

Effect of Educational Program on Mother's Knowledge and Practice Regarding Hepatitis C Virus in Rural Areas

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Abstract Background: Hepatitis C virus is an emerging global epidemic; some nations have been more drastically affected than others. Egypt bears the highest incidence in the world. Awareness of the disease is still low, despite the alarming prevalence of the disease in the country. **Aim:** study educational program effects on mother's knowledge and practice regarding Hepatitis C in the rural areas. **Design:** A quasi-experimental. **Settings:** study was in Senover village in El-Fayoum city. **Subjects:** A purposive sample conducted at 90 homes which are near to the MCH of Senover village, were chosen randomly. **Tools:** *tool I* was a structured interview questionnaire divided into 3 parts to assess socio-demographic characteristics of mothers, mothers knowledge, and reported practices about hepatitis C. *Tool II* was a daily life-style assessment scale to assess the mothers' health-habits and behavior. **Results:** The results of this study showed that 68.2% of mothers had insufficient knowledge about HCV disease, 86.4% had negative practices toward the disease, statistically significant differences in improving knowledge and practices regarding preventive measures after application the educational program were found. Also, mothers acquired sufficient knowledge and an increase in positive daily life-style practices was observed. **Conclusion:** The educational program improved mothers' knowledge and practices and improved the daily life-style which in-turn will reduce the prevalence of hepatitis C virus in the future. **Recommendations:** continuous educational programs among all family members regarding the preventive measures of HCV disease; especially in the rural areas.

Keywords: hepatitis C virus, life-style practices, mothers, rural areas

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1. Introduction

Hepatitis is an inflammation of the liver which could cause many pathways such as infectious agents. Also, viral hepatitis could come from many viruses infection like hepatitis A, B, C, D, and E [1]. For example; hepatitis C (infectious disease) is high distribution and infects millions in the over-world and very slowly progressive disease affecting the liver [2]. Later symptoms of damage to liver by HCV could include jaundice and liver pain [1].

Infection often is asymptomatic; a chronic infection could progress to scarring liver, and advanced to cirrhosis. In cirrhosis, which would have developed liver failure including liver cancer and gastric varicose [3]. Usually, Hepatitis C is spread by sharing infected needles with a carrier, from receiving infected blood, and accident. In some cases, acquire infection through non-parenteral means which have not fully defined, but include sexual transmission in persons with high-risk behaviors [4].

Hepatitis C virus was not spread through breastfeeding, sneezing, coughing, hugging, etc [5].

Worldwide, chronic hepatitis caused by the hepatitis C virus (HCV) is widespread throughout the world and affects approximately 180 million people [6,7]. In Egypt, according to the CDC report, about 8-10 million persons have viral hepatitis. Hence, where has a high prevalence of HCV and chronic liver disease [8]; cirrhosis and hepatocellular carcinoma are more prevalent. More than 125,000 viremic individuals become diagnosed in 2014; 10% has chronic hepatitis, 30% has compensated cirrhosis and 60% has cirrhosis or HCC [9,10].

No vaccine against hepatitis C till now. Many vaccines are still under development [11,12]. Egypt has limit funding to support wide-scale prevention programs. Therefore, targeting and prioritizing prevention activities are essential. Particularly, it is important due to the absence of a vaccine and the cost of medical therapy [13,14].

An Educational program is an important the contribution made by maternity and community health nurse to improve the health of the public. Nurses play a

crucial role in the quality of care improvement, which provides women education and support. At the same time, the nurse can provide health promotion & psychosocial services include assessment, health education, counseling & appropriate referral [15,16,17,18,19,20,21,22,23]. Maternity and community health nurse can identify persons who have a high risk of infection and trying to providing throughout increase education, risk reduction counseling, and HCV testing and appropriate medical. Modify activities such as avoid places that have a high risk for HCV infection [24].

