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Health Related Behaviors and Medication Adherence in Patients with Hepatitis C

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The present study was conducted to assess health related behaviors and medication adherence in patients with hepatitis C in Pakistan. It was hypothesized that: there are likely to be significant changes in the pre and post diagnosis health related behaviors of the patients with hepatitis C; there will be relationship between health related behaviours and medication adherence of the patients. The sample comprised of 100 patients diagnosed with hepatitis C and they were recruited from two teaching hospitals of Lahore, Pakistan. The patients ranged in ages between 20- 50 years, with mean age of 35 years (SD = 8.47). A self constructed health related behavior questionnaire was used to assess pre and post diagnosis health related behaviors of the patients and Morisky Medication adherence scale (Morisky, Green, & Levine, 1986) was used to assess medication adherence of the patients. Paired sample t-test and correlation analysis were used to analyze data. Results showed significant improvement in health related behaviours of the patients post-diagnosis. Medication adherence had significant positive relationship with diet and eating behavior and had negative relationship with tiredness The patients showed medium to high level of medication adherence and high level of information related to hepatitis C. Findings have important implications for the prognosis of patients with hepatitis C in Pakistan.

Keywords: Hepatitis C, health related behaviors, medication adherence

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Hepatitis C is an infection or inflammation of the liver that leads to liver failure or liver cancer and affects indirectly the other parts of the body such as nerves and kidneys (Frey & Shearer-copper, 1995). It infects an individual silently without producing the symptoms for many years and damages the liver and it may be diagnosed when it results in Cirrhosis (Fabry & Narasimhan, 2007). The patient may manifest a wide range of symptoms i.e. cold, flue, nausea, vomiting, fever, fatigue, pain in joints, headaches, pain in abdomen, and loss of appetite. Some patients may show the symptoms of jaundice (yellowing of the skin and eyes) and dark urine (Hayhurst, 2003). The modes of transmission of hepatitis C are contaminated needle use in medical care, drug abuse and unsafe blood and blood product transfusion (Shapatava, Nelson, Sertvadz, & Rio, 2006).

An estimated 300 million people are infected with hepatitis C worldwide (Bruce, Montanarelli, & Wright, 2007) and the prevalence for HCV in Pakistan is reported to, range between 2.4%-6.5% among adults, and .44-1.6% among children while 5.31% in Islamabad, 15.9% in Lahore and 23.8% in Gujranwala and it is increasing day by day (Jafri & Subhan, 2008). According to World Health Organization (WHO), 12 million Pakistanis are infected with hepatitis of which 8.6 million are affected with Hepatitis C (WHO, 2004). The prevalence of hepatitis C remains high in Karachi, interior Sindh, Lahore and southern Punjab (Shaheryar, 2012).

It is estimated that 50% of mortality from the 10 leading causes of death has been attributable to behavior that causes or complicates the chronic diseases. Tobacco use, alcohol use, sedentary life styles and unhealthy diet are among the four leading behavioral factors (Paul & Pollichino, 2005). The practice of unhealthy behaviors influences the emergence of new infectious diseases such as hepatitis C. The most common behavioral factors contributing to mortality or infectious diseases include poor diet, physical inactivity, drug use (Patel, Woodward, Feigin, Quah, & Heggenhougen, 2010). So, it is important to avoid health risk behaviors and to practice health related behaviors to improve health and to prevent from diseases.

Several lifestyle modifications have been reported to help a patient manage disease. The first step is to avoid drugs and alcohol, to maintain a healthy weight, exercise, and eat healthy and balanced diet. Life style modifications are important for general health of patient along with helping the patients to manage chronic diseases including hepatitis C. Healthy diet and exercise are also important components in the

management of hepatitis C (Fabry & Narasimhan, 2007). It's important for the patient with hepatitis C to take control of their health by exercising health related behaviors such as through proper diet, by taking exercise, balanced eating behavior etc., on daily basis to help protect their liver from further damage. These healthy behaviors may include taking exercise regularly, eating right and balanced diet, avoid drugs, and getting proper medical advice (Johnson, 2012).

