

Effect of An Intervention Program On Health Related Quality Of Life (HRQOL) Among Hepatitis C Patients.

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Abstract:

Background: Hepatitis C was one of the ultimate chronic infectious diseases in up to date years and, is estimated to infect approximately 130–150 million people globally.

Aim: Evaluate Effect of an intervention program on health related quality of life (HRQOL) among Hepatitis C patients. **Hypothesis:** Hepatitis C patients who attend the intervention program exhibits higher health related quality of life (HRQOL) than those who don't attend it. **Settings:** The study was executed at a center of liver and treatment of hepatic viruses by interferon in national medical institute in Damanhour, ElBehaira governorate.

Subjects: chronic Hepatitis C patients attending the Center were counted in in the study. The first 400 positive Hepatitis C patients who approved to contribute in the study compromised a sample for preliminary assessment. Then a sub-sample randomly has chosen of 200 Hepatitis C patients from the prior sample. These 200 patients were randomized into 100 patients for study groups and 100 patients for control groups. **Tools:** two tools were castoff for data collection. The first tool was settled by the researchers to collect data about Socio-demographic characteristics, knowledge and behaviors related to HCV. The second tool generic and disease-specific Health-Related Quality Of Life Assessment. **Results:** As to Hepatitis C patients' generic HRQOL, the program created a positive effect on Physical Component Summary (PCS) ($p= 0.000$) and Mental Component Summary (MCS) ($p= 0.000$) and all its' items as general health, bodily pain, physical functioning, role limitation physical, social functioning, role limitation emotional, vitality and mental health. Relating to Hepatitis C patients' specific HRQOL, the program established a positive effect ($p= 0.000$) on its' all items: physical, psychological, social and spiritual impacts. The study **concluded that**, there was a positive influence of intervention program on health related quality of life among Hepatitis C patients. So, it is **recommended the** educational campaigns to increase awareness of population at risk and general population along with broadcast preventive activities to encourage people to take a more active role in preventing exposure to HCV and/or modifying their behavior that permit transmission of HCV to diminish the burden of HCV disease on HRQOL of infected patients in Egypt.

Key words: Hepatitis C, health related quality of life, educational program

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I. Introduction

Hepatitis C was one of the ultimate chronic infectious diseases in latest years .It is estimated to infect approximately 130 –150 million people globally.(WHO,2016)⁽¹⁾It is also a major health problem worldwide, leads to cirrhosis in up to 20% of those chronically infected and is the primary indication for liver transplantation.^(2,3)

Egypt is provoked with a vast Hepatitis C virus (HCV) infection. It has the peak dominance of HCV in the world. Where HCV infection and its complications are among the foremost public health challenges in the country.^(4,5) The Egyptian demographic health survey (2015) concluded that 10% of the population aged (15-59) years old have been infected with hepatitis c virus.⁽⁶⁾ Liver mortality in Egypt grasps 40,000 per year, making 10% of total mortality, and comes second after heart diseases.⁽⁷⁾

An Egyptian study (2012)⁽⁸⁾ had indicated that , risk factors include intravenous drug use in addition to tattooing body piercing, and barber-shop .Also , study done in Egypt (2013)⁽⁹⁾ revealed that ,role of female genital mutilation (FGM) was not widely investigated in HCV transmission. Likewise, evidence from Egypt on sexual exposures is limited and existing studies use crude proxies for sexual activity (e.g, marital status), although intra-familial transmission by this route has been documented. The role of household contacts with

active infection has been emphasized in nevertheless one preceding study from Egypt, but modes of transmission in this context are unclear.^(10, 11)

Researchers found that some medical interventions such as surgery, blood transfusion, dental treatment, and use of shared needles are associated with increased risks of HCV infection among Egyptian workers.^(12, 13)

Although effective vaccines can prevent infection with type A and B viruses, an effective vaccine for hepatitis C virus remains to be developed, which indicates that attention should be paid to its infection routes or prevention measures.^(14, 15) Unlike other viral forms of hepatitis, the acute phase is rare. The long-lasting form, donating rare and nonspecific symptoms, makes clinical diagnosis of the disease difficult. The infection lasts for decades for a person to develop thoughtful complications and the patient may or may not be alert of its being there.^(16, 17)

Chronic infection with HCV is the foremost cause of end stage liver disease, hepatocellular carcinoma (HCC) and liver-related death in Egypt. It originates chronic hepatitis in 60%–80% of the patients, and 10%–20% of those patients grow cirrhosis over 20–30 years of HCV infection. About 1%–5% of the patients with liver cirrhosis may grow liver cancer and 3%–6% may decompensate during the following 20–30 years. The risk of death in the subsequent year after an episode of decompensating is between 15% and 20%.⁽¹⁸⁾

Patients who are conscious of the fact that chronic hepatitis C (CHC) can progress to cirrhosis or liver cancer were set up to experience of social isolation, anxiety, and psychological distress, which negatively affected their social lives and family relationship. Some CHC patients deliberate their disease shameful and filthy due to the social stigma that hepatitis C infection is assimilated through drug abuse, including narcotics, and risky sexual behaviors.⁽¹⁹⁾