1.1. Significant of the Study

Viral hepatitis is 7th leading led to mortality [25]. In Egypt, it ranks 5th compared to other countries for the burden of disease [26]. Hepatitis C has affects 2% to 3% of the over-world [27]. Egypt has the highest rate of HCV [28]. This ratio increase among rural area as results of lack of awareness and unhealthy practices. In 2008, An Egyptian Demographic Health reported HCV antibodies and HCV RNA are prevalent about 14.7% and 9.8%, respectively [29]. No evidence of decline HCV in both general and high-risk populations [30]. Hepatitis C progression takes more than 15 years before the appearance of any symptoms and could even prolong to 30 years, and it is a preventable disease. So, The most effective means to prevent HCV infection and its consequences is to educating and counseling public with ongoing risk factors for HCV infection to increase their awareness and changing behaviors that place them at risk for infection [31,32,33] and decrease the rate of hospitalization and the cost of treatment which burden national budget of Egypt by prevention which is better than treatment [34].

1.2. Aim of the Study

Study the effect of an educational program on the mother's knowledge and practice regarding hepatitis C in the rural areas. *The aims of this study achieved through:*

- Assessing the mother's knowledge and practice toward HCV.
- Developing and implementing educational program regarding hepatitis "C" virus according to the mother's needs.
- Evaluating the effect of an educational program on mothers to improved daily life-style to reduce hepatitis c virus prevalence in the future.

1.3. Research Hypothesis

The educational program will improve mother's knowledge and practice and therefore improved daily life-style to reduced hepatitis C virus prevalence in the future.

2. Subjects and Methods

2.1. Technical Design

2.1.1. Study Design

A Quasi-experimental design was utilized to conduct the study

2.1.2. Settings

This study was conducted at 90 homes; chosen randomly from those who live near to the MCH of Senover village, which affiliated to El-fayoum city.

2.1.3. Sampling

90 mothers. All mother in all homes responses of care of all family members

2.1.4. Tools of Data Collection

Two tools were used for this study

a First tool:

Structured interviewing questionnaire related to literature review composed of 78 questions with choices answers divided into three parts to assess:

Part 1: Socio. Demographic characteristics as age, economic characteristics, place of residence, family income, number of family members and their past history.

Part 2: The mother's knowledge related to HCV as causes, mode of transmission, signs and symptoms, HCV risk factors, the stages of hepatitis and The factors increasing the prognosis of the disease.

Scoring system:

The total scores for all questions that concerned knowledge were categorized into two levels as follows:

Level	Score	
Sufficient (>50%)	"3"	Correct and complete answer
Insufficient (< 50%)	"0, 1"	Wrong answer or incomplete

Part3: The mothers reported practices related to HCV as sharing personal items such as toothbrushes, razors and nail clippers.

Scoring system:

The total score for all questions that concerned practices were categorized into two levels as follows:

Level	Sore	
Positive > 60%	"1"	Correct and complete answer
Negative < 60%	"0"	No or wrong answer

b Second tool:

Daily life-style assessment scale to assess the mothers' daily health habits and behavior as sporting, toilet hygiene, and the scale modified to be suitable for this study. [35]. The scale contains 115 items classified as exercise, nutrition, personal care, safety measures, dealing with drugs, social and environmental, emotional, perception and religious aspects.

Scoring system

The total score for all questions that concerned daily health habits and behavior were categorized into two levels as follows:

Level	Sore	
Positive > 60%	"1"	Always or sometimes answer
Negative < 60%	"0"	No answer

2.2. Operational Design

The study to be completed was passed through different phases as follows:

2.2.1. Preparatory Phase

Survey literature and theoretical information about various aspects of the indifferent way as books, articles

2.2.2. Validity Tools

Through five experts from Faculty Members of Maternity, community Health Nursing department and Medical Specialty to ascertain relevance and completeness.

2.2.3. Reliability

Reliability coefficients calculated for questionnaire items. The coefficient alpha was 0.76 %

2.2.4. Pilot Study

On 10% (9 mothers) to test content clarity and time needed to fill the tool as a pre-test. According

2.2.5. Ethical Consideration

Every mother informed with purposes of this study then oral consent was obtained before starting and data will use only for research purpose and mothers have the rights to refuse or withdraw with no consequences.

2.2.6. Fieldwork

Along 6 months starting from April 2018 to the end of September 2018 study was done. Average time to fill tool for about 30 min.

Educational Program: it included 4 phases:-

Phase I: Assessing: mothers interviews' during attending to MCH to collect baseline data. Researchers greeted mothers, introduced themselves included in the study. Data obtained from pre-program assessment and reviewing of current and past, local and international related literature on different aspects.

