

# Prevalence Of Viral Hepatitis B And C In Newly Married Persons

## انتشار التهاب الكبد الفيروسي ب و ج عند المتزوجين الجدد

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### الخلاصة:

**الهدف:** تهدف الدراسة الى تحديد المتزوجين الجدد المصابين بالتهاب الكبد الفيروسي نوع B و C في محافظة النجف الاشرف والحد من انتشارها في المدينة.

**المنهجية:** تم دراسة ٢٠٠ شخص متزوجون حديثاً، ١٠٠ ذكر و ١٠٠ أنثى . الدراسة أجريت في مختبر الصحة العام في مدينة النجف الاشرف. تم تسجيل كل الأشخاص من أعمارهم وجنسهم وسيرهم على ورق بيانات مُحَضَّر من قبل الباحث وأخضعوا إلى اختبارات انزيمات الكبد ، أيضاً اختبارات أخرى و التهاب كبد الفيروسي نوع B و C ابتدأت الدراسة من كانون الثاني ٢٠١١ الى كانون الثاني ٢٠١٢ . تم وصف وتحليل البيانات باستخدام اساليب الاحصاء الوصفي والاستدلالي .

**النتائج :** ان المرضى المصابين بالتهاب الكبد نوع بي وعددهم ١٢ (٢ ذكور و ١٠ نساء). في هذا البحث هناك زيادة في المرضى النساء ١٠ (١٠ ٪)، أصغر من ٢٥ سنة ٧ (٧ ٪)، عندهم تاريخ مرضي لعملية الأسنان وتاريخ شخصي لمرض اليرقان وكذلك الذين عندهم صعود في انزيمات الكبد وهذه الاختلافات كانت هامة بشكل إحصائي . ان المرضى المصابين بالتهاب الكبد الفيروسي نوع سي وعددهم ٣ (١ ذكر و ٢ نساء). في هذا البحث هناك زيادة في المرضى الذين لديهم تاريخ مرضي لاستلام دم وكذلك الذين عندهم صعود في انزيمات الكبد وهذه الاختلافات كانت هامة بشكل إحصائي .

**التوصيات :** الدراسة توصي بأنه لا بد من فحص الأشخاص المتزوجين الجدد واخضاعهم لفحص الدم المتضمن التهاب الكبد الفيروسي نوع B و C واذا امكن فحص الفايروسات الاخرى التي تنتقل عن طريق الدم والسوائل الاخرى من أجل تشخيصهم مبكراً و منع انتقال هكذا امراض بين المتزوجين .

**مفردات البحث:** نسبة الحدوث، المتزوجين الجدد ، التهاب الكبد الفيروسي نوع B و C وانزيمات الكبد.

### Abstract

**Objectives:** The aim of study is to discover newly married persons infected with HBV and HCV they are received blood and or having dental manipulation in Najaf city and how to Prevent transmission of these diseases.

**Methods:** Total of 200 newly married persons ,100 males and 100 females , with an age ranged from 15-40years (mean age  $21.9 \pm 6.1$  SD years) . The study was conducted in central health laboratory in Al Najaf city. All recruited persons had their ages, sex and case histories recorded on an already prepared data sheet and subjected to virological tests of HBsAg and HCV Abs, also other tests like aspartate transaminase (AST), Alanine transaminase (ALT) , and total serum bilirubin .The data analyzed by using methods of descriptive statistics and inferential

**Results:** The patients with hepatitis B viral infection were 12 patients , two male and ten female. There were increased incidence of seropositive for HBsAg in patients who were female gender 10 (10%), younger than 25 years 7 (7%), history of dental manipulation 9(22.5%) with personal history of jaundice 5(19.2%), there were statistically significant( $p=0.01, 0.01, 0.000$  and  $0.02$  respectively) .Also lab finding include raised transaminase 6 (60%), and raised total serum bilirubin 2(50%) as compared in those with seronegativeHBsAg , these differenceswere statistically significant( $p=0.000, 0.000$  and  $0.000$  respectively) .The patients with hepatitis C viral infection were three patients, one male and two female. There were increased incidence of seropositive for HCV Abs in patients who had history of blood transfusion 2(50%) there was statistically significant( $p=0.000$  ) .Also lab finding include raised transaminase 6(60%) as compared in those with seronegativeHBsAg , these differences were statistically significant( $p=0.000$  and  $0.002$  respectively) .

