Nursing Intervention to Promote Self Care Management Practices for Clients with Hepatitis "C" Virus

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Abstract: The aim: was to evaluate the effect of nursing intervention to promote self care management practices for clients with Hepatitis "C" virus **Design:** a quasi-experimental design was used in carrying out this study. **Setting:** the study was conducted at the Medical Outpatients' Clinics of the Benha University Hospital in Benha City**. The sample:** A convenience sample was used included 100 HCV patients chosen randomly. **Tools:** utilized in this study comprised a structured interview questionnaire for assessment of the socio-demographic characteristics of HCV clients, the medical health status, their knowledge, self-care management practices, and an observational checklist through asking question for assessment of home environment. **Results:** the main results revealed that post the nursing intervention there was a significant improvement of client's knowledge about viral disease as causative agents of HCV, preventive measures, and self-care management about HCV practices of common health problems such as nutrition, itching, rest and exercises, depression, and muscle cramps. And, there was a positive correlation between client's knowledge, self care management practices, and home environment. **This study concluded that**, there was a significant positive effect of nursing intervention on knowledge and self-care management practices of HCV clients **The study recommended that**, promotion and enhancement of the self-care modalities to HCV clients, and mass media should be included in preventive measures programs of HCV problems, and further researches is proposed to explore factors affecting self care management in rural areas.

1. Introduction

Hepatitis "C" is a liver disease caused by the Hepatitis C virus (HCV), which is found in the blood of persons, who have this disease; it represents a serious public health problem as most cases of chronic disease especially in developing countries. Up to 300 million people have chronic hepatitis "C" mainly worldwide, *(Rayder & Beckingham, 2009).*

Self-care defined as the production of actions directed to self or the environment in order to regulate one's functioning in the interest of one's life, integrated functioning and wellbeing *,(Aleleton & Chalmers, 2009)*.

According to *Bensley et al. (2009)*, therapeutic self care demand is summation of care measures necessary at specific times or over duration of time for meeting all personal self care strategies are concerned with personal hygiene activities, which encompass bathing, general skin care, or all hygiene.

Maintaining physical and psychological health helps clients cope with any symptoms and illness. Rest is essential and is an important factor in promoting liver cell regeneration. The client must be educated to plan sensible exercise, managing stress, discussing anxious emotions, getting adequate rest and giving up smoking , that all help to keep as healthy as possible, *(Lapane, 2009).*

Most clients with viral hepatitis are cared at home. So, the nurse must assess the client's knowledge of nutrition and provide the necessary dietary teaching, and adequate nutrition is especially important until studies show that-liver function has returned to normal. The CHN through the nursing intervention has the role to instruct HCV clients about the variety of foods, eaten in the right balance, will meet clients need for energy, growth and repair. Within a well-balanced diet, unless a person with HC has serious liver damage, there are no particular foods that should be favored or avoided*.* The nurse must also teach the client about preventive measures and how to prevent transmission to other family members, *(Smeltzer & Bare, 2009:Lewis et al., 2009).* It was added by *Howard et al. (2010) that,* clients are generally advised to eat less salt small servings with the fat removed; red meat is a very useful food to include in a balanced diet, as it is a valuable source of iron and B group vitamin.

Most clients receiving Interferon experience flu-like symptoms early in treatment, but these symptoms diminish with continued treatment. Later side effects include fatigue, bone marrow suppression, and neuropsychiatric effects (e.g., apathy, cognitive changes, irritability, and depression). Interferon dosage must be reduced in 10-

40% of clients and discontinued in 5-15% because of severe side effect. Ribavirin can induce hemolytic anemic and can be problematic for clients with preexisting anemia, bone marrow suppression or renal failure. In those clients, combination therapy should be avoided or attempts should be made to correct the anemia, *(Korany, 2009).* Other treatments, including corticosteroids, ursodiol, and thymosin have not been effective. High iron levels in the liver might reduce the efficacy of interferon. Use of iron reduction therapy (phlebotomy or chelation) in combination with interferon has been studied, *(Joragnsen, 2009).*

The nurse has to explain the clients that strict isolation is not necessary, but hand washing which comes into contact with contaminated utensils, bedding, or clothing is essential. Careful handling of disposable needles, including not recapping used needles is important. Personal care articles as: Tooth brushes, razors, etc., that might have blood on them must not be shared, *(Lawrence et al., 2010).*