Dietary composition is related to the extent of liver damage and post onset the HCV patients may benefit from instructions regarding their diet (Loguercio, Federico, Masarone, Torella, & Persico, 2008). Studies suggest that the people who consume diets that are low in fat, saturated fat, and cholesterol, high in fruits and vegetables and whole grain products containing fibers have lower rates of morbidity and mortality from coronary heart diseases and several forms of cancer (Gochman, 1997).

A patient with hepatitis C benefit from exercise to make his/ her body strong and to reduce fatigue, a common symptom in hepatitis C. It causes a decrease in liver enzymes and reduces fats and scared tissues in the liver, than in turn decrease severity of the liver disease (Johnson, 2012). Exercise is not only an important strategy for preventing disease and improving health, but it can also lead to additional health related changes in an individual (Gochman, 1997). Physical exercise can improve self-confidence and lead to far-reaching changes in the way patients perceive their disease and the constraints of treatment (Payen et al., 2009). The consumption of alcohol and drugs can accelerate the deterioration of an already compromised liver in patients with hepatitis C (Hellesvig-Gaskell, 2011). Drugs should be avoided in order to protect the liver from further damage (Johnson, 2012).

The most influential theory of why people practice healthy behaviors is the health belief model that states that the practice of a healthy behavior by a person is understood through two factors; first the extent to which a person perceives health threat and second the belief that a particular health practice will reduce the health threat (Taylor, 1999).

Practicing the health related behaviors is not a substitute for medical treatment of hepatitis C, but rather an additional approach to help improve liver function. In addition to health related behaviors, adherence to treatment holds a pivotal significance in the prognosis of hepatitis C, a condition that requires using rigorous treatment depending on the severity and condition of the patient. It is also vital in the sense that medication non adherence may result in increased hospital readmission, increased

disease progression and associated complications, increased health care costs, decreased patients quality of life and finally patient's death (Ferrell & Hudson, 2012).

Medication adherence is the extent to which a patient's behavior (in terms of taking medication, modifying habits, following a prescribed diet plan) coincides with medical or health advice (WHO, 2004). Empirical evidence suggests a positive relationship between age and compliance (Lynch et al., 1992). Studies looking at gender differences have revealed that men and women are equal in staying on exercise program (Emery, Hauck, & Blumenthal, 1992), and women are better at complying to healthy diets with lots of vegetables (Laforge, Greene, & Prochaska, 1994). Grebely et al. (2010) found high adherence to treatment for patients with HCV. Similarly, Chotiyaputta, Peterson, Ditah, Goodwin, and Lok (2010) found that persistence and adherence to treatment was high among patients with Hepatitis C.

Ali, Donahue, Qureshi, and Vermend (2005) conducted a study in Pakistan and found that the prevalence rate of Hepatitis C was moderate to high in different areas of Pakistan and the modes of transmission of Hepatitis C are contaminated needle use in medical care, drug abuse, unsafe blood and blood product transfusion.

Ali, Kanwal, Tassaduqe, and Iqbal (2009) conducted a study to assess the prevalence of Hepatitis C virus (HCV) in relation to sex, age, factors, associated symptoms and season in urban population of Multan. The findings suggested that prevalence of HCV was (6.68%) and prevalence was higher adult men as compared to younger and older men. One plausible explanation for their finding could be the likelihood of adult men being indulged in risk factors such as surgery, blood transfusion, multiple injection and razor trauma of shaving. They found contaminated barber razors, parlor tools, unscreened blood transfusion, contaminated dentist equipments, infected syringes, and contaminated surgery equipment as the major causes of HCV.

The reported HCV prevalence in Pakistan is much higher as compared to other countries like, India, Indonasia, and China (Jafri & Subhan, 2008). In Pakistan, a large segment of rural population goes to barbers for facial shave. Quite often barbers use razors that are not disposable, possibly contaminated, and often reuse for shaving without getting them properly disinfected. Therefore, it is important that health related behaviours associated with hepatitis C are identified and it is examined that whether patients' attitude changes towards such behaviours subsequent to the diagnosis of hepatitis C. It is also important

to examine patients' adherence to treatment. The present study aimed to examine changes in pre and post diagnosis health related behaviors in patients and to examine relationship between health related behaviors and medication adherence in patients with hepatitis C.

Hypotheses

- The patients with hepatitis C are likely to differ in pre and post diagnosis health related behaviors.
- Health related behaviors are likely to show positive relationship with medication adherence in patients with Hepatitis C.