**Conclusions:** The total of 200 newly married couple persons were enrolled in the study. The predictors for

developing hepatitis B infection in this study that female, younger than 25 years old , with history of dental

manipulation as dental polishing or dental extraction , blood transfusion and who had abnormal liver function tests. While the predictors for developing hepatitis C infection in this study that those who were asymptomatic patients with history of blood transfusion and raised transaminase enzymes.

**Recommendation:** The study recommend that all newly married peoples should be investigated for hepatitis

B and C and if possible other transmissible viruses to diagnose them earlier and prevent transmission

**Key words:** prevalence, new married persons, hepatitis B and C and transaminase enzymes

## INTRODUCTION:

Hepatitis B and hepatitis C viruses are major public health problems worldwide, which are account for a substantial proportion of liver diseases worldwide. These viruses are responsible for liver damages ranging from minor disorders to liver cirrhosis and hepatocellular carcinoma (HCC).<sup>(1)</sup> The world health organization (WHO) estimates that there are 350 million people with chronic HBV infection and 170 million people with chronic HCV infection worldwide.<sup>(2)</sup> The estimated hepatitis B surface antigen (HBsAg) sero prevalence ranges between 0.1% - 20% in different parts of the world.<sup>(3)</sup> HBV can be transmitted vertically from mother to children or horizontally through sexual or household contact or by unsafe injections, but chronic infections acquired during infancy or childhood account for a disproportionately large share of worldwide morbidity and mortality. Vaccination against HBV infection can be started at birth and provides long-term protection against infection in more than 90% of healthy people. Hepatitis C can be also transmitted by percutaneous routes, such as injection drug use, occupational exposure to blood, and the likelihood of infection is increased in hemodialysis units. Although the frequency of transfusion-associated hepatitis C fell as a result of blood-donor screening, the overall frequency of hepatitis C remained the same until the early 1990s, when the overall frequency fell by 80%, in parallel with a reduction in the number of new cases in injection drug users.<sup>(4)</sup> The hepatitis B virus consists of a core containing DNA and the core of the virus is surrounded by surface protein.<sup>(5)</sup> The virus, also called a Dane particle, and an excess of its surface protein (known as hepatitis B surface antigen) circulate in the blood. Humans are the only source of infection. Many individuals with chronic hepatitis B are also asymptomatic. Chronic hepatitis, associated with elevated serum transaminases, may occur and can lead to cirrhosis, usually after decades of infection.<sup>(5)</sup> Vertical transmission from mothers to child in the perinatal period is the most common cause of infection world-wide and carries the highest risk. In this setting, adaptive immune responses to HBV may be absent initially, with apparent immunological tolerance.<sup>(6)</sup> Several mechanisms contribute towards this. Firstly, the introduction of antigen in the neonatal period is teratogenic. Secondly, the presentation of such antigen within the liver, as described above, promotes tolerance; this is particularly evident in the absence of a significant innate or inflammatory response. Finally, very high loads of antigen may lead to so-called 'exhaustion' of cellular immune responses such as interferon-alpha and NK cells, accompanied by host-mediate immunopathology.<sup>(7)</sup> The hepatitis B surface antigen (HBsAg) is an indicator of active infection, and a negative test for HBsAg makes HBV infection very unlikely. In acute liver failure from hepatitis B the liver damage is mediated by viral clearance and so HBsAg is negative, with evidence of recent infection shown by the presence of hepatitis B core IgM. HBsAg appears in the blood late in the incubation period but before the prodromal phase of acute type B hepatitis; it may be present for a few days only, disappearing even before jaundice has developed, but usually lasts for 3-4 weeks and can persist for up to 5 months.<sup>(8)</sup> The persistence of HBsAg for longer than 6 months indicates chronic infection. Antibody to HBsAg (antiHBs) usually appear after about 3-6 months and persists for many years or perhaps permanently. Anti-HBs implies either a previous infection, in which case