The nurse must worn clients that the highest risk comes from sharing needless and syringes but all injecting equipment potentially spread HCV, including spoons, water, filter, tourniquets cent swabs. Blood on fingers and work surfaces also involves transmission risk. Clients who are already infected can become infected with different genotype of HC and experience another initial acute stage of infection, because of the many possible risk factors involved with injecting drug, *(Hepatitis "C" Council, 2008).*

The HCV clients should be aware that management of complications as chronic persistent active hepatitis, hepatic cirrhosis, portal hypertension bleeding esophageal varices and hepatocellular carcinoma are to be considered strictly. Clients with progressive and complicated HCV infection constitute a significant proportion of liver transplant candidates. However, the rate of recurrence of HCV infection is high; reaching 85% and the rate of acute and chronic HCV on the graft is 75% and 60% at 5 years respectively, *(Shapiro et al., 2009).*

Significance of the study:

Hepatitis C virus infection is a significant nursing problem because of the high percentage of the population affected and the serious consequences of uncontrolled HCV. In Egypt, HCV infection rates (30%) from total population are increasing at an alarming rate leading to a burden disease, *(Bahnasy, 2003, Halim et al., 2005 and Shaker et al., 2009)*.

Community health nurses concerned with hepatitis disease prevention, she must recognizes the association of the disease with specific behaviors especially at home. This can be performed through the health promotion, protection; self care

management, treatment, and follow up of infected cases, *(Howard et al., 2010)*

Aim of the study

The aim of this study was to evaluate the effect of nursing intervention to promote self care management practices for clients with Hepatitis "C" virus through the following objectives:

1- Assessing the health needs of the clients with HCV.
2- Designing and carrying out self care management based on the previously detected needs of the clients with HCV.
3- Evaluating the degree of improvement of self-care management practices of the clients with HCV.

Hypothesis:

The nursing intervention will improve the self care management practices of the infected clients with HCV.

2. Subject and Methods

Research design:

A quasi-experimental design was used in carrying out this study. **Setting:**

The study was conducted at the Medical Outpatients' Clinics of Benha University Hospital in Benha City.

Sampling:

Convenience sample was used in this study. The total number of HCV patients attending the Outpatients' clinics in the years 2010 and 2011 was about 2035, so 5% were chosen randomly, (100) HCV patients according to the following criteria for the HCV patients: From different ages groups, diagnosed HCV since 6 months, attending for regular follow up care, and from different districts of Benha city.

Tool of data collection:

An interview questionnaire, developed by the researchers based on literature review, and written in simple clear Arabic language consisted of four parts as the following:

Part one: designed to collect data about the socio-demographic characteristics of HCV clients. It included data about age, sex, marital status, occupation, educational level, family income, and the medical health status such as, chronic illnesses, duration of disease, Bilharziasis, regular treatment and reasons of irregularity treatment, causes of transmission of the disease and hospitalization.

Part two: devoted to the HCV clients' knowledge about HCV. It included close–ended questions, covered areas such as, the causative agent of HCV, HCV infectious disease, and drugs which may harm the liver, self care problems about action to be taken in case of constipation or diarrhea, and life

style change about follow up and rest in bed during symptoms as well as detailed questions about HCV as meaning, types, methods of transmission, incubation period, infective period, complications, investigation and symptoms of HCV.

Scoring system: For knowledge items, the correct answers were predetermined according to literature review, a correct response was scored 1 and the incorrect one was scored zero. For each area of knowledge, the scores of the items was summed – up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed, good >65%, average 50-65%, and poor <50%.

Part three: Focused on clients' self-care management practices as prevention and control infection e.g. personal hygiene as they reported regarding to hand washing, dispose of needles and razors and disinfect blood spots. Also self-care management practices for the HCV common problems e.g., nutrition, itching, depression, rest & exercises and muscle cramps modified from *Hepatitis "C" Council (2008)*. The responses were on a 3 point: always, sometimes and never.

Scoring system: Each question has 3 levels of answers: "always", sometimes", and never. These were respectively scored 3, 2, and 1. The scores of the items were summed–up and the total divided by the number of the items, giving a mean score. These scores were converted in a percent score, and means and standard deviations were computed.

