COPING STRATEGIES IN HEPATITIS C PATIENTS DURING THE COURSE OF ANTIVIRAL TREATMENT OF HCV

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ABSTRACT

The treatment of HCV is associated with distress due to treatment-related side effects. This study looks into different types of coping strategies implied by patients during treatment for HCV infection.100 HCV positive patients (n= 100, aged 18-60 years, M = 41.23, SD = 10.17) receiving treatment were selected. Participants were divided into four groups (n=25 each group) namely conventional interferon, pegylated interferon, oral antiviral + pegylated interferon, oral antiviral. An indigenous tool; neuropsychological and physical side effects of interferon scale (NPPSI-S), coping strategies questionnaire (CSQ) and WHOQOL-BREF questionnaires were used for assessment of side effects of the treatment, coping strategies and health-related quality of life. Results revealed patients who received pegylated interferon treatment, had a high level of active distractive coping and low level of religious focused coping. Patients receiving oral antiviral plus interferon treatment had a low level of avoidance focused coping. Patients getting injection-free treatment had a high level of avoidance, and religious focused coping. This study concluded that the use of oral injection-free regimes for the treatment of HCV results in better-coping strategies to deal with treatment-related side effects and have a better quality of life as compared to injection regimes.

BACKGROUND

Being diagnosed with HCV is perceived as a significant life event, and it causes substantial stress even in the absence of advanced disease. When compared with other stressful life events and other significant chronic illnesses, being diagnosed with chronic hepatitis C infection give rise to much higher levels of depression and anxieties. (Castera et al., 2006). Even the veterans of the US army had much higher levels of stress then initially anticipated when diagnosed with HCV. It was found that almost 44.7% of veterans have significantly higher levels of depression that needed clinical intervention. (Lehman & Cheung, 2002).

Chronic hepatitis C infection is associated with reduction in HRQOL due to a long list of physical and psychological symptoms a patient suffers from. The fatigue and depression associated with this infection are the most common reasons of a decline in wellbeing. Stigma of the disease and financial constrains add to stress of patients and hence cause further decline in the HRQOL. The diagnosis of hepatitis C is one of the major stressful event in the life of an individual. Moreover, interferon therapy is associated with appearance or aggravation of neuro-psychological symptoms such as major depression, fever and fatigue, which in turn may lead to a further decrease in wellbeing of the patient. This is a major factor that leads to the discontinuity of the treatment by the patients (Bernstein et al., 2002).

Coping is the efforts of an individual to manage, reduce or tolerate a stressful situation. It is different from the defense mechanism because coping strategies are conscious efforts of a person, whereas defense mechanisms are sub-conscious strategies towards a stressor. The coping strategies used to reduce stress arising from a specific situation are termed as adaptive or constructive coping strategies (Brannon & Feist, 2009). The psychologist has identified hundreds of coping strategies over the past century.

Recovery from a chronic illness depends on coping strategies used by the patients. Positive reappraisal, seeking of social support or religious coping strategy is among the most common adjustments made by patients suffering from chronic illness (Antonovsky, 1979).

There are different psychosocial factors associated with perceived disease severity in patients with chronic hepatitis C. The patients consider hepatitis C infection a severe disease, and the information processing and psychological features play a crucial role in the way patients with chronic hepatitis C perceive their condition (Constant et al., 2005). The detrimental coping strategies adopted by these patients, which may reduce the patient's adherence to the treatment regime are linked with the cost-effectiveness of the treatment regime. An affordable treatment regime means good compliance by the patients as patients tend to use more proactive coping strategies (Sanyal et al., 2011).

Although curable in most of the cases, Hepatitis C is associated with high levels of anxiety in a large number of patients. Level of anxiety is higher in the individuals who have received treatment as compared with the individuals who have yet not received the treatment for HCV. These patients most commonly

imply religious focused and active, practical coping strategies. However, coping avoidance strategies are also used in a significant number of patients with chronic hepatitis C (Kausar and Yusuf, 2011).

