

# Prevalence of Hepatitis B virus and regional distribution in Thi Qar province 2021

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Research done by  
Nawal Reihan Auda  
Wijdan Najj Ali  
Wid Saib Abd Alhadi

Under supervision of  
Assist Prof. Dr. Faez khalaf

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University of Thi-Qar / College of medicine

## **Abstract**

### **Background :**

The hepatitis B virus causes a potentially fatal liver infection called hepatitis B. (HBV). It is a significant global health issue. It can lead to persistent infection and increases the chance of cirrhosis and liver cancer mortality.

Hepatitis B can be prevented with a safe and effective vaccine that provides 98 percent to 100 percent protection. Hepatitis B infection can lead to a variety of problems, including chronic disease and liver cancer.

The burden of hepatitis B infection is highest in the WHO Western Pacific Region and the WHO African Region, where 116 million and 81 million people, respectively, are chronically infected. Sixty million people are infected in the WHO Eastern Mediterranean Region, 18 million in the WHO South-East Asia Region, 14 million in the WHO European Region and 5 million in the WHO Region of the Americas.

This study aimed to identify sex, age & regional distribution of Hepatitis B virus infection and to explore any possible association between these factors.

### **Methodology:**

One thousand four hundred and fifty-seven patients were included by prospectively reviewing their data to find out the relationship among them, in addition to evaluating clinical records and case sheets to identify their comorbid conditions in a specially designed questionnaire form.

## **Results :**

Socio-demographic characteristics of this study population are shown in Table 1, 2,3. The mean age of participants was 44.8 years with the majority of participants 317 (21.7%) in the 21–30 year-old group as shown Table 3. The majority 1134 (77.8%) were male and 323 (22.1%) were female.

Some participants 13 (0.8%) were had both hepatitis B&C.

The data collection was 454 (31.1%) from Nasyriah center in Thi-Qar & the others were from Districts and sub-districts in Thi Qar 1003 (68.8%) as shown in Table 2.

## **Introduction**

Hepatitis B, also known as serum hepatitis, is a viral infection of the liver caused by the hepatitis B virus. HBV is a hepadnaviridae virus that is largely double-stranded circular DNA virus [1-3].

Infection with the hepatitis B virus is more contagious than HIV or HCV infection. It is 50 to 100 times more infectious than HIV and ten times more infectious than hepatitis C. Many carriers are unaware that they are infected with HBV, making it a silent killer disease of the liver. [4].

Nearly 2 billion people are infected with the virus worldwide, with 350 million of them developing chronic hepatitis B [5].

The prevalence of HBV is the highest among the developing countries of Asia,

Africa and the Pacific Islands and the lowest among the developed countries of America, Western Europe and Australia.

Iraq, being a developing country, has a serious public health concern with viral hepatitis [6]. Hepatitis B is a major public health issue in Iraq, according to studies, with increased morbidity and mortality. Iraq, according to the WHO (World Health Organization), is an endemic territory, with 3 percent of the population infected with HBV [7-9]. Although the exact proportion of HBV exposure in Iraq is unknown, limited data suggests a prevalence of 35-38 percent, with 4 percent being carriers and 32 percent having anti-Hepatitis B virus surface antibodies due to natural conversion [9].

Unsafe therapeutic injections, blood transfusions, tattooing, mother-to-child transmission, and unsafe sexual practices are also important factors in HBV transmission [10, 11]. Therapeutic injections given in health-care settings have been identified as a substantial and constant source of infection in Iraq.

The hepatitis B virus (HBV) is a major cause of liver disorders such as chronic hepatitis, liver cirrhosis, and liver cancer [12]. After cigarettes, it is the second most prevalent human carcinogen [13]. The virus is highly contagious, with a contagiousness of 50 to 100 times that of the human immunodeficiency virus (HIV). Its extreme resiliency allows it to live on dry surfaces for more than a week, confounding epidemiology and raising the probability of horizontal intra-familial transmission [14].