Phase II: planning phase: Developing the program according to the general objective. The educational program will improve mother's knowledge and practice to reduced hepatitis c virus in the future. The content of the program was revised and modified according to the related literature. It consisted of detailed knowledge about concept of HCV, prevalence rate in Egypt, Prevalence rate around the world HCV, the main cause of liver cirrhosis, HCV types, the main type in Egypt, mode of transmission, presence of vaccine for HCV, Period of acute stage, period of chronic stage, acute to chronic stage, onset of signs and symptoms, incubation period, acute stage signs and symptoms, investigation of liver enzyme, complication of HCV, time to had liver cirrhosis, type of sample, duration of virus detection, duration of antibodies detection, medical treatment, preventive measure, early detection practices and daily life-style exercise, nutrition, Self-hygiene care, safety measures, dealing with drugs, social lifestyle, psychological and spiritual.

Phase III: Implementing: Educational program was implemented over a period of six months and sessions ranged about 20-30 minutes and implemented either individually or with group, mothers were response to the

care of all family. Each session started with a summary about what given through the previous session. Different teaching methods used as brainstorming, demonstration and re-demonstration. At the end of each session, the sample informed about the content of the next session and its time.

Phase V: Evaluating immediately after implementation of the educational program during their follow up by using the same pre-program format.

2.3. Statistical Design

Data entry and analysis were performed using SPSS version 22, using descriptive statistics in the form of frequency, percentages, means and standard deviations for quantitative variables, $P < 0.05$.

3. Result

Table 1. Frequency distribution of socio-demographic Characteristics of the study sample (n=90)

Item	No.	%
Age		
≤18	36	40.0
>18 -<28	51	56.7
≥28	3	3.3
Mean ± SD	20.8±6.8	
Marital status		
Married	80	88.9
Divorced	10	11.1
widow	0	0.0
Mother education		
Illiterate	10	11.1
Read and writes	14	15.6
Primary or secondary education	40	44.4
University or more	26	28.9
Mother's occupations		
Work	18	20.0
Housewife	72	80.0
Family income		
Enough	31	34.4
Not enough	59	65.6
Enough and saved	0	0.0
Number of rooms		
One room	10	11.1
Two room	70	77.8
Three rooms	10	11.1
Four or more	0	0.0
Number of family members		
Two	9	10.0
Three	35	38.9
More than four	46	51.1
Crowded index		
< 1	10	11.1
1-2	30	33.3
> 2	50	55.6
Housing		
Separate	30	33.3
Participants	60	66.7

Table 1 shows that the age of the mothers was ranged between 18-38 years with a mean 20.8±6.8 years old. Most of them 88.9% of mothers were married, regarding mother's education; 44.4% were primary or secondary education, regarding to family income 65.6% not enough,

77.8% of the number of room two rooms. Regarding crowded index 55.6% of them > 2 person, 66.7% the mother's housing were participants.

Figure 1 explains that 68.2% of total studied sample had insufficient knowledge related to HCV disease. Mothers' knowledge improved after application to education program to 90% sufficient knowledge and 10% insufficient knowledge. This improvement was statistically significant difference in total knowledge pre-post program $P < 0.001$

Figure 2 reports that 86.4% of total studied sample had negative practices related to preventive measures of HCV. Mothers' knowledge improved to 89.0% positive practices after application the education program. This improvement was statistically significant difference in total mothers practice pre-post program; $P < 0.001$.

Table 2 shows the distribution of the studied sample according to their daily life-style. They have positive lifestyle practices as follows: exercise 33.3% and social life-style 55.6%, self-hygiene 66.7%, 22.2% psychological and 44.4 % spiritual lifestyle. The nutrition and safety

measure as daily life style for the mothers had the majority interest. 50.0% of mothers dealing with drugs by negative way. Mothers' knowledge improved of all items after application the education program; this improvement was statistically significant difference in to their daily life style pre-post program $P < 0.001$.

Table 3 shows that 55.6% of the studied sample who had insufficient knowledge had negative practices related to preventive measures of the disease and 55.6% who had sufficient knowledge related to HCV had positive practices, 77.8% positive practices and knowledge after implementation the educational program, with highly statistically significant differences, $P < 0.001$.

Table 4 represents that there are high statistical significant differences between the studied sample knowledge related HCV disease and their exercise, nutrition, self-hygiene case, dealing with drugs and social life-style improved to mothers knowledge and life-style after implementation the educational program, with highly statistically significant differences, $P < 0.001$.