Method

Research Design

It was a cross sectional and co-relational study which assessed health related behaviors and medication adherence of the patients with hepatitis C.

Sample

Purposive sampling strategy was used for sample selection. The sample consisted of 100 gender equated patients (men = 50, women = 50) with hepatitis C. Sample was taken from two different hospitals of Lahore, Pakistan. The patients ranged in ages between 20 years to 50 years with the mean age of 35 years (SD = 8.47).

Table 1

Demographic Characteristics of the Sample

Variable	*M*	*SD*	*f*	%
Age (in years)	34.56	8.47		
Education (in years)	6.56	5.72		
Age at the time of diagnosis (years)	33.73	9.56		
Duration of disease (in months)	21.24	20.83		
Duration of treatment (in months)	5.59	10.32		
Marital status				
Married			83	83
Unmarried			14	14
Divorced			1	1
Widow			2	2
Employed status				
Employed			61	61
Unemployed			38	38
No. of Children (n = 83)				
1-3			32	32
4-6			33	33
7-10			13	13

Inclusion and Exclusion Criteria. While taking sample the following criteria were kept in mind.

- Those patients who had confirmed diagnosis of hepatitis C by a medical doctor and were receiving treatment for hepatitis C were included.
- Patients with any other co-morbid disease or a chronic condition were excluded.
- Those with physical disability or any other congenital condition were excluded.

Assessment Measures

Assessment was carried out using Demographic Information form, Health Related Behavior Questionnaire (HRBQ), and Morisky Medication Adherence scale.

Health Related Behavior Questionnaire (HRBQ). A self constructed Health related behavior Questionnaire (HRBQ) was used to assess the health related behaviors of the patients with hepatitis C and the questionnaire was prepared in Urdu Language in consultation with the existing literature (Ghany, Strader, & Thomas, 2009). The questionnaire consists of three parts: first part comprises of patient's health related behaviors before the onset of hepatitis C: the second part enquire about health related behaviors after being diagnosed; the third part is about the level of information physicians provide to the patients about diet. exercise and precautionary measures. Health related information parts consisted of five subscales each i.e. exercise, diet, eating behavior, tiredness and drug use. Internal consistency of the health related behavior questionnaire for present sample was .69.

Morisky Medication Adherence Scale. Morisky, Green, and Levine (1986) developed the questionnaire to assess medication adherence in patients with hepatitis C. The scale consists of 8 items and it measures generic adherence. There is no right and wrong answer and the response categories are "yes" or "no" and a 5 point-Likert response. Item 5 and 8 need reverse coding. Sample items are "Do you forget to take your pills" and "Did you take all your medicine yesterday". Ranges are given for low (less than 6), medium (6-8), and high (8) adherence. Internal consistency of the scale for the present sample was .66. The scale was translated in Urdu Language using Mapi guidelines.

Procedure

First of all the research proposal was approved by the Institute of Applied Psychology's Board of Studies' and subsequently by the University Competent authority. A letter explaining nature of the study was taken from the Institute of Applied psychology and was provided to the Medical Superintendents of the respective hospitals for seeking permission for data collection. After seeking permissions, potential participants were approached through outpatient clinics. The patients with hepatitis C visit outpatient clinics to get their routine checkup and medicine on regular basis. Before assessment, the participants were briefed about the nature and purpose of the study and their informed consent was sought. They were ensured that information provided by them would be kept confidential and will only be used for the research purpose. Those who were willing to participate completed questionnaires at the premises of the hospital and it took about 20 minutes to complete assessment measures.

Ethical Considerations

- Permission from the author of the medication adherence scale was taken for translation and use in the research.
- A letter explaining nature and purpose of the research duly signed by the research supervisor was taken to the hospital authorities for getting their permission to gather data.
- The procedure and purpose of the study was explained to the participants and their informed consent was taken on informed consent form.
- The participants were assured that the information obtained from them would be treated anonymously and would only be used for research purpose and that they had the right to withdraw from research if they wished so.

Results

It was hypothesized that the patients with hepatitis C are likely to differ in health related behaviors (such as diet behavior, eating behavior, exercise behavior and drug behavior), pre and post the diagnosis of hepatitis C. For this purpose, paired sample t test analysis was used and results are presented in table 2.

