

Seroprevalence of Hepatitis B, Hepatitis C and Human Immunodeficiency Virus in Al-khraj region.

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Running title: Prevalence of HBV, HCV and HIV in Al-khraj

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Abstract

This study was aimed to determine the prevalence Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV) infections in Al-kharj region, Kingdom of Saudia Arabia (KSA). The study was carried out in male and female population for the period of three years from 2011 to 2013. Serological screening was performed for detection of Hepatitis B Antigens, Anti-Hepatitis C virus antibodies and anti-HIV 1/2 antibodies. A total of 1128 samples were tested and 4.68% to 4.82% HBV prevalence was recorded. The HCV prevalence was ranged from 7.49% to 7.69% whereas no HIV infected subject was detected in the region. Highest prevalence of HBV was recorded in age group ranged between 15 to 30 years while highest prevalence for HCV was observed in age group ranged between 46 to 65 years. The results of the study provided data regarding prevalence of HBV, HBC and HIV infections in Al-kharj region. HBV and HCV infections were indicated as a crucial public health problem in Al-khraj area. No significant increase or decrease was recorded in HBV and HCV prevalence pattern during the study period. For appropriate prevention and control of HBV and HCV infections comprehensive screening and public health awareness program should be initiated among different population groups.

Key words: HBV, HCV, HIV, prevalence, Al-kharj.

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Introduction

HBV and HCV infections are global health problem. HBV and HCV cause liver infection that may lead to the development of sever chronic complications like liver cirrhosis or hepatic cellular carcinoma. The prevalence of hepatitis B and C virus is common in different regions of world. It has been estimated that currently 400 million people around the world carries hepatitis B virus infection. Around the world 130 to 170 million people carries chronic hepatitis C virus infection [1, 2]. HBV and HCV are transmitted by blood transfusions, unsafe injections, sexual contacts or mother to new born child [3, 4]. HIV infection is most prevalent in African countries around the world. The disease is transmitted by

heterosexual contacts mostly but infected mothers may transmit infection to newborn child during pregnancy, childbirth or by breastfeeding [5]. Higher HBV and HCV prevalence was reported in KSA in previous decades. In most of the cases HBV infection was transmitted horizontally as compared to the vertical transmission [6, 7, 8]. After the introduction of mass vaccination program considerable decrease was seen in HBV infections and a prevalence rate of 0.05% and 0.22% was recorded in children and adult population with an average of 0.15%. In another study HBV prevalence rate was reported between 0.03% to 0.72% in different regions of kingdom [9, 10]. HCV infections constituted one of the major public health problem in the kingdom in past. Prevalence of HCV in Jeddah and Riyadh region was reported 1.7%

and 1.1% respectively [11, 12]. The Prevalence of HBV (0.07%) and HCV (0.22%) was reported in Jazan region [13]. In Qassim region Prevalence of HBV and HCV was ranged between 0.7% - 2.04% and 0.1% - 3% respectively [14]. HIV infections are progressive threat to the society and it is difficult to track them in conservative societies like KSA. The average annual HIV Prevalence was reported as 1.5 - 4 cases per 100,000 among Saudi population [15].

The prevalence of HBV, HCV and HIV varies in different region of kingdom and these studies are important for the assessment of changing epidemiology of these infections for effective implementation of eradication and control program. Present study was conducted with the aim to estimate HBV, HCV and HIV prevalence in Al-khraj region during the calendar years 2010 to 2013.

Materials and Methods

Blood samples were collected from 1128 male and female subjects of Al-khraj region during the period from 2011 to 2013. All subject participated in the study were examined by the physician and clinical data was recorded. The clinical diagnosis was accomplished from the patient's records and interview. This study was approved by

Ethical Committee of University hospital, Salman bin Abdul Aziz University, Al-Kharj. An informed consent was obtained from all subjects included in the study. The serum was separated from clotted blood by centrifugation at 2000g (Bench top Centrifuge 5810, Eppendorf International). The samples were stored at -20 °C until screened for HBV, HCV and HIV infections. Hepatitis B Antigens were detected by ELISA kit (Monolisa TM HBs Ag ULTRA, Bio-Rad). ELISA anti- HCV Kit version 4.0 (Bio-Rad) was used to screen Anti-Hepatitis C virus antibodies. HIV antibodies were screened by ELISA kit (Genscreen HIV-1/2 Version 2 Diagnostic Kit, Bio-Rad). Appropriate positive and negative controls present with in the kits were used with all test samples. Posttest counseling and medical assistance was offered to all those patients who were found positive. The prevalence for HBV, HCV and HIV infections were obtained for demographic groups (gender and age groups) for the period of three years from 2011 to 2013.

