Exploring Effect of Medication Adherence on Quality of Life among Newly Treated Hepatitis "C" Virus Patients

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Abstract:

Background: Medication adherence and Quality of Life (QoL) are two integral factors for sustaining optimal health; where medication non-adherence of Hepatitis C virus patients predisposes them to poor prognosis and remarkably low QoL. This study **aimed** to explore the effect of medication adherence practices on the quality of life among newly treated hepatitis "C" virus (HCV) patients. **Methods:** The researchers used a quasi-experimental research design. **Setting**: The study was conducted at the Hepatology Outpatient Clinic of Alexandria Main University Hospital. **Subjects:** A purposive non-probability sample of 100 adult newly treated HCV patients (≤12 months) were enrolled. **Tools:** The researchers used three tools for collecting data. Firstly, Sociodemographic and Clinical Data sheet, secondly Morisky Medication Adherence Scale 8 items (MMAS-8), and thirdly, the World Health Organization Quality of Life abbreviated version (WHOQoL-BREF) Questionnaire. **Results**: A highly significant difference was obvious between all medication adherence items of studied patients at the pre, one-month, and three months post-tests. Where the mean total QoL score was increased after three months of follow-up than from the pre-intervention with a highly significant difference. Additionally, a highly positive correlation between medication adherence and QoL was detected in pre, one-month, and three months follow-up periods. **Conclusion**: the mean total QoL score of the studied HCV patients was improved, with a high positive correlation between medication adherence and QoL in newly treated studied HCV patients.

Keywords: Hepatitis C virus, Effect, Medication adherence, newly treated, Quality of life.

Introduction

Hepatitis C virus (HCV) infection is a chronic inflammatory blood-born infectious liver disease, ranging from minimal histological changes to extensive fibrosis and cirrhosis with or without hepatocellular carcinoma (HCC) **(Abdelrheem, Saleh, Abdelatif, & Elbadry, 2020; Shahid et al., 2021).**

Additionally, HCV is considered a global public health concern in both developed and developing countries, where in 2016, 325 million estimated cases of HCV infection worldwide. While, in Egypt, the HCV prevalence rate reached 13% of the total population in 2018, equating to 8-12 million Egyptians, with approximately 8 million living with uncomplicated chronic HCV. The HCV prevalence in rural Egypt is 10 to 20-fold higher than in the United States, ranging from 2.01 to 25.47 HCV cases per 1000 person-years. The highest HCV prevalence among Egyptians was attributed to previous schistosomiasis treatment with unsafe injections **(Kamal, 2017; Noreen et al., 2022)**

Considering this higher HCV infection prevalence in Egypt, studies declared that it represents a complicated network of social, economic, psychological, and political factors. The possible causes of hepatitis include autoimmune hepatitis or secondary to dental, obstetric, injection administration, blood transfusion, and alcohol consumption **(Ayoub & Abu-Raddad, 2017; Kouyoumjian, Chemaitelly, & Abu-Raddad, 2018)**

Acute HCV infection is usually asymptomatic or accompanied by mild flu-like symptoms, weight loss, fatigue, muscle or joint pain, irritability, nausea, malaise, anorexia, and jaundice which rarely occurs after 2 to 26 weeks post-infection. It develops over years to be chronic in 70% of patients with the presence of various symptoms related to liver damage.

Acute hepatitis C symptoms are more short-term, lasting six months or less; whereas, chronic hepatitis can last for the entire life requiring long-term treatment **(Hirano et al., 2021; Hudson et al., 2022)**.