Part four: Checklist for assessment of home environment through asking question adapted from *Maurer and Smith (2009),* and filled in by the investigators. Composed of 8 close–ended questions, i.e., residence, concerning ventilation, it was evaluated as "**Good"** there is more than one window; **"Moderate"** there is only one window**, and "Poor"** there is no source of ventilation. The same for cleaning the house and hygiene of the bathroom, water source, and type of the bathroom, sewage disposal, and garbage refuse.

Scoring system: Each item was assigned a score of one if present, and zero if absent.

Content validity: Was done by 5 of Faculties' Staff Nursing Experts from the Community Specialties.

II – Operational design:

Preparatory phase:

A review of the current and past available literature, covering the various aspects of the problem, using textbooks, articles, magazines and internet search, was done, to assist in the development of data collection tools and the preparation of the nursing intervention.

Ethical considerations:

All the clients with hepatitis "C" virus rights' were secured, each one was informed about nature of expected outcomes of the study. They were assured that all data will be tested confidentially and information will be used only for the research purpose and for their benefits and each study subject was allowed time enough throughout the study. They were also informed about their right to withdraw at any time without going any reasons

Pilot study:

The pilot study was carried out on 10 HCV patients (5% of the sample). They were chosen randomly to test content clarity and consistency of the tools. Participants in the pilot study were not included in the main study sample. Modifications were accordingly made on the study tools in order to be more applicable and the necessary changes were fulfilled by correction, omission or addition of items, until the final shape of the tools was reached.

Field work:

- The field work was done throughout the period of 12 months beginning from March 2011 to end of February 2012. It was carried out in the selected settings at Outpatients' Clinics. The researchers visited the medical outpatient clinics 3 days/week (Sunday, Monday and Tuesdays) from 9.00 a.m. to 12.00 mid day.

- Nursing intervention development included 3 phases:

Phase (1): preparation for assessment: (2 months)

Based on the preparatory phase for developing the data collection tool obtained from the interviewing questionnaires, as well as literature review (pre /post test).

Phase (II): Design and implementation: (4 months)

The nursing intervention was developed through determine the general objective, contents, teaching methods and aids.

General objective: was to improve the self care management practices of the infected clients with HCV.

Contents: Contents were designed to meet HCV clients' needs and to fit into their interest and levels of understanding.

Teaching methods: were used group discussions, demonstration and re-demonstration, role play, and presentation.

Teaching aids: Flip charts, pictures, available real materials (e.g., some types of food, drug specimens, syringes and disinfectant solutions), and hand out.

Sessions: (4 months)

The clients divided into five groups (20 clients for each group). The total number of sessions' hours was 18 hours (6 hours theoretical and 12 hours practical). This is in addition to 2 sessions for pre and post tests. The duration of each session was 1-2 hours, including

periods for assessment of pre and post test. The sessions including the following parts:

Part I – Promotion of clients' knowledge about: HCV disease: anatomy of the liver, function of the liver, virus, and hepatitis, mode of transmission, incubation period, infective period, signs and symptoms, diagnostic measures, drug used to treat HCV, side effects of these drugs, preparing meals for HCV clients, complications, schedule to seek medical advice, preventive measures.

Part II: Promotion of self-care management practices as prevention and control infection such as A- personal hygiene e.g. hand washing, covering the wounds, use individual shaving articles, and individual toothbrush, use disposable syringe, use condom for partner, dispose of needles and razors, disinfect blood spots, apply an appropriate hand washing, disinfectant before cleaning, and use solution.

 Part III: Self-care management practices for the HCV common problems e.g., B- nutrition as drinking fluids & juices, eating foods containing vitamin "C", eating fresh vegetables and fruits, small intake of carbohydrates, fatty foods, and proteins, avoiding salty and spicy foods, moderate intake of sugars, small frequent meals during the day, having cooked food, and half cooked foods, and avoiding eating manufactured foods.

C- Itching that included bathing, keeping skin dry and clean, avoiding rubbing of the skin, cutting nails, staying away from high temperature places, avoiding wearing polyester's underwear, putting cold compresses, and putting topical analgesic ointments under the guidance of a physician.

D- Rest & exercises as managing time, arrangement of the work, doing one work at a time, using body mechanisms, using suitable tools while cleaning the house, keeping on taking periods of rest and relax, and doing breathing exercises.