It has been 50 years since the hepatitis B virus (HBV) was discovered, and despite the availability of a preventive vaccine for more than 20 years, HBV infection continues to be a major global health concern. More than 240 million people are thought to be chronically infected with HBV, putting them at risk of developing cirrhosis, hepatic decompensation, and hepatocellular cancer (HCC). Older males with hepatitis B e antigen (HBeAg) positive illness, high-grade liver necroinflammation, and increasing fibrosis have a higher risk of clinical

complications. Recent developments in our understanding of the natural history of chronic HBV infection have revealed that plasma HBV DNA levels play a significant role as a predictor of clinical outcomes [15].

Persistent highlevel HBV replication in adults is linked to an elevated risk of cirrhosis and the development of HCC [16].

As a result, the therapeutic focus has shifted to attaining longterm viral suppression. Quantitative hepatitis B surface antigen (HBsAg) levels are becoming more often used as a natural history marker [17].

Low HBsAg levels have been lined to better immunological control, HBsAg seroclearance, and a lower risk of HCC.

In 2015, viral hepatitis killed an estimated 1.34 million people worldwide. These deaths outnumbered those caused by tuberculosis and were higher than those caused by AIDS [18].

The majority of hepatitis-related deaths (720,000). Cirrhosis of the liver was the cause, followed by primary liver failure. Hepatocellular carcinoma (470,000 fatalities) is one type of cancer [19].

A total of 257 million people were believed to be living with HIV/AIDS over the world.

In 2015, the global prevalence of chronic hepatitis B infection (HBV) and the global prevalence of HBV infection in the general population [20] was 3.5 percent. The frequency of chronic HBV, on the other hand, is quite high.

People born before the year 2000 have a substantially higher risk of infection [21].

A HBV vaccination is now present. Despite the introduction of universal HBV vaccination and efficient antiviral medication, HBV surface antigen sero

prevalence is still high in the United States.

The World Health Organization (WHO) says HBV infection affects more than 5% of the local population, according to the World Health Organization. With more than 8% of the population in Sub-Saharan Africa, West Africa, with rates as high as 15% in some places [22].

Only a few research have been conducted in East African countries.

Conducted research on viral hepatitis epidemiology, and the majority of these investigations were limited to certain sub populations.

Data for the majority of the population is unavailable.

In Thi Qar , data on HBV seroprevalence are isolated and limited to only sub-group studies, such as blood donors , health care professionals , and pregnant women on prenatal care , HIV-positive populations , as well as care [23].

There are few studies in the literature that look at HBV prevalence at national and regional levels. This means that the risk factors for HBV infection haven't been thoroughly examined because different populations may have different infection predictors [24].

Understanding the epidemiology of HBV infection on a large regional scale would thus provide not only evidence-based data on HBV prevalence but also an array of possible risk factors linked with HBV infection at the regional level [25].

HBV infection risk factors are mostly determined by beliefs and cultural behaviors, both of which differ from one society to the next. History of blood transfusion, low level of education, surgery, sexually transmitted infections, abortions, higher mean parity, engaging in early sexual activities, polygamy, being male, having a rural birthplace, and engaging in sex with multiple partners have all been identified as key risk factors for HBsAg seropositivity in other studies

[26].

Lawal et al found no link between HBV infection and sharing a toothbrush, needle sharing, incision marks/tattoos, hepatitis B vaccination status, history of blood transfusion, previous surgical procedures, sexual exposure/abuse, history of jaundice, or genital circumcision. As a result of the conflicting findings in the literature about which risk factors are more important for HBV infection in the community, we conducted a systematic review and meta-analysis to identify the primary potential predictors linked with the high HBV prevalence in Thi Qar. This could help to attain the ambitious 2030 sustainable development target of eliminating hepatitis B virus (HBV) infections [27].

This is the first study that we are aware of that provides a complete analysis.

***Aims of the study:***

*1.To reveal regional distribution of Hepatitis B virus infection in Thi Qar province 2021.*

*2.To summarize all background sociodemographic characters.*

*3.To find out any possible other associations that may exist between variables during infections of the patients.*

***Methodology:***

*One thousand four hundred and fifty-seven patients were included by prospectively reviewing their data to find out the relationship among them, in addition to evaluating clinical records and case sheets to identify their comorbid conditions in a specially designed questionnaire form.*

*The official agreement was obtained from the College of Medicine and the department of health in Thi-Qar province, to access the data of patients who infected with Hepatitis B virus.*

*Variables included in the registration form:*

*Age, sex & regional distribution as a continuous and categorical variable.*

***Statistical analysis:***

*Excel sheet used to summarize data into categories before entering into SPSS version 28 software for the statistical analysis. In the descriptive statistics section, mean and standard deviation will be used to analyze quantitative data.*

*Frequencies, tables, and were used to summarize data.*

**Results :**

One thousand four hundred and fifty-seven patients were approved to have Hepatitis B virus infection and were admitted to the hospital after confirming the diagnosis.