Latterly, advances in HCV therapy have resulted in steadily higher cure rates preventing virus transmission, reducing the risk of Hepatic Cell Carcinoma (HCC) development among liver fibrosis persons; sequentially, slowing the disease progression and improving quality of life (QoL). The best approach in HCV treatment focuses on protecting and supporting the liver and keeping the immune system healthy **(Hudson et al., 2022; Noreen et al., 2022)**. Studies have revealed in long-term conditions that medication non-adherence in developed countries is a common problem estimating around 50%, and is expected to increase; portraying poor immunological consequences **(Kleinsinger, 2018; Tay, 2019).**

Medication adherence is sustained when HCV patients follow the clinically prescribed doses and maintain healthy lifestyle behaviors; which predispose to QoL improvement and minimize complication risk incidence **(Khayyat et al., 2019)**. As chronic HCV is a complex condition; thus patients in the long term may face unfavorable medication side effects, financial burden, frequency of dosing, anxiety, or depression, all of which have profound negative consequences; making medication adherence difficult **(Cho & Park, 2017; Barreira, Marinho, Bicho, Fialho, & Ouakinin, 2019)**.

The negative effects of chronic HCV medication non-adherence can be controlled by changing patients' behaviors toward better QoL through; encouraging healthy lifestyle practices such as: eating a healthy diet, drinking plenty of water, exercising daily, managing stress, enforcing medication adherence, and getting enough rest **(Neiman et al., 2018)**.

Nursing care for hepatitis C patients requires a holistic approach and integration with physicians, pharmacists, nutritionists, and psychologists to meet these patients' physical, psychological, emotional, spiritual, and socio-economic needs **(Upton, 2020).** Nurses being health care provider who has continuous contact with patients and their families; can assess potential problems, discuss medical regimen, encourage adherence to medication schedules, teach measures that maintain physical activity, as well as enforce dietary modifications **(Verloo, Chiolero, Kiszio, Kampel, & Santschi, 2017)**.

Nurses also guide these patients to follow the medical prescriptions, make therapeutic decisions, and manage medications' side effects on patients' QoL. This holistic nursing approach entails counseling, support, and education about HCV patients' medication adherence are vital for successful management, healthier QOL, and prevention of serious disease complications **(Girgis, Farahat, & Ahmed, 2012; Weber, 2021)**.

Significance of the study:

Although the QoL and medication adherence in HCV patients have been discussed in the medical literature; there is a significant gap in the context of the multidisciplinary approach which includes the gastroenterology nurse practitioners' integration into the pharmacological management plan**.** Furthermore, In Egypt, despite HCV being considered one of the major public health concerns being difficult to manage; minimal research has evaluated HCV patients' adherence to prescribed medication and its consequence on all aspects of QOL. **Thus**, **the researchers aimed** in this research to explore the effect of medication adherence practices on the quality of life among newly treated hepatitis "C" virus patients**.**

Research hypothesis:

Medication Adherence has positive effect on Quality of Life among Newly Treated Hepatitis "C" Virus Patients.

Operational definition:

Medication adherence is the degree to which a person 's complies to accepted guidelines about medication consumption from a healthcare professional.

Newly Treated Hepatitis "C" Virus Patients who have just started receiving treatment with sofosbuvir, daclatasvir, and ribavirin, all of which have a half-life of less than or equal to 12 months, are referred to as recently treated patients.

Materials And Method

Research Design: The study followed a quasi-experimental research design, (One group

with pre, post-one-month, and post-three-month follow-up tests).

Setting: The study was conducted at the Hepatology Outpatient Clinic of Alexandria Main University Hospital. It is the main Hepatic University Clinic, with a specialty on evaluating and delivering follow-up instructions for HCV patients from Alexandria and the adjacent governorates. The clinic is a one-room facility on the first floor of a conventional one-day medical clinic. It is open Tuesdays and Wednesdays from 8 a.m. to 12 p.m.

Subjects: The study population comprised a purposive non-probability sample of 100 HCV patients. These patients were enrolled according to the following **inclusion criteria**: Able to communicate, from both gender, ages ranging between 18-60 years, have controlled chronic diseases, and free from associated complications i.e., Hepato Cellular Carcinoma, co-infection with HIV or hepatitis B virus. All subjects were randomly enrolled in the current study.

The researchers estimate the Sample size by using G*power software version 3.1.9.7, based on F tests - ANOVA, one-way, Effect size (0.40), α err prob (0.05), Power (1-β err prob) =0.90 for the difference between Pre, post, and follow up tests: the program revealed a total sample size (84) newly treated hepatitis C patients; however the researchers increased the sample to 100 patients to overcome the possibility of withdrawal of some patients.

