

Health- related quality of life for adult patient with chronic viral hepatitis B and C

Adel H. Midhin , M.Sc.*

Narmeen B. Tawfeeq, PhD **

*Academic Nurse Specialist, Al-Rumady Health Directorate

** Professor, Adult Nursing Department, College of Nursing, University of Baghdad

المستخلص

الهدف: تهدف الدراسة إلى تقييم الصحة ذات العلاقة بنوعية الحياة للمرضى العراقيين الذين يعانون من التهاب الكبد الفيروسي المزمن (ب) و (ج)، وإيجاد العلاقة بين الصحة ذات العلاقة بنوعية الحياة والصفات الديموغرافية العامة، وكذلك تصميم مقياس جديد لتقييم نوعية الحياة بين مختلف مرضى التهاب الكبد الفيروسي المزمن (ب) و (ج).

المنهجية: أجريت دراسة ميدانية في مستشفى الجهاز الهضمي والكبد التعليمي التابع الى مدينة الطب في بغداد للمدة من الاول من شباط ولغاية الثلاثون من اب ٢٠١١. اختيرت خلالها عينة غرضية "غير احتمالية" مكونة من (١٠٠) شخص مصاب بالتهاب الكبد الفيروسي إما (ب) وإما (ج) يراجعون العيادة الاستشارية في مستشفى الجهاز الهضمي والكبد التعليمي للمتابعة. وقد جمعت المعلومات من خلال استعمال استبانة مصممة ومكونة من ثلاثة أجزاء، جزء شمل الصفات الديموغرافية ويحتوي (١٠) فقرات وجزء شمل المعلومات الطبية المكونة من (٧) فقرة وجزء شمل الجوانب الحياتية، والمكون من ستة جوانب أساسية؛ وهي الجسمي، النفسي، مستوى الاستقلالية، الاجتماعي، البيئي، والجانب الروحي. صدق الاستمارة تم تحديده من قبل مجموعة من الخبراء في مختلف التخصصات. ثبات الأداة حدد باستعمال معامل الثبات بواسطة أسلوب الاختبار – وإعادة الاختبار من خلال الدراسة الميدانية التي أجريت من ١ شباط ٢٠١١ ولغاية ٣٠ آب ٢٠١١. تم تحليل البيانات باستعمال الإحصاء الوصفي (التوزيع التكراري، النسبة المئوية، النسب التراكمية، الوسط الحسابي، الكفاءة النسبية، الإنحراف المعياري، ومعامل الارتباط بيرسون)، وتحليل الإحصاء الإستنتاجي (اختبار مربع كاي، اختبار ذو حدين، ومعامل الاحتمالية).

النتائج: أظهرت نتائج الدراسة إن إصابات الكبد الفيروسي المزمن (ب) و (ج) أثرت على جوانب حياة الأشخاص المصابين بشكل متأرجح، كما وأظهرت النتائج بعدم وجود علاقة معنوية بين جوانب حياة الأشخاص المصابين والمعلومات الديموغرافية. استنتجت الدراسة أن إصابات التهاب الكبد الفيروسي المزمن (ب) و (ج) شائعة الحدوث عند الأشخاص المقيمين في المناطق الحضرية عن أولئك من سكنة المناطق الريفية، وكذلك إصابات التهاب الكبد الفيروسي المزمن (ب) و (ج) تحدث عند الرجال أكثر من النساء وتحدث عند المستوى التعليمي المتدني أكثر من غيره، وتحدث عند الأشخاص الذين يعانون من مستوى معيشي متدني أكثر من غيرهم.

التوصيات: أوصت الدراسة بضرورة إجراء دراسات شاملة مركزة لتشمل عينة كبيرة لتقييم الصحة ذات العلاقة بنوعية حياة الأشخاص البالغين الذين يعانون من التهاب الكبد الفيروسي المزمن ب و ج وتبني وزارة الصحة لوسائل التوعية الصحية لزيادة وعي المجتمع حول إصابات التهاب الكبد الفيروسي المزمن بي و سي وكذلك شمول المنظمات الحكومية وغير الحكومية في حملات التوعية الصحية.

