chronic illnesses such as HIV and hepatitis C. Research in the community suggests that patients with co-morbid chronic viral illness and mental health problems have poorer adherence to medical treatment [1].

Hepatitis C virus (HCV) is a major public health problem and a main reason of chronic liver disease.

Hepatitis C is the primary reason of death from liver disease and the leading indication for liver transplantation in the United States[2].

The WHO estimates that there are presently 150-200 million individuals infected with HCV worldwide. Approximately 3-4 million individuals in the United States have chronic HCV infection, with higher rates among men and African-Americans [3]. Egypt

reports the highest prevalence of HCV around the world. The prevalence of an antibody to hepatitis C virus (anti-HCV) ranges from 22% in Egypt or Cameroon to 0.8% in Germany [4].

Individuals face HCV as a chronic progressive disease that does not have a cure. The diagnosis of HCV can have harmful impact on emotional well being. The emotional challenge becomes great. Most people experience some kind of emotional reaction after being diagnosed with chronic HCV. Fear, anger, distress, denial and depression are common reactions. In spite of the fact it is normal to have these short-term reactions, it is not healthy in the long-term [5].

There is an increased prevalence of psychiatric co-morbidity in patients with chronic HCV infection and the emerging evidence proposes that mental health problems may be connected with the infection itself, possibly mediated by an effect on the central nervous system [6].

Moreover, treatment for hepatitis C includes interferon alfa, which has neuropsychiatric reactions. Psychiatric disorder is the primary reason for delay or discontinuation of interferon alfa treatment. Depression is a particularly common side effect that may happen in up to 60% of patients, and in some rare cases, it might be connected with deliberate self-harm or suicide attempts [7].

Hepatitis C is largely a disease of injectable drug users, a marginalized and unpopular group in society. In their study, **Zickmund, Ho, Masuda,**

Ippolito, and LaBrecque (2003), [8] found that fifty-seven percent of hepatitis C patients experience stigmatization attributed to HCV infection. This stigmatization was associated with an increase in emotional problems. Stigmatization can affect the self-esteem and quality of life of the affected individuals.

Hepatitis C patients need help coping with their disease throughout the entire course of treatment. The chronicity of hepatitis C is particularly challenging for the patient who may exhibit no outward signs of disability or disease. Interventions designed to reduce depression is important to successful combination therapy and improving physical, social, and mental functioning [9].

Self-management programs are one option for helping HCV-infected patients adhere to treatment recommendations. Self-management programs provide problem-solving and behavioral skills along with disease-specific information. They have been proven to improve chronic symptoms, increase health-supporting behaviors, and enhance overall quality of life[10].

Strategies to improve psychological adjustment to chronic medical illness, increase social support, reduce stigmatization, promote lifestyle changes (alcohol use, nutrition, exercise, work) and contribute information about potential side effects of antiviral therapy, all significantly improve treatment adherence [11].

Despite Egypt's status as the nation with the highest levels of HCV infection in the world and is the most

significant public health problem facing Egypt today, most studies have been done on diagnosis, management, and treatment of Hepatitis C Virus (HCV) and few studies have been done to assess the (HRQOL), address the psycho educational campaigns may help reduce the burden of disease for patients [12].

Aim of the study:

The aim of this study was to evaluate the impact of psychosocial intervention on the quality of life in patients with chronic hepatitis C virus infection.

Material and Methods:-

Study Design:-

A quasi experimental design was followed in this study.

Setting:-

The study was carried out at the Center of liver and treatment for hepatic viruses by interferon at Intrnational Mansoura Hospital in Dakahlia governorate.

Subjects:

The number of the subject was calculated using the Epi- Info program using confidence coefficient 95%, power averaging 80%, error 5% with minimum sample size=140 increased to 200 patients to avoid loss of follow up effect. They were alternatively divided into two equal groups; the first was the experimental group comprised of 100 patients and this group were received psychosocial intervention in addition to the drug therapy. The second was a control group comprised

of 100 patients and they were exposed to drug therapy only.

This subject was chosen according to the following criteria:

- Age: 18-60 years
- Receiving medical treatment for at least 4 weeks.
- No other medical or psychological disorders.

Tools: four tools was used to collect data, includes: Tool I: Socio-demographic and clinical data. Tool II: structured interview questionnaire to gathering data about patient's knowledge related to his disease, treatment, social support, disclosure of infection and discrimination and coping with physical and psychological side effects. It was developed by the researcher after reviewing the relevant literature [13,14].

Tool III: Health Survey Questionnaire (SF-36) Arabic version of health survey questionnaire used by (Radwan, 2011) [15] to determining the quality of life for different diseases and in measuring the benefits of treatments. It consists of multi-item scales measuring 8 concepts (physical functioning, role limitations due to physical health, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health). Items concerning bodily pain were excluded as the chronic hepatitis does not cause pain.

Too (IV): Beck depression inventory (BDI):

The standardized Arabic version of the short – form of Beck Depression

Inventory, translated by Ghareeb (1990)[16] was used to assess degree of depression. The scale comprised of 13- items; each one consists of four alternative statements that represent graduations of a given symptom rated in severity from 0-3. The scale measures the following: sadness, pessimism, feeling of failure, dissatisfaction, feeling with guilt, self hateness, suicidal ideation, social withdrawal, hesitation, body image, work retardation, fatigability and loss of appetite. The total score ranges from 0-39. The degree of depression was categorized according to the following scores: non-depression ranging from 0-4, mild depression ranging from 5-7, moderate depression ranging from 8-15 and severe depression equal to 16 and more.