Results

A total of 1128 male and female subjects were tested for presence of HBV, HCV and HIV infections in Al-khraj region (Table 1). During the year 2011, 2.6% male and 2.08% female subjects were found positive for HBV

Table 1. Prevalence of Hepatitis B, C and HIV in Al-khraj region

Years	No. of Samples	HBV+	%HBV+	No. of Samples	HCV+	%HCV+	No. of Samples	HIV+	%HIV+
2011	385	18	4.68	267	20	7.49	221	0	0
2012	411	20	4.87	308	24	7.79	371	0	0
2013	332	16	4.82	535	41	7.66	406	0	0
Total 2011-13	1128	54	4.79	1110	85	7.66	998	0	0

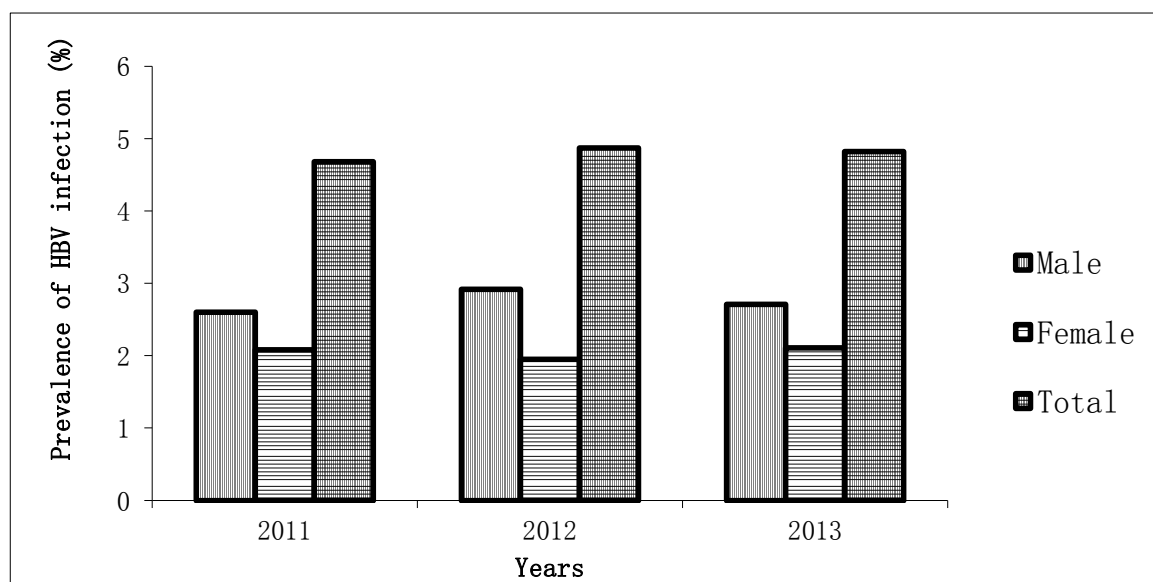


Figure 1. Prevalence of Hepatitis B in Male and Female Subjects in Al-khraj region from year 2011 to 2013