E- Depression as talking with someone close about anxieties and fears, and managed stress, listening to calm music, asking others (friends & family) encouragement, reassurance & compassion, enjoying everything beautiful in life, avoiding thinking or focusing on problems of health, exercising any favorite hobby, and praying and listening to the Koran.

F- Muscle cramps as using warm water compresses, taking a rest, taking amount of food rich in calcium, informing the doctor if the number of times of contraction increase, taking analgesics for pain as instructed and doing the laboratory tests as ordered by the doctor.

Phase (III): Evaluation of the nursing intervention: (2 months)

Evaluation of the program was done by using the post test questionnaire which was the same format of pre-test in order to compare the change in clients' knowledge, and self care management practices, it assessed immediately after implementation of the program.

III - Administrative design:
Permission for conduction of the study and implementation of the program was obtained by submission of an official letter issued from the Faculty of Nursing, of Benha University and Ain Shams University to the heads of the Medical Outpatients Clinics in Banha Hospital, Benha City.

IV - Statistical design:
Statistical presentation and analysis of the present studied data were carried out, using the mean, standard deviation, and paired t-test, Chi-square, Linear Correlation Coefficient and Analysis by r-test by using the statistical package for social sciences (SPSS) version 17. Statistically significant difference ($P \leq 0.05$) and highly statistically significant difference ($P \leq 0.001$).

3. Results
Table (1) shows socio-demographic characteristics of the studied sample. It was clear that 59% of clients were males, regarding to age, 66% of them were more than 40 years, with mean age of 41.20 ± 5.646 years, 77% of them were married, and 30.0% of them were secondary school. In addition, it shows that, 35.0% of clients were employees while 74% of them, their income were insufficient.

Table (2) indicates that, 45% of clients had history of kidney diseases; meanwhile, 66% of them had the disease since one year. 75% had *Schistosoma mansoni*, while 17% had *Schistosoma haematobium*, and only 8 % of the clients were free from Bilharziasis. Meanwhile 48 % had previous treatment of Bilharziasis. While 41.0% had irregular treatment of Hepatitis C viruses. 61% mentioned that the cause for irregularity wear fear from complications of the treatment, also contaminated blood transfusion and hemodialysis were 30% and 25% prevalent causes of transmission of the disease, and 53% of the clients had twice more history of hospital admission.

Table (3) explains the difference in clients' knowledge about HCV pre and post program. As they had poor knowledge pre-test, but after the implementations of the program, they improved to good knowledge. As well, there were highly statistically significant improvements in all items related to knowledge of the HCV clients (pre 35.59 ±7.342 vs. post 59.33 ± 2.731).

As regard in table (4), it indicates that there were highly statistically significant improvements in all self care management practices items towards HCV

disease such as personal hygiene, nutrition, itching, rest & exercises, depression, and muscle cramps, pre the program the Mean±SD   were (15.59 ± 2.582, 27.670±4.767, 17.240 ± 3.235, 25.590 ± 3.635, 21.220 ± 3.686, & 14.320 ± 2.318) respectively, while post program they were (25.72±0.74, 40.720 ± 2.771, 23.640 ± 1.283, 31.850± 3.141, 28.720 ± 3.464, &17.380±1.262) respectively.

Table (5) describes the home environment of HCV clients that 89% of the clients were from rural areas, 94% of clients' houses were supplied by source of clean water and 89% had a private bathroom and 69% had unsanitary sewage disposal. In addition, the table shows that the majority of clients had good ventilation, cleaning of the houses and hygienic bathroom. The same table shows that 54% had proper collection of garbage refuse in a special box.

Table (6) displays the correlations between clients' total knowledge, total self care management practice and their home environment. It shows that a positive statistically significant correlation were between knowledge, self–care management and the clients' environment.

Table (1) Distribution of HCV clients according to their socio-demographic characteristics (n = 100).

Items	%
Sex :	
Male	59.0
Female	41.0
Age	
20-	4.0
30-	30.0
40 +	66.0
Mean + SD	41.20 ± 5.65
Marital status	
Single	15.00
Married	77.00
Widowed	8.00
Educational level	
Illiterate, read and write	50.00
Basic education	13.00
Secondary/Diploma	30.00
University education	7.00
Occupation	
Employed	35.00
Housewife	30.00
Private worker	19.00
Others (student- pension &	16.00
unemployed)	
Income	
Enough and saving	14.00
Enough	12.00
Insufficient	74.00

Table (2): Distribution of clients according to medical history (n=100).