Socio-demographic characteristics of this study population are shown in Table 1, 2,3.

The mean age of participants was 44.8 years with the majority of participants 317) 21.7%) in the 21–30 year-old group as shown Table 3.

The majority 1134 (77.8%) were male and 323 (22.1%) were female.

Some participants 13 (0.8%) were had both hepatitis B&C.

The data collection was 454 (31.1%) from Nasyriah center in Thi-Qar & the others

were from Districts and sub-districts in Thi Qar 1003 (68.8%) as, 292 (20%) were from Al Rifai, 211 (14.4%) from Suk Alshuyukh, 174 (11.9%) from Al Shatruh, 70 (4.8%) from Al Ahwar, 56 (3.8%) from Al Garraf, 43 (3%) from Qaleat Sukar, 42 (2.9%) from Al Jabayish, 41 (2.8%) from Al Fjr, 41 (2.8%) from Al Diwaya, 31 (2.1%) from Sayid Dakhil & only 1 patient (0.07%) from outside Thi-Qar people is from Wasit as shown by Table 2.

*Table 1 shows the prevalence of HBsAg according to sex group.*

Participants	Frequency	Percentage
Male	1134	77.8
Female	323	22.1
Total	1457	

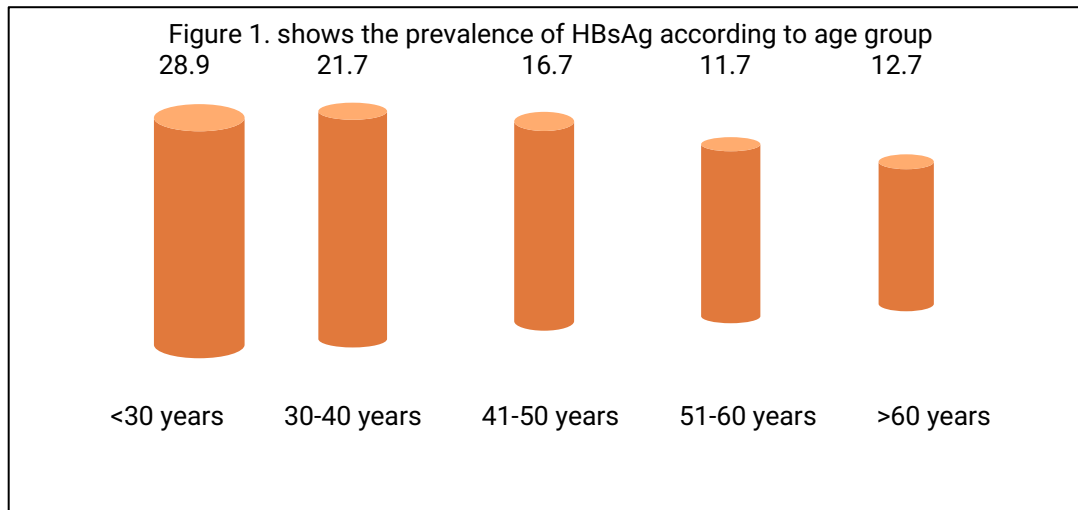
Table 2 shows the prevalence of HBv according to regional distribution in Thi Qar province

Site	Frequency	Percentage
Alnassyriah Center	454	31.1
Al Rifai	292	20
Suq Alshuyukh	211	14.4
Al Shatruh	174	11.9
Al Ahwar	70	4.8
Al Garraf	56	3.8
Qaleat Sukar	43	3
Al Jabayish	42	2.9
Al Fajr	41	2.8
Al Diwaya	41	2.8
Sayid Dakhil	31	2.1
Wasit	1	0.07

Table 3 shows the prevalence of HBV according to age group.