Tools: Three tools were utilized for data collection:

Tool I: Sociodemographic and Clinical Data Structured Interview Schedule. It was divided into two parts:

Part I Socio-demographic data: It comprised age, gender, level of education, marital status, presence of medical insurance, and residence.

Part II Clinical data: which included the clinical history of patients and their family history related to hepatitis C virus infection. Medical health history related to the presence of associated controlled associated diseases namely: hypertension, renal disorders, heart disease, and diabetes mellitus, in addition to its duration, and previous hospitalization.

Tool II. Morisky Medication Adherence Scale (MMAS-8):

The MMAS-8 is a structured self-report eight-item scale; which was used to measure medication consumption behaviors, and to estimate the risk of medication non-adherence in patients with chronic illnesses. The researchers adopted the Arabic version by **(Ashur, Shamsuddin, Shah, Bosseri, & Morisky, 2015),** its internal consistency (α = 0.70).

Scoring system: The first 7 items of the 8-MMAS were answered with a dichotomous response "Yes" or "No". Where items 1–4 and 6–7 had a score of "0" for the "Yes" answer and "1" if the answer is "No"; considering that the 5th item was reverse-coded. Whereas; the 8th item responses had a Five-point Likert scale ranging between "Never forget" ="1" to "All the time"= "5".

The total score for the scale was the sum of each item's scores; ending up with a **dichotomous scale:** Adherent/Non-adherent; the values of 6-8 are computed corresponding to (adherence), and below 6 is (non-adherence)**.** Whereas**,** the higher the score indicates better medication adherence.

Tool III: World Health Organization Quality of Life Abbreviated Version (WHOQoL-BREF) Questionnaire:

The researchers adopted the Arabic reliable and valid version of the WHOQOL-BREF questionnaire **(Dalky, Meininger, & Al-Ali, 2017). It is reliable at** (r = 0.7).

The WHOQOL-BREF sheet contained 26 questions and aimed to provide a broad short form QoL assessment over the previous two weeks. The first two questions evaluated patients' self-perceived QoL (Q1) and satisfaction with health (Q2). The remaining 24 questions were divided into four domains: physical (seven questions), psychological (six questions), and social relationships (three questions). In addition (eight questions) were approaching the environment parameters in the context of an individual's culture, value systems, personal goals, standards, and concerns.

Scoring system:

Each domain's question was rated on a five-point Likert scale: where for questions 1 and 2; "1" represents "Disagree or not at all" and "5" represents "Completely or extremely agree". Whereas, **questions**: "3, 4, and 26" were negatively phrased to be reversely scored. The

Total QOL score was achieved by summing the scores of its domains; where a higher score denotes a higher perceived healthier QOL and vice versa.

Study framework:

The study was carried out in three phases:

I-Preparatory phase:

a- Written approval: The study was approved by the ethical Research Committee of the Faculty of Nursing, University of Alexandria. Also, an official letter from the Faculty of Nursing was submitted to the hospital director of the Hepatology Outpatient Clinic; at Alexandria Main University Hospital after explaining the study's purpose. In addition, permission and license agreement were obtained and signed by the appropriate authority and the researchers to use the WHOQoL-BREF tool in the current study.

b- A written instructional colored **pamphlets** containing illustrative pictures was developed by the researchers to clarify the study medication adherence practices for each patient individually.

II-Implementation phase:

1.Data collection started by greeting the patients, introducing self, and explaining the study aim for the subjects who fulfilled the inclusion criteria.

2.Prior to starting medication adherence practices sessions, the researchers employed the three study instruments to collect the necessary information on patients' sociodemographic and clinical data, level of medication adherence, and QoL evaluation.

3.The researchers interviewed the study subjects individually during **the first visit** to take initial assessment (pre-test).