anti-HBc is usually also present, or previous vaccination, in which case anti-HBc is not present. The hepatitis B core antigen (HBcAg) is not found in the blood, but antibody to it (anti-HBc) appears early in the illness and rapidly reaches a high titre, which subsides gradually but then persists. Anti-HBc is initially of IgM type with IgG antibody appearing later. Anti-HBc (IgM) can sometimes reveal an acute HBV infection when the HBsAg has disappeared and before anti-HBs has developed.<sup>(8)</sup> Chronic HBV infection is marked by the presence of HBsAg and anti-HBc (IgG) in the blood. Usually, HBeAg or anti-HBe is also present; HBeAg indicates continued active replication of the virus in the liver. Although the presence of anti-HBe usually implies low viral replication, the exception.

isHBeAb-positive replicating chronic hepatitis B in which high levels of serum HBV-DNA are seen, despite negative HBeAg.<sup>(8)</sup> Hepatitis C is caused by an RNA flavivirus. Acute symptomatic infection with hepatitis C is rare. Most individuals are unaware of when they became infected and are only identified when they develop chronic liver disease.<sup>(9)</sup> Eighty per cent of individuals exposed to the virus become chronically infected and late spontaneous rare. Hepatitis C is the cause of what used to be known as 'non-A, non-B hepatitis', a syndrome of acute hepatitis often with jaundice seen after a transfusion of blood or blood products. Following the identification of the virus in 1990, blood donors are now screened for infection in many parts of the world. New cases of post-transfusion hepatitis C no longer occur in the UK. Hepatitis C infection is usually now identified in asymptomatic individuals screened because they have risk factors for infection such as previous injection drug use or they have incidentally been found to have abnormal liver blood tests. Although most individuals remain asymptomatic until progression to cirrhosis occurs, fatigue can complicate chronic infection and appears to be unrelated to the degree of liver damage.<sup>(9)</sup> The aim of study is to discover newly married persons infected with HBV and HCV they are received blood and or having dental manipulation in Najaf city and how to prevent transmission of these diseases.

## **PATIENTS AND METHODS.**

This is a cross sectional study, a total of 200 newly married persons, 100 males and 100 females, with an age ranged from 15-40 years (mean age  $21.9 \pm 6.1$  SD years) . The study was conducted in central health laboratory in Al Najaf governorate during the period from December 2011 to December 2012. Patients who had features of chronic liver disease and those who declined to give consent were excluded from the study. All recruited patients had their ages, gender and case histories recorded on an already prepared data sheet. The history of dental manipulation was recorded if patients were visiting the dentist that did tooth extraction or dental polishing. Laboratory tests: All couple of persons had been subjected to that the serum aspartate transaminase (AST), Alanine transaminase (ALT) and total serum bilirubin were performed by enzymatic method. Hepatitis Bs antigen (HBsAg) and anti-hepatitis C antibodies (anti-HCV) were done using Enzyme-linked Immunosorbent Assay (ELISA) kits. Data were coded and fed on computer. Analysis was done on SPSS version 17, for determination of statistical significance among different variables. Descriptive statistics like mean together with analytic statistics have been done when appropriate. A p-value was calculated by Chi square method and of less than 0.05 was considered as significant. The percentage in result tables were considered for row rather than column