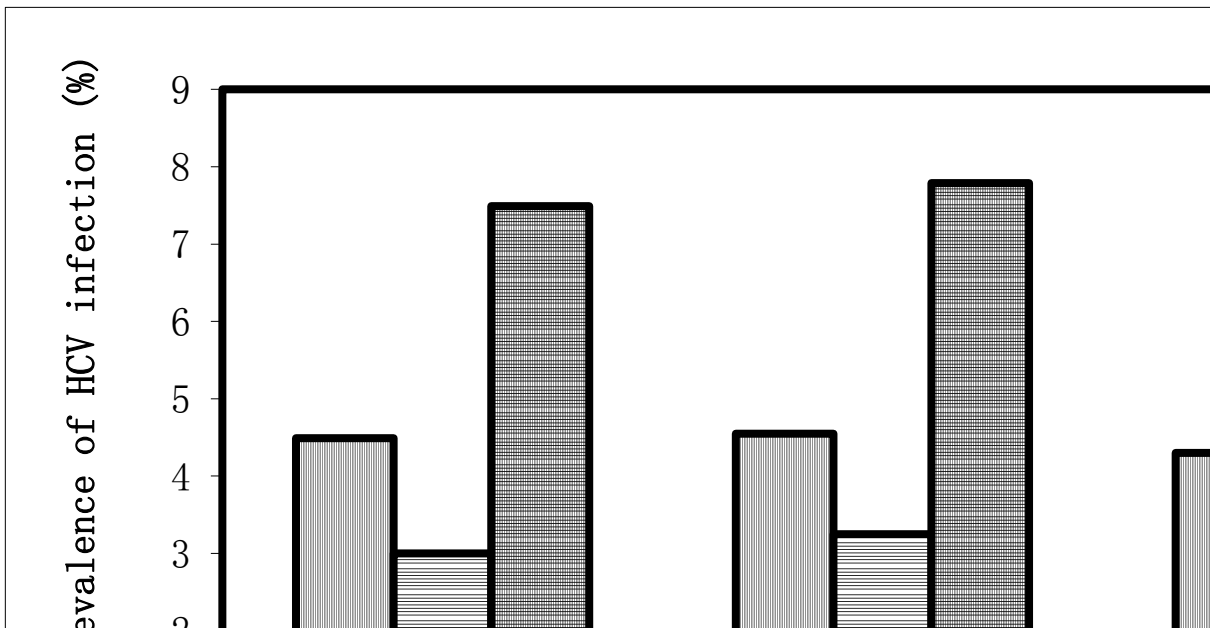


Figure 2. Prevalence of Hepatitis C in Male and Female Subjects in Al-khraj region from year 2011 to 2013.

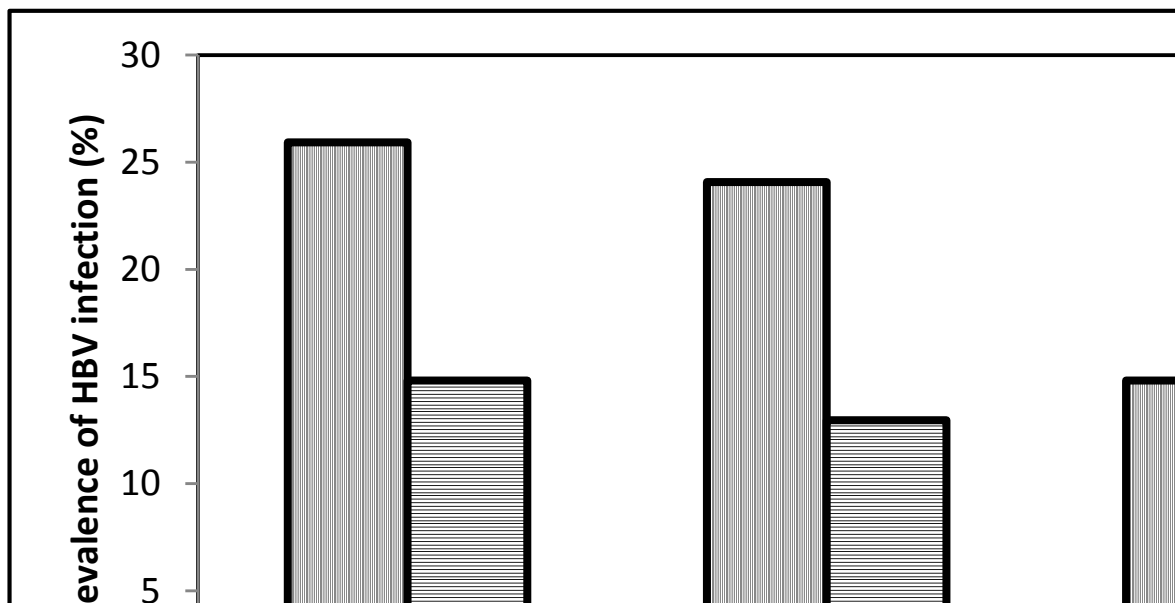


Figure 3. Prevalence of Hepatitis B in various age groups in Al-khraj region from year 2011 to 2013.

infections as well as 2.71% male and 2.11% female subjects were found infected with HBV infections during the year 2013 (Figure 1). HCV antibodies were found in 4.49% male and 3% female subjects during the year 2011 whereas 4.30% male and 3.36% female subjects were found infected with HCV during the year 2013 (Figure 2). No HIV infected subject was found in the region during

the study period. No significant increase or decrease was recorded in prevalence pattern of prevalence of HBV, HCV and HIV infections during the study period. The highest prevalence of HBV was recorded in the age group ranged between 15-30 years (Figure 3) whereas highest prevalence of HCV was noted in age group of 46-65 years (Figure 4).