Methods:

An official approval to carry out the study was obtained from the Director of International Mansoura Hospital through an official letter from the Dean of the Faculty of Nursing, Mansoura University. The letter indicated the purpose of the study and its procedures.

Tool II was developed by the researcher. It was tested for clarity, relevance, applicability, comprehensiveness, understanding, and ease for implementation by a jury in the related field of Psychiatric and Medical surgical nursing. The group also assessed the validity of the content of the educational program. Some modifications were applied according to experts' opinions .

- A pilot study was carried out on 10 patients to ensure the clarity,

applicability and feasibility of the study tools, and to identify any unforeseen obstacles and problems. According to results of pilot study, some questions were modified to be clear to the patients and others were omitted. Those who participated in the pilot study were excluded from the total subjects of the study.

The program was developed by the researcher which is guided by [17,18,19,20,21].

5. The objective of the program was to improve patients knowledge and understanding of their illness and treatment in order to be more skillfully and efficiently capable of managing their daily requirements. The program also provides these patients with a number of health coping to deal with physical and psychological side effect and to enhance their QOL

6. The program content included 3 parts as follow:

- The first part: provides patients with knowledge related to hepatitis C and its management, with particular emphasis on treatment and its side effects.

- The second part focused on the way of coping with physical and psychological side effects with particular emphasis on relaxation techniques, meditation, and cognitive restructuring.

- The third part focused on life style modification such as healthy diet, smoking cessation, exercise.

7. The program was implemented on the study group. Divided into (10) groups each group consisted of (10) Hepatitis C patients) attended 4 sessions (1 sessions /week) and the

total number of sessions for the whole experimental group was 40 over a period of 6 month. The researcher implemented the program for each group in scheduled times and days. To ensure exposure of all patients in the groups to the same content and learning experiences, the same content was provided using the same teaching methods, discussions, and handouts.

8. The program implemented through various teaching methods as short lectures, group discussions, brain storming, demonstration re-demonstration, and role-play. The teaching media included power-point presentations, and a handbook.

9. The content of session includes:

Session I (45 min) focused on providing knowledge related to the nature of their disease, risk factors, mode of transmission, methods of prevention.

Session II (45 min) covered the items concerning side effects of interferon therapy including coping strategies with physical and psychological adjustment to depression.

Session III (45 min) cover information about coping with stigma and relationships changes through (open discussion).

Session IV (45 min): cover information about implementing healthy life style recommendation (exercise, healthy nutrition, cessation of smoking).

Evaluation phase

- Immediately after the end of the program. Evaluation of the program for the study and control group was done to assess the effectiveness of

the program on the patients using tool II, tool III, and tool IV.

- After two months from implementation of the program, reevaluation of the study and control group was done using the study tools.

Ethical considerations

- Written informed consent of the patients was obtained after explanation of the aim of the study prior to data collection.
- Anonymity, confidentiality and privacy of the patients were assured.
- Voluntary participation and right to refuse to participate in the study was emphasized to the subjects.

Statistical analysis:

Data were analyzed with SPSS version 21. The normality of data was first tested with one-sample Kolmogorov-Smirnov test. Qualitative data were described using number and percent. Association between categorical variables was tested using Chi-square test. When 25% of the cells have expected count less than 5, Fisher exact test was used.

Continuous variables were presented as mean \pm SD (standard deviation). The two groups were compared with Student *t* test while paired groups compared with paired *t*-test. Analysis Of Variance (ANOVA test) used for comparison of means of more than two groups. Pearson correlation used for correlation between continuous data.

Results:

Table (1) shows frequency distribution of the study and control groups according to their socio-demographic characteristics. It appears from the table that, more than one third of the study and control group were in the age group of 30 to less than 40 years, with a mean age of 39.0 ± 2.1 years and 41.0 ± 2.3 years respectively. Also, it was shown that female patients represented a higher percentage in two groups; distribution showed 63.0% in study group and 57.0% in control group. Concerning education, 40.0% of the study group were illiterate compared to 39.0% of the control groups, while 35.0% and 26.0% of the study and control group had secondary level of education. 71.0% in the study group were married compared to 79.0% % in the control group. Regarding residence, 98.0% of the study and control groups were lived in rural areas, while 35.0% and 26.0% of the study and control group had secondary level of education. Concerning occupation, it was found that 60.0% of the study groups were housewife compared to 52.0% of the control group. In addition, there was no statistical significant differences regarding living condition between the two groups ($P=.081$).

As for patients' income; more than half of the study and the control groups reported not having enough income. No statistical significant differences were found between the study and control groups in relation to all socio-demographic characteristics, which mean that the two groups were matched in this respect.