Studies had proposed that these patients are usually concerned about the possibility that they may infect others around them owing to the lack of knowledge on the disease process of hepatitis C. Accordingly; they may have bad relationships with their family or be isolated from society because of physical tiredness or feelings of powerlessness. As such, CHC is originated to widely affect the patients' personal and family lives and even the society at large, representing that efforts are desired to recover their Health-related quality of life (HRQOL).⁽²⁰⁾

HRQOL an impression that denotes to the effects of health on the quality of life. In view of that, HRQOL is an indicator of the health conditions of patients with CHC; it can be beneficial in the creation or evaluation of nursing plans for these patients.⁽¹⁹⁾

Health related Quality Of Life (HRQOL) is a widespread term that transports an overall sense of well-being, including aspects of happiness and satisfaction with life as entire. It is broad and subjective rather than specific and objective.⁽²¹⁾ Long survival with HCV clues to diminish Health-Related Quality Of Life (HRQOL) even in the absence of clinically significant liver disease. Singularly, the impact of HCV give the impression to be most dramatic in social and physical function, general health and vitality, such as the effects of Hepatitis C on families, work environments, and on society as a whole.⁽²²⁾

Deficiency of knowledge and awareness about Hepatitis C in the community habitually leads to distortion, missing of opportunities for prevention and treatment, and stigmatization of infected populations. The significances for members of at-risk communities are vital in that missing occasions for prevention can lead to infection of extra people with HCV. Once infected, they recurrently are unaware of their infection and so run the risk of unknowingly infecting others and of not getting suitable medical management.⁽²³⁾

II. Significance of the study

In Egypt, the situation is very critical, HCV is well thought-out an endemic. Infection with hepatitis c virus (HCV) is a foremost public health problem in Egypt where 4% of the population aged 1-59 years or around 3.5 million Egyptian had an active hepatitis c virus. (EDHS 2015)⁽²⁴⁾

Hepatitis C virus affects most families in Egypt, about 1 in 6 women and 1 in 4 men age 50-59 years had active HCV. In the Nile Delta and Upper Egypt, infection rates can increase by 26% and 28%, respectively. With incidence rates between 2 and 6 per 1000 every year, this clues to an estimated 170,000 new cases every year to enhance to the 11.5 million patients suffering from the disease.⁽²⁵⁾

El-Behira governorate had high prevalence of this infection after Menoufia and El Sharkia. This high level of HCV infection has been credited in part to the use of incompetently sterilized needles during mass campaigns assumed to treat Schistosomiasis during the 1960s. (EDHS 2015)⁽²⁴⁾

In spite of Egypt's status as the country with the uppermost levels of HCV infection in the world, most studies have been finished on diagnosis, management, and treatment of Hepatitis C Virus (HCV), and rare studies have been done to measure the Health Related Quality Of Life (HRQOL), address the educational campaigns about increase awareness of, preventing exposure to HCV or amending people's behavior may help lessen the load of disease in Egypt.⁽²⁶⁾ For these reasons, the aim of this study was **to evaluate the effect of an intervention program on health related quality of life (HRQOL) among Hepatitis C patients.**

Hypothesis of this study was:

Hepatitis C patients who attend the intervention program exhibits higher health related quality of life (HRQOL) than those who don't attend it.

III. Material and Methods

Study design:

True experimental design was used to demonstrate this study.

Study setting:

Center of Liver and Treatment of Hepatic Viruses by Interferon in National Medical Institute in Damanshour Governorate.

Subjects:

Chronic Hepatitis C patients attending the Center of Liver and Treatment of Hepatic Viruses by Interferon in National Medical Institute in Damanshour Governorate.

Sample size:

The sample size was designed assuming the following: Prevalence of good HRQOL of 50% (to give the maximum sample size), confidence limit 95% and degree of absolute precision 0.05. This gave a minimum sample size of 384; this number was rounded to 400 to compensate for any incomplete questionnaire.

Sampling design:

The study elaborates two sampling methods:

Sample for preliminary assessment

Center of liver and treatment of hepatic viruses by interferon in national medical institute in Damanshour governorate was visited daily. Four outpatient clinics (afternoon shift 12 - 4 pm) were visited by three data collectors. The first 400 positive Hepatitis C patients who acknowledged participating in the study after being oriented about the aim of it were nominated.

Sub sample for intervention program

The intervention phase: a sub-sample of 200 Hepatitis C patients was chosen randomly from the preceding sample. These 200 patients were randomized into study groups (100 patients) and control (100 patients) groups. Both groups were being exposed to post-test.

Tools for data collection: Two tools were exploited in the current study to collect the necessary data.

Tool 1: was settled by the researchers after reviewing the related current national and international literature. This questionnaire is alienated into **three sections** to collect the following data:

Section 1: Socio-demographic characteristics

This section includes gender, age, residence, education, marital status, occupation, and occupation loss due to HCV. Socioeconomic level was determined according to the total socioeconomic score modified after the model settled by Fahmy and El Sherbini (1983).⁽²⁷⁾

The maximum score for previous indicators was 34 points and it was classified into three levels as follows:

- | | | | | |
|-------------------------------------|---------------------|---------------|-------------------|-----------------------|
| <input checked="" type="checkbox"/> | High social level | $\geq 75\%$ | \longrightarrow | " ≥ 25 " points. |
| <input checked="" type="checkbox"/> | Middle social level | $50 - < 75\%$ | \longrightarrow | "17" - < 25" points. |
| <input checked="" type="checkbox"/> | Low social level | $< 50\%$ | \longrightarrow | " < 17 " points |

Section 2: Knowledge about HCV

This section of the tool is made up of 31 items includes general knowledge about HCV, mode of transmission, factors making further damage of liver, protection from HAV and HBV and healthy diet. A score of (2) was given to the correct complete answer, a score of (1) for correct but incomplete answer and a score of (0) for the wrong or missed answers. The maximum score was ranged from 0-62 points and the total knowledge score was categorized as "Poor: < 60th percentile" (less than 37 points), "Average: 60th – 80th percentile" (from 37-50 points), "Good: ≥ 80 th percentile" (more than 50 points).

