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ORIGINAL ARTICLE

Assessment of stigma among patients infected with hepatitis C virus in Suez City, Egypt

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Abstract

Aim This study aimed to assess the presence of stigma in patients with chronic hepatitis C and to assess the relationship between socio-demographic characteristics and stigma.

Subjects and methods This is a cross-sectional descriptive and analytic study. This study was carried out at the communicable diseases, research and training center affiliated with Suez Canal University, Suez Governorate, Egypt. The sample included 260 patients with hepatitis C who filled in a questionnaire asking about the socio-demographic characteristics and hepatitis C stigma scale.

Results There was at least one stigmatizing characteristic in 155 (59.6%) of the patients with HCV. Among them, 53 (20.4%) reported that he/she is not the same as the others, 54 (20.8%) feel dirty, and 112 (43.1%) feel he/she is a bad person. Participants also agreed that people with hepatitis C are repulsive and rejected, according to 55 (21.2%) and 64 (24.6%), respectively. Sixty-seven (25.8%) had been hurt by the reactions of others. Among them, 52 (20%) stopped "hanging out" with others because of their reactions, 53 (20.4%) lost friends, and 55 (21.2%) were worried that others would tell about their illness. The marital relationship was affected by the diagnosis of hepatitis in 134 (51.5%) of participants. Subjects with younger age and who were married had higher stigma scores ($p = 0.018$, 0.013). Smokers were more rejected ($p = 0.007$) and hurt by reactions of others than non-smoking patients ($p = 0.013$); they had lost more friends ($p = 0.002$) and were more worried that others would tell about their illness ($p = 0.016$).

Conclusion Patients with hepatitis C feel stigmatized in different areas; there is a need for implementation of educational programs to raise the awareness of community and health care providers about the stigma of hepatitis C and its negative consequences to act as advocates for their patients.

Keywords Stigma · Hepatitis C · Chronic patients · Stigma scale

Introduction

Hepatitis C virus (HCV) infection is a major public health burden in Egypt, causing an increasing level of liver-related morbidity and mortality (Cooke et al. 2013). The disease burden has increased in sero-prevalence over the last 15 years to 2.8%, equating to more than 185 million infections worldwide (Mohd Hanafiah et al. 2013).

In African countries, HCV is a major public health concern with the highest prevalence rates in the world (1–26%) (Madhava et al. 2002). In Africa, over 28 million people are chronically infected with HCV (Onyekwere and Hameed 2015). In North Africa, according to current estimates, the lowest prevalence of the virus is in Libya (0.9–1.6%) and the highest is in adjacent Egypt (12.5–26.6%) (Riou et al. 2016). Sub-Saharan Africa has the highest burden of the disease in the world. Other WHO regions with a high prevalence of HCV include the Eastern Mediterranean (prevalence 4.6%) and Western Pacific (prevalence 3.9%) (Karoney and Siika 2013).

Egypt has the highest prevalence of hepatitis C in the world (El-Zayadi 2009). In 2008, the Egyptian Demographic Health Survey (EDHS) estimated the prevalence of HCV antibodies and HCV RNA among the 15–59 year age group to be 14.7 and 9.8%, respectively (El-Zanaty and Way 2009).

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Geographically, HCV prevalence has been shown to be higher in Lower Egypt (Nile Delta) than in Upper Egypt and lower in urban compared to rural areas (Ministry of Health and Population 2015).

Liver disease is the second most common death cause after heart disease (National Committee for the Control of Viral Hepatitis 2008). The virus is thought to have started in Egypt during vaccination campaigns that used unsterilized needles in the 1960s (Tanaka et al. 2004). Because of the prohibitive costs of HCV treatment, Egyptian governments neglected and denied the problem. This accelerated the epidemic. Although drug use is not the main reason behind HCV spread in Egypt, HCV carriers are still stigmatized. Diagnosis of hepatitis C was reported to have profound impacts on social functioning. The perceived stigma associated with HCV infection leads to high levels of anxiety and exaggerated fear of transmission, and it can be a major cause of social isolation and reduced intimacy in relationships (Grundy and Beeching 2004).