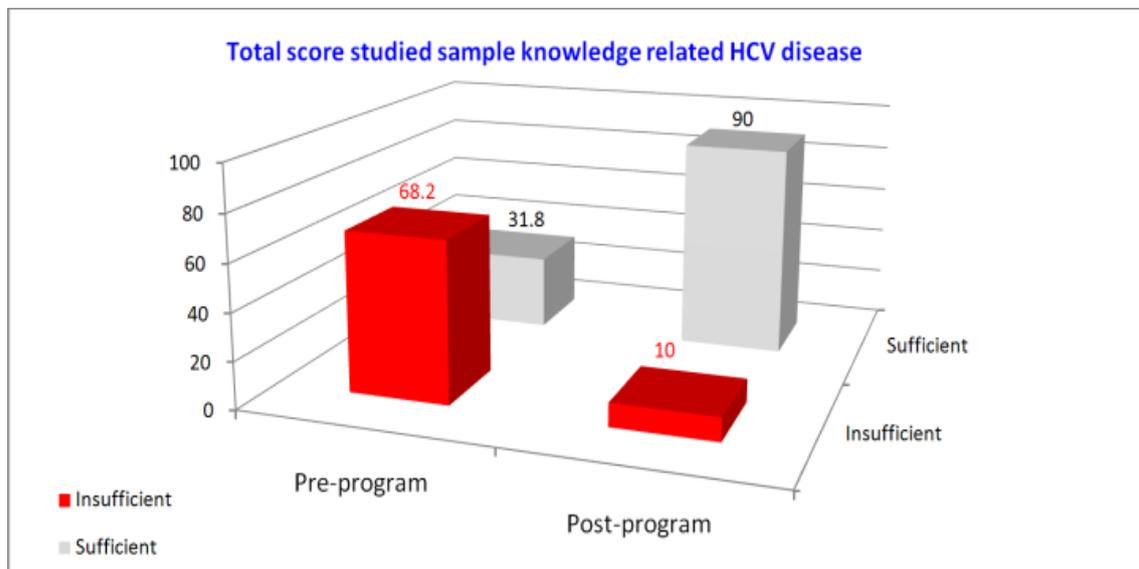


Figure 1. Distribution total score studied sample knowledge related HCV disease (N =90).

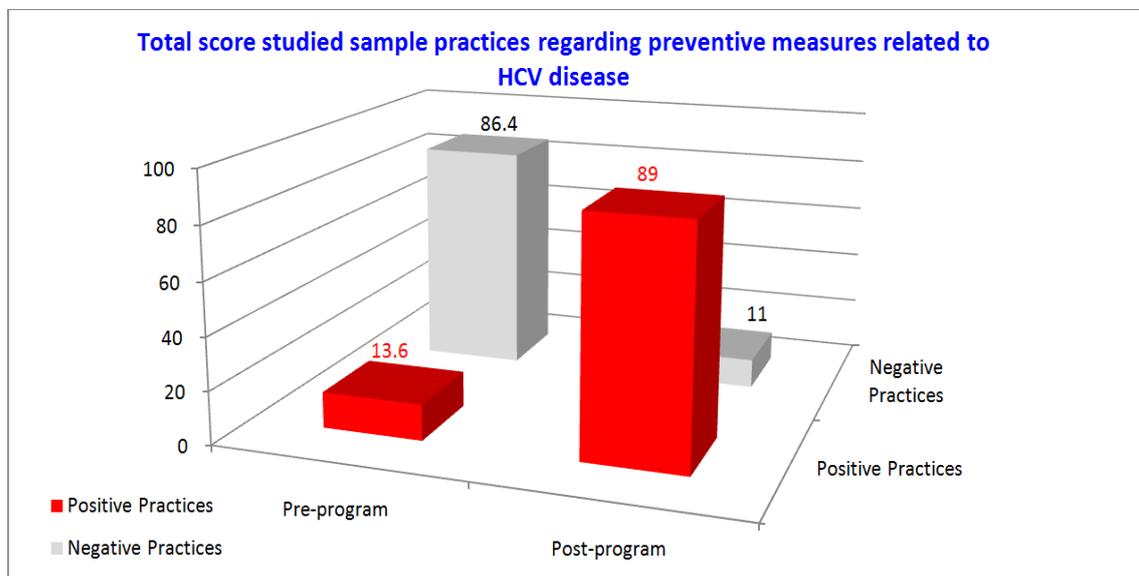


Figure 2. Distribution total score studied sample practices regarding preventive measures related to HCV disease (N =90).