Section 3: Self-behaviors related to HCV

This section of the questionnaire is made up of 13 items assessing patient's behavior. It is alienated into two parts: **risky behaviors**: it includes data regarding, smoking, addiction, alcohol intake, irrational drug

use, use of herbs, use of honey, use of Hegama and use of camel's urine. part two : **protection of other from having HCV**: it includes data regarding, use of identification card , not allowing others to share personnel sharp instruments, caring of wound, notify dentist and notify barber about HCV. A score of (2) was given to the correct complete answer, a score of (1) for correct but incomplete answer and a score of (0) for the wrong or missed answers. The maximum score was ranged from 0-26 points and the total behavior score was categorized as "Poor: < 60th percentile"(less than 16 points), "Average: 60th – 80th percentile" (16-21points), "Good: ≥ 80th percentile" (more than 21points).

Tool II: part 1: Generic Health-Related Quality Of Life assessment

HRQOL is a systematic tool to assess quality of life of HCV patients. (SF-36) is an instrument universally used to assess HRQOL. (SF -36) questionnaire is made up of 25 questions and 36 items covering eight domains: physical functioning, role participation with physical health problems, bodily pain, general health perceptions, vitality, social functioning, motional functioning and mental health. The items of (SF - 36) approved by Martino, (1997).⁽²⁸⁾

A modification pragmatic to the SF-36v2® such as reduction of the number of items (29 instead of 36), simplify the Arabic version tool language to be superior understandable for the local respondent's culture, finally simplifying and changing the original scale to 3 point Likert scale for all questions. All items were scored from 1-3, in which (3 indicating all of the time , 2 indicating some of the time and 1 indicating none of the time) total generic HRQOL score was obtained by summing the scores of the eight domains. All raw scores were transformed to a 0-100 score using the following formula:⁽²⁹⁾

$$\text{Transformed score} = \frac{(\text{actual raw score} - \text{lowest possible raw score})}{\text{Possible raw score range}} \times 100$$

Higher score indicates better Generic Health-Related Quality Of Life (HRQOL).

Tool II: part 2: Disease-Specific Health-Related Quality Of Life Assessment

The hepatitis quality of life questionnaire used to determine all the possible impact of the HCV on the physical, psychological, social and spiritual aspects of the respondent during the course of a disease.⁽³⁰⁾ The HCV specific Health-Related Quality Of Life signifies of 35 items. These questions are allocated into **4 domains** Physical (16 items), Psychological (7 items), Social (8 items) and Spiritual impact of the disease (4 items). All items were scored as stated by 3 points Likert scale from 1-3, in which (3 indicating all of the time, 2 indicating some of the time and 1 indicating none of the time) scores of each of the four domains was calculated by summing the scores of its items. Total specific HRQOL score was achieved by summing the scores of its domains. All raw scores were transformed to a 0-100 score using the following formula⁽³⁰⁾:

$$\text{Transformed score} = \frac{(\text{actual raw score} - \text{lowest possible raw score})}{\text{Possible raw score range}} \times 100$$

IV. Methods

The study was carried out according to the following steps:

- ☒ Permission to demonstrate the study was gained from director of Center of liver and treatment of hepatic viruses by interferon in national medical institute in Damnhour Governorate
- ☒ 1st tool of data collection was settled by the researchers after extensive review of relevant and current literature. Tool 1 and 2 were checked for content validity by a jury of three experts in the field and tool reliability was tested by **Cronbach alpha** test. Its result was 0.723 which indicates an accepted reliability of the tool. The second tool is a standardized which used by the researchers (SF – 36) HRQOL questionnaire.
- ☒ A pilot study was finished on 20 patients (10 % of the study sample) to test clarity, applicability, feasibility, and estimate the need time to complete each tool. Needed modifications were completed in data collection tools and subjects included in the pilot were excluded from the main study sample.

Data collection methods- The study is allocated into 3 phases:

Pre-intervention phase:

All Hepatitis C patients of the study sample were subjected to a pre- coded interview schedule. It was answered within 30 minutes and completed in the same visit. The purpose and the nature of the study were clarified to patients, for full cooperation

Intervention phase:

Selection of the place:

The educational sessions were held at the outpatient clinics in the center or, in the conference room at the faculty of Nursing in Damnhour University.

Selection of participants

All patients who got average or poor level of knowledge at the pretest were identified (n=396). Then, the researcher selected 200 of them randomly by using the blind paper picking and these 200 patients were divided randomly by using the blind paper picking into experimental group (100 patients) and control group (100 patients). Some family member or relative had attended the educational sessions with their patients.