Researchers have varied in their definition of stigma, ranging from a personal attribute that marks the person as being flawed and deviant (Goffman 1963) to notions of stigma as a process of social exclusion (Reidpath et al. 2005). Another study defined stigma as incorporating five interrelated components: the identification and labeling of difference; stereotyping; distinguishing members of the stigmatized group as "them" in contrast to the non-stigmatized group as "us", and the exercise of power (Link and Phelan 2006).

HCV can carry a harmful burden and is a significant source of stigma due to its communicability and association with intravenous drug use. HCV stigma can contribute to decreased quality of life and depressed mood and be a barrier to accessing health care services. Stigma is conceptually distinct from discrimination, another social determinant of health in that the primary goal of discrimination is exclusion, not necessarily for the target to feel ashamed or guilty (Deacon 2006).

Stigma is a multidimensional challenge and a discrediting social label that changes the way the individual looks at him/herself, adds complexity to its impact on the individual health and disqualifies them from full social acceptance. The concept of stigma was defined by Goffman as "an attribute that is deeply discrediting" that devalues the individual "from a whole and usual person to a tainted, discounted one." He listed examples of stigma stemming from deformity, physical and mental illness, disability, race and addiction (Goffman 1963).

For some, the stigma of HCV hurts more than HCV itself. Stigmatized individuals can, however, suffer discrimination and status loss at the hands of the broader community, whose norms have caused them to be perceived as undesirable (Courtwright 2009).

HCV touches the homes and workplace of the patients, and relationships may be strained by worries about sufferers' uncertain health causing the fear of the disease, the fear that they will infect others and the fear of death. Stigma related to hepatitis C has been found to have negative effects on self-esteem, access to health care, employment, and family and social support (Crockett and Gifford 2004). Stigma has major effects upon physical health, mental health and psychological well-being (Ward et al. 2000; Loveday et al. 2005). It is one of the major obstacles preventing people from coming forward for management and treatment (Anti-Discrimination Board of New South Wales 2001).

Healthcare professionals and social support play a critical role in adjustment and providing supportive guidance for HCV-infected patients; they have a significant impact on improving overall quality of life (Cormier 2005).

A spectrum of treatments has been used to target the public health disaster represented by the hepatitis C problem in Egypt, from the use of PEGylated interferon to the recent use of direct-acting antiviral drugs. Some new treatments have shown more than 90% efficacy. However, cost is a key barrier to access to these new medicines. This is coupled with a growing population, limited resources and a lack of infection control practices, which means Egypt still faces significant disease control issues today (Elgharably et al. 2017). The cultural attitudes and the effect of limited medical and financial resources impact the management of Egyptian patients with hepatitis C as for most of them the disease is discovered accidentally, sometimes late after complications have already occurred.

A previous study was conducted in Egypt to determine the psycho-social stresses accompanying HCV. The study focused on both immediate and later reactions to being diagnosed as infected HCV patients. The effect of HCV on disruption of patients' relationships in terms of family relationships and friendship, employment and financial status was assessed. The magnitude and causes of the social stigma, relation to awareness of the illness and level of education were also assessed. The study revealed that the financial problems are the most common problems faced by 75.5% of the patients. More than 70% suffered from immediate sadness and 67.4% suffered from worry. Social stigma was reported by 13% of HCV patients (Metwally et al. 2013).

Another study to determine the experiences of stigma in patients with hepatitis B and C in Pakistan revealed that the majority of patients (75%) said they had to change their lifestyle, and a significant majority were males. Stigma was marked in terms of disease transmission, with 66% of patients fearing that they could transmit the infection to others; 19% said that family members avoided sharing towels, soap, and eating and drinking utensils. Marital relationships were affected in 51% of married patients who had told their spouse. Patients' comments showed a sense of family and societal discrimination resulting in feelings of disappointment and isolation (Rafique et al. 2014).

Stigma poses significant challenges to those with chronic hepatitis C, their social networks, communities and society. It affects quality of life and causes depression and anxiety in patients with chronic hepatitis.