Variables	%
Chronic illness*	
Hypertension	41.0
Diabetes	27.0
Kidney disease	45.0
Arthritis	8.0
Anemia	24.0
Heart disease	2.0
Tumors	21.0
Duration of disease	
One year	66.0
Five years and more	34.0
Schistosomiasis	
Schistosoma haematobium	17.0
Schistosoma Mansoni	75.0
No schistosomiasis	8.0
Treatment of Bilharziasis	
Previous treatment	48.0
Until now treatment	40.0
No treatment	12.0
Treatment of Hepatitis C Virus	
Regular	59.0
Irregular	41.0
Reasons of irregularity (n=41):	
The price of treatment is not available	9.70
The same treatment does not exist	29.30
Fear of complications of treatment	61.00
Causes of infection:	
Contaminated blood transfusion	30.0
Hemodialysis	25.0
Dental clinic	20.0
Surgical operations	13.0
Other (barbers)	12.0
Hospitalization	
None	19.0
Once	28.0
Twice more	53.0

 * Not mutually exclusive

Table (3): Knowledge of HCV clients about the disease and related problems pre / post program (n = 100).

Knowledge	Pre- program (%)			Post- program (%)			X^2	*P*-value
	Good	Average	Poor	Good	Average	Poor		
Meaning of Hepatitis	1.00	9.00	90.00	93.00	7.00	0.00	180.29	<0.000**
Causative agent of HCV	6.00	43.00	51.00	99.00	1.00	0.00	173.46	<0.000**
Modes of transmission	12.00	21.00	67.00	100.00	0.00	0.00	157.14	<0.000**
Types of Hepatitis	5.00	22.00	73.00	96.00	4.00	0.00	167.45	<0.000**
HCV infectious diseases	58.00	0.00	42.00	97.00	0.00	3.00	43.61	<0.000**
Symptoms of HCV	11.00	35.00	54.00	99.00	1.00	0.00	156.51	<0.000**
Treatment for HCV	1.00	9.00	90.00	91.00	3.00	6.00	134.87	<0.000**
Drugs may harm the liver	0.00	6.00	94.00	100.00	0.00	0.00	200.00	<0.000**
Complications of hepatitis "C"	0.00	9.00	91.00	90.00	9.00	1.00	178.04	<0.000**
Investigations of HCV	0.00	2.00	98.00	88.00	12.00	0.00	193.14	<0.000**
Rest in bed in presence of symptoms	2.00	20.00	78.00	97.00	3.00	0.00	181.727	<0.000**
Follow up	54.00	0.00	46.00	86.00	0.00	14.00	24.00	<0.000**
Smoking from hookah "Goza" as a risk factor	51.00	0.00	49.00	70.00	0.00	30.00	7.553	<0.006*
Actions for tackling problems: Constipation	6.00	15.00	79.00	90.00	10.00	0.00	153.500	<0.001**
Diarrhea	2.00	8.00	90.00	96.00	4.00	0.00	181.497	<0.001**
Total Knowledge	Mean ± SD	Range		Mean ± SD	Range		*Paired t- test*	*p-value*
	35.59 ±7.342	0 - 48		59.33 ± 2.731	48 – 63		30.712	<0.001**

According research hypothesis:
The nursing intervention will improve self care management practices of the infected clients with HCV.

Table (4): Statistical analysis of HCV clients' total self care management practices pre and post program (n = 100)

Total self care management practices	Pre- program	Post- program	Paired t-test	
	Mean±SD	Mean±SD	T	*P*-value
Personal hygiene practices	15.59 ± 2.582	25.72±0.74	22.901	<0.001*
Nutrition practices	27.670±4.767	40.720 ± 2.771	-21.37	<0.001*
Itching practices	17.240 ± 3.235	23.640 ± 1.283	16.88	<0.001*
Rest & exercises practices	25.590 ± 3.635	31.850± 3.141	9.862	<0.001*
Depression practices	21.220 ± 3.686	28.720 ± 3.464	11.198	<0.001*
Muscle cramps practices	14.320 ± 2.318	17.380±1.262	14.554	<0.001*

Table (5):   Distribution of HCV clients' home environment as reported by them (n = 100).