## RESULTS:

100 males and 100 females where resident in Al Najaf Governorate and their age range from 15 to 40 years old , classified into groups :I- Seropositive for HBsAg were 12 patients, two male and ten female. While seronegative 188 newly married persons where 98 male and 90 female. There were increased incidence of seropositive for HBsAg in patients who were female gender 10 (10%), younger than 25 years 7 (7%), history of dental manipulation 9(22.5%) with personal history of jaundice 5(19.2%), there were statistically significant ( $p= 0.01, 0.01, 0.000$  and  $0.02$  respectively). Also lab finding include raised transaminase 6(60%) ,and raised total serum bilirubin 2(50%) as compared in those with seronegativeHBsAg , these differences were statistically significant( $p=0.000, 0.000$  and  $0.000$  respectively). II-Seropositive for HCV Abs was 3 patients, one male and two female. While seronegative 188 newly married persons where 99 male and 98 female. There were increased incidence of seropositive for HCV Abs in patients who had history of blood transfusion 2(50%) there was statistically significant( $p=0.000$  ). Also labfinding include raised transaminase 6(60%) as compared in those with seronegativeHBsAg, these differences were statistically significant( $p=0.000$  and  $0.002$  respectively) 100 males and 100 females where resident in Al NajafGovernorate and their age range from 15 to 40 years old , classified into groups :I- Seropositive for HBsAg were12 patients , two male and ten female. While seronegative 188 newly married persons where 98 male and 90 female. There were increased incidence of seropositive for HBsAg in patients who were female gender 10 (10%), younger than 25 years 7 (7%), history of dental manipulation 9(22.5%) with personal history of jaundice 5(19.2%), there were statistically significant( $p= 0.01, 0.01, 0.000$  and  $0.02$  respectively) .Also lab finding include raised transaminase 6(60%) ,and raised total serum bilirubin 2 (50%) as compared in those with seronegative HBsAg, these differences were statistically significant ( $p=0.000, 0.000$  and  $0.000$  respectively). II-Seropositive for HCV Abs were 3 patients, one male and two female. While seronegative 188 newly married persons where 99 male and 98 female. There were increased incidence of seropositive for HCVAbs in patients who had history of blood transfusion 2(50%) there was statistically significant( $p=0.000$  ).Also lab finding include raised transaminase 6(60%) as compared in those with seronegative HBsAg , these differences were statistically significant( $p=0.000$  and  $0.002$  respectively).

**Table 1: demographic characteristics of studied patients**

variables		Hepatitis B (HBs Ag positive)		P= value	Hepatitis C (seropositive HCV Abs)		P= value
		NO.	%		NO.	%	
sex	male	2	(2%)	0.01	1	(1%)	0.5
	female	10	(10%)		2	(2%)	
Age	Age < 25 years	7	(7%)	0.01	2	(2%)	0.4
	Age > 25 years	5	(5%)		1	(1%)	
Residence	Urban	10	(10%)	0.7	3	(3%)	0.5
	Rural	2	(2%)		0	(0%)	
	History of Jaundice	5	(19.2%)	0.02	1	(3.8%)	0.2

This table shows infection of females < 25 years old higher compared with other ages and higher in Urban.

**Table 2: distribution of Hepatitis B with history of dental manipulation**

Dental manipulation	Hepatitis B (HBs Ag serotype)				Total (%)	
	Negative		positive			
	NO.	%	NO.	%	NO.	%
no	157	(98.1%)	3	(1.9%)	160	(100%)
yes	13	(77.5%)	9	(22.5%)	40	(100%)
Total	188	(94%)	12	(6%)	200	(100%)
P = 0.000						

The table reveals only 3 persons have infection of HBV with no hx .of Dental manipulation while 9 persons infected with hx .of Dental manipulation

**Table 3: distribution of Hepatitis C with history of dental manipulation**

[illegible]

The table reveals only 3 persons have infection of HCV with no hx .of Dental manipulation while no persons infected with hx .of Dental manipulation

**Table 4: Distribution of Hepatitis B with history of blood transfusion**

blood transfusion	Hepatitis B (HBs Ag serotype)				Total (%)	
	Negative		positive			
	NO.	%	NO.	%	NO.	%
no	148	(93.9%)	12	(6.1%)	196	(100%)
yes	4	(100%)	0	(0%)	4	(100%)
Total	188	(94%)	12	(6%)	200	(100%)
P = 0.61						

The table reveals only 12 persons have infection of HBV with no hx .of blood transfusion while no persons infected with of blood transfusion

**Table 5: distribution of Hepatitis C with history of blood transfusion**

blood transfusion	Hepatitis C (HCV Abs serotype)				Total (%)	
	Negative		positive			
	NO.	%	NO.	%	NO.	%
no	195	(99.5%)	1	(0.5%)	196	(100%)
Yes	2	(50%)	2	(50%)	4	(100%)
Total	188	(94%)	12	(6%)	200	(100%)
P = 0.000						

The table reveals only 1 person have infection of HCV with no hx .of blood transfusion while 2 persons infected with of blood transfusion