Table 2. Distribution of the studied sample according to their daily life style (N=90).

Item	Pre program				Post program				Chi-square	
	Negative		Positive		Negative		Positive		X ²	P-value
	No	%	No	%	No	%	No	%		
Exercise	60	66.7	30	33.3	20	22.2	70	77.8	85.185	<0.001**
Nutrition	30	33.3	60	66.7	10	11.1	80	88.9	84.236	<0.001**
Self-hygiene care	30	33.3	60	66.7	10	11.1	80	88.9	74.227	<0.001**
Safety measure	15	16.7	75	83.3	10	11.1	80	88.9	59.278	<0.001**
Dealing with drugs	45	50.0	45	50.0	20	22.2	70	77.8	51.923	<0.001**
Social lifestyle	40	44.4	50	55.6	20	22.2	70	77.8	58.730	<0.001**
Psychological	70	77.8	20	22.2	0	0.0	90	100	67.919	<0.001**
Spiritual	50	55.6	40	44.4	0	0.0	90	100	55.313	<0.001**

Answers are not mutually exclusive.

Table 3. Relation between the studied sample knowledge about HCV virus and practices related to its preventive measures (N =90).

Knowledge	Practices								Chi-square	
	preprogram				Post program					
	Positive practices (>60%)		Negative practices (<60%)		Positive practices (>60%)		Negative practices (<60%)		X ²	P-value
	No	%	No	%	No	%	No	%		
Sufficient (>50%)	50	55.6	40	44.4	70	77.8	20	22.2	36.95	<0.001**
Insufficient (< 50%)	40	44.4	50	55.6	70	77.8	20	22.2	46.88	<0.001**

** = Highly significant

Table 4. Relation between total knowledge and daily life style of the studied sample (N =90).

Life style	Knowledge								Chi-square	
	Pre program				Post program					
	Sufficient		Insufficient		Sufficient		Insufficient		X ²	P
No	%	No	%	No	%	No	%			
Exercise										
negative	20	22.2	70	77.8	70	77.8	20	22.2	12.28	0.001**
positive	70	77.8	20	22.2	80	88.9	10	11.1		
Nutrition										
Negative	0	0.0	90	100.0	70	77.8	20	22.2	15.58	0.001**
Positive	45	50.0	45	50.0	80	88.9	10	11.1		
Self-hygiene case										
Negative	15	16.7	75	83.3	60	66.7	30	33.3	16.59	0.001**
Positive	60	66.7	30	33.3	70	77.8	20	22.2		
Safety measure										
Negative	0	0.0	90	100.0	75	83.3	15	16.7	19.29	0.01*
Positive	45	50.0	45	50.0	70	77.8	20	22.2		
Dealing with drugs										
Negative	75	83.3	15	16.7	60	66.7	30	33.3	45.31	0.05**
Positive	60	66.7	30	33.3	70	77.8	20	22.2		
Social life style										
Negative	20	22.2	70	77.8	70	77.8	20	22.2	57.20	0.001**
Positive	70	77.8	20	22.2	80	88.9	10	11.1		

NS = Not significant * = Significant ** = highly significant

4. Discussion

In Egypt, hepatitis C virus is mainly health burden [36] and affecting on liver and spread by blood-to-blood contact, it is often asymptomatic through acute phase, but once established, chronic infection can progress to scarring of the liver, and advanced scarring to cirrhosis which is generally apparent from 10-30 years [37], rural areas showed more prevalent HCV seroprevalence than urban areas [38]. This is in accordance with EDHS report 2008 that mentioned that infection was more in rural than urban areas (12% vs 7%). The same dominance of HCV prevalence in rural areas was documented in all age groups, even in vertical transmission cases [39].