Items	%
Residence	
Rural	89.00
Urban	11.00
Ventilation	
Good	81.00
Moderate	16.00
Poor	3.00
Cleaning the house	
Good	84.00
Moderate	13.00
Poor	3.00
Water source	
Inside	94.00
Outside	6.00
Sewage disposal	
Municipal system	31.00
Trench	69.00
Bathroom	
Private	89.00
Shared	11.00
Hygiene of bathroom	
Good	82.00
Moderate	15.00
Poor	3.00
Collection of garbage refuse	
Using the recycle and then burned in a special box	54.00
Thrown rubbish collected in front of the house	28.00
Thrown rubbish collected in the canal water	18.00

Table (6): Correlation between clients' total knowledge, total self-care management practices and their home environment.

Items	Environment	
	R	*P*-value
Knowledge	0.804	<0.001**
Self care management practices	0.77	< 0.001**

4. Discussion

Self-care programs of the chronic and irreversible nature of the disease, has to be developed according to clients needs and to maintain his/her independence and sense of well-being. Moreover, very little studies included the effect of self-care programs of these clients, as well as self-care researches could contribute to fulfilling the quest for

providing a better life for those who have this chronic disease, (*Aleleton & Chalmers, 2009)*.

According to characteristics of the studied sample **(Table 1)** the current study pointed out that the mean age of the sample was 41.20 ± 5.65 years. This finding was nearly similar to that of *Mohsen et al. (2011),* who carried out a study to assess the effect of nursing management protocol on selected side effects of Interferon and Ribavirin among hepatitis C clients. Who used a purposeful sample of 60 hepatitis C clients of both sexes in the Liver Out client Clinic at Shebin El-Kom Teaching Hospital; he found that the mean age of the studied group was 41.06 ± 9.31 years. However; these results were the same those of *Davis el al. (2011),* who reported in his study that, the average age of clients was 49 years. As well, *Heneedy (2009),* who conducted a study on the effect of nursing implementations on physical responses and compliance among clients with liver cirrhosis at the National Liver Institute and Menoufyia University Hospital, it was mentioned that the mean age of the study sample, was 49.8±8.3.

As regards sex, the present study results showed that, slightly less than three fifths of clients were males. This finding was in line with *Alavian et al. (2006); Mitra et al. (2006) and Mohsen et al. (2011),* who reported that the majority of their studied sample was male. In addition, this finding is congruent with *Mohamed et al. (2006) and Murphy (2007),* who reported in a cross sectional study conducted among Egyptians attending the Ministry of Health Laboratories for certification of freedom from viral hepatitis B and C to work abroad that, male sex was considered a significant risk factor in acquiring HCV infection.

Concerning the educational levels of the studied sample, the results showed that less than one third had secondary education. This finding was supported by *Bahnasy (2003)*, who revealed that cases of viral hepatitis that occurred among secondary or more education were more likely to be anti–HCV seropositive compared to those who got read and write education.

It was confirmed by *Nafeh et al. (2007) and Darwish et al. (2008)* that, these findings as they found that the prevalence of HCV was higher among males than females. It was greater among those above 30 years of age than younger age, and it was more prevalent among low educated client, also, among residents of Upper Egypt than residents of Lower Egypt, and among farmers and currently married.

Concerning medical history (**Table 2**), revealed that less than half of HCV clients had kidney disease, most of them were schistosoma and less than half had previous treatment of schistosomiasis. In a very recent study by, *Butt et al. (2011),* explained the

association of hepatitis C virus (HCV) with Chronic kidney Disease (CKD) is controversial, due, in part, to conflicting research findings. Although HCV transmission in dialysis units has been well documented, a high number of clients new to dialysis already have HCV, suggesting that the virus often is acquired before initiating dialysis therapy. Also results from the Third National Health and Nutrition Examination US survey conducted by *Tsui et al. (2006),* identified that among a representative sample of the US population, hepatitis C is independently associated with albuminuria among adults over the age of 40 and HCV seems to be most strongly associated with membranoproliferative glomerulonephritis.

The present study showed that, slightly more than two fifths of the clients had irregular treatment of Hepatitis C, and the cause for irregularity for almost three fifths of them was fear from complications of the treatment. These findings are in accordance with those of the study conducted by *Canfield et al. (2010)*, who reported that, the majority of participants expressed fear from side effects of HCV treatment, and the majority of them expressed willingness to start HCV treatment medications.