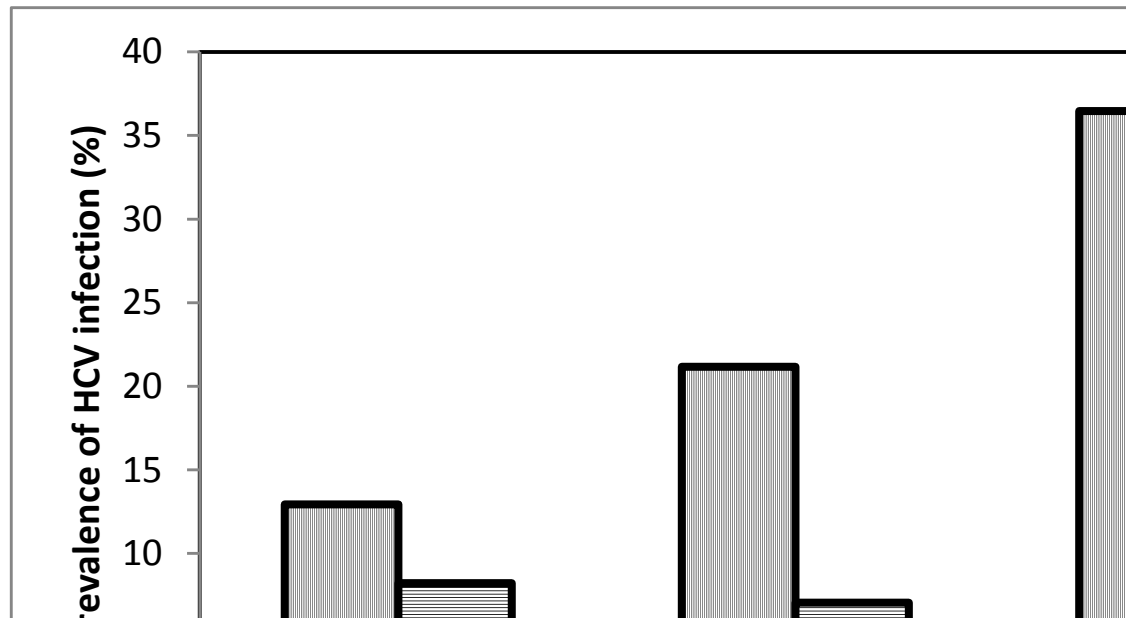


Figure 4. Prevalence of Hepatitis C in various age groups in Al-khraj region from year 2011 to 2013.

Discussion

The prevalence pattern of HBV, HCV and HIV was studied from year 2011 to 2013 in Al-khraj region. The overall HBV and HCV prevalence for the study period was recorded as 4.9% and 7.6% respectively. These results are comparable with HBV prevalence studies in south western (5.4%), Central (1.5%) and Eastern (6.8%) regions of KSA [16, 17]. The prevalence rate in current study is higher than Central region but lower than South Western and Eastern regions. The prevalence of HCV in Al-khraj area was recorded 7.66%. The result is comparable to the previous studies indicating 2.05-15 % [18] and 0.4 -1.15% [19] HCV prevalence in different regions of KSA. In current study the highest HBV prevalence was found in age group of 15-30 years and similar higher prevalence of HBV was reported in age group of 40 year [20]. The highest HCV prevalence was recorded in age group of 46-65 years and similar result for highest prevalence of HCV was reported in age group ranged between 45-54 years [18]. KSA has been grouped in countries with low prevalence of HBV and HCV infections. However prevalence patterns for these infections varies in different regions of the country. The differences in prevalence pattern of HBV and HCV infection may attribute to the geographical variations, social or cultural differences, education and awareness level and living standards in different regions of the country. In present study, No HIV infection was recorded in the region. The cultural values and life style of Beduins may contribute the lack of HIV infection in the area. The Al-khraj region is a desert area and mostly occupied by Bedouin tribes. These tribes are mostly engaged in nomadic herding and due to their specialized culture and

social norms their movement outside the region is restricted. They have limited contacts with the outside world. Moreover, 0.0015 - 0.004% average HIV prevalence has been reported mostly in densely populated cities like Riyadh and Jeddah in KSA [15].

The current report indicates that HBV and HCV infections are emerging as a significant public health problem in Al-khraj region. A comprehensive surveillance and public awareness program should be implemented to prevent further spread of these infections.

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