Age	Frequency	Percentage
< 30 years Old	421	28.9
30-40 Years Old	316	21.7
41-50 Years Old	243	16.7
51-60 Years Old	170	11.7
> 60 years Old	185	12.7





### Discussion :

All infection of liver mean hepatitis, that can cause a health problems and may be fatal, but this infection differ in modes of transmission, finally related death by cirrhosis and liver cancer.

Globally the prevalence of HBV it is 257 million, divided by 21 million Eastren Mediterranean, 15 million Europe, 39 million South-East Asia, 7 million Americas, 115 million Western pacific, 60 million Africa, as for the prevalence HCV globally were 71 million, divided by 15 million Eastren Mediterranean, 14 million Europe, 11 million South-east Asia, 7 million America, 14 million western pacific, 10 million Africa, the dual infection (HBV & HCV) 327 million were divided by 36 million, 29 million, 49 million, 14 million, 129 million, 70 million, in this regions respectively (WHO,2016;Lingani et al.,2018) , hepatitis B and C virus are blood borne viruses, spread in Iraq and all worldwide (Hussein et al.,2017), in 2015, globally about 1.34 million people died from complications viral hepatitis (WHO,2016;Sallam et al.,2020).

The higher prevalence areas were include of Egypt and other Mediterranean regions followed by sub-Saharan Africa (Lavanchy,2011).

According to WHO, Iraq is a low endemicity country for HBV & HCV by study in Mesan ( Kadhem et al.,2019), from total population(37140000) Iraqi people, 3674 cases HBV, while HCV 929 cases were reported (WHO.,2016).

This study was done for determining prevalence of HBV infection and the association with age and gender & regional distribution of patients in Thi-Qar province, Iraq.

In our Study One thousand four hundred and fifty-seven patients were approved to have Hepatitis B virus infection and were admitted to the hospital after confirming the diagnosis.

In This Study Males represented 77.8% of the whole sample, while female represented 22.1% from the total. These results are in agreement with the results of the prospective cross-sectional study was conducted between 2015 and 2019 at the directorate of main Blood Bank, dialysis center, thalassemia center and public health laboratory in Thi-Qar Province -Iraq, during that period a total of 1323 patients, 948 (71.7%) males and 375 (28.3%) females, they suffering from signs and symptoms of Hepatitis B virus infection [28].

The results showed a statistically significantly higher prevalence of hepatitis in males than females, this could possibly be a result of greater exposure to infection, e.g. through the common use of razors and and shaving at barber shops and males more traveler than females ,also genetic factors in each sex may play main role in infections[31].This results were agreement with other studies[32].

The age group of 21 to 30 years had the greatest infectious rate, according to our findings it agree with study was conducted on 1990 patients during three years

2005-2007 at Thi-Qar province. They suffering from sings and symptoms of Hepatitis B virus infection,The results of this study showed high prevalence of HBV, HCV and HBV+HCV in age group 16-30 years followed by age group 31-45, this is may be refer to fact that most of them have low educational level and have had low awareness of the potential modes of transmission of infection.The results agreement with Kutrani et al.[29], [30].

Hepatitis infections were found more prevalent in rural (68.8%) than urban patients(31.1%) . A similar finding has been reported previously [31,32].

Dual infections with HBV and HCV is not uncommon in geographic area where a high endemic level of both infections is reported as in our study there is 13 (0.8 %) were had both hepatitis HBV&HCV infectios[33].

#### **Conclusion & Recommendation :**

HBV is an intermediate epidemic in the Thi-Qar people, according to this study. The findings are similar to the region's limited HBV data and might be applied in other similar situations.

This study reveals the gender-wise prevalence and risk factors associated with HBV among the different age groups in the Thi-Qar province. Male were more frequently exposed to the risk factors as compared to female. Similarly the younger age group have high rate of infection as compared to the children's and the older age groups. This high prevalence was due to the lack of awareness regarding various risk factors involved in HBV transmission among most of the respondents.

These risks are minimized by comprehensive measures in both public and private sector to ensure the need for regulation and control of the transfusion practices in Thi-Qar.

In order to prevent HBV infection in our country government should take aggressive steps towards awareness programs involving both the media and public sectors organizations. Information should also be provided to the public that hepatitis B is vaccine preventable disease. Massive awareness and vaccination programs are required to decrease the future burden of HBV from Thi-Qar population.

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