As regards treatment of HCV, less than half of the studied HCV clients received specific treatment of it. This finding is in the same line with, that of *Hubbard (2005)*, who stated that hepatitis C was viewed as a disease for which little, could be done, both because of ineffective treatment and the regimen was difficult to tolerate even with dose reductions.

 As regards causes of transmission of the HCV disease, less than one third of HCV clients under study mentioned that they received blood transfusion or its products and one fourth reported that they were on hemodialysis (table 2). These findings were supported by those of *Delwaide et al. (2004)*, who mentioned that clients at risk for hepatitis C are those exposed to a major risk factor i.e., blood transfusion, intravenous drug abuse, household contact, surgical operation and hemodialysis. As well **Russo *et al.* (2009)** who stated that the prevalence of HCV infection is higher in clients on hemodialysis than in general population. The current study finding goes on the same line with the result of a Cohort study and acute case control studies done by *Alter (2006)*, who revealed that risk factors associated with acquiring HCV infection in the United States of America have included transfusion of blood and blood products and transplantation of solid organisms from infected donors, injecting drug use, occupational exposure to blood (primarily transmitted needle sticks) and sex with an infected partner. On the other hand, *Saxena et al. (2010)* added that infection with hepatitis C

virus is endemic in hemodialysis (HD) units, especially in Middle Eastern Countries.

Concerning promotion of HCV clients' knowledge about symptoms, modes of transmission, **(Table 3)**, pre implementation of the program, more than half of clients had good knowledge only for (follow up and smoking from Goza as a risk factor), while the clients had poor knowledge in all items as regards the disease it self. However; post program implementation, results revealed that almost the whole study sample had good knowledge about symptoms of HCV, causative agent, and mode of transmission. Also, there were highly statistically significant improvements post program in all items related to HCV clients' knowledge and action taken in case of problems such as constipation and diarrhea. These study findings are in congruence with *Mohsen et al. (2011),* whose results showed that there was a significant improvement of sample knowledge in approximately every aspect given to them than pre implementations. He attributed these results to the theoretical sessions that were provided to cover all aspects of hepatitis C virus (symptoms, modes of transmission, infective periods of HCV, definition, causes, signs, treatment, action, side effects and how to deal with them) which eventually increased clients' knowledge. These results also were consistent with *Fareed (2004)*, whose results revealed statistically significant difference between before and after implementations the nursing management indicates improvement of clients' knowledge after program. similarly, this study result was in agreement with the finding of *Gupta et al. (2007)*, who studied effects of a brief educational program on knowledge and willingness to accept treatment among clients with hepatitis C at inner-city hospitals, they found that there was a substantially low knowledge among clients with HCV. After the educational implementations there was an increase in knowledge about risk factors for transmitting HCV, such as unprotected sexual intercourse and sharing personal items like razors. Knowledge of the risk of developing liver cancer in clients with HCV also increased substantially. Moreover, there was a marked increase in the expressed willingness to accept treatment, and the results of the educational program were very encouraging.

Considering HCV clients' knowledge about smoking from hookah "Goza" as a risk factor for HCV infection, the present study showed highly significant improvement post the program. It was mentioned by *Bahnasy (2003) and Zaher (2004),* who found that, smoking either cigarette or hookah "Goza" was significantly associated with HCV seropositivity. The risk of being anti-HCV positive among viral hepatitis cases was nearly about two and

half times greater among cigarette smokers and three times among hookah "Goza" smokers. In addition, smoking is known to decrease the immunity and body resistance. Also the results of the present study showed that there were highly statistically significant differences related to actions taken in case of problems constipation and diarrhea after implementation of the program. In the same line*, Paul and Martin (2005)*, found that, in most cases infected person experiences an acute reaction two to three weeks after infection, with severe abdominal pain, diarrhea, and constipation but the severity of these symptoms usually decreases over time. As with the milder acute reactions, many individuals dismiss these symptoms as flu-like or may not even recognize them as being sufficiently serious to require medical attention.