The current study revealed that, more than half of the studied sample between 18 to 28 years with a mean age of 20.8±6.8 years, the majority of mothers (88.9%) were married, housewives (80%) and 44.4% of them had primary education. These findings are in line with Nawaz et al results; who found that 36% of the study sample, ranged between 18-30 years; 77% were married and 35% primary education [40]. The possible explanation may be the low socioeconomic status of the family in Upper Egypt lead to decrease the mother's level of education. Mothers were selected for the research sample because they are responsible for all family members

The current study has highlighted that about two-thirds (68.2%) of the total studied sample had insufficient

knowledge related to HCV disease. In contrast, the majority (90%) of mothers had sufficient knowledge after application of the education program with highly statistically significant differences ($P < 0.001$). The possible explanation for that may be that the rural areas, especially in Upper Egypt, have less strict precautions as regards the different modes of HCV infection and comparably less awareness about HCV than urban areas. This result is in agreement with the study results of **Gardella et al** who conducted the study "assess hepatitis C awareness among adolescents in the Alpes-Maritimes area of France". They study a population of 2,946 students and they found that there is poor knowledge about HCV infection. Mothers' knowledge improved to 95% after participating in the training program [41]. Also, this supports the results of **Eassa et al** who conducted a study "Prevalence of Hepatitis C Virus Infection and Evaluation of a Health Education Program in El-Ghar Village in Zagazig, Egypt" and reported statistically significant knowledge improvement about hepatic C infection after implementation of the educational session [42]. In the same line, this result agreed with the study of **The American Gastrointestinal Association**, who conducted the "A survey of public understanding of hepatitis C questioning about 500 people with the disease and about 1,230 people without it." The survey found that about 74% of the uninfected people have wrong ideas about the disease before giving educational program, these ideas improved after the educational program [43]. This result was also supported by **Angelo et al** [44].

The present study shows that about two-thirds of the studied sample had negative practices related to preventive measures of HCV. It is recommended to be mentioned that the most negative aspects are shaving at a coiffure, use other's cut nail tools, and don't get the proper way to remove blood after dealing with the victim. This may be attributed to the populations living in El Fayoum city are reflected to be the rural and simple nature of people living in families who consider themselves all relatives and they cannot say No to someone who asked them to use their same own tools. The current results revealed improvement in mothers' practices for all items after the application of the educational program with highly statistically significant differences ($P < 0.001$). This result is in agreement with **Amret et al** results who conducted a case-control study, from June 2007-September 2008, to investigate risk factors practices for acute HCV infection in two infectious disease hospitals in Cairo and Alexandria. Their sample size was 86 infected persons; 70% aged between 30-50 years old, 98% of them shaving at a barbershop, 45 % were wounded there and 23% injecting drug use. Multivariate analysis indicated that unsafe health facility practices are the main risk factors associated with the transmission of HCV infection in Egypt. Mother's practices improved after giving a workshop about the preventive measures about virus C [45]. This supports the results of **Shalaby et al** who conducted a study to determine hepatitis C viral infection: prevalence, knowledge, attitude and practice among barbers and clients in Gharbia governorate, Egypt and their clients ($n = 308$). Knowledge was inadequate among the majority of participants and negative practices during shaving and hair-cutting were observed for the majority of barbers. The mother's knowledge improved for all items after the application of

the health education program [46]. Sharing hygiene tools and sharp items, and the use of communal barbers may be considered as risk factors for HCV, particularly among rural dwellers [47,48]. This raises the importance of Continuous application of educational program especially in rural areas about managing sources and modes of infection in parallel to the mass treatment programs for HCV to achieve the goal of HCV eradication.

On the contrary, this result disagrees with **Holly et al** results who conducted a study to assess risk behavior in young adults as themselves-reported related to hepatitis C virus at five U.S. cities among 3,004 persons, from 15 to 30 years old. The participant of the study good knowledge and practice about hepatitis C virus, the main risk behaviors were drug abuse, tattoo piercings and sexual risk behavior [49]. The differences in this study's results and the present study results may be due to the differences between the two settings cultures and Religious beliefs.

Regarding assesses the daily life-style among mothers; the studied sample had a low score in the functional scale, physical function (exercise) and Self-hygiene care and nutrition. While they had a high positive score their lifestyle items improved and were better after the implementation of the educational program. This may be more prone to Lack of awareness among mothers and their interest in doing the daily life requirements of their family members more than their attention to healthy habits and this is due to low socioeconomic status and traditional habits. This point of view was in agreement with **Angelo et al** results who founded that the patients with Hepatitis C had lower scores in physical function and role while in the symptomology scale they had a higher score, indicating more problems and complaints. This could be related to that hepatitis is a debilitating illness that influences all aspects of quality of life among patients [44].