Table (2) shows distribution of the studied patients according to their clinical data. It was found that 43.0% of the study group compared to 46.0% of the control group had hepatitis C for less than 1 year, while 49.0% and 50.0% of the study and control group respectively had hepatitis C for 1 to less than 10 years with statistical significant differences between the two groups regarding to duration of illness ($P= 0.007$). In relation to dose of interferon, more than one third of the study and control groups received dose (120ml) ,while 42.0% of the study group and 39.0% of the control group received maximal dose (180ml) , with no statistical significant difference ($P=.648$). Concerning treatment duration, 42.0 % of the study group and 40.0% of the control group had been received the drugs for less than 12 week, while 42.0% and 41.0% of the study and control groups had been received the drugs for 12 to 24 weeks respectively. Only16.0% of the study and control groups had been received the drugs for 24 to 36weeks, with no statistical significant differences between the two groups regarding treatment duration ($P= .344$).

Table (3) shows Comparison between total knowledge mean scores of study and control during pre, immediately post, and two month after program. The mean score of the study group pre program is slightly lower than the control (27.87 ± 6.43 & 32.44 ± 4.25 respectively). However, there is statistical significant difference in knowledge mean score between study and control groups at pre program. Immediately post program,

mean scores for study and control groups increased compared to pre program (they equaled 38.2 ± 4.04 & 35.05 ± 4.28 respectively). While two month after the program, knowledge mean scores of study and control groups slightly decreased compared to immediately post program (they equaled 35.12 ± 3.58 & 31.79 ± 3.99 respectively). A statistical significant difference were found between study and control groups at pre immediately post, and two month after the program. Hence, there is statistical significant difference was found between the study and control group coping mean scores, $P \leq 0.001$.

figure (1) shows the level of quality of life for study and control groups during pre, immediately post and two month after program. It was observed that, (43.0%) and (37.0%) of the study and control group respectively had good quality of life at pre program implementation. It also observed that, more than two third (78.0%) of the study group compared to more than half (52%) of the control group had good quality of life immediately after applying program. While, two month after, the level of quality of life decreased to "(68.0%) for the study group and (42.0%) for the control group. Moreover, No statistical significant difference was found between the study and control groups at pre-program, while statistical significant difference was found between two groups immediately post and two month after program implementation.

Table (4) presents Comparison between quality of life items for study

and control groups during pre, immediately post and two month after program. The mean scores and standard deviation of total quality of life such as physical functioning, role limitation due to physical health, general health, vitality, social functioning, role limitation due to emotional problems and emotional well being at pre-program implementation in the study group is slightly lower than in the control group (31.3 ± 6.2 & 33.5 ± 8.9) respectively. However, there is no statistical significant difference was found between the study and control groups before the program, $P = 0.04$. Immediately post program mean scores of study group increased compared to pre program (38.3 ± 7.6) while slight decreased in the control group (32.9 ± 8.5 .) The increased is statistically higher in the study than control group, which mean that there is highly statistical significant difference between study and control groups, $P \leq 0.001$. Two month after the program, mean scores of study group increased compared to immediately post (equaled 54.3 ± 5.9) and mean score of the control group slightly decreased compared to immediately post (equaled 31.2 ± 7.0). Hence, there is statistical significant difference was found between the study and control group quality of life mean score immediately post and two month after program implementation.

Table (5) shows levels of depression in the study and control group during pre, immediately post and two month after program. It was found that 38.0% and 30.0% for the

study and control groups respectively had sever level of depression before the program. Immediately post program, 24.0% and 28.0% of the study and control groups respectively had sever level of depression. While two month after program the level of depression decreased to (12%) for the study group and slightly increased to (31.0%) for the control group. No statistical significant difference was found between the study and control groups at pre-program, while statistical significant differences were found between two groups immediately post and two month after program implementation.

Discussion:

Hepatitis C virus is a chronic medical condition that has broad implications for a person's physical and mental wellbeing. In order for people with hepatitis C virus (HCV) infection to effectively deal with this condition, it is vital that they get great therapeutic care and support from many different sources as possible – medical professionals, family and friends, and others living with hepatitis C. Peer support in the form of a support group is one of the critical links in helping HCV positive people confront the issues in their ordinary lives. The education, support, care, and services accessible to HCV positive people will help them make the best possible choices to successfully deal with their lives [22].

The socio-demographic characteristics of the present study showed that mean age of the patients in the study group was 39.0 ± 2.1 years,

while it was 41.0 ± 2.3 years for those in the control group. The result of this study showed that the majority of patients in experimental and control group were females. It may be due to that females are higher risk for medical procedures during pregnancy and labor. In contrast, studies done in Iran by **Alavian et al, (2002)**, [23], found that the majority of patients were males. In addition, higher percentages of them were illiterate and lived in rural areas. These may return to that most of them were farmer, where high prevalence of bilharizias. This is results consistent with **Khaled et al., (2010)**, [24], who found that rural areas are more affected by HCV.

Regarding knowledge of the study and control groups, the findings of the present study showed that, the total mean score of knowledge for the study and control group before program nearly the same with no statistical significant differences between groups. It may be attributed to lower educational level in the studied sample (more than one third were either illiterate or had low level of education) may be linked with a weaker awareness of the seriousness of the disease. These findings were similar to the previous study conducted in Egypt by **ibrahim & madian, (2011)**, [25], who revealed that lack of knowledge may be attributed to lack of health educational mass campaigns about the HCV and the way of living healthy with it.

The present study revealed a significant improvement about knowledge in those patients who were in the study group on the immediately

post program when comparing the mean score of both the study and control groups. On the same line, a study carried out in Tehran by **Kato & Ishii, (2004)**, [25], which concludes that the educational program increases the samples' awareness and the degree of knowledge about HCV infection. **Kizer et al, (2006)**, [26], stated that participation in an HCV education class was associated with a significant increase in understanding of disease symptoms, transmission, and treatment, both immediately after the class and at follow-up.