Recently the advances in the treatment of hepatitis C infection has created the great interest of physician and researchers and most importantly patients regarding efficacy and safety of the drugs now available in the market for the eradication of hepatitis C infection. The oral treatment regimens almost take over the era of interferon treatment. Still, with it, a lot of questions are arising about safety and treatment-related side effects of these drugs. This study is the first of its kind in identifying the types of coping strategies implied by different groups of patients according to their gender and age. Moreover, this study also sees the mediating role of these coping strategies in reducing the stress related to chronic hepatitis C and its different treatment regimes.

OBJECTIVES

Identification of coping strategies implied by the patients receiving treatment of hepatitis C according to different gender and age groups. To assess the mediating role of coping strategies between side effects and health-related quality of life.

METHODOLOGY

Participants

A **s**ample of forty-six men and fifty-four women (N=100) HCV patients with the age range 18-60 years (M = 41.23, SD = 10.17) was selected using a non-probability purposive sampling technique. All of them were taking treatment for HCV from the private and government sector liver clinics in Lahore. Patients who came to receive the final dose of treatment were selected for the assessment. Patients were divided into four groups (n=25 each group) based on the type of treatment they were receiving. Group, I was taking conventional interferon treatment, group II was adhering to pegylated interferon treatment, group III was following a combined regime pegylated interferon and oral antiviral and group IV was comprising of those patients who were taking only oral antivirals for HCV treatment.

Variables and Measures

Coping Strategies is operationally defined as the attempts, either behavioral or psychological, that people use to conquer, bear, decrease or reduce stressful life events. Coping strategies have been divided into two distinguished types: problem-solving strategies are tries to act in a way to cope with stressful situations, whereas emotion-focused coping strategies include efforts to bear the emotional effects of stressful events. Research has shown that people may use both types of plan in one way or other to overcome and face stressors in one's life. (Folkman & Lazarus, 1980).

Coping Strategies Questionnaire (CSQ) measured coping strategies used by the patients of hepatitis C undergoing treatment with interferon. It is an

indigenous scale developed in 2004 by Kausar and Munir. This questionnaire has a total of 62 items asked on a four-point scale from "did not use at all" to "Used quite a lot" regarding a specific coping strategy. This questionnaire can assess four types of coping strategies. These are active-distractive coping; religious focused coping, avoidance focused coping and active practical coping. CSQ was used in this study after obtaining permission from the author.

Neuro-Psychological and Physical Side Effects of Interferon Therapy Scale (NPPSI-S) is an indigenous scale, developed in 2019 by Hassan, Muazzam and Anjum, which assesses the neuro-psychological and physical side effects of antiviral therapy for HCV. It is a multidimensional 4-point rating scale. Alpha coefficient of NPPSI-S is .97. This scale has three factors physical factor, neurological factor and psychological factor. Each element measures distinct side effects of antiviral treatment faced by the patients of HCV receiving antiviral treatment. Physical factor contains 19 items with good reliability of α =.97and it measures physical complications of antiviral treatment. Neurological factor has nine items, and it covers the neurological side effects of antiviral treatment in HCV patients. Alpha coefficient of neurological factor is .93. The third factor of NPPSI-S is psychological factor with 12 items which measures the psychological side effects of antiviral treatment of HCV. The reliability coefficient of the psychological factor is .98.

Health-Related Quality of Life (HRQOL) is operationally defined in this study as "a person's perception of their situation in life within the perspective of the ethnicity and value system in which they survive and in relation to their ambitions, expectations and standards." (WHO, 2004). WHOQOL-BREF questionnaire was used to measure HRQOL.

WHOQOL- BREF is a questionnaire which constitutes 30 items focusing on how one feels about one's overall QOL. It is multicultural and covers four areas of QOL such as environmental, social, physical and psychological. The reliability of the scale is from good to very good in terms of psychometric properties and is sound and valid to apply to the respondents of diverse cultures. (WHO, 2004).

Procedure

The present study was carried out after fulfilling the protocols of the research. Objectives of the study were explained to the patients before the administration of questionnaires. Informed consent was signed from the patients. The NPPSI-S, CSQ and WHOQOL-BREF questionnaire were administered on selected patients after completion of the treatment (end of treatment assessment). Administration of all questionnaires was done under the supervision of the researcher. The sequence of the questionnaires was as follows: Demographic sheet, NPPSI-S, CSQ and WHOQOL-BREF. Only the fully completed questionnaires were considered for analyses. Finally, we quantitatively analyzed the gathered data with the help of SPSS, hypotheses were tested, and results were discussed.