4.After that, the researchers tailored approaches encouraging the study subjects for complying with medication adherence practices. Thus, the following measures were planned by the researchers to achieve the study's goal:

- Conducting researchers-patients individualized face-to-face simple language discussions engaging the clinic's health team members; as possible, to explain the seriousness of their condition, and medication non-adherence risks, in addition, to fortifying lifestyle modifications, manage patients' fears and concerns and clarify the positive effects of medication adherence practices.
- Moreover; the researchers distributed written simplified "Image-based" instructional colored pamphlets; which was developed by the researchers supplementary as a home message for the newly treated HCV patients.

  The pamphlet included: HCV definition, causes, prevention, mode of transmission, and complications. Moreover, it contained medication-related information regarding prescribed treatments pharmaceutical preparations/administration, dosage, and side effect. Also it included the positive effects of medication adherence, adverse effect of non-adherence, and the recommended safety measures enforcing VHC patients medication adherence.
- Moreover, bi-weekly mobile phone calls throughout the 12 weeks study period; were implemented as a reminder intervention reinforcing the provided proposed medication adherence practices importance.

However, the two subsequent interviews (post-tests) have been conducted either face to face or through phone calls; if patients' attendance was not possible.

Ethical consideration:

The researchers obtained written informed consent from all patients after an explanation of the study aim. Confidentiality of data and privacy of personal information was ascertained, also the participants were informed that their participation in research was voluntary and they have the right to withdraw from the study at any time without any consequences.

Statistical analysis of the data:

The analysis of data was performed utilizing the SPSS version 22. Data were presented using descriptive statistics in the form of frequencies, percentages, and Mean (SD). Correlation coefficients were used to measure the strength of the relationship between two variables. Multiple linear regression (MLR) and one-way analysis of variance (ANOVA) were also used. Statistically significant was considered at p-value < 0.05 and highly significant at p-value < 0.01.

Limitation of the study:

The researchers during the process of dat collection confronted limitations owing to the ne Corona (COVID-19) pandemic where; nearly 2 patients did not attend to the clinic either for th second or the third follow-up visits; accordingly their interviews and follow up were accomplishe via phone calls. Following an extensive review c previous studies, the researchers found lacking i hepatitis C patients' therapeutic-adherenc researches; additionally there was no previou research linking the effect of medication adherenc practices on newly treated HCV patients' QoL.

Results:

Table (1) portrays that; the mean age of studied patients was 43.58 ±5.77 years, where 55% were males, and 70% were married. According to a residence, 72% of studied patients were from rural areas. Furthermore, the minority had a preparatory school education (12%). In relation to health insurance, nearly two third (74%) had no health insurance.

Table (2) shows that; 98% of studied patients had a family history of HCV, 75% of them did not know the cause of HCV infection, 97% did not admit to hospital-related HCV, and 26% suffered from another chronic disease. Also, this table reveals that 38% and 100% of studied patients received medication for both renal and liver disease; respectively.

Table (3) declares that; all of the studied patients reported forgetfulness as a cause of non-adherence, while 90%, 76%, and 64% of them reported that side effects of drugs, financial reasons, and being too busy are the causes of their non-adherence; respectively.

Table (4) shows that; there was highly significant difference between all items of medication adherence of studied patients at pre, one months, and three months follow-up post researchers intervention periods at p-value <0.01**

Figure (1) reveals that; 19% of studied patients were adherent to their prescribed medication in pre-intervention, while 63% of them were adherent at one month post-intervention which was increased to 75% at the three months follow-up period.

Table (5) shows highly significant difference between mean scores of Physical, Psychological, Social, Environmental, Overall QoL, and General health domains of studied patients' QoL at pre, one month, and three months post intervention periods, at a p-value <0.01. Finally, the mean total QoL score was markedly increased from 217.42(35.76) in pre-intervention to 286.77(28.53) in the three months follow-up period; with a highly significant difference at p-value <0.01.

Table (6) portrays that; there was a highly positive correlation between medication adherence and studied participants' QoL in the three study periods at a p-value <0.01.

Table (7) reveals that; a high significant model was detected through the F-test value = 12.009 with a p-value of 0.001. This model explains that 59% of the variation in the QoL was detected through R^2 value of 0.59. Also, explained that both medication adherence and having health insurance had a high-frequency positive effect on the quality of life, at a p-value <0.010. While; participants' age, high educational level, and being married had slight frequency positive effect on their QoL, at a p-value <0.05.

