



## Original Article

## Epidemiology of hepatitis B and hepatitis C in Lebanon

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## ABSTRACT

**Background and study aims:** Hepatitis B and C are two potentially life threatening liver infections. Lebanon is ranked as a zone of moderate endemicity. This study aimed to determine the prevalence of hepatitis B and C in Lebanon and their distribution according to age, region and sex.

**Patients and methods:** This national prospective cross-sectional study was conducted from January 2011 till December 2012 in the six Lebanese Governorates in collaboration with municipalities, the Ministry of Public Health, Health Centres and dispensaries. An upcoming screening for hepatitis B and C was announced? in different districts of each Governorate. All individuals presenting to local laboratory, not known to have chronic hepatitis, were asked for a blood sample and answered a questionnaire addressing sex, age, place of birth and residence. Screening tests were “Abbots” for hepatitis B and “Human Hexagon” for hepatitis C. PCR testing was used to confirm the positivity of the previous tests. **Results:** Of 31147 individuals screened, 542 had a rapid test positive for HBV (prevalence 1.74%, 95% CI 1.6–1.89) with a male to female ratio of 1.08. This prevalence was higher in the South and Nabatieh (1.9%) compared to Beirut (0.73%). Of 31,147 individuals screened, 64 had a rapid test positive for HCV (prevalence 0.21%, 95% CI 0.16–0.27) with a male to female ratio of 0.85. This prevalence was higher in Nabatieh (0.61%) compared to Mount Lebanon (0.08%).

**Conclusions:** The prevalence of HBV and HCV in Lebanon is 1.74% and 0.21%, respectively with a higher prevalence in South and Nabatieh districts. These data rank Lebanon amongst countries with low endemicity for both viruses. Decrease in the prevalence of HBV is due to awareness campaign as well as success of the MOPH National Hepatitis Program in vaccinating all new born since 1998 and in screening and vaccinating high risk groups.

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## Introduction

Viral hepatitis is a major public health problem affecting millions of people worldwide. The WHO estimates that 2 billion people have been infected with hepatitis B virus and more than 350 million have a chronic state, with a prevalence ranging from 1% to 20% according to geographic regions [1]. On the other hand, about 3% of the world's population has been infected with HCV and there are more than 170 million chronic carriers [2]. Disease prevalence varies amongst geographic regions, variations being related to the mode of transmission and the patient's age at time of infection. All patients share the risk of developing liver cirrhosis and/or liver cancer.

The WHO's last official assessment of viral hepatitis in Lebanon, based on limited national studies done in 2007, estimated that hepatitis B incidence rate is of 6 per 100,000 individuals and its prevalence ranges between 1.6% and 2.2%, whereas hepatitis C incidence and prevalence rates are lower, not exceeding 1.7 cases per 100,000 individuals and 0.7% respectively and higher prevalences for both infections, may reach 30% in selective high-risk populations (haemodialysis patients and drug abusers) [3]. Almost 0.2% of the population was found to have a co-infection hepatitis B and C virus [14].

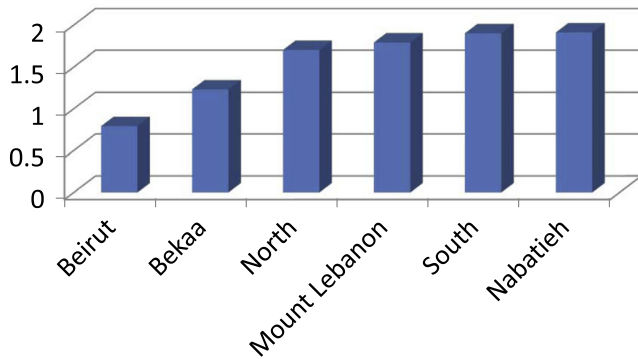
Lebanon, is currently lacking nationwide epidemiological studies regarding the prevalence and demographic distribution of B and C viral hepatitis. Hence, we conducted a broad national prospective cross sectional study aiming to determine the prevalence of hepatitis B and C in Lebanon as well as their geographic and demographic distribution.