Stigma can significantly affect the patients' lives, causing a lower quality of life. Studies regarding stigma of HCV patients are one of the most deficient areas in the specialty literature. This study aimed to assess the presence of stigma in patients with chronic hepatitis C and to assess the relationship between socio-demographic characteristics and stigma.

Subjects and methods

Study design and setting

The current study is an analytical cross-sectional study including a descriptive component. This study was carried out in the communicable diseases, research and training center affiliated with Suez Canal University, Suez Governorate, Egypt, and was conducted between January and July 2017.

Study population

The study included patients with chronic hepatitis C who attend the communicable diseases, research and training center affiliated with Suez Canal University, Suez City, Egypt.

Inclusion criteria

Adult patients of both sexes, aged over 18 years, who attend to the communicable diseases and research center affiliated with Suez Canal University in the Suez governorate and who had already been diagnosed with HCV for more than 1 year were included.

Exclusion criteria

The study excluded patients with hepatic encephalopathy, aged less than 18 years, psychiatric patients and those with dementia, pregnant women and newly diagnosed patients.

Sample size

A sample sufficient to demonstrate 19% prevalence of stigma among adult patients with hepatitis C (95% confidence interval) was collected. The sample size was calculated using the following formula (Dawson and Trapp 2004).

$$n = \left[\frac{Z_{\alpha/2}}{E}\right]^2 P(1-P)$$

Here:

- **n** sample size
- $\mathbf{Z_{\alpha/2}}$ 1.96 (The critical value that divides the central 95% of the Z distribution from the 5% in the tail)
- $\mathbf{P_1}$ Prevalence/proportion in the study group = 19% (Blasiole et al. 2006).
- **E** Margin of error/width of confidence interval = 5%

To ensure that the 95% confidence interval estimate of the proportion of the sample was within 5% of the true proportion, by calculation, the sample size was equal to 236 + 10% drop-out, so the total sample was 260.

Sample technique and sampling

A systematic random sample was used to select the calculated number of patients from registered patients who follow up at the center.

Study tools

The questionnaire consisted of two parts: **Part 1** contained the socio-demographic characteristics.

Part 2 contained the Hepatitis C Stigma Scale (Cabrera 2014).

Part 1: Socio-demographic characteristics were age, gender, residence, level of education, employment status at the time of morbidity, financial state, marital status, abandonment by the partner after the diagnosis of hepatitis C virus, family status, current use or history of injection drug use and smoking status.

Part 2: Hepatitis C stigma scale.

The Hepatitis C stigma scale is a questionnaire derived from the original HIV stigma scale. The nine-question HCV stigma scale enables seeing the connection with depression and mental health. Tests have shown that the maximum stigma scores are associated with depression and mental health. The first set of questions asks about some of the experiences, feelings and opinions about how people with hepatitis C feel and how they are treated. The second set, questions 6 to 9, refers to something that has not actually happened to the patient, but he or she imagines him- or herself in that situation. Answers are ranked from 1 to 4 (with modalities: 1 I strongly disagree; 2 I disagree; 3 I agree; and 4 I strongly agree), with the total score ranging from 9 to 36. The maximum score is the greatest stigma. The patient was considered stigmatized if he or she agreed on any one of the nine questions on the HCV stigma scale; a stigma was defined as a mark of disgrace associated with infection by Hepatitis C virus.

Translation of the hepatitis C stigma scale

Using accepted guidelines for translation-back translation, the questionnaire was translated into Arabic and back into English by a bilingual consultant. Both translators agreed on the necessary modifications, restatement and rewording. A pilot study was carried out before the study to assess the feasibility and reliability of the questionnaire, but did not bring major changes to the initial study proposal.

Data collection

Data were collected from April to June 2017. The research protocol was approved by the Research Ethics Committee, providing protection of human subjects. Permission to conduct the study was also obtained from the appropriate local and central authorities. Participants were provided with information about the background of the study. They were informed that participation was voluntary and that they could withdraw from the study at any time; informed consent was obtained from the patients. Privacy and confidentiality were confirmed throughout the process of data collection; all data were kept confidential and anonymous; data were saved on a computer with password protection and encryption.