Table (1): Distribution of studied patients according to their Sociodemographic characteristics (n=100)

Items	N	%
Age:		
25 - <35	16	16
35 - <50	56	56
50 or more	28	28
Mean SD	**43.58±5. 77**	
Gender		
Male	55	55
Female	45	45
Marital status:		
Married	70	70
Not married	30	30
Residence:		
Rural	72	72
Urban	28	28
Educational level:		
Neither Read nor write	22	22
Read and write	26	26
Preparatory school	12	12
Secondary school	14	14
University	26	26
Health insurance		
Governmental	6	6
Private	20	20
No	74	74

Table (2): Distribution of studied patients according to their clinical data (n=100)

Items	Yes		No	
	n	%	n	%
Family history of HCV	60	60	40	40
HCV infection due to:#				
Hepatic Disease	0	0	100	100
Surgery	6	6	94	94
Blood transfusion	19	19	81	81
I don't know	75	75	25	25
Treatment period				
< 6 months	57	57	43	43
6 to 12 months	43	43	57	57
Repeated hospital admission:	3	3	97	97
Associated diseases:#				
Cardiac disease	14	14	86	86
DM	16	16	84	84
Renal disease	28	28	72	72
Other diseases	26	26	74	74
Prescribed medication:#				
Hypertension	18	18	82	82
Cardiac	24	24	76	76
Renal	38	38	62	62
Hepatic	100	100	0	0

More than one answer.

Table (3): Distribution of studied patients according to their reason of non-adherence (n=100)

Items	n	%
Forgetting	100	100
Side effects of drugs	90	90
Financial Reason	76	76
Too busy	64	64
Feeling that drugs are ineffective	60	60
Too many drugs	34	34
Lack of family care	20	20

Table (4): Mean score of studied patients related medication adherence pre, one month, and three months post- practices intervention (n=100)

Medication adherence items	Mean (SD) Pre-intervention	Mean (SD) One month Post-intervention	Mean (SD) Three months post-intervention	Anova P value
Forget to take your medication	0.96 (0.032)	0.82 (0.011)	0.70 (0.012)	6.778 <0.01**
During the past two weeks, were there any days when you did not take your medication	0.97 (0.013)	0.83 (0.012)	0.72 (0.013)	8.009 <0.01**
Have you ever taken a different dose or stopped your medication without telling your doctor, because you felt worse when you took it?	0.97 (0.032)	0.76 (0.020)	0.62 (0.010)	7.665 <0.01**
When you travel or leave home, do you sometimes forget to bring your medicines	0.58 (0.019)	0.51 (0.009)	0.46 (0.015)	6.901 <0.01**
Did you take all of your medicines yesterday?	0.72 (0.024)	0.79 (0.011)	0.85 (0.017)	8.192 <0.01**
Do you stop taking medications when you feel that your health condition is stable?	0.66 (0.017)	0.60 (0.008)	0.58 (0.010)	7.541 <0.01**
Have you ever felt bothered by sticking to your treatment plan?	0.94 (0.011)	0.81 (0.013)	0.63 (0.015)	9.052 <0.01**
Do you forget to take your medication?	2.84 (0.67)	2.25 (0.43)	2.04 (0.52)	7.355 <0.01**

**High significant <0.01

Figure (1): Distribution of studied patients-related medication adherence pre, post, and follow-up (n=100)