Abstract:

Objective(s): This study aims to assess health related quality of life among Iraqi patients with chronic viral hepatitis B and C also to find out the relationship between health related quality of life and patients demographic characteristic and to design a new measurement scale for assessing QoL among viral hepatitis B and C patients which can be suitable to be adopted for Iraqi patients

Methodology: A descriptive quantitative study is carried out at Gastroenterology and Hepatology Teaching Hospital from February, 1st, 2011 to August 30th 2011, Anon probability (purposive sample) of (100) chronic viral hepatitis B and C persons , who were clients of Gastroenterology and Hepatology Teaching Hospital / outpatient clinic for follow up. The data were collected through the use of semi-constructed questionnaire, which consists of three parts (1) demographic data form that contains (10) items (2) form medical information that contains of (7) items and (3) main domains of the quality of life which contains six main domains: physical, psychological, level of independence, social, environmental, spiritual domain. Content validity was determined by a panel of experts in different specialties. Reliability of instrument was determined by the use of test–retest approach through the pilot study. The data were described statistically and analyzed through use of the descriptive and inferential statistical analysis procedures.

Results: The findings of the presented study indicate that the chronic viral hepatitis B and C affect the quality of life domains. There is a non-significant relationship between socio-demographic characteristic and quality of life domains. The study concludes that the chronic viral hepatitis B and C are most common occurring among persons in urban residential area than in those in rural. chronic viral hepatitis B and C are most common in male than in females, chronic viral hepatitis B and C are most common in married than in unmarried, chronic viral hepatitis B & C are most common in non-drink alcohol than in drink, chronic viral hepatitis B and C are most common in low level education than other, chronic viral hepatitis B and C are most common in low socioeconomic status.

Recommendations : the study recommended An intensive comprehensive wide population-based (national level) studies could be conducted to assess the chronic viral hepatitis B and C patients quality of life also Health oriented mass media approach should be employed by the Ministry of Health to increase population knowledge and awareness about the route of transmission and risk factor of chronic viral hepatitis B & C and Involving both governmental and non-governmental organizations in national health promotion campaign .

Keywords: hepatitis B, hepatitis C, Quality of life

Introduction:

Chronic liver diseases (CLD) are a major cause of morbidity and mortality in the present day world. Chronic infection with hepatitis B and C viruses, alcoholic and non-alcoholic fatty liver diseases are important causes of chronic liver diseases ⁽¹⁾. It is also extensive disorder affecting 5 million people in the United States and it is one of the leading causes of death which is regarded as the tenth leading cause of death among adults in the United States. It accounts for approximately 25,000 deaths annually, or approximately 1% of all death. Population-based studies indicate that 40% of chronic liver disease is related to hepatitis C virus (HCV), resulting in an estimates 8,000–10,000 deaths each year ⁽²⁾. World Health Organization (WHO) estimates more than 75% of cirrhosis and hepato cellular carcinoma (HCC) is attributable to chronic HBV and HCV infection ⁽³⁾. Chronic hepatitis B infects approximately 400 million people worldwide and cause 1 million deaths annually of liver disease ⁽⁴⁾. Clinically, people with chronic hepatitis infection are at high risk of liver damage, with approximately 15% to 40% of infected patients eventually developing cirrhosis, liver failure, or hepato

cellular carcinoma during the course of hepatitis B virus infection ⁽⁵⁾. HBV is the leading worldwide cause of liver disease, liver death, and liver morbidity. In the United States, although the prevalence of chronic HBV infection is low (prevalence of 0.48% in the pre vaccination era), approximately 1.2 million people are infected ⁽⁶⁾.

Methodology:

A descriptive quantitative design was carried out through the present study in order to achieve the early stated objectives. The period of the study was from February 1st, 2011 to August, 30th, 2011. The study is conducted at Baghdad, Al-Rusafa Health Directorate, Gastroenterology and Hepatology Teaching Hospital belongs to Baghdad Teaching Hospital, medical city, Ministry of Health, outpatients' clinic. Patients mad been met on Sunday and Tuesday every week. A purposive "non-probability" sample of (100) chronic viral hepatitis B and C patients who visit Gastroenterology of Hepatology Teaching hospital, outpatients clinical for medical follow-up were included in the study sample.

