



Study Of HBV and HCV Among the Libyan Population in Bani Waleed City, Libya

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Received: March 18, 2023

Accepted: April 15, 2023

Published: April 20, 2023

Abstract:

Hepatitis viral infection is an important burden for healthcare services worldwide. The incidence of HBV and HCV differ between different countries, and even within regions of the same country. The study aimed to investigate the prevalence of viral infection (HBV and HCV) among the Libyan population in Bani Waleed city. The study is cross-sectional and analyzed the incidence of HBV and HCV in Bani Waleed City during the period from 2014 to 2020. 239 cases of viral hepatitis were examined and identified over the study period. The frequency of HBV and HCV was 67.36% and 32.64% respectively, whereas the frequency of co-infection was found to be 3.77%. The results illustrated that the infection rate in males at 53.97% and it was slightly higher than in females 49.79% among age groups between 15 and 75 years. To conclude, the study showed that the prevalence of viral hepatitis in Bani Waleed city is not high, however, further studies are needed to establish the spread ratio in the society.

Keywords: Viral infection, HBV, HCV, Bani Waleed, Libya.

Cite this article as: Z. M. Eisay, S. D. Ameigal, M. M. Abdoarrahem, S. Grimida, A. A. Ageel, H. K. Ibrahim, "Study of HBV and HCV among the Libyan population in Bani Waleed City, Libya," African Journal of Advanced Pure and Applied Sciences (AJAPAS), Vol. 2, No. 2, pp. 84–89, April-June 2023.

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Introduction:

Viral hepatitis B (HBV) and C (HCV) are common viral diseases that are causing problems in liver and lead to liver cirrhosis and hepatocellular carcinoma. HBV and HCV are major global health problem that infected millions of people. Transmission of these viruses occurs via blood and blood products transfusion and by sexual contact (1). According to World Health Organization (WHO), approximately one third of the world's population has been exposed to hepatitis viruses, with estimated 350 million people are chronically infected (2, 3). More than 500000 people die each year due to hepatitis-B-related diseases (2,4). The WHO estimated that two to three percent of the world's population are infected with HCV, resulting in a total number of 120 to 170 million infected people (5,6). There is a distinct geographical variation in both HBV and HCV prevalence and incidence

in the European Union and neighboring countries (5,6). Studies showed that more than 80% of the risk for Hepatocellular carcinoma (HCC) is attributable to chronic infections with hepatitis B and C viruses (HBV and HCV) worldwide (7). Prospective studies have documented extremely high hazard ratios for HCC by comparing HCV-infected and non-infected individuals; a recent example is a community-based study in Japan where the hazard ratio for subjects who were positive for high-titer anti HCV was 38.77% (8). Also, similar evidence is available for HBV: in a study in Taiwan, the relative risk of developing HCC among chronic HBsAg carriers was >200 (9). Number of studies have investigated the hepatitis B and C infection in Libya, focusing on major cities such as Tripoli and Benghazi. Libya is a developing country of approximately 6 million people, belongs to the intermediate endemicity countries with a wide variance of seropositivity among different regions and populations. Previous studies of blood donors from serum screening in Libya revealed varying prevalence rates between 1.9%–5.8% for HBV and 1.2%–7.9% for HCV (10,11). In this article, data from Bani Waleed general hospital was used to report the incidence of viral infection (HBV and HCV) among Libyan population in Bani Waleed city. Bani Waleed is small city in the western part of Libya with the population of 120 thousand. Findings should help to understand risk factors to increase the infection rates and prepare health care systems to face such challenges. Materials and methods: This study was a cross sectional study included retrospective analysis of blood samples from infected Libyan individuals who have HBV and HCV and attended general Bani Waleed hospital during period from January 2014 to December 2020. The patients' data were collected from files of official records at general hospital of Bani Waleed. Blood samples of HBV and HCV were performed by using rapid test and commercially available enzyme-linked immunosorbent assays (ELISA) as part of hospital standard procedure. The data was entered and analyzed by Microsoft excel 2010. Permission to carry out the study was approved by general Bani Waleed hospital and approval consent was obtained from patients to participate in the study.

Results:

The study included 239 cases of hepatitis B and C viruses, and co-infection cases were recorded. The frequency of HBs Ag was greater than HCs Ag ((161)67.36%, (78)32.64% respectively). While the frequency of co-infection cases was (9)3.77%. out of total 239 cases, 129 (53.97%) were males (HBs Ag 75(58.13%), HCs Ag 50(38.75%) , and 119 (49.79%) were females (HBs Ag 86 (72.27%), HCs Ag 25 (21%), figure 3, co-infection were males 4(3.10%) and females 5 (4.20%). The incidence of viral infection was observed over the last seven years ago from 2014 to 2020 as illustrated in table 1.