The 100 Hepatitis C patients in the intervention (study group) were phoned to attend the intervention program. They were alienated into smaller groups (eight groups); each group (10-15 Hepatitis C patients) attended 4 sessions (1 sessions /week) and the total number of sessions for the whole study group was 32 over a period of 1 month. The duration of each session was ranged between 40-60 minutes, started with 5 minutes warming up, then 20 minutes lecture and followed by group discussion for 15-35 minutes questions and answers. (The data collection process from January 2017 till September 2017)

Methods used: Lecture and Group discussion.

Audio-visual materials used: Data show (available visual aids)

Content of the program

- ✦ Function of liver
- ✦ General knowledge about HCV
- ✦ Mode of transmission
- ✦ Factors makes further damage of liver
- ✦ Signs and symptoms
- ✦ Investigations done for diagnosis of the disease
- ✦ Treatment of HCV
- ✦ Healthy diet
- ✦ Protection from risky behaviors that damage liver
- ✦ Protection of other from having HCV
- ✦ How to maintain mental , spiritual and sexual health

Post-intervention phase:

The same interview schedule of HRQOL introduced for both study and control groups three months after the end of the intervention program to evaluate the impact of the program on Health-Related Quality Of Life (HRQOL) for hepatitis C patients.

Ethical consideration:

Oral consent was obtained from patients after explanation of the aim of the study. Privacy was maintained. Confidentiality and anonymity of individual response were guaranteed during the study. Ethically, the control group was exposed to educational sessions and provided with available visual aid after the completion of post- test. The participants have the right to withdraw from the study at any time without giving any reasons.

Statistical analysis:

The collected data was handled and analyzed using SPSS program, version 16. Data were revised, coded, analyzed and tabulated using the number and percentage distribution.

A- Descriptive statistics:

Count and percentage: Used for recitation and succinct categorical variables, arithmetic means, Standard deviation (SD) and range used as measures of central tendency and dispersion correspondingly to recapitulate quantitative data. Statistical significance level was set at 5% ($p \leq 0.05$ was considered statistically significant).

B-Analytical statistics:

- ☒ Pearson Chi-Square test was applied to gauge the difference between categorical data. Paired t-test and ANOVA were used to compare between sample means for quantitative data with normal distribution. Mann-Whitney test and Wilcoxon signed ranks test were used to compare the non-normal quantitative data
- ☒ Stepwise Logistic Regression using Forward Conditional Method was applied for identifying the relationship between PCS and MCS and different independent variables.

V. Discussion

Most people who are diagnosed with HCV infection respond with some degree of shock, fear and denial. The effects of hepatitis C on families, work environments, and on society as a whole, are remarkable, of particular concern loss of productivity in the workforce, increased tension, and stress in the family and potential decreases in quality of life.⁽³¹⁾

Egypt has the peak prevalence of chronic HCV infection, with the existing new modalities antiviral therapy, which is expected to cure more than 90% of chronic infection within a short duration, Egypt has ongoing treating a large number of infected persons through 23 national treatment centers with a schedule that Quality Of Life For Patients with Hepatitis C viruses experiencing new modalities comprises the new antiviral agent Sofosbuvir.⁽³²⁾

Quality of life has become an imperative outcome variable in clinical research and a vital factor in treating HCV. The load of HCV infection is not limited to the impact of cirrhosis and hepatocellular carcinoma. Research has reputable that HCV infection is connected with reduced Health-Related Quality of Life (HRQOL).⁽³³⁾ So the current study aimed to evaluate the effect of intervention program on health related quality of life among Hepatitis C patients and give a pure image of 400 patients with age ranged from 18-68 years with the mean age 43.5 ± 10.3 . This result is reinforced by Fábregas, et al. (2013)⁽³⁴⁾ .who conduct his study to assess HRQOL with chronic hepatitis C, the majority of patients mean age was 50.6 ± 11.3 . So, patients who suffer from HCV are in middle adulthood which is the productive age for both family and society.

In the existing study, nearly two thirds of patients were male and the majority of them were married. This result is supported by Chang, et al. (2014)⁽³⁵⁾ in his study to assess HRQOL for a patient treated by antiviral therapy in Taiwan, he found that around half of the patients were male and the majority of the patients were married and live with their families.

In this study, more than two thirds of the patients were educated and more than half are working. This result is in covenant with Chang, et al. (2011)⁽³⁶⁾, that over half of patients had an educational level above junior high school, and more than half were currently employed.

Concerning the patients' knowledge about HCV, the pre-test results discovered that the great bulk of the sample gave dissatisfied level of knowledge about HCV; in which average score level gained by more than half of them (55%), while poor score level gained by less than half of them (44%) This impairment of knowledge in the contemporary study may be credited to two reasons; first, lack of health educational mass campaigns about the HCV and the way of living healthy with it. Second, it is obvious that, lower educational level in the studied sample (nearly one third were either illiterate or had low level of education) may be associated with worse capability of the infected patients to handle with the challenges of a chronic condition. This result is consistent with other study accompanied in Kingdom of Saudi Arabia at 2013⁽³⁷⁾. on the other hand, the result of the existing study is not in contract with other studies that originated a good knowledge of participant toward hepatitis C infections.^(38, 39) So the reasonable factors to this difference of response may be the demographic variation of the study location, study population along with the study tool used for data collection. Hence the knowledge needs to be increased and framed more in lower educated portion of community.