RESULTS

Hypotheses 1

There is a significant correlation between the type of treatment and different coping strategies adopted by the patients of HCV during treatment.

Table
Correlation between Age, Gender, Type of Treatment and Coping Strategies (Active Practical Coping, Active Distractive Coping, Avoidance Focused Coping and Religious Focused Coping) (N=100)

Variables	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. Age	-.02	.14	-.02	-.12	.01	.02	-.003	.20*	.12
2. Gender	-	-.02	.07	-.07	.02	.02	-.09	-.03	.06
3. Treatment 1		-	-.33**	-.33**	-.33**	-.01	.10	-.03	-.04
4. Treatment 2			-	-.33**	-.33**	.01	.27**	.09	-.22*
5. Treatment 3				-	-.33**	.07	-.04	-.30**	-.04
6. Treatment 4					-	-.08	-.34**	.24*	.31**
7. Active Practical						-	.31**	.15	.28**
8. Active Distractive							-	.30**	.02
9. Avoidance Focused								-	.33**
10. Religious Focused									-

Note. Treatment 1 = conventional interferon, Treatment 2 = pegylated interferon, Treatment 3 = sovaldi+interferone, Treatment 4 = sovaldi, Gender, 1 = men, 2 = women
**p<.05, **p<.01, ***p<.001*

The results of the Pearson product-moment correlation showed that age was found to be significantly positively correlated with avoidance focused coping (shown in Table 1). While patients who undergone pegylated interferon treatment had a high level of active distractive coping and low level of religious focused coping. Whereas patients who undergone oral antiviral plus interferon treatments, had a low level of avoidance focused coping. Patients who undergone oral antiviral treatment had a high level of avoidance, and religious focused coping during a low level of active distractive coping. Moreover, conventional interferon treatment and gender were found to be non-significantly correlated with coping strategies.

Hypothesis 2

It was hypothesized that coping strategies (active, practical coping, active distractive coping, avoidance focused coping and religious focused coping) would mediate the relationship between side effects (physical, neurological and psychological), and QOL (physical health, psychological health, social relationships and environmental factors).

Mediation Analysis

Mediation analysis was carried out using *PROCESS* macro v3.3 (Hayes & Little, 2018). (See table 2)

The results of direct effect showed that physical side effects were found to be a significant positive predictor of active distractive coping. In contrast, it was found to be a significant negative predictor of religious focused coping, psychological health, social relationships and environmental factors. At the same time, neurological side effects were found to be a significant positive predictor of active distractive coping. In contrast, it was found to be a significant negative predictor of religious focused coping, psychological health. Whereas psychological side effects were found to be a significant positive predictor of active distractive coping, while it was found to be a significant negative predictor of avoidance focused, religious focused coping, psychological health and social relationships.

Active, practical coping was found to be a significant positive predictor of social relationships and environmental factors. In contrast, active distractive coping was found to be a significant negative predictor of environmental factors. Whereas avoidance focused coping was found to be a significant positive predictor of psychological health and negative predictor of social relationships. Religious focused coping was found to be a significant negative predictor of physical health.

Whereas side effects (physical, neurological and psychological) were found to be non-significant predictors of active practical coping and physical health. The physical side effect was found to be non-significant predictor avoidance focused coping. While neurological side effect was also found to be a non-significant predictor of avoidance focused coping, social relationships and environmental factors. Moreover, the psychological side effect was found to be non-significantly predicted environmental factors. Active, practical, active distractive and avoidance focused coping were found to be non-significant predictors of physical health. Whereas Active practical, active distractive and religious coping were found to be non-significantly predicted psychological health. Furthermore, distractive and religious coping were also found to be non-significant predictors of social relationships. Whereas avoidance focused and religious coping were also found to be non-significant predictors of environmental factor.

The results of the indirect effect showed that avoidance focused coping was found to be a significant negative mediator between a psychological side effect

and psychological health (see table 3). While avoidance focused coping was found to be a significant negative mediator between a psychological side effect and social relationship. In comparison, active distractive coping was found to be a significant negative mediator between a neurological side effect and environmental factors.