Figure 2 and figure 3, which the results showed the highest percentage of HCs Ag was in 2014 (47% (76) while HBs Ag was in 2017 (23% (18)).

Table 1: The number of cases of hepatitis B and C infection during the years of study

Year	HBV	HCV	Total	Percentages
2014	76(31.7%)	12(5%)	88	37%
2015	13(5.4%)	14(5.86%)	27	11.26%
2016	8(3.34%)	15(6.27%)	23	10%
2017	14(5.85%)	18(7.53%)	32	13.38%
2018	23(9.62%)	9(3.76%)	32	13.38%
2019	4(1.67%)	4(1.67%)	8	3.34%
2020	23(9.62%)	6(2.51%)	29	12.13%
Total	161(67.4%)	78(32.6%)	239	100%

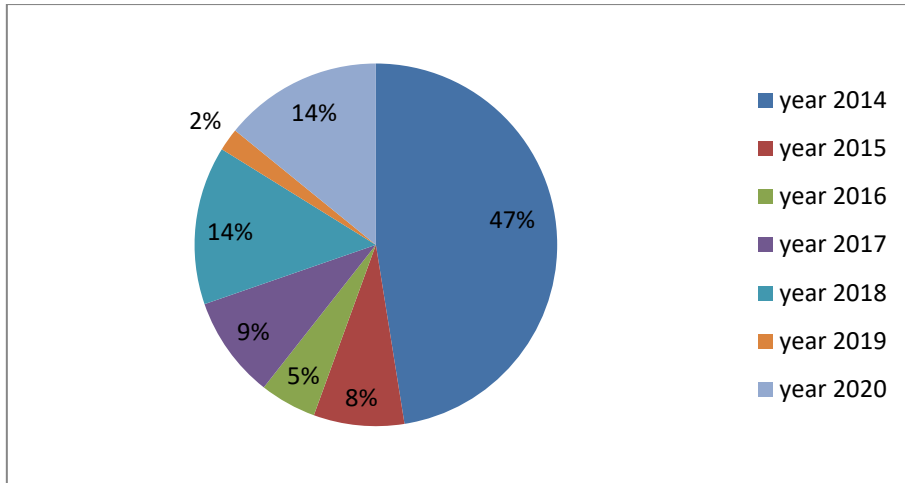


Figure 1. The percentage of cases of hepatitis B infection during the years of study

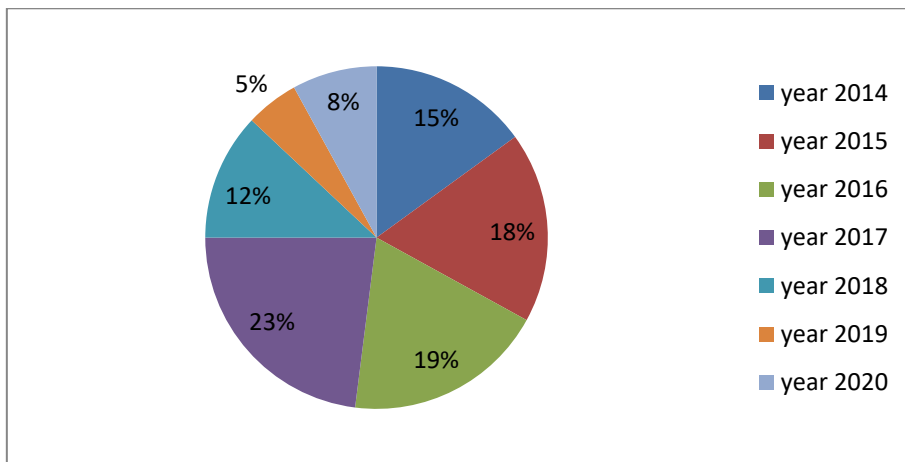


Figure 2. The percentage of cases of hepatitis C infection during the years of study