Statistical analysis

Collected data were analyzed using SPSS version 20. Data were tested for normality using the Shapiro-Wilk test. Categorical and descriptive data were presented in frequencies and percentages. Continuous not normally distributed data were presented as median and interquartile range (IQR), and the non-parametric test (Mann-Whitney test) was used for relationships between categorical variables and continuous non-normally distributed variables. The chi-squared test was used as a test of significance to compare categorical data. To estimate the independent association of socio-demographic factors with stigma, multiple linear regression analysis was performed. Tests were two tailed, and P was considered significant if <0.05.

Research ethics

The Ethics Committee of the faculty of medicine, Suez Canal University, approved the study (code 3113). Informed consent was obtained from all participants included in the study.

Results

Baseline characteristics of HCV patients

Our study included 260 patients diagnosed with Hepatitis C virus: 195 (75%) were aged 50 years or more, with mean age of 54.36 ± 10.5 years, median 55.50 years and range from 20–80 years. More than half of the patients were female (151, 58.1%), and most of the participants were married (218, 83.8%). Also, most (210, 80.8%) had no formal schooling, and 188 (72.3%) were not employed; 193 (74.2%) lived in urban areas, and 196 (75.4%) had hepatitis for less than 10 years, with mean disease duration of 6.03 ± 5.4 years. The marital relation was affected (abandonment by spouse) after diagnosis of hepatitis in 134 (51.5%) of participants. Only 5 (1.9%) had a history of injectable drug use, while 32 (12.3%) were smokers (Table 1).

Magnitude of stigma among HCV patients

There was at least one stigmatizing characteristic in 155 (59.6%) of the patients with HCV; among them, 53 (20.4%) agreed that he/she is not the same as others, 54 (20.8%) feel dirty, and 112 (43.1%) feel he/she is a bad person. Participants also agreed that people with hepatitis C are repulsive and are rejected in 55 (21.2%) and 64 (24.6%), respectively. Also, 67 (25.8%) had been hurt by the reactions of others. Among them, 52 (20%) had stopped "hanging around" with others because of their reactions, 53 (20.4%) had lost friends, and 55 (21.2%) were worried that others would tell about their illness (Table 2).

Factors associated with stigma among HCV patients

There was a statistically significant relationship between age and stigma score as patients with younger age had higher stigma scores than older patients ($p = 0.002$), but there was no relationship with gender, marital status, education, employment status, duration of disease, abandonment by spouse, smoking or history of injectable drug use (Table 3).

There were statistically significant differences in the response of patients older than 50 years as they disagreed with many statements concerning the stigma score. The younger were more stigmatized than the older patients. They felt they are bad people ($p = 0.004$), repulsive ($p = 0.001$), rejected ($p = 0.008$), hurt by reactions of others ($p < 0.001$), had stopped hanging out with others ($p = 0.012$) and had lost friends ($p = 0.016$) (Table 4).

There were statistically significant differences in the response of non-smoking patients as they disagreed about many statements on the stigma score; smokers were stigmatized more than non-smoking patients. Smoking

Table 1 Socio-demographic characteristics of the sample ($n = 260$)

Variable		Count	%
Age	< 50 years	65	25
	≥ 50 years	195	75
	Mean ± SD	54.36 ± 10.5	
Gender	Male	109	41.9
	Female	151	58.1
Marital status	Without family	42	16.2
	Have family (married)	218	83.8
Education	No formal schooling	210	80.8
	Primary/ prep. school	20	7.7
	Secondary school	26	10.0
	High education	4	1.5
Occupation status	Unemployed	188	72.3
	Employed	72	27.7
Residency	Rural	67	25.8
	Urban	193	74.2
Duration of disease	< 10 years	196	75.4
	≥ 10 years	64	24.6
	Mean ± SD	6.03 ± 5.4	
Abandonment by spouse	No	126	48.5
	Yes	134	51.5
History of injectable drug use	No	255	98.1
	Yes	5	1.9
Smoking	No	222	85.4
	Yes	32	12.3
	Quit	6	2.3

patients were more rejected ($p = 0.007$), hurt by the reactions of others more than non-smokers patients ($p = 0.013$), lost more friends ($p = 0.002$) and were more worried that others would tell about their illness ($p = 0.016$) (Table 5).