Table 2
Paired Samples t test Comparing Pre-Post Health Related Behaviors of the Patients with Hepatitis C (N = 100)

Variables		*M (SD)*	*t(99)*	*p*	*95% CI*		Cohen's *d*
					UL	*LL*	
Pair 1	Exercise behavior (pre)	1.38(0.76)			-.48	-0.6	.25
	Exercise behavior (post)	1.65(1.02)	2.54	.01			
Pair 2	Diet behavior (pre)	5.50(2.48)			-4.26	-3.15	1.32
	Diet behavior (post)	9.26(1.34)	13.17	.001			
Pair 3	Eating behavior (pre)	18.01(4.65)			-5.98	-3.93	.96
	Eating behavior (post)	22.97(2.90)	9.61	.001			
Pair 4	Tiredness (pre)	1.93(1.40)			-1.15	1.87	.82
	Tiredness (Post)	3.44(1.38)	8.23	.001			
Pair 5	Drug behavior (pre)	4.80(.96)			-.26	-.02	2.33
	Drug behavior (Post)	4.94(.23)	2.32	.05			

Results demonstrated significant improvement in pre and post diagnosis health related behaviors in patients with hepatitis C. Their exercise related and eating behaviors significantly improved post diagnosis, however, they were feeling significantly more tired than they used to pre-diagnosis.

It was hypothesized that health related behaviors are likely to show positive relationship with medication adherence in patients with Hepatitis C. To find the relationship between post diagnosis health related behaviors and medication adherence, Pearson product moment correlation analysis was carried out (see table 3).

Table 3
Relationship between Medication Adherence and Post Onset Health Related Behaviors

Variables	1	2	3	4	5	6	*M*	*SD*
1.Medication Adherence	-	.26**	-.03	.02	-.20*	.28**	6.40	1.62
2. Diet Behavior		-	-.04	-.12	-.27**	.53***	9.26	1.34
3. Drug Use			-	-.04	.02	-.06	4.94	0.23
4. Exercise				-	.22*	.03	1.65	1.02
5. Tiredness					-	-.18	1.93	1.40
6. Eating behavior						-	22.97	2.90

*$P<0.05$, **$P<0.01$, ***$P<.001$

Medication adherence had significant positive relationship with diet, eating behavior whereas it had negative relationship with tiredness.

The patients were asked about the extent of information they are provided by their physicians regarding precautionary measures to be taken by them. The results showed that 52 percent of patients had high level of information pertaining to their disease. Information provided by the concerned physician to the patients about diet is shown in figures 1 & 2.