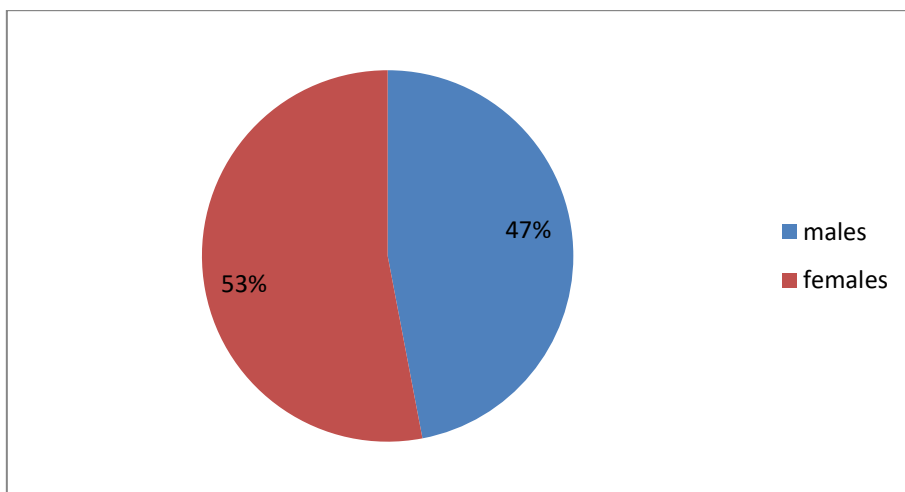


Figure 3. The percentage of cases of HBV and HCV according to gender

The ages of patients with HBV Ag ranged from 15 to 75. The highest rate in females was in the age group 12-25 years (77%) while in males, it was in the age group 16- 45 years (67%) as illustrated in Figure 4. Moreover, the highest infection rate of HCV Ag was in females which were in the age group 36-45 (80%), and in males that which was in the age group 26-35 (60%) as illustrated in Figure 5.