With reference to source of their knowledge, about two thirds of patients in the existing study reported that, they obtained their knowledge regarding hepatitis C from doctors or nurses followed by mass media that reported by more than one third of them. This was quite dissimilar from the study done on Pakistan (2016)⁽⁴⁰⁾ to assess knowledge, attitude and practice regarding hepatitis b & c, in which the first source of knowledge that reported by more than half of studied sample was mass media. This difference may be attributed to culture diversity in different cities in various regions.

In point of fact, after the implementation of health educational program, the study group showed momentous improvement in their knowledge compared with the control group. This finding approved with the study accompanied in Ain Shams University⁽⁴¹⁾ that reported the educational program increases the samples' awareness and the level of knowledge about HCV infection.

Regarding the patients' behavior about HCV, the pre-test results demonstrated that nearly one fourth of the sample achieved poor level of behavior about their risky life style. This might be because the infectious disease that compounded by stigmatization may imposed stressful effect that led them to continue or increase their risky behaviors. Also, the level of support that someone with CHC might receive was less when compared to someone with a chronic illness that does not carry a stigma which might affect self-esteem and cause alterations in the quality of life.⁽³⁹⁾

Parallel result was reported from Pakistan that indicated their participants had poor practices toward HCV infection.⁽⁴²⁾ But the current results are inconsistent with a study conducted in Iran on 2013, showed that their patients had good practices toward HBV infection with mean practices score of 27.92 ± 2.56 .⁽³⁸⁾

After program implementation the study group of Hepatitis C patients had a significant improvement of all behavior items regarding the prevention and controlling cross infection of HCV disease. These results were consistent with Mohsen, (2011)⁽⁴³⁾ who showed a significant improvement of the practice of the studied sample

of HCV family members regarding prevention and controlling cross infection of the disease after exposure to health education program.

Generic *HRQOL* instrument (SF-36) asks for patients' views about their health. This information will help keep track of how the Hepatitis C patients feel and how well they are able to do their usual activities. In the present study, the pre-test results showed that the Hepatitis C patients saw themselves as sick people, where they showed deteriorating mean score of physical and mental component summary of SF-36 *HRQOL* generic scale. After the implementation of the health educational program, the study group showed significant improvement in physical and mental components summary and all health domains of the SF-36 measuring *HRQOL* compared with the control group. This result is supported by a study completed in Iran (2015)⁽⁴⁴⁾ aimed to evaluate the effects of psycho-educational intervention on health-related quality of life (QOL) of patients with chronic liver disease referring to Shiraz University hospital and it reported a significant improvement of the eight domains of SF-36 of *HRQOL* measurement of the studied sample of CHC after conducted to health education program.

Disease-Specific *HRQOL* instrument ask for patients' views about how HCV infection had affected their life. In the present study, the pre-test results showed that the Hepatitis C patients suffered from spiritual, physical, psychological and social impacts of their *HRQOL*. The mean scores of spiritual impact was observed the highest mean of specific tool for measuring their quality of life, followed by physical impact, psychological impact, while the social impact was observed as the lowest one. This highest impact of spirituality on CHC patients might be due to they experienced higher levels of discrimination, felt isolated from family, friends, neighbors and groups.⁽⁴⁵⁾

Moreover, they interpreted HCV infection as part of God's punishment or finally worrying about an uncertain future rather than concerning on present. All these reasons had an impact on Hepatitis C patients, as the previously independent patients may suddenly become emotionally, financially or physically dependent on family members.⁽⁴⁶⁾

While for lowest impact of sociality on CHC patients might be due to about half of the studied sample have rural residence, and it is obvious that the characteristics of rural cultures in Egypt are depend on when person infected with certain diseases, the relationships had deepened and became stronger so that their family members became an important source of physical, emotional and financial support.⁽⁴⁷⁾ This positive interaction used to be occurred within rural family than urban as the urbanization stressors cannot permit the patient's family members to take this role.

After the implementation of the health education program, the study group presented significant improvement in all items of disease-specific scale to measure *HRQOL* compared with the control group. These findings coincided with the studies conducted on Chinese patients with chronic liver diseases at 2013,⁽³⁾ in which the study revealed that, the intervention was effective on all aspects of QOL among the experimental group.

In this study, linear regression model of PCS and MCS of generic *HRQOL* (SF-36) was conducted to identify the factors that affect the *HRQOL* of CHC patients. The result disclosed that 4 significant predictors of PCS were extracted out of 14 independent variables that entered the linear regression analysis model. Age, perception of seriousness of hepatitis c patients about HCV, how the disease was discovered (accidentally or when the symptoms appear) and working status of hepatitis c patients are considered significant predictors of PCS.

Regarding Mental Component Summary (MCS), the result snarled that 3 significant predictors of MCS were extracted out of 14 independent variables that entered the linear regression analysis model. Working status of hepatitis c patients, how the disease was discovered (accidentally or when the symptoms appear) and perception of seriousness of HCV are considered significant predictors of MCS.

These results coincide with study done by Gao et al (2013)⁽³⁾ in which a multivariate analysis was conducted to identify the factors that affect the *HRQOL* of CHC patients. The result exhibited that these factors included age, sex, educational level, employment status, monthly income and presence of comorbidity in SF-36.