Coping strategies (active, practical coping, active distractive coping, avoidance focused coping and religious focused coping) were found to be non-significant mediators between side effects (physical, neurological and psychological), and physical health. Whereas Coping strategies (active, practical coping, active distractive coping, avoidance focused coping and religious focused coping) were found to be non-significant mediators between side effects (physical and neurological), and psychological health and social relationships while coping strategies (active, practical coping, active distractive coping and religious focused coping) were found to be non-significant mediators between a psychological side effect and psychological health and social relationships.

Moreover, coping strategies (active, practical coping, active distractive coping, avoidance focused coping and religious focused coping) were found to be non-significant mediators between side effects (physical and psychological) and environmental factors. While (active, practical coping, avoidance focused coping and religious focused coping) were found to be non-significant mediators between a neurological side effect and environmental factors.

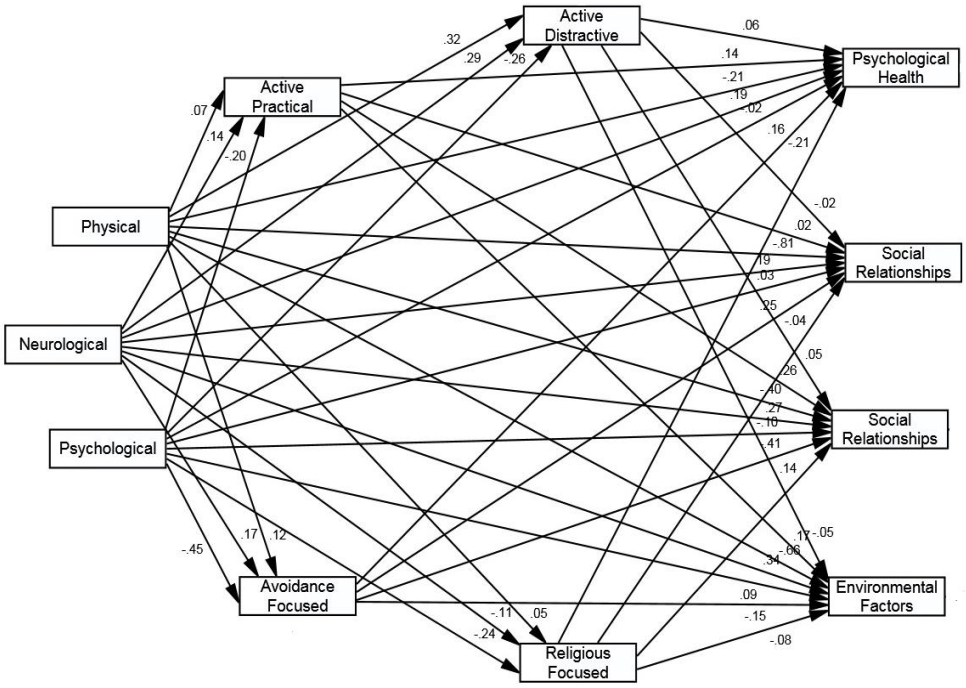

Figure 1: Emerged Statistical Model of Side Effects, Coping Strategies and Quality of Life (N=100)

Table 2. Direct Effects of Side Effects (Physical, Neurological and Psychological), Coping Strategies (Active Practical Coping, Active Distractive Coping, Avoidance Focused Coping and Religious Focused Coping) and HRQOL (Physical Health, Psychological Health, Social Relationships and Environmental Factors) (N=100)

Antecedent	Consequent															
	Coping Strategies (Mediators)								Quality of Life (Outcome Variables)							
	Active Practical Coping		Active Distractive Coping		Avoidance Focused Coping		Religious Focused Coping		Physical Health		Psychological Health		Social Relationships		Environmental Factors	
	B	*SE*	B	*SE*	B	*SE*	B	*SE*	B	*SE*	β	*SE*	β	*SE*	β	*SE*
Side Effects																
Physical	.004	0.05	.32**	0.04	-.13	0.08	-.20*	0.06	-.12	0.02	-.75***	.02	-.32***	.03	-.48***	.02
Neurological	.05	0.15	.32**	0.11	-.08	0.24	-.25*	0.18	.07	0.06	-.23*	.09	.03	.06	.12	.07
Psychological	-.05	0.08	.20*	-.06	-.27**	0.12	-.28**	0.09	-.04	0.03	-.47***	.04	-.21*	.03	-.18	.04
Coping Strategies																
Active Practical	-	-	-	-	-	-	-	-	.16	0.04	.05	.05	.29**	.04	.25*	.04