As regards the safety measures, the results founded that the studied sample had negative safety measures before the educational program. Mothers' practices improved after the application of the educational program. This may be attributed to that, the population in Upper Egyptian Governorates, including Senover, are predominantly agricultural regions and farming-related water activities is one of the main occupations in these rural areas. This probably correlates with higher schistosomal affection, more frequent anti schistosomal parenteral therapies, lower socioeconomic status and not adopting safe medical practices that may contribute to higher levels of HCV infection [50]. So, community awareness campaigns are needed to teach the populations about the risks involved. This result is in line with **Salem et al** results who found that 44% of the study sample has poor practices for self-protection and vaccination [51]. This result was also supported by **Ali et al** [37].

Concerning social, psychological and spiritual lifestyle, the current study founded that the studied sample had negative social, psychological and spiritual functioning scores before application of the educational program and these scores improved after application of the educational program. Similarly to a study "Quality of life Hepatitis C of patients during the treatment period" by **Angelo et al** and had been done in Brazil revealed that the all study sample were negative social psychological and spiritual

lifestyles domains and these domains were improved after the educational program [44]. Also this result agreement with **Ali et al** results who clarified that their all studied patients were had negative social, psychological and spiritual lifestyle which improved after participating in the educational program. This can be due to that the mothers were considering chronic diseases especially Hepatitis C is stigma so relationships with others were decreased [37].

The present study represents that there are highly statistically significant differences between the studied sample knowledge towered HCV and their practices related to preventive measures. The majority of the studied sample who had insufficient knowledge had negative practices related to preventive measures of the disease. This finding could be a result of their insufficient knowledge related to the prevalence and incidence of the disease in Egypt, its modes of transmission, its complications and that they are considered risk group so they don't appreciate preventive measures of the disease. This result was also supported by **Ali et al** who conducted a survey to assess hepatitis C virus in Pakistan: A systematic review of prevalence, risk factors and knowledge status in different areas from Pakistan, the findings were that Pakistan is highly endemic with HCV related to the lack of routine serological screening in Pakistani hospitals prior to surgery which is one of the factors responsible for increased disease transmission, intravenous drug users and the reasons are lack of proper health facilities, poor economic status and less public awareness about modes of disease transmission [37].

On the contrary, this result disagrees with **Salemet al** results who conducted a study to assess Knowledge and attitudes regarding hepatitis viruses among secondary-school students in Menoufia governorate. They found that there was no relation between students' knowledge and attitude regarding viral hepatitis and their practice for self-protection against it [51]. The differences in this study's results and the present study results may be due to the differences between the two study age, residences, and education.

The results of the current study confirm the strong link and high statistical significant differences between the studied sample knowledge related to HCV disease and their daily lifestyle variables. That about two-thirds of who had a negative lifestyle at exercise and negative dealing with drugs had insufficient knowledge related to HCV. Additionally, all who had negative lifestyle practices at safety measures and nutrition also had insufficient knowledge related to HCV. Moreover, most of the studied sample who had negative daily dealing with self-hygiene and social life had insufficient awareness related to HCV. The possible explanation for that may be poor community awareness in Upper Egypt regarding the daily lifestyle as a result of low economic, cultural status and poor health facilities. That is in agreement with **Kempen et al** results who conduct a study to assess the relationship between health knowledge, lifestyle behavior in Gauteng. A sample of 357 participants reported that there is a relationship was found between patterns of health awareness and lifestyle behaviors [52].

5. Conclusion

Based on the finding of this study, the following can be concluding:

After the application of the educational program; mothers' knowledge, practices, and life-style to reduced hepatitis C were improved. Research hypothesis is accepted.

6. Recommendations

According to the result of the present study, the following recommendations should be put into considerations:

1. Adequate and variable scientific books or pamphlets with simple explanations including materials related to HCV knowledge and preventive practices should be available in the rural area.
2. Continuous application educational program to enhance their life-style practices to reduced Hepatitis C Virus especially in rural areas.
3. Conducting further research about health education programs among the mothers related to preventive measures of HCV disease.

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