Furthermore, the results showed that knowledge level of the study group were slightly decreased at two month after program when compared the mean score at immediately post with two month after program. It may be related continuing need for education and decrease ability to retain information for long time.

Hepatitis C affects not only liver but has many extra hepatic symptoms. The virus results in inflammation and cirrhosis of liver, thereby influencing the quality of life of the HCV patients. Assessment of the quality of life in patients in various chronic diseases is becoming significant. Health-related quality of life generally refers to the patients' perceptions of their physical functioning, social functioning, role functioning, mental health, vitality, pain, and cognitive functioning (**Ijaz et al, 2012**)[27]. A study conducted by **Dan et al, (2006)**,[28], showed that quality of life in patients with HCV significantly reduced during IFN- α treatment.

The results of the current study showed that all of the dimensions of quality of life showed significant improvement in study group; but this effect was not seen in control group. This was confirmed when comparing the mean scores immediately post minus pre for both groups. This may be related to the fact that the knowledge and skills played an essential role in predicting the health behaviors because after receiving patient education, patients might become more determined to change their lifestyles and to be more motivated. This result is supported by a study conducted by **Zandi et al, (2005)**,[29], proven the beneficial effects of training and self-care programs on the health related QOL of Iranian patients with chronic liver disease. The same findings was reported in another study conducted by **Noghabi et al, 2005**, [30], who stated that quality of life for HCV patient improved after educational intervention. On the other hand, the average quality of life score in our controls was decreased after two months. Previous studies show that the quality of life of the patient under antiviral treatment decreases in the primary stages of treatment and side effects had reduced their compliance and adherence to treatment (**Kang et al, 2005**)[31].

Moreover, the quality of life scores in the study group showed significant improvement in the follow up stage compared to the control. This may be related to better adherence to healthy educational instruction such as using simple measures against side

effects like adequate hydration; light-to-moderate physical activity, using sedatives, and antipyretics will greatly help the control of side effects which will consequently increase the satisfaction and quality of life of patients.

Mental health problems frequently occur in chronic infection with the hepatitis C virus (HCV) and during antiviral treatment with pegylated interferon-alpha (PegIFN α) and ribavirin. Depression is one of the most important complications during antiviral treatment of chronic hepatitis C infection (**Schafer et al, 2007**)[32]. Evaluation for psychiatric symptoms in hepatitis is important because they have an adverse effect upon the course of disease. Psychiatric problems in the patients with hepatitis may be responsible for functional impairment, reduced treatment compliance, and reduced quality of life. A multi-disciplinary team should be consulted to develop complex physical and psychological treatments for patients with CHC (**Gadit, 2010**) [33].

The current study showed that, 38.0% for the study group and 30.0% for the control group had severe depressive symptoms. It is hypothesized that multiple factors are responsible for depression in hepatitis patients. biological factors (neurotoxicity of HCV and numerous changes in the cerebral metabolism) or psycho-social factors (reaction to unfavourable CHC prognosis, negative expectation of the outcome, the potential of sexual transmission of HCV virus to a patient's partner, insufficient information about the

disease and perception of stigma are thought to be the causes of depression in this population (**Harris, 2009**)[34]. Also, it was found that IFN-induced depression, alteration of tryptophan metabolism into quinolinic acid and activation of the hypothalamic pituitary adrenal axis resulting in increase of stress peptides (**Cai et al., 2005**) [35]. These results are in accordance with a previous study that demonstrated that hepatitis C positive patients had more psychiatric disorders (**Qureshi et al, 2012**)[36]. Furthermore, **Lee et al, (1997)**,[37], reported that every fourth person with hepatitis C had depressive symptoms during IFN therapy and about 60% of them required psychiatric treatment. Moreover, several studies showed that PEG-IFN- α was associated with depression in chronic myeloid leukemia, malignant melanoma, and kidney cell carcinoma (**Mamman et al, 2009**)[38]. In addition, **Peter & Hauser et al., (2002)**,[39], reported depression is common in Hepatitis C and is exacerbated by interferon depression occurred in 38% of patients. Whereas **Manns et al. (2001)**, [40], reported depression in 31% of patients receiving the drug.

Cognitive behavioral therapy works to treat depression by changing an individual's faulty information processing and negative belief systems. The desired outcome of CBT is to enable the individual to create healthier interpretation of situations, thus decreasing depression level (**Soctt, 2008**)[41]. The present study revealed that depression level decreased within the study group

compared to the control group immediately after program. In this respect **Edwards, et al, (2008)**, [42], stated that psycho educational interventions aim to reduce uncertainty, feelings of inadequacy, confusion, helplessness, and loss of control by supplying information about the disease process, coping with the disease, and resources available to these patients. This could be explained by that psychosocial interventions that involve relaxation training, coping skills training, and cognitive restructuring as positive self talk have proven effective in altering maladaptive thoughts, promote well-being, enhancing benefit-finding and reducing depressive symptoms.

The improvement in depression levels in the study group was significant in the follow up stage i.e. depression level is lower in the study than the control group. This could be explained by the benefits of psycho educational interventions were probably produced reduction in fear through providing information about ways to cope with stress and treatment.