Results:

Table 1. Participants' distribution by their socio-demographic characteristics

Variables		Frequency (N= 100)	Percent	Cumulative percent
Gender	male	62	62	62
	female	38	38	100
Age groups	< 20	8	8	8
	20 - 29	13	13	21
	30 - 39	26	26	47
	40 - 49	26	26	73
	50 - 59	17	17	90
	60 >	10	10	100
	Statistics	Mean ± SD	40.44 ± 13.16 (yrs.)	
Marital status	single	18	18	18
	married	74	74	92
	divorced	3	3	95
	widower	4	4	99
	separated	1	1	100

Table 1. (Continued)

Variables		Frequency (N= 100)	Percent	Cumulative percent
Residency	countryside	20	20	20
	urban	80	80	100
Occupation	employ	29	29	29
	unemployed	2	2	31
	student	8	8	39
	housewife	34	34	73
	workless	4	4	77
	wage earner	23	23	100
Level of education	illiterate	20	20	20
	read and write	22	22	42
	primary	18	18	60
	secondary	19	19	79
	institute or more	21	21	100
Duration for illness	6 -12	44	44	44
	13 - 19	21	21	65
	20 >	35	35	100
The number of hospital entering for follow-up	Once	12	12	12
	Twice	6	6	18
	Three or more	82	82	100
The age at the time of illness	< 5 yrs.	1	1	1
	5 - 19 yrs.	10	10	11
	20 - 29 yrs.	17	17	28
	30 - 39 yrs.	27	27	55
	40 - 49 yrs.	20	20	75
	50 - 59 yrs.	18	18	93
	60 > yrs.	7	7	100
	Statistics Mean \pm SD	38.30 \pm 13.69 (yrs.)		
Socio-economic status	Low	75	75	75
	moderate	25	25	100

>: more than , < : less than , SD= standard Deviation , Yrs. : years

The table (1) shows that the majority of the study sample (62%) are male and the remaining are female, and also shows that the vast majority of the study sample are within fourth category of age groups and accounted for (26%). Regarding to the patients marital status, the majority of the sample are married and they accounted for (74%) of the whole sample. and this table depicts that the highest percentage of the study sample are living in urban residential area and they accounted for (80%) of the complete sample. In addition, the major groups of the study sample in regarding to their occupational status are housewives and they accounted for (34%). Relative to patient's level of education, the greater number of them can

read and write and they are accounted for (22%) of the whole sample. In regarding to the duration of the illness the major group of the study sample are 6-12 months and they accounted (44%). Also the major group of the study sample in regarding to the number of hospital entering for follow-up are three or more and they accounted (82%). This table too shows that the majority of the study sample are within fourth category of the age at the time of illness and they accounted for (27%). Finally, in the above table and in regarding to the patients socio-economic status, the results show that the major group of the study sample are within the low level of socio-economic status (75%).

Table 2. Quality of life domains

Domains	f	Min.	Max.	Mean	Std. Dev.	R.S.	Ass.
Physical Domain	100	1	3	2.23	0.51	74.39	Failure
Psychological Domain	100	1	2.93	1.99	0.40	66.39	Failure
Level of independence	100	1	3	1.62	0.72	53.89	Pass
Social Domain	100	1	2.73	1.61	0.40	53.60	Pass
Environment Domain	100	1	2	1.43	0.27	47.72	Pass
Spiritual Domain	100	1	2.5	1.13	0.24	37.78	Pass
Overall Domains	100	1.04	2.31	1.67	0.28	55.63	Pass

Ass. = Assessment; Max= maximum; Min= Minimum; SD= Standard Deviation; R.S= Relative Sufficiency

This table reveals term of mean of score (MS), Standard deviation (SD), and the relative sufficiency (RS), regarding the physical domain is above the cutoff point (74.39) which indicates failure, but the subject responding in concerned with psychological domain the cutoff point (66.39), which indicates failure too. While subject responses which relate to the third domain level of dependence domain the cutoff point (53.89) which indicates pass, and relative

the subject responding the social domain the cutoff point (53.60) which indicates pass, and also in regarding the subject responding the environment domain the cutoff point (47.72) which indicates pass. Relative the subject responding the spiritual domain the cutoff point (37.78) which indicates pass, finally with respect to overall domain of the study the subject responding the cut-off-point (55.63).