Finally, this study identified the educational needs of chronic hepatitis patients that should be considered in the future. The results may serve as reference for nurses to ensure an excellent management of patients' discomfort and their self-care ability. Patient education programs must focus on the individual needs of patients and the continuous assessment of such needs.⁽⁴⁸⁾

Community health Nurses are in a key position to carry out health education since they are the health care providers who have continuous contact with patients and their families and have the best opportunities to assess potential problems or side effects, discuss medical regimen and give teaching about all aspects of care which includes maintaining physical activity, recognizing activity limitations, conserving energy, following dietary modifications, adhering to medication schedule with attending to side effects and lastly to improve their quality of life. Moreover, special attention should be given regarding teaching patients family members who have an active role in patient care to help them comply with the prescribed medical and nursing intervention and to cope with chronic disease.⁽⁴⁹⁾

VI. Conclusions and Recommendations

The findings of this study accepted the hypothesis and give a clear picture of the magnitude of the positive effect of intervention program on both generic (*SF-36*) and disease-specific HRQOL instruments of HCV patients. Therefore, recommendations concerning Ministry of Health (MOH) activities, Hospitals and specialized centers activities and increase awareness of population at risk and general population. These activities should have the priority to inspire people to take a more active role in preventing exposure to HCV and/or modifying their behavior that permit transmission of HCV to reduce the burden of HCV disease on HRQOL of infected patients in Egypt.

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VII. Results

Table (1) Distribution of the study subjects along with their socio-demographic characteristics

Socio-demographic characteristics (no=400)	No	%
Sex: Male	258	64.5
Female	142	35.5
Age/ year		
18 -	40	10.0
28 -	63	15.8
38 -	133	33.3
48 -	145	36.3
58 – 68	19	4.6
Mean ±SD	(43.5±10.3)	
Residence : Rural	169	42.3
Urban	231	57.7
Education: Illiterate	85	21.3
Read and write or primary school	35	8.8
Preparatory school	47	11.8
High school	150	37.5
University or higher	83	20.6
Marital Status : Single	36	9.0
Married	339	84.8
Widow & divorced & separated	25	6.2

Occupation		
Working	241	60.2
Student	5	1.3
House wife	98	24.5
Retired	22	5.5
Unemployed	34	8.5
Occupation as a result of HCV (n=34)		
No	7	20.6
Yes	27	79.4
Socio economic score level		
Low socio economic level	119	29.8
Middle socio economic level	191	47.8
High socio economic level	90	22.4

Table (1): spectacles the distribution of the Hepatitis C patients according to socio-demographic characteristics. *Socio-demographic data* were collected in the present study to gain a clear picture of the 400 HCV patients’ characteristics. Nearly two thirds of the sample were male with mean age was 43.5 ±10.3 (range 18-68) years. Regarding education, 37.5% had high school level (secondary school and middle institute), while 30.1% were illiterate, read & write or got primary school education. 57.7% were lived in urban areas, 84.8% were married, 60.2% of patients were employed and the majority of them (79.4%) lost their work as result of having HCV. On the other hand nearly half (47.8%) of the sample had middle socioeconomic level.

Table (2) Distribution of the study subjects along with their source of knowledge

Source of knowledge	No =400	%
Doctors and nurses	256	64.0
Mass media	158	39.6
Friends	26	6.5
Other patients	25	6.3
Family	21	5.3
Inter net	9	2.3

Not mutually exclusive

Table (2) displays the distribution of the study subjects as stated by their sources of knowledge. The table revealed that more than two thirds (64.0%) of hepatitis c patients reported doctors and nurses was the source of their knowledge, followed by (39.6%) of them reported mass media, (6.5%) reported friends, (6.3%) reported other patients, (5.3%) reported family, while only (2.3%) of hepatitis c patients reported internet as a source of knowledge.

Table (3) Comparison between Study & Control groups regarding mean percentage change as a result of attending the intervention program in relation to Knowledge, Behavior, and Health Related Quality Of Life (HRQOL) (generic SF-36 and specific)				
Knowledge, Behavior and Perception	Experimental (No=100)	Control (No=100)	Z	P
	Mean (SD)	Mean (SD)		
Total Knowledge score level	67.5 (44.4)	7.1 (17.7)	-11.9	0.000**
Total behavior score level	51.7 (36.7)	0.9 (4.3)	-12.6	0.000**
Generic HRQOL (SF-36)				
General Health	55.2 (46.2)	0.6 (3.9)	-12.2	0.000**
Bodily Pain	43.4 (35.1)	2.3 (9.7)	-9.9	0.000**
Physical Functioning	36.4 (26.9)	0.5 (3.5)	-11.3	0.000**
Role Limitation Physical	42.7 (29.6)	1.9 (11.8)	-11.5	0.000**
PCS	41.7 (25.3)	1.1 (4.9)	-12.4	0.000**
Social functioning	38.6 (33.2)	0.3 (2.5)	-10.1	0.000**
Role Limitation Emotional	43.8 (35.7)	0.5 (3.7)	-11.0	0.000**
Vitality	51.1 (23.5)	0.4 (2.5)	-12.6	0.000**
Mental health	41.5 (26.3)	0.4 (4.5)	-11.6	0.000**
MCS	40.7 (18.9)	.33 (2.1)	-12.4	0.000**
Specific HRQOL				
Physical impact	9.9 (10.4)	-.03 (0.7)	-11.9	0.000**
Psychological impact	20.9 (21.5)	-.24 (3.9)	-8.9	0.000**
Social impact	28.6 (22.6)	-7.4 (8.6)	-11.2	0.000**
Spiritual impact	18.4 (21.2)	-8.1 (10.6)	-10.1	0.000**

Z for Mann Whitney test**P ≤ 0.01

Table (3) illustrates the comparison between study& control group regarding mean percentage change as a result of intervention program in relation to knowledge, behavior and Health Related Quality Of Life (HRQOL) (generic SF-36 and specific).