Concerning promotion of clients' self management practices about personal hygiene **(Table 4)** for prevention and control infection, such as hand washing, covering the wounds, use individual shaving articles, scissors, tooth brushes, disposable syringes, condom and disinfect blood spots, the pre–program results showed that a minority of the study group follow these measures and less than one third did not use condoms. After program implementation, either all or majority of the study group followed these measures. These finding were matching with that of *Lorig et al. (2001)*, who studied over 1,000 clients with chronic diseases of the home health care program. It showed that there were significant improvements in their practices after the program implementation such as; hand washing, covering the wounds and use individual shaving articles,

Regarding to proper nutrition **(Table 4)** the result revealed that, the majority of the study sample were avoiding drinking fluids containing caffeine i.e., coffee tea and nescafe avoiding salty foods and spicy of pickles, use small intake of fatty foods and were eating fresh vegetables and fruits, while more than three fourths of them handing half cooked foods. These results are congruent with *Davise and Sherer (2004)*, who found that the majority of clients under study were avoiding salty foods and eating fresh vegetables and fruits for proper nutrition regarding their illness.

Considering management of itching **(Table 4)**, in the current study, results revealed that, keeping skin clean and dry was the most common strategy used by the majority of the clients to overcome itching, followed by cutting nails, avoiding rubbing of the skin and consulting their physicians. These findings were consistent with those reported by *Climent et al. (2005) and Lemone (2008)*, who found that the majority of clients consult doctor about these

problems, followed by using of prescribed medications.

Considering to rest & exercises **(Table 4)**, the majority of the studied clients were arranging their works, using suitable tools while cleaning the house and keeping on taking periods of rest and relax during the day. These findings are in accordance with that reported by *Susan (2006)*, who found that, taking periods of rest was the most commonly used by the majority of clients..

As a self-care management to overcome depression feelings, especially praying and listening to the Koran **(Table 4)**, it was strategies always utilized by most of the clients. This may be due to their belief that the disease is their fate and that gaining religious support and being near from God might help them to accept this, prevent future unknown consequences and gain a sense of power in controlling the situation. This strategy was followed by giving them reassurance and encouragement by always talking to a close person about their anxieties, fears and avoiding over–thinking or focusing or problems of their own illness. This finding is consistent with those of *Hawthorne and Hixon (2004)*, who studied the self care management of HCV clients used to control depression and worries, they found that they use of the following strategies : being optimistic and praying when upset and having a sense of security and privacy. These results are also supported by what was mentioned by *Miller (2007)*, who mentioned that clients use the religion strategies' support for managing the emotional impact of illness and cope with their chronic illness.

As regards management of muscle cramps **(Table 4)**, the results of the present study revealed that, taking a rest, using warm water compresses immediately on the pain area, and taking amount of food rich in calcium, were used either by all the clients or most and majority of them after implementations of the self–care management program. These findings were supported by *Miller (2007)*, who found that the majority of clients were taking a rest followed by taking amount of food rich in calcium.

The results in **(Table 6)** indicate that, a positive statistical significant correlation between knowledge, self-care management and the clients' environment. As well, **(Table 5)** shows that, for the majority of clients' their houses were supplied by source of clean water, had a private and hygienic bathroom, good ventilation and good cleaning of the houses. In addition, more than half had proper collection of garbage refuse in a special box. These results, confirm that the good, safe, and clean client's environment had a positive effect on improving

clients' knowledge and practices when the self-care program was implemented.

5. Conclusion
Based on the results of the present study, and research hypothesis, it is concluded that:

The nursing intervention revealed a significant improvement of client's knowledge about viral disease as causative agents of HCV, modes of transmission, treatments, preparing meals, preventive measures and control infection. And, self-care management about HCV practice as personal hygiene, and common problems such as nutrition, itching, rest and exercises, depression, and muscle cramps. Also there was a positive correlation between client's knowledge, self care management practices and the home environment.

Recommendations
Based on the findings and conclusion of this study, the following recommendations are suggested:
- Promotion and enhancement of the self-care modalities to HCV clients; through a strict written illustrated instructions prepared by specialists about disease process, risk factor as smoking from Guza ,allowed foods, rest and physical activities, treatment of complication, and follow up.
- Mass media, radio, TV and newspapers should include in programs for preventive measures and HCV problems.
- Further research is proposed to explore various socio-cultural, practices and behavioral determinants of HCV risk behaviors, especially in the rural areas, for regular investigation.

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