Discussion:

Part I-A: Discussion of the Socio-demographic Characteristics Variables Related to the Studied Sample: (table1)

Throughout the course of the present study, as shown in table (1), it has been noticed that (62%) of the study sample are males and the remaining are females, this could be attributed to a higher attendance by males at the Gastroenterology and Hepatology teaching hospital, where the sample was taken (The researcher). This result comes along with ⁽⁷⁾. They report that the study population consisted of (340) chronic viral hepatitis B and C,(303) male and (37) female. Also this result agrees with ⁽⁸⁾, who report that the study population consisted of (103) chronic viral hepatitis B and C, (58) male and (45) female. In regarding to the age groups, the study shows in table (1) that the dominant age group of study sample is within (30-39, 40- 49) years old of age group and

accounted for (26%), patients age range(18->60) years with mean (40.44) years and standard deviation (13.16). This truth comes along with ⁽⁹⁾, in their study (Comparison of liver histopathology between chronic hepatitis C patients and chronic hepatitis B and C-co-infected patients) shows that the distribution of their study sample which were composed of (336) patients, as 204 were men and 132were women. The mean age was (46.1) years and SD was (11.7). In regarding to the marital status, the higher percentage of the study sample is married. They accounted for (74%) of the whole sample. This result agrees with ⁽¹⁰⁾ who state that the largest proportions are married.

Regarding residency, the highest percentage of the study sample is living in Urban and they accounted for (80%) of the sample. This result agrees with ⁽¹¹⁾, who found that the highest percentage from the sample is living in urban area and they represent (61%) of

their study sample. This finding may be due to the health education in the urban which is better than in rural an area, which leads to early discovery of viral hepatitis B and C. ⁽¹²⁾, classify their study sample in term of residency as rural and urban. They point out that the highest percentage of the study sample are living in urban area and they represent (66.2%) of their study sample. Concerning to the occupation status, the majority of the study sample are housewives and they accounted (34%). This result disagrees with ⁽¹³⁾, who found that the majority of the study patients are working and they accounted (69%) of their study sample. In regarding to the level of education, the majority of the study sample are read and write and accounted (22%) of the whole sample, this result is in agreement with ⁽¹⁴⁾, the findings indicate that the majority of the study sample are low literacy level and also agree with ⁽¹⁵⁾, who indicate that the majority of the study patients are illiterate and who found the mode of transmission is mainly by(homosexual and drugs abuse), and both of them are behaviors of low educational level and that explain, why the HBV and HCV is more common in this community groups. Concerning the duration of illness, the majority of the study sample (44%) is injury before (6–12) months. This result disagrees with ⁽²⁾, who found the duration of disease is more than two years.

In regarding to the patients visiting of hospital for follow up, the highest patients responses were as (three or more) and they accounted for (82%) of the study sample. Unfortunately the researcher did not find any studies that support this study. Related to the age at the time of illness, the dominant age group of study sample is within (30-39) years old of age group and accounted for (27%), subjects age range (<5->60) years with mean (38.30) years and standard deviation (13.69).This result agrees with (16) who found most infection with hepatitis B and C virus occurred

among young adults 20- 39 years old. In regarding to the socioeconomic status, the majority of the study samples (75%) are within the low level. This result agrees with ⁽¹⁷⁾, who found that the vast majority of their study is very low socioeconomic status.

Part I-B: Discussion of Chronic Viral Hepatitis Persons Quality of Life in Summarized Statistical form of the Main Domains and Related sub-Domains responding: (table2)

This discussion is based mainly on the study statistical mean of score which equals to ⁽²⁾ for all domains, except the environmental domain; the mean of score equals to (1.5), and relative sufficiency (RS), and as we know that the present study is composed basically of six main domains. Our results show that the subjects responses regarding the physical domain are above the mean of score (fail). This result agrees with the previous studies ⁽¹⁸⁾ and ⁽¹⁹⁾ found that many persons with chronic viral hepatitis C are associated with fatigue. Concerning psychological domain, the study patients responses are above the mean of score (fail), with relative sufficiency (RS) for psychological domain equal (66.39) which indicates failure in this domain. This result is supported by previous studies, ⁽²⁰⁾, their study findings indicate that the patients with chronic viral hepatitis C are associated with a higher prevalence fatigue and psychological disorder. ⁽¹⁴⁾ reveal that the patients with hepatitis C have more anxiety and depression comparing with those suffering from hepatitis B. ⁽²¹⁾; report that the Mental illnesses are affected by chronic conditions such as viral hepatitis. Regarding level of independence, the study subjects response are above the mean of score (pass), relative sufficiency (RS) for level of independence domain equal (53.89) which indicates pass in this domain. This result is supported by ⁽²²⁾. They reported that the quality of life is closely associated with independent living.