Table 2 Stigmatizing characteristics of the sample (n = 260)

Type of stigma	Count	%
At least one stigmatizing characteristic	155	59.6
One is not the same as others	53	20.4
Feels dirty	54	20.8
Feels that he/she is a bad person	112	43.1
People with hepatitis C are repulsive	55	21.2
People with hepatitis C are rejected	64	24.6
Hurt by the reaction of others	67	25.8
Stopped hanging out with some people because of their reactions	52	20
Lost friends	53	20.4
Worried that others tell about their illness	55	21.2

Age was a statistically significant independent negative predictor of the stigma score ($p = 0.018$). Conversely, being married was a statistically significant independent positive predictor of the stigma score ($p = 0.013$) (Table 6). The model explains 84% of the variation of the stigma score, as indicated by the value of r-square.

Discussion

Hepatitis C does carry a stigma for several reasons. First, HCV is potentially infectious. Although not easily transmitted, people are fearful and shun those who have the disease. Fear and ignorance have cost patients their jobs, friendships and marriages. Hugs and kisses cease. Sexual relationships stop or are never initiated. In the extreme, even marriages have been challenged. Another stigma associated with HCV is some people do not like to be around people who are sick. Some people are afraid of illness and death. They may also be afraid that someone they care about will die, so they reject that person rather than risk of loss. A third stigma connected to hepatitis C is its association with injection drug use. Misinformed people sometimes assume that all hepatitis C patients have a history of injection drug use despite the many ways hepatitis C can be acquired (Porter 2014).

In this study, 155 (59.6%) patients with HCV had experienced at least one stigmatizing characteristic. Among them, 53 (20.4%) agreed that he/she is not the same as others, 54 (20.8%) felt dirty, and 112 (43.1%) considered themselves a bad person. Participants agreed that people with hepatitis C are repulsive and rejected in 55 (21.2%) and 64 (24.6%), respectively. Also, 67 (25.8%) had been hurt by the reactions of others, and 52 (20%) had stopped hanging out with others because of their reactions, 53 (20.4%) had lost friends, and 55 (21.2%) were worried that others would tell about their illness.

Similarly, another study showed that 57% of the 257 respondents who were hepatitis C positive reported that they had been stigmatized by health care workers (Zickmund et al. 2003).

Previous study in Egypt revealed that 13% of HCV patients are suffering from stigma with no significant difference regarding gender; concerning immediate reactions to being diagnosed with hepatitis C, 60% of patients suffered from sadness and worry, while 40% reported feeling dirty and dangerous to other people. With later time reactions to being diagnosed with hepatitis C, less than 30% of the patients continued suffering from sadness or feeling dirty, ashamed and worried. More than 35.0% of the HCV patients reported friend and relationship problems (Metwally et al. 2013).

In another study, a total of 140 indoor and outpatient hepatitis B/C positive patients were enrolled from tertiary care hospitals in Islamabad and Rawalpindi, Pakistan. The majority (83%) were worried, and, in 74%, their lifestyle had been