The results of this study confirmed the beneficial effects of psychosocial intervention on the health related quality of life and also supported the findings of previous studies that reported improvement in patients HRQoL after self-care and educational programs (**Sharif et al, 2005**) [43]. Therefore, it could be said that the combination of psychological and educational intervention like the programs conducted in the present study could satisfy many needs of these chronic patients and will

empower them to improve their quality of life.

Conclusion:

Based on the results of the present study found that patients with chronic hepatitis C who received interferon plus ribavirin therapy had poor quality of life during the treatment period. Also, this study confirmed the positive effect of the psychosocial interventions in alleviating distress in patients who have been medically treated for hepatitis. Evidence is also presented that psychosocial interventions can help manage side effects. Moreover, this study showed that some patients' socio demographic characteristics moderate the effectiveness of psychosocial intervention on their quality of life.

Recommendation:

Based on the findings of the current study, the following recommendations are:

- 1- All hepatitis C patients undergoing antiviral therapy should be counseled and encouraged to participate in educational programs at the time of diagnosis to reduce unnecessary behavioral changes and stigmatization perceptions to improve quality of life.
- 2- Patients should be evaluated for their psychological condition during treatment and if they require psychological help, provision of psychological services should be ensured to help patients cope with their condition at different stages of treatment.

- 3- Patients should receive additional education about the treatment regimen to ensure that they are well informed prior to starting treatment.
- 4- Implementing educational intervention for the patients to educate them to promote the use of appropriate coping strategies to enhance quality of life.
- 5- Address patients' concerns regarding mood changes while on IFN and deficits in patients' coping skills.
- 6- Mass media can play a vital role in providing the public with information about prevention, early detection, and treatment of chronic hepatitis.
- 7- Psychotherapy to enhance adherence is also recommended for those individuals who report a history of poor compliance to medication or other behavioral regimens.
- 8- Family member should actively participate in planning the care for hepatitis C patients so that they can support and encourage them to manage their condition.
- 9- Follow up visits either through home visits is important in order to evaluate the progress of patient's condition and motivate his\ her to cope with the disease and adopt healthy lifestyle to prevent complications.
- 10- In- service training to nurses and health care providers in hospitals and outpatient clinics to update their knowledge about hepatitis C and its management, and proper ways to provide health education and appropriate counseling for patients in order to improve condition.

Table (1): Distribution of the studied patients according to their socio-demographic characteristics.

Items	Study group (n=100)		Control group (n=100)		X ²	p-value
	No	%	No	%		
Sex						
Male	37	37	43	43	0.75	P=.386
Female	63	63	57	57		
Age(in years)	39.0±2.1		41.0±2.3		10.923	P =.053
<20	4	4	0	0		
20-	17	17	16	16		
30-	38	38	33	33		
40-	30	30	25	25		
50-	9	9	21	21		
60+	2	2	5	5		
Mean ± SD	39.0±2.1		41.0±2.3			
Marital status						
Single	20	20	9	9	6.932	P =.074
Married	71	71	79	79		
Widow	5	5	10	10		
Divorced	4	4	2	2		
Educational level						
Illiterate	40	40	39	39	7.408	P =.192
Read and write	12	12	25	25		
Primary school	5	5	3	3		
Preparatory school	7	7	7	7		
Secondary school	35	35	26	26		
University degree	1	1	0	0		
Occupation						
Employed	1	1	0	0	2.667	P =.446
Worker	38	38	46	46		
Housewife	60	60	52	52		
student	1	1	2	2		
Residence						
Urban	2	2	2	2	0	P =1
Rural	98	98	98	98		
Living situation						
Alone	0	0	3	3	3.046	P =.081
With family	100	100	97	97		
Income						
Enough	48	48	46	46	0.08	P=.777
Not enough	52	52	54	54		

*Significant, at P≤ 0.05

Table (2): Distribution of the studied patients' according to their clinical data.

Items	Study group (n=100)		Control group (n=100)		X ²	p-value
	No	%	No	%		
Duration of illness						
<1yr	43	43	46	46	12.111	P=0.007*
1-<10yr	49	49	50	50		
10+	8	8	4	4		
interferon dose/week						
100ml	11	11	16	16	1.65	P=.648
120ml	38	38	39	39		
150ml	9	9	6	6		
180ml	42	42	39	39		
Treatment duration						
<12week	42	42	40	40	3.33	P=.344
12-<24week	42	42	41	41		
24-<36week	16	16	16	16		
36+week	0	0	3	3		

*Significant, at P≤ 0.05

Table (4): Comparison between total knowledge mean scores of study and control groups during pre, immediately post, and two month after program.