Concerning the social domain, the study patients responses are above the mean of score (pass) which relative sufficiency (RS) for social domain equal (53.60) which indicates pass in this domain ⁽¹¹⁾. Both the patients of HBV and HCV have highest score in social relationship domain. It illustrates that neither HBV nor HCV affect the social relationship of the patient severely, but as compared to HCV the patient of HBV social relationships are in good condition. Relative to environment domain the study patients responses are above the mean of score (pass) with relative sufficiency (RS) for environment domain equal (47.72) which indicates pass in this domain. This result is supported by the ⁽²³⁾. They reported that the "environment is your barrier, if everything was set up for me perfectly, then my quality of life would be absolutely wonderful". Regarding the spiritual domain, the study patients' responses are above the mean of score (pass) with relative sufficiency (RS) for spiritual domain equal (37.78) which indicates pass in this domain. It indicates that the spiritual domain had the weakest effect by the chronic viral hepatitis B and C. As far as spiritual domain is concerned, the war had great impact in different aspects of life such as economy, health and culture. All these factors lead to injury of such disease. And we know that the functioning and disability reflect an interaction between health conditions (disorders, disease, and injury) and contextual (environmental and personal) factors.

Also the findings in this study indicate that the quality of life domains are fairly affected by chronic viral hepatitis, which means that the study hypothesis is accepted. Our results lead us to the final assessment for all the compact criteria reflected by the quality of life domains with all the patients' related variables. So, we can see that the maximal effect, presented by the psychological domain is followed by the social domain and then level of independence which is in turn followed by the

physical domain. While the minimal effect, presented by environment domain, while the second factor was included only one component spiritual domain. This result is supported by the ⁽²⁴⁾ they studied Psychosocial impact of chronic infection with hepatitis B virus on British patients; the result indicates that the patients' with chronic viral hepatitis had psychiatric or functional problems. Anxiety and depressive symptoms may play a disturbing role in functioning. Somatic and abnormalities such as fatigue and headache; therefore, inadequate knowledge about transmission modes, and undue anxiety about transmissibility of the virus may lead to isolation ⁽²⁵⁾. Also the result is supported by ⁽²⁶⁾ who found the well-being is decreased in individuals infected with HCV and low socioeconomic status the main cause for a decrease Health related quality of life especially low total household income was the single most important independent factor associated with a reduced HRQOL.

Recommendations:

Based on the study conclusion, the study can recommend that:

1. An intensive comprehensive wide population-based (national level) studies could be conducted to assess the chronic viral hepatitis B and C patients' quality of life.
2. Health oriented mass media approach should be employed by the Ministry of Health to increase population knowledge and awareness about the route of transmission and risk factor of chronic viral hepatitis B and C .
3. Involving both governmental and non-governmental organizations in national health promotion campaign.

References:

1. Shahzad, Ashraf. Non-Invasive evaluation of liver fibrosis in patient with chronic hepatitis B and C in America, College of Medicine, Baqai Medical University, 2006, published thesis, P.P. 12,67.
2. Farkhondeh, S., Sadrollah, M., Hamid R., Mehdi, S. and Sakineh, G. Effects of psycho-educational intervention on health-related quality of life (QoL) of patients with chronic liver disease referring to shiraz university of medical sciences; *Health and Quality of life out comes* 2005; 3: 81.
3. Perz, J.F., et. al. The contributions of hepatitis B virus and hepatitis C virus infections to cirrhosis and primary liver cancer worldwide. *Journal of hepatology*, 2006, 45: 529-38.
4. Lavanchy, D. Hepatitis B virus epidemiology disease burden, treatment and current and emerging prevention and control measures. *J viral Hepato.* 2004; 11: 97-107.
5. Lok, A. Chronic hepatitis B. *Nengl J Med.* 2002; 346: 1682-1683.
6. Shepard, C.W., Simard, E.P., Finell, A.E. and Bell, B.P. hepatitis B virus infection: epidemiology and vaccination. *Epidemiol. Rev.* 2006; 28: 112-125.
7. Khalid, M.S., Saeed, M.S. and Bijaz, A.S. Hepatitis B and C: share of young Rural populace of Sindh, medical channel, 2010; 16(2): 216.
8. Ashraf, M., Chaudhry, F.R., Muhammad, A., Muhammad, Z., Sera, N., Atif, B. et.al. Frequency of risk factors for hepatitis B virus (HBV) and hepatitis C virus (HCV); *Ann. Pak. Inst. Med. Sci.* 2010; 6(3): 161-163 .
9. Li-po lee, Chia-yen, D., Wan-long, C., Wen-yu, C., Nei-jen, H., Ming-yen, H. et. al. Comparison of liver his to pathology between chronic hepatitis B and C co-infected patients. *Journal of gastro- enterology and Hepatology.* 2007; 515-517.
10. AL-Qureshi, H., Bile, K.M., Jooma, R., Alam, J.E., Alam, and Afridi, H.U.R. Prevalence of hepatitis B and C viral infection in Pakistan. *Estern Mediterranean Health Journal (EMHJ).* 2010; 16.
11. Awan, M.S., Waqas, M., Ali, M. et. al. Status of health related quality of life between HBV and HCV patients of Pakistan . <http://Mpra. Ub .uni- muenchen-de/31933/> June 2011; 5-6,10.
12. Gogos, C.A., Fouka, K.P., Nikiforidis, G., Avgeridis, K.G., Sakellaropoulos, H., Bassaris, Aet al. Prevalence of hepatitis B and C virus infection in the general population and selected groups in south –western Greece, *European journal of epidemiology*; 2003; 18: 551-557.
13. Khozema, B., Robert, J., Cheryl, A., Grace, L., Naomi, S. and Anna, S.F. Look comorbid illness is an importuned determinant of health–related quality of life in patients with chronic hepatitis C. *American Journal Gastroenterology.* 2001; 96(9).
14. Seyed, M.A., Seyed, A.T., Mahdi, A.A., Hamid, R. and Karman, B. Evaluation of the severity of depression and anxiety in hepatitis B and hepatitis C patients: A case-control study. *Iranian journal of clinical infection disease.* 2007; 2(3): 113-119.
15. Dursun, M., Ertem, M., Yilmaz, S., Saka, G., Ozekinci, T. and Simsek, Z. Prevalence of hepatitis B infection in the south eastern region of Turkey: comparison of risk factors for hepatitis B virus infection in rural and urban areas. *Jpn. J. infect. Dis.* 2005; 58: 15-19.