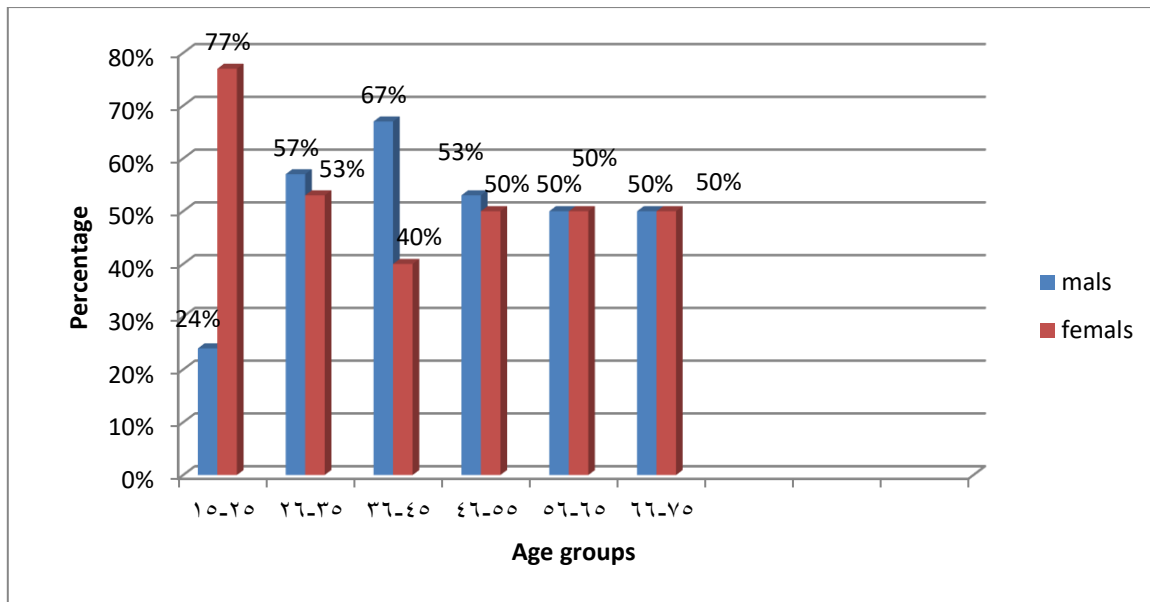


Figure 3. HBV infection among age group

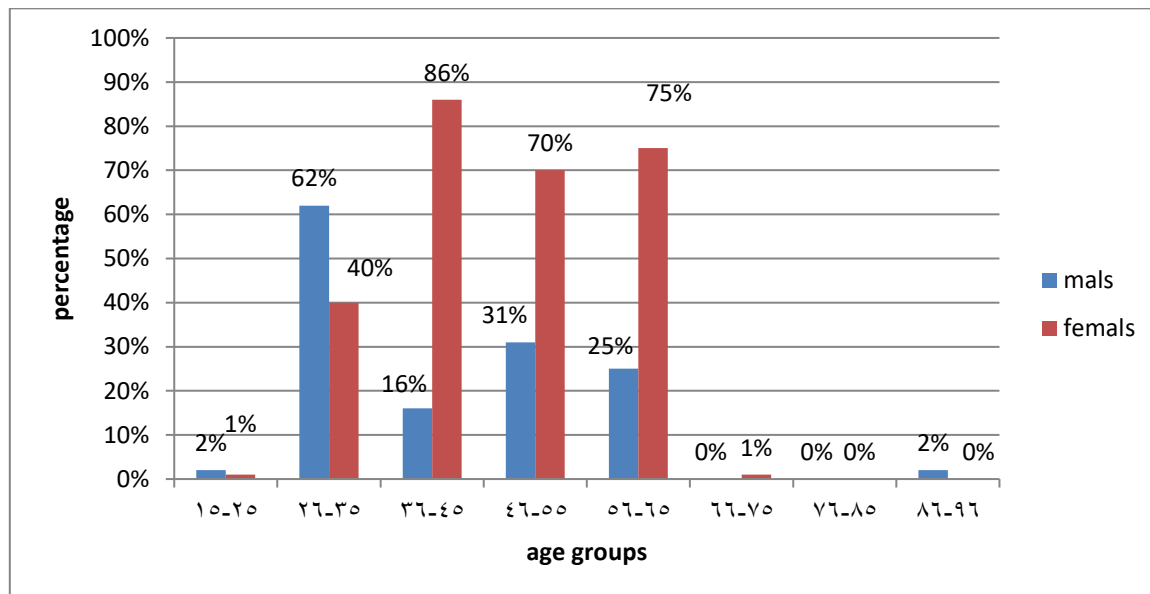


Figure 5. HCV among age group

Discussion

The prevalence of HBV and HCV infection was documented among Libyan population in different regions of the country. However, in Bani Waleed city, there is no study about these viral infection among Libyan individuals. In 2014 a study carried out by Daw et al., in Libya has showed the prevalence of hepatitis B virus (HBV) was 2.2% and Hepatitis C virus (HCV) prevalence was 1.3% (12). which indicates that Libya might be low-intermediate endemicity for HBV and HCV. in Egypt, it has been reported that the HBV prevalence was 1.4% and that was (13.6%) of HCV (7). In a systematic review by a Madihi et al., has revealed the prevalence of HBV in Arab countries, which showed higher rates of this viral infection in Tunisia 4.2-5.6% and in Syria 4.2% in general population (14). In present study, the prevalence of viral infection was calculated during period 2014 to 2020 among Libyan individuals in Bani Waleed city. In this study there 239 cases were recorded in general Bani Waleed hospital during the study period. The results have revealed the high rate of HBV (67.36%) followed HCV (32.64%) and co- infection (3.77%). The high infection rates might be due to many people have not been vaccinated by HBV vaccine and infections may transmitted by foreign immigrations from African. In previous research by Mostafa et al., that investigated the prevalence of viral infection among immigrations in Bani Waleed city, and has showed rates of infection at HBV (6.68%) and HCV at 3.51% (15). This could have an effect on the spread of infection among Libyan community in city. Data obtained by this study are in

agreement with a study in Tripoli city which found the high percentage of HBV (3.7%) in comparison to HCV (0.9%) (16). The infection rate in Tripoli city was higher than in Bani Waleed due to the big difference in number of populations between two cities. Another study in Benghazi city has showed the prevalence of HBV and HCV which, was (6.4%), (5%) respectively (17). The findings of this study showed the variability rates of HBV and HCV and co- infection during recent years, as the highest rate of HBV was recorded in 2014 at 47%, but afterwards declined. While the HCV rate increased gradually in first years of the study period and then decreases. The results also revealed that most commonly affected age group with HBV in both genders was about 12-25 years in females (77%) and 16-45 in males (67%). This result agreed with several previous studies where this age groups is more affected. In recent research in Alzawia city the findings showed the most age group affected with HBV was 21-40 years at 62.64% (18). Results of the current work showed different pattern with HCV, where the most infected age group in females was 36-45 years with 80%, while in males was in 26-35 years at 60%. A recent study carried out in many different geographic regions of Libya showed that the prevalence of HCV infection was variable among districts, and it was high rates in especially eastern and southern of the country (19) (20). The findings of the present study also showed that male ratio (53.97%) is higher slightly than female ratio (49.79%). Results of this research is an agreement with results in other previous studies (5,12). This may be due to the fact that males are exposed more to infections than females. There are several limitations in this study. First of all, the outcome of data was recorded just from patients attended general hospital of Bani Waleed, and this could not represent all cases in the whole society. In addition, there are other data in private clinics that should be included. The finding should be used to set up a control plan for Libyan community to reduce the infection rate and educate the public.

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