Knowledge Mean ±SD	Study group(n=100)			Control group(n=100)			P1	P2	P3
	pre	post	follow	pre	post	follow			
Patient information about disease (22)									
	13.3± 4.25	20.29 ±2.59	18.58± 2.54	12.5± 3.97	15.4±3. 58	14.88± 2.24	t=1.44 P=0.15	t=4.2 P≤0.001**	t=2.06 P=0.04*
Treatment drugs (21)									
	14.5± 3.36	19.9 ±2.24	18.5± 1.94	14.9± 2.13	17± 2.17	16.9± 2.24	t=1.93 P=0.055	t=2.88 P=0.004**	t=2.13 P=0.035*
Total knowledge score									
	27.87 ± 6.43	38.2± 4.04	35.12± 3.58	32.44± 4.25	35.05±4 .28	31.79± 3.99	t=2.08 P=0.039*	t=4.71 P≤0.001* *	t=2.48 P=0.014 *

*Significant, at P≤ 0.05

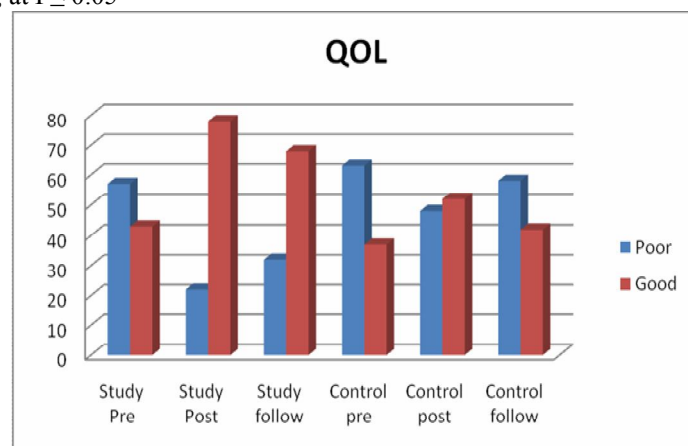


Table (9): Comparison between quality of life mean scores for study& control groups pre, immediately post and two month after.

Quality of life (SF-36) #	Study group(n=100) Mean ±SD			Control group(n=100) Mean ±SD			P1	P2	P3
	pre	post	follow	pre	post	Follow			
General health									
	36.1 ± 12.4	41.3 ± 11.9	58.5± 12.4	40.4 ± 15.0	40.3 ± 13.7	39.6± 11.8	t=6.6 6 p≤0.001	t=3.39 p=0.01	t=3.46 7 p=0.01
Physical functioning									
	52.6 ± 18.3	55.6 ± 18.4	62.0± 18.0	59.4 ± 10.1	49.1 ± 6.7	32.8 ± 8.1	t=1.2 68 p=0.206	t=2.52 6 p=0.12*	t=2.79 5 p=0.06*
Role limitation physical									
	13.3 ± 21.7	33.3 ± 26.8	77.5± 21.5	19.8 ± 24.0 9	20.8 ± 25.4	13.0± 18.3	t=1.9 64 p=0.051	t=5.84 5 p=0.01*	t=2.37 9 p=0.018
Emotional wellbeing									
	43.9 ± 11.5	50.5 ± 10.1	36.2 ± 7.7	48.1 ± 13.6 6	46.6 ± 14.2	43.4± 14.4	t=0.2 33 p=0.816	t=1.58 p=0.075	t=1.48 3 p=0.14
Social functioning									
	47.0 ± 7.8	58.3 ± 11.4	69.5± 13.6	53.2 ± 19.2	49.0 ± 20.0	44.4± 22.1	t=1.7 19 P=0.087	t=1.98 5 P=0.048*	t=1.77 5 P=0.077
Energy/fatigue									
	34.0 ± 12.8	42.6± 14.9	55.1± 13.4	41.3 ± 15.6	39.6 ± 14.5	37.4± 13.8	t=4.3 p≤0.001	t=5.18 p≤0.01	t=2.11 p=0.036
Role limitation Emotions									
	14.3 ± 27.2	34.0± 33.2	77.7± 26.8	13.0 ± 28.2	11.7 ± 27.0	9.7± 19.1	t=1.9 7 p=0.051	t=4.17 p≤0.01	t=4.46 9 p≤0.01
Total quality of life score									
	31.3 ± 6.2	38.6 ± 7.6	57.3± 5.9	33.5 ± 8.9	32.9 ± 8.5	31.2 ± 7.0	t=2.0 P=0.04	t=4.9 P≤0.01*	t=12.9 P≤0.01*

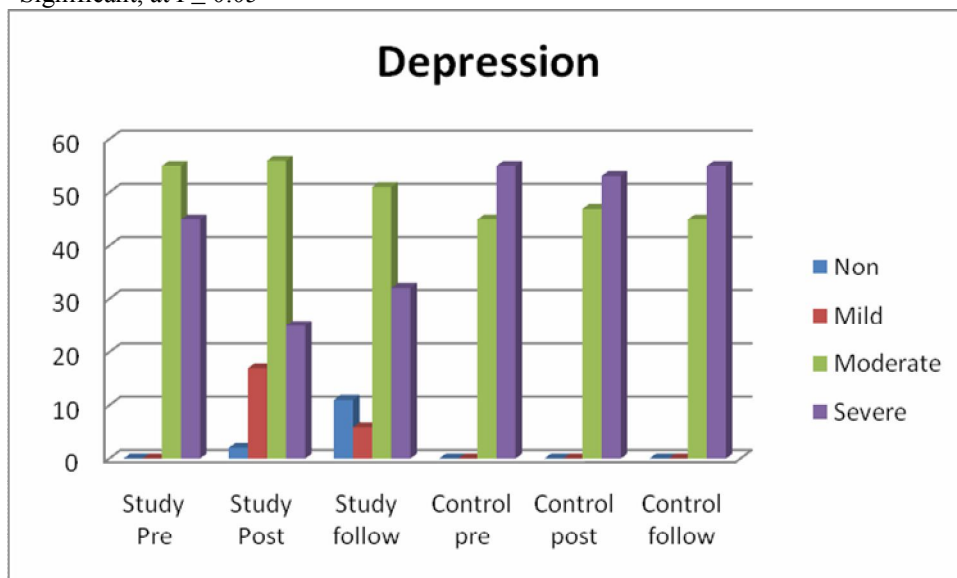
SF-36 Health Survey Questionnaire (increased scores denote improvement).