Active Distractive	-	-	-	-	-	-	-	-	.09	0.06	-.15	.07	-.003	.05	-.27*	.06
Avoidance Focused	-	-	-	-	-	-	-	-	.15	0.03	.26**	.04	-.33**	.03	.004	.03
Religious Focused	-	-	-	-	-	-	-	-	-.25*	0.04	-.08	.04	.14	.03	-.07	.04
Covariate																
Age	-	-	-	-	-	-	-	-	-	-	-	-	-.23*	.02	-.33**	.02
R^2	.017		.151		.100		.086		.115		.672		.374		.511	
F	0.56		5.70**		3.54*		3.02*		1.71		26.93***		6.80***		11.91***	

**p<.05, **p<.01, ***p<.001*

Table 3

Indirect Effects of Coping Strategies (Active Practical Coping, Active Distractive Coping, Avoidance Focused Coping and Religious Focused Coping) between Side Effects (Physical, Neurological and Psychological), and HRQOL (Physical Health, Psychological Health, Social Relationships and Environmental Factors) (N=100)

Mediator	Physical Health			Psychological Health			Social Relationships			Environmental Factors		
	Effect	*95%BootCI*		*Effect*	*95%BootCI*		*Effect*	*95%BootCI*		*Effect*	*95%BootCI*	
		BootLL	*BootUL*		*BootLL*	*BootUL*		*BootLL*	*BootUL*		*BootLL*	*BootUL*
Physical*												
Active Practical	.001	-.05	.03	.001	-.02	.01	.001	-.06	.06	.001	-.05	.05
Active Distractive	.03	-.05	.12	.002	-.04	.05	.02	-.04	.08	-.01	-.09	.05
Avoidance Focused	-.02	-.08	.01	-.03	-.09	.02	.05	-.01	.14	.02	-.01	.06
Religious Focused	.05	-.01	.13	.02	-.01	.06	-.03	-.09	.01	.03	-.01	.10
Neurological*												
Active Practical	.01	-.04	.06	.003	-.03	.05	.01	-.07	.10	.01	-.05	.11
Active Distractive	.01	-.07	.10	-.07	-.12	.001	-.03	-.11	.04	**-.09**	**-.18**	**-.01**
Avoidance Focused	-.02	-.08	.02	-.03	-.11	.04	.03	-.02	.10	.001	-.03	.03
Religious Focused	.05	-.002	.13	.01	-.06	.06	-.05	-.14	.004	.02	-.04	.08
Psychological*												
Active Practical	-.01	-.07	.02	-.002	-.04	.01	-.01	-.10	.04	-.01	-.08	.04
Active Distractive	.01	-.04	.07	-.03	-.08	.01	-.001	-.04	.05	-.03	-.10	.01
Avoidance Focused	-.04	-.13	.01	**-.07**	**-.15**	**-.02**	**.09**	**.02**	**.18**	.02	-.04	.07
Religious Focused	.07	.01	.15	.02	-.04	.08	-.04	-.12	.01	.04	-.03	.10

Note. ***Bold** = Predictors (independent variable), Effect = standardized regression coefficient, BootCI = bootstrapped confidence interval, BootLL = bootstrapped lower limit, BootUL = bootstrapped upper limit

DISCUSSION

This study found that active-distractive coping strategies are used by the patients that undergo HCV treatment with pegylated interferon with ribavirin. Moreover, the injection-free group with oral antiviral drugs also used active-distractive coping strategy to combat treatment-related side effects. Many studies have found that use of distractive coping strategies such as "started socializing and meeting with people" or "going out with friends" are linked with low levels of anxiety or perceived stress.

The reasons that HCV patients do not use active, practical coping strategies are multifactorial. A study in Taiwan traced the pathway that links stressors to active coping, and it postulated that motivation and resilience are the factors that cause a person to imply practical coping strategies in response to an unfavorable situation. (Li, 2014). This study also found that self-efficacy is the key to resilience and motivation.