Table 3 Stigma score values according to sociodemographic factors

Variable		Stigma score, median(IQR)	z	P value
Age	< 50 years	20.00(18.00–24.00)	3.172	0.002*
	≥ 50 years	19.00(18.00–21.00)		
Gender	Male	19.00(18.00–22.00)	0.661	0.509
	Female	19.00(18.00–21.00)		
Marital status	Without family	19.00(18.00–21.25)	0.561	0.575
	Have family	19.00(18.00–21.00)		
Education	No formal schooling	19.00(18.00–22.00)	0.326	0.744
	Formal schooling	19.00(18.00–21.00)		
Occupation status	Unemployed	19.00(18.00–23.00)	0.391	0.696
	Employed	19.00(18.00–21.00)		
Residency	Rural	19.00(18.00–22.00)	0.061	0.952
	Urban	19.00(18.00–21.00)		
Duration of disease	< 10 years	19.00(18.00–21.75)	0.824	0.410
	≥ 10 years	19.00(18.00–21.00)		
Abandonment by spouse	No	19.00(18.00–21.00)	0.752	0.452
	Yes	19.00(18.00–21.00)		
History of injectable drug use	No	19.00(18.00–21.00)	0.387	0.699
	Yes	18.00(14.50–25.50)		
Smoking	No/quit	19.00(18.00–21.00)	1.269	0.204
	Yes	19.50(18.00–24.75)		

IQR interquartile range

*Statistically significant ($P < 0.05$)

(z): two-sample Wilcoxon rank-sum test (Mann-Whitney test)

affected because of weakness and emotional disturbances (Rafique et al. 2014).

Another study on 462 females with hepatitis C stated that about half (48%) reported discrimination because of their hepatitis C infection (Gifford et al. 2005).

Bloodborne diseases carry the risk of stigma, but many healthcare workers (HCWs) state that they do not discriminate against patients living with human immunodeficiency virus (HIV). However, one study identified HCWs as a noteworthy source of stigma and discrimination against those who are infected with HIV (Mill et al. 2009).

This study revealed a statistically significant relationship between age and stigma score as younger patients have higher stigma scores than older patients. Age was a statistically significant independent negative predictor of the stigma score. There were statistically significant differences in the response of patients older than 50 years as they disagreed on many statements concerning the stigma score, while there were no significant differences related to other sociodemographic data such as gender, education level, employment status, duration of disease, abandonment from spouse, history of injection drug use or smoking.

Similarly, another study stated that discrimination was most common among the young (Hopwood et al. 2006). However, another study found no significant difference associated with age, employment status and educational background between the stigmatized and the non-stigmatized, but women were more likely to report stigmatizing experiences than men in another study (Zickmund et al. 2003).

A comparable study in Egypt also found no significant difference regarding gender or different levels of education starting from illiteracy to the university level of education between stigmatized and not stigmatized patients (Metwally et al. 2013).

Similarly, the nine-item HCV stigma scale was not significantly correlated to years since HCV diagnosis in a comparable study (Cabrera 2014).

Another study showed a total of 111 of 140 patients reported experiencing at least one kind of stigma, but there were no significant differences in age, sex and duration of illness or other demographic characteristics of the stigma patients compared with the total sample of patients (Rafique et al. 2014; Zacks et al. 2006).

In another study on stigma prevalence among tuberculosis patients in Egypt, 41.5% of patients were stigmatized. Stigma is more prevalent among younger subjects. Of a total of 53 patients, 41.5% reported feeling hurt by how others reacted to knowing that they have TB, and 35.8% lost friends when they told them they have TB. Being afraid of going to TB clinics because other people may see them was reported by 28.3% of TB patients, while about half of the patients, 47.1%, felt guilty because their family had the burden of caring for them (Eldahshan et al. 2015).

Hepatitis C patients experienced hardships within their own families as well. In one study, of those who experienced