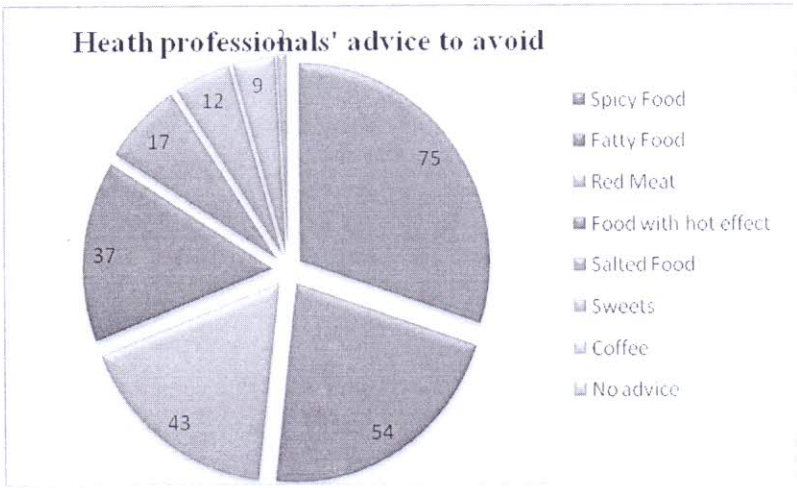

Figure 1

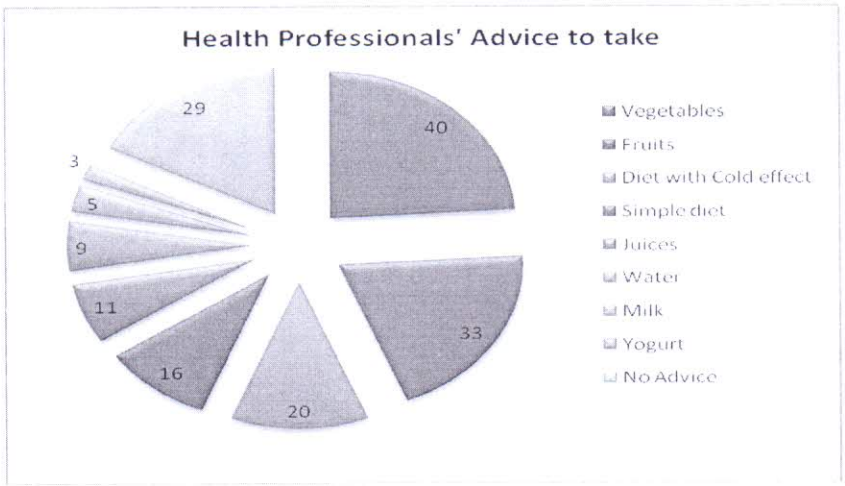

Figure 2

The results revealed that the physicians were providing information to the patients pertaining to what type of diet should be taking.

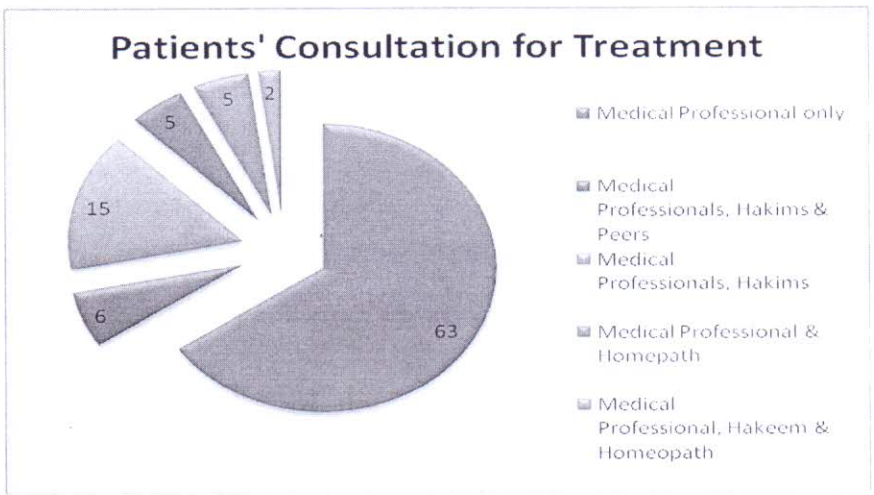

Figure 3

Figure 3 shows that majority of the patients were only consulting medical professionals, however there were patients who were also consulting other professionals such as hakims, homeopaths and peers (faith healers).

Summary of Findings

- Exercise related and eating behaviors of the patients with hepatitis C significantly improved post diagnosis.
- There was significant positive relationship between medication adherence and health related behaviors.
- Majority of the patients had high level of information pertaining to their condition, and their physicians had been advising them to take appropriate food, such as vegetables, fruits and to increase fluid intake. It was also found that in addition to consulting medical professionals the patients had been consulting hakims, homeopaths and faith healers.

Discussion

The present study aimed to assess health related behaviors and medication adherence in patients with hepatitis C. The findings indicated significant change in health related behaviours in patients with hepatitis

C pre-post diagnosis. Their health related behaviors had been significantly improved post diagnosis.

Findings from our study indicated that the exercise related behavior of the patients had improved after the diagnosis. Exercise is essential for healthy life and is not only an important strategy for preventing disease and improving health. but it can also lead to additional health related changes in an individual. People who exercise regularly find it easier to make other healthier changes such as giving up smoking and eating more healthful food (Gochman, 1997). Our findings are consistent with previous studies as Gapinski and Zucker (2005) found that exercise as a form of treatment for HCV-related fatigue increased in their sample and they emphasized the value of exercise for maintaining and improving health. Payen et al. (2009)'s findings also suggested that patients with hepatitis C may safely participate in a programme of suitably supervised physical exercise. Taking part in physical exercise leads to clear changes in the way patients perceive their bodies and its capacities. It improves self-confidence and leads to far-reaching changes in the way patients perceive their disease.