The finding of this study is also consistent with the earlier research about the use of coping strategies in the patient receiving interferon therapy. The use of distractive coping strategies decreases with the course of treatment. This finding may be argued by the fact that patient undergoing treatment have higher levels of stress and fatigue, which is related to side effects caused by treatment (Kausar, 2010). The patient receiving single weekly injections of pegylated interferon have a fewer number of injections as compared to conventional interferon. This causes relatively less injection-related stress in these patients, and these patients tend to resolve their conflicts by using distractive coping. However, when these patient uses oral antiviral drugs alone or along with pegylated interferon the level of anxiety increases because of increase in the cost of treatment and fear of treatment failure despite spending a considerable amount of money. This results in a decreased use of distractive coping.

We found that our patients had minimum education or background knowledge of this disease. These are the reason that made our patients not self-efficient; consequently, our patients lacked motivation and resilience. Our health care system and overburdened clinics lacked the facilities for psychological counselling. There are no motivation strategies for patients during treatment hence leads to failure of these patients to use active coping strategies.

Furthermore, this research looks into avoidance-focused coping strategies such as "tried to forget what had happened", "started avoiding others". Avoidance-focused strategies are considered a conscious effort to overcome the stress related to a particular event by trying to forget the event or trying to decrease social interactions. The use of avoidance focused coping strategies is linked with a high level of stress and anxiety. It has been studied that mostly the people who tend to choose avoidance coping strategies have fewer resources and social support. (Billings & Moos, 1981).

The reason for the use of avoidance coping strategies in patients' receiving treatment for hepatitis C infection is the lack of social support for the patients undergoing this treatment. This study found that patients receiving oral antiviral

treatment used more avoidance coping strategies when compared with other types of treatment regimes. This finding was in contrast with another study that showed the use of avoidance coping strategies was prevalent in patients receiving injectable treatment for hepatitis C. (Kausar, 2010).

The use of religious focus coping like "prayed to God" to overcome the stress of treatment-related side effects is studied. It was assumed that most of the patients receiving treatment were from middle-class families and would show more inclination towards the use of religious coping strategies. However, it was noticed that other than the group using an injection-free, oral treatment, none of the treatment group used religious coping strategies. The use of religious coping strategies declined significantly in patients using combined pegylated interferon and oral antiviral treatment. The reason for this might be linked to the severity of side effects caused by injections. The fatigue and depression caused by these injections may leave the patients with so less energy that they are not able to perform prayers despite having a desire to do so. As this has already been discussed that newer injection-free oral antiviral regime has less treatment-related side effects. And, degree of fatigue is less with these drugs; patients still feel energetic enough to pray and seek solace in religion. This is the reason that patients receiving oral treatment tend to have significantly higher chances of using religious coping strategies.

This study also looks into the mediating role of coping strategies between physical, psychological and neurological side effects of treatment of hepatitis C and domains of HRQOL such as physical health, psychological health, social relationships and environmental factors.

The results gathered by this study further shows that avoidance focused coping have significant negative mediating role between psychological health and psychological side effects. It means that those patients that use avoidance focused coping strategies during times of stress caused by psychological side effects have a significantly negative impact on their psychological health. Findings elaborate on the negative mediating role of avoidance based on coping between psychological side effects and social relationships. It means that negative impact on social relationships of patients undergoing treatment of hepatitis C is warranted if these patients use avoidance focused strategies to cope with psychological side effects.

The current study also found that active distractive coping strategies were a significant negative mediator between neurological side effects and environmental factors. This means that while using the distractive coping strategy to overcome the neurological side effects caused by HCV treatment, the environmental factors were negatively impacted by these patients. These patients have such a severe degree of side effects that they are not able to enjoy their leisure activities or feel relaxed in the surrounding environment. These patients suffer from excessive fatigue while getting around and don't feel safe or healthy in their physical environment.

CONCLUSION

This study shows patients most commonly use the avoidance coping strategies during treatment. It further compares different groups of treatment regime and coping strategies used by patients facing a specific type of side effects. This study also reveals the mediating role of different coping strategies between side effects and QOL of patients. Especially the positive mediating role of proactive coping strategies on the QOL of the patients is established in this study. These findings can be used to advocate the role of pretreatment counselling of patients by a professional psychologist before starting therapy. So those patients use the proactive coping technique to combat the side effects of treatment and have improved QOL.

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