Table 4 Presence of stigma by age

Type of stigma	Disagree n (%)	Agree n (%)	χ2	P value
Not the same as others				
< 50 years	56 (86.2)	9 (13.8)	2.283	.131
≥ 50 years	151 (77.4)	44(22.6)		
Total	207(79.6)	53(20.4)		
Feel dirty				
< 50 years	52 (80)	13(20)	.031	.860
≥ 50 years	154 (79)	41(21)		
Total	206 (79.2)	54(20.8)		
Feels that he/she is a bad person				
< 50 years	27(41.5)	38(58.5)	8.366	.004*
≥ 50 years	121(62.1)	74(37.9)		
Total	148(56.9)	112(43.1)		
People with hepatitis C are repulsive				
< 50 years	42 (64.6)	23(35.4)	10.523	.001*
≥ 50 years	163(83.6)	32(16.4)		
Total	205(78.8)	55(21.2)		
People with hepatitis C are rejected				
< 50 years	41(63.1)	24(36.9)	7.075	.008*
≥ 50 years	155(79.5)	40(20.5)		
Total	196(75.4)	64(24.6)		
Hurt by the reaction of others				
< 50 years	37(56.9)	28(43.1)	13.057	.000*
≥ 50 years	156(80)	39(20)		
Total	193(74.2)	67(25.8)		
Stopped hanging out with some people because of their reactions				
< 50 years	45(69.2)	20(30.8)	6.282	.012*
≥ 50 years	163(83.6)	32(16.4)		
Total	208(80)	52(20)		
Lost friends				
< 50 years	45(69.2)	20(30.8)	5.756	.016*
≥ 50 years	162(83.1)	33(16.9)		
Total	207(79.6)	53(20.4)		
Worried that others tell will about their illness				
< 50 years	46(70.8)	19(29.2)	3.393	.066
≥ 50 years	159(81.5)	36(18.5)		
Total	205(78.8)	55(21.2)		

*Statistically significant (P < 0.05)

stigma, 48% felt left alone or pushed aside by their families compared with 10% of the other patients. Stigmatizing circumstances generally revolved around issues of contamination and abandonment (Zickmund et al. 2003). Similarly, in this study, being married was a statistically significant independent positive predictor of the stigma score, and the marital relation was affected (abandonment by spouse) after diagnosis of hepatitis in 134 (51.5%) of the participants. Another study stated that more than 35% of the HCV patients reported family relationship problems (Metwally et al. 2013).

Table 5 The presence of stigma by smoking state

Type of stigma	Disagree n (%)	Agree n (%)	χ2	P value
Not the same as others				
Smoking				
Yes	24(75.0)	8(25.0)	0.479	0.489
No/ quit	183(80.3)	45(19.7)		
Total	207(79.6)	53(20.4)		
Feel dirty				
Smoking				
Yes	25(78.1)	7(21.9)	0.027	0.869
No/ quit	181(79.4)	47(20.6)		
Total	206(79.2)	54(20.8)		
Feels that he/she is a bad person				
Smoking				
Yes	19(59.4)	13(40.6)	0.089	0.765
No/ quit	129(56.6)	99(43.4)		
Total	148(56.9)	112(43.1)		
People with hepatitis C are repulsive				
Smoking				
Yes	22(68.8)	10(31.2)	2.230	.135
No/ quit	183(80.3)	45(19.7)		
Total	205(78.8)	55(21.2)		
People with hepatitis C are rejected				
Smoking				
Yes	18(56.3)	14(43.7)	7.200	0.007*
No/ quit	178(78.1)	50(21.9)		
Total	196(75.4)	64(24.6)		
Hurt by the reaction of others				
Smoking				
Yes	18(56.3)	14(43.7)	6.168	.013*
No/ quit	175(76.8)	53(23.2)		
Total	193(74.2)	67(25.8)		
Stopped hanging out with some people because of their reactions				
Smoking				
Yes	22(68.8)	10(31.2)	2.887	0.089
No/ quit	186(81.6)	42(18.4)		
Total	208(80.0)	52(20.0)		
Lost friends				
Smoking				
Yes	19(59.4)	13(40.6)	9.211	0.002*
No/ quit	188(82.5)	40(17.5)		
Total	207(79.6)	53(20.4)		
Worried that others tell about their illness				
Smoking				
Yes	20(62.5)	12(37.5)	5.846	0.016*
No/ quit	185(81.1)	43(18.9)		
Total	205(78.8)	55(21.2)		

*Statistically significant (P < 0.05)