In the present study, the patients' diet and eating behaviors were also improved compared to their pre-diagnosis behaviors. One could argue that improvement could be for the reason that their physicians could have provided them information pertaining to precautionary diet and cautioned them to refrain from unhealthy diet. Eating is an important behavior for improving health and unhealthy diet has been reported to be associated with a wide range of health related conditions. Majority of the studies suggest that the people who consume diets that are low in fats, saturated fats, and cholesterol, high in fruits and vegetables and whole grain products containing fibers have lower rates of morbidity and mortality from coronary heart diseases and several forms of cancer (Gochman, 1997). Loguercio, et al. (2008) found that dietary composition is related to the extent of liver damage in patients with hepatitis. This suggests that HCV patients may benefit from instructions on their diet and to follow diet plan suggested by their physician.

The findings from our study suggest that patients with Hepatitis C were experiencing more tiredness and fatigue after the diagnosis. Obhrai, Hall, and Anand (2001) concluded that fatigue and psychological disturbances occur frequently in chronic diseases. The fatigue experienced by patients with HCV infection is more severe and intransigent and responds poorly to relieving factors. The findings of previous studies provide support for the present study as the patients had

been experiencing more tiredness and fatigue after the diagnosis. Moreover, tiredness and fatigue could be the result of weakness and side effect of treatment regimn.

Findings pertaining to correlation analysis revealed significant positive relationship of medication adherence with diet and eating behavior. One could argue that patients showing higher level of adherence to treatment would also be aware of significance of diet and eating behaviour. Moreover, its understandable that their physician would have advised them to follow a particular diet plan in order to have improvement in their condition.

In our sample, majority of the patients with hepatitis C had moderate to high level of information pertaining to different aspects of hepatitis C. This information was provided by their physicians and the extent of information provided by the physicians helped them show adherence to medication. The health belief model suggests that a patient who knows more about their condition and its consequences would be more compliant than patients who are less knowledgeable.

Limitations and Suggestions. Some limitations of the study are given below:

- Data was collected from the two hospitals of the Lahore so the findings cannot be generalized to whole population.
- Patient's pre and post diagnosis health related behaviors were assessed at one point of time relying on self report of the patients, one may consider gathering this information from a significant other in order to ascertain validity of information provided by the pariticpants.

Implications

The findings of the present study have important implications as pre-post health related behaviors associated with hepatitis C are identified in this study, and the behaviours which patients perceive as helpful can be practiced for better prognosis. Health related behaviors also play a pivotal role in the prognosis of Hepatitis C. Certain steps can be taken to spread information regarding health related behaviors related to hepatitis C. Programs can be initiated to increase awareness regarding knowledge pertaining to hepatitis C, so that they can exercise healthy behaviours such as exercise and eating habits as preventive measures.

References

Ali, M., Kanwal, L., Tassaduqe, K., & Iqbal, R. (2009). Prevalence of Hepatitis C virus (HCV) in relation to Its promotive factors among human urban population of Multan. *Pakistan European Journal of General Medicine*, *6*(2), 94-98.

Ali, S. A., Donahue, R. M. J., Qureshi, H., & Vermund, S. H. (2005). Hepatitis B and hepatitis C in Pakistan: prevalence and risk factors. *International Journal of Infectious Disease, 13*(1), 9-19. doi: 10.1016/j.ijid.2008.06.019

Bruce, C., Montanarelli, L., & Wright, T. (2007*). First year: Hepatitis C: An essential guide for the newly diagnosed* (2nd ed.). USA: Marlowe & Company

Chotiyaputta, W., Peterson, C., Ditah, F. A., Goodwin, D., & Lok, A. S. (2010). Persistence and adherence to nucleos (t) ide analogue treatment for chronic hepatitis B. *Journal of hepatology*, *54*(1), 12-18. doi:10.1016/j.jhep.2010.06.016

Emery, C. F., Hawk, E. R., & Blumenthal, J. R. (1992). Exercise adherence or maintenance among older adults: one year follow up study. *Psychology and Aging*, 7, 466-470.