*Significant, at P≤ 0.05

Table (10): levels of depression scores of study and control groups during pre, immediately post and two month after program.

Levels of depression	Study group(n=100)			Control group(n=100)			P1	P2	P3
	Pre %	post %	follow %	pre %	post %	follow %			
Non	2%	2%	17%	3%	2%	0%	$\chi^2 = 2$ $P = 0.157$	$\chi^2 = 13.32$ $P = 0.004^*$	$\chi^2 = 26.23$ $P \leq 0.001$
Mild	5%	10%	39%	11%	12%	2%			
Moderate	55%	64%	32%	56%	58%	67%			
Severe	38%	24%	12%	30%	28%	31%			

No depression: 0-4
 Mild depression: 5-7
 Moderate depression: 8-15
 Severe depression 16
 *Significant, at $P \leq 0.05$



References:

1. **Haney C. (2003):** Mental Health Issues in Long-Term Solitary and "Supermax" Confinement. *Crime and Delinquency*; 49:124-156.
2. **Ismael V., Al-Shamma K. & Hussein H. (2012):** Early Virological Response of the First Line Combination Therapy (Pegylated Interferon α -2a and Ribavirin) in Iraqi Chronic Hepatitis Patients and Their Psychological Adverse Effects. *Global Journal of Medical Research*; 12(11).
3. **WHO (2012):** Hepatitis C. available at <http://www.who.int/mediacentre/factsheets/fs164/en/index.html> Accessed on July 4 – 2014.
4. **Meguid M. & Moussa M. (2010):** Cognitive Function in Hepatitis C Patients: Effect of Pegylated Interferon α and Ribavirin Therapy, Institute of Psychiatry, Internal Medicine and Hematology Department, Faculty of Medicine, Ain Shams University, *Current Psychiatry*; 17(2): 45-51.
5. **Elshahawi H., Hussein M. & Allam A. (2011):** Depression Comorbidity in Patients with Chronic Hepatitis C and Its Possible Relation to Treatment Outcome. *Middle East Current Psychiatry*; 18: 23-28.
6. **Golden J., O'Dwyer A. & Conroy R. (2005):** Depression and Anxiety in Patients with Hepatitis C: Prevalence, Detection Rates and Risk Factors. *Gen. Hosp. Psychiatry*; 27: 431-438.
7. **Zickmund S., Ho E., Masuda M., Ippolito L. & LaBrecque D. (2003):** "They Treated me Like Aleper". Stigmatization and the Quality of Life of Patients with Hepatitis. *J. Gen. Intern. Med.*; 18(10): 835-844.
8. **Leone N. (2002):** The Role of Nursing in Managing Treatment-Associated Adverse Effects in Patients with Hepatitis C. *Gastroenterology Nursing*; 25(5): 201–203.
9. **Lorig K. R., Ritter P. L. & Gonzalez V. M. (2003):** Hispanic Chronic Disease Self-management: A Randomized Community-Based Outcome Trial. *Nurs. Res.*; 52(6): 361-369.
10. **Silberbogen A., Uilon E., Janke A. & Mori D. (2009):** Psychosocial Issue and Mental Health Recommendation for Patients with Hepatitis C. *psychosomatics*; 50:2.
11. **Hassan S. G., El-Ghitany M. E. & El-Sheikh W. (2012):** Knowledge, Attitude and Lifestyle Changes among Chronic Hepatitis C Patients in Alexandria, Egypt: An ear-Appeal Intervention. *Journal of American Science*; 8(2): 73-9.
12. **Alam M, Tariq W. (2006):** Knowledge, attitudes and practices