Table 6 Best fitting multiple linear regression model for stigma score

	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% Confidence interval for B	
	B	Std. error	Beta			Lower bound	Upper bound
(Constant)	16.142	4.089		3.947	0.000	8.087	24.196
Gender	0.062	0.382	0.011	0.163	0.871	−0.690-	0.814
Residence	−0.249-	0.397	−0.039-	−0.626-	0.532	−1.030-	0.533
Age	−0.046-	0.019	−0.175-	−2.390-	0.018*	−0.084-	−0.008-
Duration of disease	−0.036-	0.033	−0.071-	−1.0940-	.275	−0.102-	0.029
Marital status	3.289	1.309	0.439	2.512	0.013*	0.710	5.867
Education	−0.382-	0.254	−0.099-	−1.5030-	.134	−0.883-	0.119
Income	0.751	0.951	0.050	0.790	0.430	−1.121-	2.623
Family status	0.246	0.218	0.082	1.129	0.260	−0.183-	0.674
Abandonment	0.145	0.422	0.026	0.344	0.731	−0.687-	0.977

r-square = 0.84. Model ANOVA: F = 1.890, $p = 0.036$. Variables entered and excluded: smoking, injectable drug use

*Statistically significant (P < 0.05)

Similarly, in another study about half of the patients (57/112, 51%) reported that hepatitis had affected their marital relations; 46/57 (81%) said that their spouse avoided intercourse altogether, and 11 (19%) had started using condoms. When asked to rate how much the disease affected their marital relations, 21% reported that it was very affected and 14% that it was only a little affected, while the remainder felt that they were not affected (Rafique et al. 2014).

Diagnosis of hepatitis C was reported to have profound impacts on social functioning. Perceived stigma associated with HCV infection caused high levels of anxiety and exaggerated fear of transmission, and it led to social isolation and reduced intimacy in relationships (Grundy and Beeching 2004).

In the developed world, the majority of people with Chronic Hepatitis C (CHC) have a history of illicit drug use (Patrick et al. 2000; Remis 2004; Zou et al. 2000); people diagnosed with CHC are blamed for acquiring the disease and placing others at risk (Herek et al. 2003). The strength of the stigma arising from the association with illicit drug use is so pervasive that those who contract the virus through so-called "innocent" means (e.g., contaminated blood products) often experience stigma regardless of the source of their infection (Anti-Discrimination Board of New South Wales 2001; Zickmund et al. 2003; Hopwood and Treloar 2003).

In this study, only five (1.9%) had a history of injectable drug use. There was no statistically significant difference in stigma score regarding injectable drug use as it is not considered the main source of infection in Egypt. It is believed that vaccination campaigns that used unsterilized needles in the 1960s were the main reason (Tanaka et al. 2004).

However, there were statistically significant differences in the response of non-smoking patients as they disagreed about many statements on the stigma score; this is congruent with another study stating that there is growing evidence for the existence of stigma associated with cigarette smoking in France, and smoking has become a stigmatized behavior (Peretti-Watel et al. 2014). In another study on the stigma of tuberculosis patients in Egypt, there was an immense stigma observed by current smokers (60.0%) (Eldahshan et al. 2015).

Limitations of the study

As the first study in Egypt to examine the stigma of Hepatitis C using the HCV Stigma scale, there may be some limitations because of the paucity of studies for comparison of stigma even on the level of Africa to put the study in the African context. No data were obtained about the source of infection or treatment given to patients.

Conclusions

Patients with hepatitis C feel stigmatized in different areas. There was at least one stigmatizing characteristic in 59.6% of patients with HCV. They agreed that they were not the same as others, felt dirty, felt they were bad people, agreed that people with hepatitis C were repulsive and rejected, had been hurt by the reactions of others, had stopped hanging out with others because of their reactions, had lost friends and were worried that others would tell about their illness. Marital relations were affected after a diagnosis of hepatitis in 134

(51.5%) of participants. Younger age and smokers have higher stigma scores. There is a need for implementation of educational programs to raise the awareness of the community and healthcare providers about the stigma of hepatitis C and its negative consequences so they can act as advocates for their patients and implement educational programs for nonsmoking as it increases stigma scores.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in the study were in accordance with the ethical standards of the institutional research committee (code 3113) and with the 1964 Helsinki Declaration and its later amendments.

Informed consent Informed consent was obtained from all individual participants included in the study.

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