**Table 6: distribution of Hepatitis B with laboratory tests**

Hepatitis B (HBs Ag serotype)	Increased Transaminase (AST & ALT)				Total (%)	Increased Total Serum Bilirubin				Total (%)
	Normal		abnormal			normal		abnormal		
	NO.	%	NO,	%		NO.	%	NO.	%	
Negative	148	(97.9%)	4	(2.1%)	(100%)	186	(98.9%)	2	(1.1%)	188 (100%)
positive	6	(50%)	6	(50%)	(100%)	10	(83.3%)	2	(16.7%)	12 (100%)
Total	190	(95%)	10	(5%)	(100%)	196	(98%)	4	(2%)	200 (100%)
P value=0.000						P value=0.000				

The table reveals increase incidence of infection with HBV in patients who have hx.of increase Transaminase(AST & ALT)

**Table 7: distribution of Hepatitis C with laboratory tests**

Hepatitis C (HCV Abs serotype)	Increased Transaminase (AST & ALT)				Total (%)	Increased Total Serum Bilirubin				Total (%)
	Normal		abnormal			normal		abnormal		
	NO.	%	NO.	%		NO.	%	NO.	%	
Negative	189	(95.9%)	8	(4.1%)	197 (100%)	189	(98.9%)	4	(2%)	197 (100%)
positive	1	(33.3%)	2	(66.7%)	3 (100%)	3	(100%)	0	(0%)	3 (100%)
Total	190	(95%)	10	(5%)	200 (100%)	196	(98%)	4	(2%)	200 (100%)
P value=0.000						P value=0.803				

The table reveals increase incidence of infection with HCV in patients who have hx.of increase Transaminase (AST &ALT) andIncreased Total Serum Bilirubin.

## DISCUSSION

Viral hepatitis is a major health problem in all parts of the world especially in tropical and subtropical areas. It is among the eading causes of morbidity, and actually heads the list of communicable diseases reported in many countries.A total of 200 newly married couple persons were enrolled in the study.There were increased incidence hepatitis B viral infection in patients with female gender 10 (10%) and younger than 25 years old 7 (7%), these might be caused by young female with this productive age had high risk of acquiring infection by horizontal transmission as incidental needle stick injury during routine blood investigation in pregnancy or other medical conditions. These were inconsistent with other study <sup>(10)</sup>because of interobserver variations.History of dental manipulation 9(22.5%) as dental polishing or extraction with personal history of jaundice 5(19.2%) were more robust risk factors for hepatitis B viral infection, there were statistically significant (p= 0.000 and 0.02 respectively), these results were consistng with other study <sup>(11)</sup>.Also lab finding include raised transaminase 6 (60%) and raised total serum bilirubin 2(50%) were

found in hepatitis B viral, these were statistically significant ( $p=0.000, 0.000$  respectively). These were consistent with other studies<sup>(11)</sup>. These could be explained by immunological response to the virus occurred, with elevation in serum transaminases because of liver damage. If this response is sustained over many years and viral clearance does not occur promptly, chronic hepatitis may result in cirrhosis. In individuals where the immunological response is successful, viral load falls, and there is no further liver damage. There was increased incidence of hepatitis C viral infection in patients with female gender 2 (2%) and younger than 25 years old 2 (2%), but there were no statistically significant, this was consistent with other study<sup>(12)</sup>. There was increased incidence of hepatitis C viral infection in patients who had history of blood transfusion 2 (50%) there was statistically significant ( $p=0.000$ ). This might be explained by the source of infection transmission. Also lab finding include raised transaminase 6 (60%), this was statistically significant ( $p=0.000$ ).

## CONCLUSIONS:

The total of 200 newly married couple persons were enrolled in the study. The predictors for developing hepatitis B infection in this study that female, younger than 25 years old, with history of dental manipulation as dental polishing or dental extraction, blood transfusion and who had abnormal liver function tests. While the predictors for developing hepatitis C infection in this study that those who were asymptomatic patients with history of blood transfusion and raised transaminase enzymes.

## RECOMMENDATION:

The study recommends that all newly married peoples should be investigated for hepatitis B and C and if possible other transmissible viruses to diagnose them earlier and prevent transmission.

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