- about hepatitis B and C among young healthy males. *Pak J Pathol*; 17(4): 47-50.
- 13. Haq N, Hassali M, Shafie A, Saleem F, Farooqui M, Aljadhey H.(2012):** A cross sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan. *BMC Public Health*; 12(1): 692.
- 14. Radwan E.(2011):** Effect of discharge plan on quality of life of acute MI among elderly patient, thesis submitted for partial fulfillment of Doctorate degree. Mansoura university, Faculty of nursing.
- 15. Groessl EJ, Weingart KR, Kaplan RM, Clark JA, Gifford AL, Ho SB. (2008):** Living with hepatitis C: qualitative interviews with hepatitis c-infected veterans. *J Gen Intern Med*.
- 16. Groessl EJ, Weingart KR, Kaplan RM, Ho SB. (2007):** Health-related quality of life in HCV infected patients. *Curr Hepatitis Rep*; 6:169-75.
- 17. Balfour L, Cooper C, Kowal J, Tasca GA, Silverman A, Kane M, et al. (2004):** Depression and cigarette smoking independently relate to reduced health-related quality of life among Canadians living with hepatitis C. *Can J Gastroenterol*; 20: 81-6.
- 18. Hickman IJ, Jonsson JR, Prins JB, Ash S, Purdie DM, Clouston AD, et al.(2004):** Modest weight loss and physical activity in overweight patients with chronic liver disease results in sustained improvements in alanine aminotransferase, fasting insulin, and quality of life. *Gut*;53:413-9.
- 19. Abd El-Kader S., Al-Jiffri O. & Al-Shreef F. (2014):** Liver enzymes and psychological well-being response to aerobic exercise training in patients with chronic hepatitis C. *African Health sciences*; 14 (2): 414-419.
- 20. Alavian S. M., Azimi K., Sarafi M., Alavi M. & Zadeh M. R. (2002):** To Determine Etiologic Factors of Liver Cirrhosis in Hospitalized Patients in Shariaty Hospital. *Iranian Journal of Gastroenteria*; 38: 19-26.
- 21. Khaled S. Heissam, Hanan Abass (2010):** Quality of life in patients with hepatitis C virus, www.scribd.com
- 22. Ibrahim E. & Madian A. (2011):** Impact of Hepatitis C on Health-Related Quality of Life in Egypt. *Journal of American Science*; 7(11): 430-439.
- 23. Kato S. & Ishii H. (2004):** Lifestyle Guidance for Patients with Chronic Liver Disease; Information Provision via Educational Classes on Liver Diseases. *Hepatol. Res*; 30: 81-85.
- 24. Kizer E. E., Whitehead A. J., Indest D. W. & Hauser P. (2006):** Efficacy of Group Education in
-

-
- Veterans with Hepatitis C. *Federal Practitioner*; 23: 50–57.
- 25. Ijaz K., Omer B., Mahmood K. & Amin F. (2012):** Quality of Life in Hepatitis C. *Pharm. Sci. & Res*; 4(11): 1982 – 1985.
- 26. Dan A. A., Martin L. M., Crone C., Ong J. P., Farmer D. W., Wise T., et al. (2006):** Depression anemia and healthrelated quality of life in chronic hepatitis C. *Journal of Hepatology*; 44: 491-498.
- 27. Zandi M., Adib-Hajbagheri M., Memarian R., Nejhad A. K. & Alavian S. M. (2005):** Effects of a Self-Care Program on Quality of Life of Cirrhotic Patients Referring to Tehran Hepatitis Center. *Health Qual Life Outcomes*; 3: 35.
- 28. Noghabi A., Zandi M., Mehran A., Alavian S. & Dehkordi A. (2010):** The Effect of Education on Quality of Life in Patients under Interferon Therapy, *Hepar Mon*; 10(3): 218-222.
- 29. Kang S. C., Hwang S. J., Lee S. H., Chang F. Y. & Lee S. D. (2005):** Health Related Quality of Life and Impact of Antiviral Treatment in Chinese Patients with Chronic Hepatitis C in Taiwan. *World J. Gastroenterol*; 11(47): 7494-7498.
- 30. Schafer A., Wittchen H. U., Seufert J. & Kraus M. R. (2007):** Methodological Approaches in the Assessment of Interferon-Alfa-Induced Depression in Patients with Chronic Hepatitis C – A Critical Review. *Int. J. Methods Psychiatr. Res.*; 16: 186–201.
- 31. Gadit A. A. (2010):** Mood Disorder Associated with Gastrointestinal and Liver Diseases: Are there many Challenges? *J. Pak. Med. Assoc.*; 71: 1064-5.
- 32. Harris M. (2009):** Injecting, Infection, Illness: Abjection and Hepatitis C Stigma. *Body & Society*; 15: 33-51.
- 33. Cai W., Khaoustov V., Xie Q., Pan T., Le W. & Yoffe B. (2005):** Interferon-alpha-induced Modulation of Glucocorticoid and Serotonin Receptors as a Mechanism of Depression. *Journal of Hepatology*; 42: 880-887.
- 34. Qureshi M., Khokhar N. & Shafqat F. (2012):** Severity of Depression in Hepatitis B and Hepatitis C Patients. *Journal of the College of Physicians and Surgeons Pakistan*; 22(10): 632-634.
- 35. Lee D. H., Jamal H., Regenstein F. G. & Perrillo R. P. (1997):** Morbidity of Chronic Hepatitis C as Seen in A Tertiary Care Medical Center. *Dig. Dis. Sci*; 42: 186-191.
- 36. Mamman A., Yusuf A. J., Aminu S. M., Sheikh T. L. & Hassan A. (2009):** Severe Depression Following Á-Interferon Usage in A Patient with Chronic Myeloid Leukemia. *Afr. Health Sci.*; 9: 54-56.
-

- 37. Manns M.P., McHutchison J.G., Gordon S.C., Rustqi V. K., Shiffman M., Reindollar R., et al., (2001):** Peginterferon Alfa-2b Plus Ribavirin Compared with Interferon Alfa-2b Plus Ribavirin for Initial Treatment of Chronic Hepatitis C: A Randomized Trial. *Lancet*, 358: 958-965.
- 38. Scott J. (2008):** Cognitive Behavioral Therapy for Sever
- Mental Disorders: Back to the Future? *British Journal of Psychiatry*; 192: 401-403.
- 39. Edwards A, Hulbert-Williams N, Neal R. (2008):** Psychological interventions for women with met static breast cancer. *Cochrane Database of Systematic Reviews*, 3, CD004253