Generally, the table (3) proves that the results of comparison between study & control groups of hepatitis c patients revealed that there is significant difference between study and control group in favor of study group regarding mean percentage change of total knowledge score level ($p \leq 0.01$), total behavior score level ($p \leq 0.01$), and HRQOL (Generic and Specific).

Regarding Generic Health Related Quality Of Life (HRQOL) (SF-36), the results revealed that there is significant difference between study and control group in favor of study group regarding mean percentage change of Physical Component Summary (PCS) ($Z = -12.4$, $p \leq 0.01$). Concerning the domains of PCS among study group, the results revealed that general health was the highest mean score, followed by bodily pain and role limitation physical while physical functioning ranked last. Concerning Mental Component Summary (MCS), the results revealed that there is significant difference between study and control group in favor of study group regarding mean percentage change of MCS ($Z = -12.4$, $p \leq 0.01$). Regarding the domains of MCS among study group, the results revealed that the vitality domain was the highest mean score, followed by role limitation emotional and mental health while social functioning ranked last.

Concerning the domains of disease specific health related quality of life, the results revealed that there is significant difference between study and control group in favor of study group regarding mean percentage change. As regard the domains of MCS among study group, the results revealed that the social impact of hepatitis c virus was the highest mean score, followed by psychological impact and spiritual impact while physical impact of HCV ranked last.

Table (4): Significant predictors of PCS and MCS of generic HRQOL (SF-36) among studied patients with HCV as revealed by linear regression model.

Significant predictors	B	T	P
Physical component summary (PCS)¹			
Constant	86.68	9.04	0.0001
Age (years)	-0.475	-4.49	0.0001
Perception of seriousness	-3.59	-2.042	0.042
How the disease was discovered	-7.85	-3.403	0.001
Working (no/yes)	11.37	4.037	0.0001
Mental component summary (MCS)²			
Constant	67.313	6.65	0.0001
Working (no/yes)	11.329	3.915	0.0001
How the disease was discovered	-4.743	-2.044	0.042
Perception of seriousness	-4.74	-2.66	0.008

$$^1 F = 7.722 \quad P < 0.05 \quad ^2 F = 19.51 \quad P < 0.05$$

Table (4) shows the distribution of the hepatitis c patients according to linear regression model of PCS and MCS of generic HRQOL (SF-36). The (table 4) illustrates the results of stepwise linear regression analysis of the relationship between PCS and MCS and different independent variables.

As shown in the table, the result tangled that 4 significant predictors of PCS were extracted out of 14 independent variables that entered the linear regression analysis model. Age, perception of seriousness of hepatitis c patients about HCV, how the disease was discovered (accidentally or when the symptoms appear) and working status of hepatitis c patients are considered significant predictors of PCS.

Regarding Mental Component Summary (MCS), the result tangled that 3 significant predictors of MCS were extracted out of 14 independent variables that entered the linear regression analysis model. Working status of hepatitis c patients, how the disease was discovered (accidentally or when the symptoms appear) and perception of seriousness of HCV are considered significant predictors of MCS.

Figure (1): confirmations the distribution of the study subjects as stated by their total level of knowledge score. More than one half (55.0%) of the study subjects had average total level of knowledge, while 44.0% got poor levels and only 1.0% got good levels of knowledge .

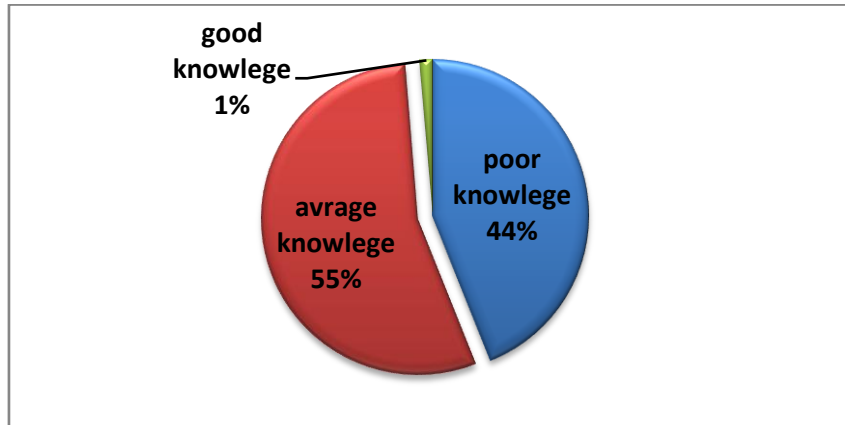


Figure (1) Distribution of the study sample along with their Total level of knowledge score

Figure (2) expresses the distribution of the study subjects according to their Total behavior scores. More than half (55.0%) of them got average total behavior score, followed by (25.0%) had poor total behavior score and (20.0%) achieved good total behavior score.