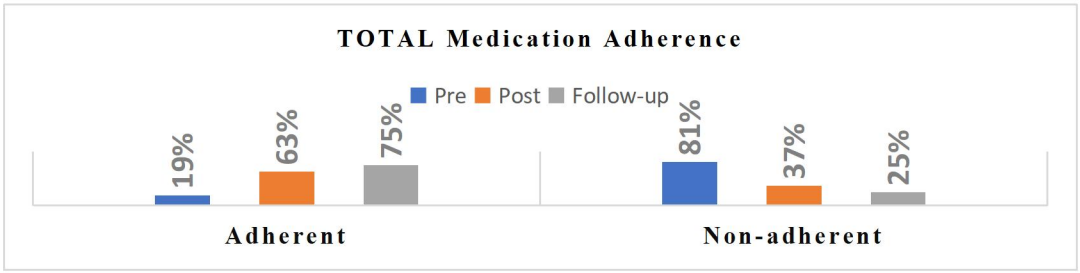

Table (5): Mean score of studied patients' related quality of life pre, one month, and three months post practices-intervention (n=100)

Quality of life domains	Mean (SD) Pre-intervention	Mean (SD) One month Post-intervention	Mean (SD) Three months Post-intervention	ANOVA test P-value
Physical	53.08(10.78)	64.24(10.7)	69.64(12.3)	6.555 <0.01**
Psychological	51.92(9.76)	70.14(10.5)	72.55(11.09)	7.002 <0.01**
Social	57.07(12.5)	68.33(12.2)	70.42(13.46)	6.590 <0.01**
Environmental	49.22(13.6)	60.10(10.21)	63.41(13.40)	7.112 <0.01**
Overall QoL	3.01(0.65)	3.40(0.30)	3.98(0.43)	5.809 <0.01**
General Health	3.12(0.57)	3.51(0.22)	3.77(0.29)	5.333 <0.01**
Total quality of life	217.42(35.76)	269.72(25.08)	286.77(28.53)	13.908 <0.01**

**high significant <0.01

Table (6): Correlation between medication adherence and quality of life of the studied patients at the three follow-up periods (n=100)

Items	r.	P value
Medications adherence and QoL pre-intervention	**0.657**	**<0.01****
Medications adherence post and QoL post-intervention	**0.704**	**<0.01****
Medications adherence at three months post-intervention and QoL follow-up	**0.699**	**<0.01****

**high significant <0.01

Table (7): Multiple Linear regression model for quality of life (n=100).

Items		Unstandardized Coefficients B	standardized Coefficients B	T	P. value
Medication adherence		0.476	0.370	7.765	**0.000****
Age		0.189	0.141	2.756	0.042*
Education level (High)		0.201	0.273	2.303	0.030*
Marital status (married)		0.253	0.176	3.018	0.031*
Health insurance (Yes)		0.324	0.213	6.001	**0.003****
Model	**R^2**	**Df.**	**F**	**P. value**	
Regression	**0.59**	4	12.009	0.000**	

a. Dependent Variable: **Quality of life**

b. Predictors: (constant): Medication adherence, Age, Education level (High), Marital status (married), and Health insurance (Yes)

Discussion

Chronic hepatitis C virus (HCV) infection affects over 240 million people representing about 6% of the world's population, and it is considered one of the leading causes of cirrhosis, liver failure, and hepatocellular carcinoma (HCC). Medication adherence refers to the extent to which a patient takes their medication as prescribed and for the duration of treatment agreed between the patient and their physician **(Chugh et al., 2022).** Therefore, the present study aimed to explore the effect of medication adherence on the quality of life among newly treated hepatitis "C" virus patients**.**

The current study revealed that the mean age of studied patients was 43.58±5.77 years, more than half of the studied patients were males. These results are consistent with the study conducted by **(Rodis & Kibbe, 2010)** that aimed to evaluate changes in quality of life (QOL) of (HCV) infected patients and their medication adherence during the first 3 months, who stated that more than two-thirds of patients were male. Also, it is supported by the study by **(Dalgard et al., 2022)** who detected that the mean age of HCV patients was 47.4(9.9) years.

Likewise, most of the studied patients had a family history of HCV, and three-quarters of them did not know the cause of HCV infection. These results are in cohort with the study by **(Liu et al., 2019)** who stated that; less than one-fifth of the studied patient had a family history of liver disease and did not confirm their proposed cause of HCV infection. The current study reported selected the newly treated HCV patients; illustrating that less than half of patients were treated from 6 to 12 months, which disagreement with the study by **(Papaluca et al., 2019)** who declared that the majority of patients were treated for 8 to 12 months.