Fabry, S., & Narasimhan, R. A., (2007). *100 Questions and Answers about Hepatitis C: A Lahey Clinic Guide.* USA: Jones and Bartlett Publishers, Inc

Ferrell, M., & Hudson, S, (2012). *Medication adherence: defining the problem.* Retrieved from http://www.slideshare.net/ SarahHudson6 /medication-adherence

Frey, R., Shearer-copper, L. A. (1995). *Introduction to Nursing Assissting: building language skills.*USA: Cengage Learning.

Gapinski, M. A., & Zucker, D. M. (2005). Factors influencing the development of a Hepatitis C exercise protocol: A literature review. *Gastroenterology Nursing, 3*(28), 10-18.

Gochman, D. S. (1997). *Hand book of health behavior research.* Springer.

Ghany, M. G., Strader, D. B., & Thomas, D. L. (2009). Diagnosis, management, and treatment of hepatitis C: an update. *Hepatology*, *49*(4), 1335-1374.

Grebely, J., Matthew, G. V., Hellard, M., Shaw, D., Van, B. I., Petoumenos, K., Alavi, M., Yeung, B., Haber, P. S., Lioyd, A. R., Kaldor, J. M., & Dore, G. J. (2010). Adherence to treatment for recently acquired Hepatitis C virus (HCV) infection among injecting drug users. *Journal of Hepatology, 10*(33), 76-85.

Hayhurst, C. (2003). *Everything you need to know about Hepatitis C.* Rosen Publishing Group

Hellesvig-Gaskell, K. (2011). Diet for Hepatitis C Patient. Retrieved from: http://www.ehow.com/way

Jafri, W., & Subhan, A. (2008). Hepatiti C in Pakistan: Magnitude. Genotype, Disease characteristics and therapeutic response. *Tropical Gastrointerlogy, 29*(4), 194-201.

Johnson, K. (2012). *Hepatitis C, Diet, and Exercise*. Retrieved from http://www.webmd.com/hepatitis/hepc-guide/c-diet-exercise.

Laforge, R. G., Greene, G. W., & Prochaska, J. O. (1994). Psychosocial factors influencing low fruits and vegetables consumption. *Journal of Behavioral Medicine, 17*(4), 361-374.

Loguercio, C., Federico, A., Masarone, M., Torella., R, & Persico., M. (2008). The impact of diet on liver fibrosis and on response to interferon therapy in patients with HCV-related chronic Hepatitis. *The American Journal of Gastroenterology, 103*(12), 3159-3166.

Lynch et al. (1992). BRCIA and pancreatic cancer: Pidegree findings and their cacasualelationships. *Cancer and Psychogenics, 15*(8), 119-125.

Morisky, D. E., Green, L. W., & Levine, D. M. (1986). Concurrent and predictive validity of a self-reported measure of medication adherence. *Medical Care, 24*(1), 67-74.

Obhrai, J., Hall, Y., & Anand, M. D. (2001). Assessment of fatigue and psychologic disturbances in patients with Hepatitis C virus infection. *Journal of Clinical Gastroenterology, 32*(5), 413-417.

Patel, V., Woodward, A., Feigin, V., Quah, S. R., & Heggenhougen, K. (2010). *Mental and Neurological Public Health: A Global Perspective*. USA: Cataloging in publication data.

Paul, N. L., & Pollichino, G. (2005). *Living with Hepatitis C For Dummies*.USA: Wiley Publishing, Inc.

Payen, J. L., Pillard, F., Mascarell, V., Riviere, D., Couzigou, P., & Kharlov, N. (2009). Is physical activity possible and beneficial for patients with hepatitis C receiving pegylated interferon and ribavarin therapy. *Gastroentterology clinic at Biology, 33*(1), 8-14.

Shapatava, E., Nelson, K. E., Tsertsvadze, E., & Rio, C. (2006). Risk behaviors and HIV, hepatitis B, and hepatitis C seroprevalence among injection drug users in Georgia. *Drug Alcohol Dependency, 82*(1), 751-759.

Shaheryar, Z. A. (2012). *Prevalence of hepatitis C*. Retrieved from: http://dawn.com/2012/04/19/prevalence-of-hepatitis-c/

Taylor, S. E. (1999). *Health psychology* (4th ed.). USA: McGraw Hill Companies.

World Health Organization (2004). *Immunization in practice: a practical guide for health staff.* Cataloging in publication data.

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