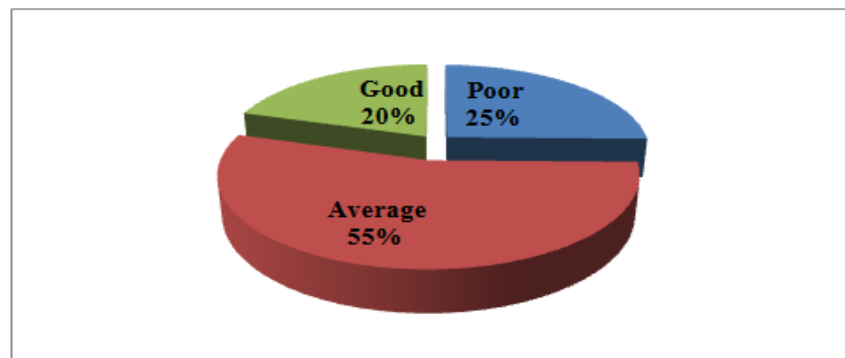


Figure (2) Distribution of the study sample along with their Total behavior scores

Figure (3) parades the distribution of the study subjects' mean SF-36 generic Health-Related Quality Of Life domains and their components summary measure. Generally, it is clear that patients saw themselves as sick. It was observed from the figure that Physical Component Summary (PCS) and Mental Component Summary (MCS) are nearly having the same mean. Among eight domain of SF-36 generic quality of life measure, Role Emotional (RE) ranked first with the highest mean of patients 50.9 ± 30.9 , followed by Social Function (SF) 49.8 ± 33.2 and Physical Functioning (PF) 48.3 ± 30.9 , while Vitality (VT) ranked last 36.8 ± 24.7 .

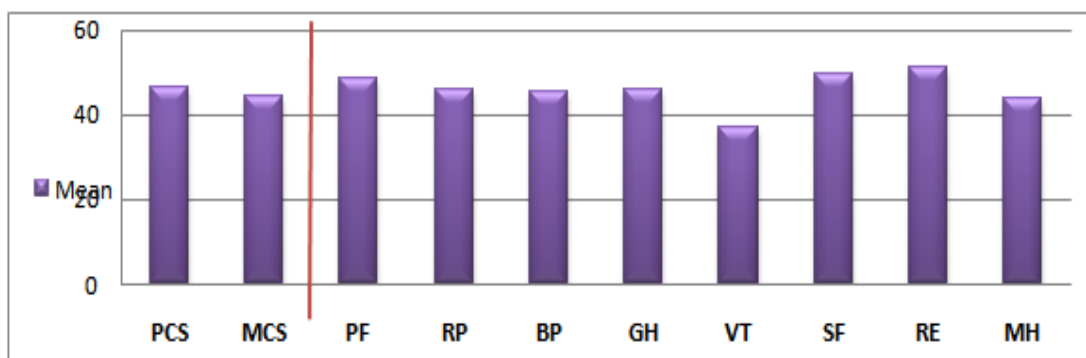


Figure 3: Distribution of the study subjects' mean generic SF-36 domains and component summary measures

Figure (4) show the distribution of the study sample's mean disease specific health-related quality of life domains. Among CHC patients, spiritual impact was observed the highest mean of specific quality of life 71.8 ± 23.9 , followed by physical impact 65.5 ± 17.4 , psychological impact 57.7 ± 26.3 and the social impact was observed the lowest one 51.7 ± 23.9 .

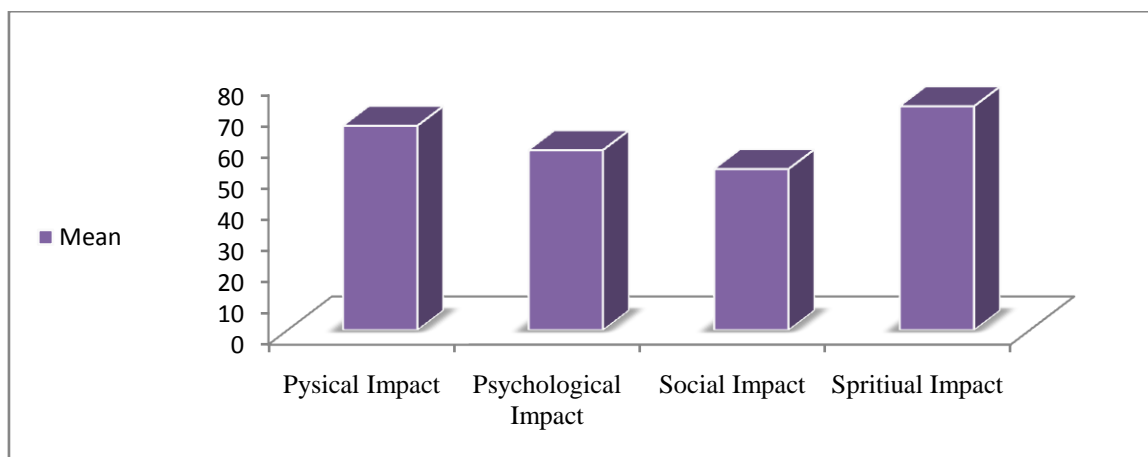


Figure 4: Distribution of the study subjects' mean disease specific HRQOL domains

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