All of the studied patients reported that forgetting was the cause of medication nonadherence, followed by the presence of drug side effects, financial reasons, and being too busy. These results disagree with **(Shin et al., 2018)** who found with multivariate analyses that age was the only independent predictor of poor medication adherence. Where, in particular, younger (<30 years) and elderly (>70 years) patients exhibited poor adherence. Also, **(Antonia, 2011)** reported that physical impairments and cognitive limitations may increase the risk for nonadherence in older adults.

Additionally, the study results revealed improvement in medication adherence among HCV patients; these results may be due to the effectiveness of the proposed researchers' tailored interventions utilizing the developed colored pamphlet. Where, **(Anglada-Martinez et al., 2015)** stated that; there was a highly significant improvement in patient medication adherence post-intervention than pre-intervention. Moreover, **(Butt, Ali, Bakry, & Mustafa, 2016)** reported that multidisciplinary-led interventions significantly improved patient adherence to medication regimes.

According to quality of life, the present study showed that there was a highly significant difference between all QoL domains of studied patients with a high and significant improvement in the mean QoL total score at the

end of the three months follow-up period. Furthermore, a high positive significant correlation was declared between medication adherence and QoL at the pre, post, and follow-up tests. These findings were attributed to that improved medication adherence, which in turn enhanced VHC patients' QoL. However, these results are consistent with **(Ali et al., 2019)** who portrayed that the researchers' intervention had a significant impact on improving cure rates, HRQoL, and medication adherence for HCV patients. Correspondingly, **(Naderifar, Tafreshi, Ilkhani, Akbarizadeh, & Ghaljaei, 2018)** found that; there was a positive correlation between medication adherence and health-related QoL among hemodialysis patients. This study was carried out on hemodialysis patients while there is no study dealing with both Qol and Medication adherence in HCV Additionally, **(Cortesi et al., 2020)** found that different subtypes of Chronic Liver Diseases affect the overall QoL domains and recommended the implementation of educational interventions for those patients. Moreover, **(Alavinejad, Hajiani, Danyaee, & Morvaridi, 2019)** concluded that simple educational intervention and continuous monitoring for 6 months of the start of the therapeutic regimen can affect clinical outcomes, QoL, hospital admissions days, and knowledge of patients with hepatic disorders. Besides, **(Khorvash, Ataei, Baghersad, & Boroumandfar, 2021)** found that educational programs with a strong emphasis on family support and companionship can improve some dimensions of the QoL and pharmaceutical compliance in patients with HCV. Also **(Shin et al., 2018)** reported poor medication adherence is associated with higher mortality and greater risk of HCC and cirrhotic complications, particularly among patients with liver conditions.

According to the Multiple Linear regression model, the current study explained that medication adherence and having health insurance had a high-frequency positive effect on the QoL. Whereas, age, high education level, and married had a slight frequency positive effect. These findings are supported by a cross-section study carried out by **(Chen et al., 2021)** who found that hepatic disease stage and income level were the factors most associated with HRQoL variables; while age, education level, and marital status were also slightly significantly associated with some HRQoL variables. Furthermore, **(Kim, Chu, & Lee, 2018; Chugh et al., 2022)** discovered that marital status, occupation, medication adherence, HCC, subjective health status, and depression are all factors influencing HRQoL.

Conclusion:

Based on the findings of the current study the researchers concluded that: after three months of newly treated HCV patients' compliance to medication adherence taught practices; a declared an evident improvement in their level of adherence to medication at the post-tests compared to the pre-test. Furthermore, the mean total QoL score of the studied HCV patients was improved; declaring a high positive correlation between medication adherence and QoL in newly treated HCV patients.

Recommendation:

The Researchers propose the provision of continuous educational programs for hepatitis patients regarding the importance of adherence to treatment to be followed up periodically to monitor the improvement in their quality of life. Additionally, replication of the current study using a large study sample in various geographical areas.

Acknowledgments:

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Conflicts of interest:

The researchers of this study declared that they had no conflicts of interest.

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