16. Hepatitis information center, viral hepatitis and injection drug users, September, 2002.
17. Misra, B., Panda, C., Das, HS., Nayak, K. and Singh, S. study on awareness about hepatitis B virus infection in costal Eastern India, *Hep. B Annual*. 2009; (6): 1228. Available from: <http://www.hepatitisbannual.org/text.asp>.
18. Barkhuizen, A., Rosen, H.R., Aolf, S., Flora, K. B. and Bennett, R. Musculoskeletal pain and fatigue are associated with chronic hepatitis C: A report of 239 hepatology clinic patients. *AM j Gastroenterol*. 1999; 94; 1355-60.
19. Poynard, T., Cacoub, P., Ratzu, V., Myers, R., Dezailles, M.H., Mecadier, A. et. al. Fatigue in patients with chronic hepatitis C. *J viral Hepat*. 2002; 9: 295-303.
20. Ayman, A. Abdo. Hepatitis C and poor quality of life: is it the virus or the patient? *Saudi Journal of Gastroenterology*; 2008; 14 (3): 109-13.
21. Nasser, E., Mohammed, B., Mehdi, K., Mohamed, R., Narges, E. and Amir-Abbas S. Prevalence of psychiatric disorders in hepatitis B virus carriers in Iranian charity for hepatic patients support. *Hepatitis monthly*. 2008; 8 (3): 201-205.
22. Al-Biatey, Ali, Assessment of spinal cord injured persons quality of life, Unpublished thesis, College of Nursing, University of Baghdad, 2010; P.P. 41, 42, 45.
23. Manns, P., Chad, E.K. Component of quality of life for persons with quadriplegic and paraplegic spinal cord injury, *Ebsco Electronic journal*, 2008; 95(110): 795-811. Available on line www.sagepublication.com
24. Lok, A.S., Van-Leeuwen, D.J., Thomas, H.C. and Sherlock, S. psychological impact of chronic infection with hepatitis B virus on British patients. *Genitourin Med* 1985; 61: 279-82.
25. Atesci, F.C., Cetin, B.C., Oguzhanoglu, N.K., Karadag, F. and Turgut, H. Psychiatric disorders and functioning in hepatitis B virus carriers. *Psychosomatic*. 2005; 46: 142-7.
26. Hellbing, B., Overbeck, K., Gonvers, J.J., Malinverni, R., Dufour, J.F., Borovicka, J. et. al. Host- rather than virus-related factors reduce health-related quality of life in hepatitis C infection. *Gut* 2008; 57: 1597-1603 available on line gut.bmj.com.