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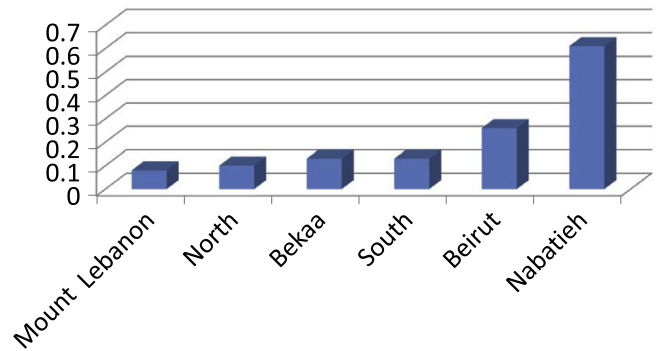
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**Table 1**  
Prevalence of hepatitis B in the different Governorates within 95% of confidence interval.

Governorates	Number of participants recruited	Number of participants hepatitis B positive	Prevalence (%)	95% CI
Beirut	1928	14	0.73	0.44–1.23
Mount Lebanon	3748	67	1.79	1.4–2.28
South	13950	265	1.90	1.68–2.14
Nabatieh	5296	101	1.91	1.57–2.32
Bekaa	2284	28	1.23	0.83–1.8
North	3941	67	1.70	1.33–2.17



**Fig. 1.** Distribution of hepatitis B prevalence by governorate.



**Fig. 2.** Distribution of hepatitis C prevalence by governorate.

## Patients and methods

Recruitment of participants was done in the different regions of the six Governorates of Lebanon in collaboration with MOPH, municipalities, health centre and dispensaries. During an awareness campaign, an oral presentation was done explaining the potential risks of hepatitis B and C (chronic carriers, liver cirrhosis, and liver cancer), their mode of transmission and the possibility of treatment and prevention, to encouraging people to get tested for these two preventable and treatable diseases.

The only exclusion criterion was a well-known previous history of hepatitis B and/or C?

For each individual who accepted, without a written informed consent, to be included in the study, a questionnaire was completed designed to gather demographic data including sex, age, place of birth and residence.

A blood sample from each individual was collected and a rapid test was performed: “Abbotts” for hepatitis B and “Human Hexagon” for hepatitis C. Individuals who tested positive for rapid test underwent a confirmatory PCR testing using Monitor Cobas Amplicor Roche®.

## Results

From January 2011 till December 2012, 31,147 individuals were recruited, 51% males and 49% females, aged between 14 and

89 years (mean age 38 years), distributed in the 6 Governorates as follows: 1928 from Beirut (6.19%), 3748 from Mount Lebanon (12.03%), 13950 from South (44.79%), 5296 from Nabatieh (17%), 2284 from Bekaa (7.33%) and 3941 from North (12.65%).

All participants were screened for hepatitis B using “Abbotts” test. 542 tested positive, 52% males and 48% females (male to female ratio 1.08). Their distribution by number and prevalence in the different governorates is presented in [Table 1](#) and [Fig. 1](#).

The prevalence of hepatitis B is 1.74% with (1.6–1.89) 95% CI, distributed by region as follows: 0.73% in Beirut, 1.79% in Mount Lebanon, 1.9% in South, 1.91% in Nabatieh, 1.23% in Bekaa and 1.7% in Nord. [Table 1](#) presents the numbers and prevalences of participants who tested positive for hepatitis B in the different Governorates with 95% confidence interval.

A confirmation with quantitative PCR was done for participants who had a rapid test positive. HBV DNA was undetectable in 8.24%, was less than 2000 IU in 40.05% and more than 2000 IU in 51.69% of the cases.

Of the 31147 participants screened for hepatitis C with Human Hexagon test, 64 tested positive with 46% males and 54% females (male to female ratio 0.85). [Table 2](#) and [Fig. 2](#) presents the distribution of hepatitis C in different governorates.

The prevalence of hepatitis C is 0.21% with (0.16–0.27) 95% CI, distributed as follows: 0.21% in Beirut, 0.08% in Mount Lebanon, 0.13% in South, 0.6% in Nabatieh, 0.13% in Bekaa and 0.1% in north.

**Table 2**  
Number and prevalence of participants who tested positive for hepatitis C in the different Governorates with their 95% confidence interval.

Governorates	Number of participants recruited	Number of participants hepatitis C positive	Prevalence (%)	95% CI
Beirut	1928	4	0.21	0.07–0.57
Mount Lebanon	3748	3	0.08	0.02–0.25
South	13950	18	0.13	0.08–0.21
Nabatieh	5296	32	0.60	0.42–0.86
Bekaa	2284	3	0.13	0.03–0.42
North	3941	4	0.10	0.03–0.28

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