

**Original Research Article- Medical Education****The Prevalence of Hepatitis B among Medical Students, Majmaah University, Kingdom of Saudi Arabia**

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ARTICLE INFO:**Article history:**

Received: 17 March, 2015

Received in revised form:

05 April, 2015

Accepted: 20 April, 2015

Available online: 30

April, 2015

Keywords:

Hepatitis
Medical Students
Majmaah University
Saudi Arabia

ABSTRACT

Background: Medical students in the course of their clinical work are at risk of acquiring hepatitis B virus (HBV) infection or transmitting it to their patients. HBV immunization for medical students in Saudi Arabia is recommended but not strictly enforced. It is important to assess the prevalence of HBV infection in medical students in order to direct interventions and inform policy. The objectives of this study were to determine the prevalence of hepatitis B among the medical students of Majmaah University; secondly to determine the relation of hepatitis B and the social factors; and thirdly to compare the relation of hepatitis B in different colleges. **Methods:** This was a cross-sectional study carried out in 478 students of medical, dentistry and applied medical students in Majmaah University. Total enumeration of all students was done. A structured questionnaire was used to collect demographic data. The selected students underwent a blood test to detect HBsAg. SPSS version 20 was applied for data analysis for (frequency, mean and standard deviation). Comparisons between groups were made using the Fisher Exact test. $P < 0.05$ was considered significant and all tests were two-sided. Informed written consent was obtained from each student before enrolment in the study. **Results:** The results showed that out of the 478 students tested, two were positive for HBsAg, giving an overall prevalence rate of 0.41%. The prevalence of hepatitis B among males and females was 0.6% and 0.0% respectively. It was shown that one of the positive cases was in the college of Medicine and the other was in the college of Medical laboratories. **Conclusion:** The prevalence of hepatitis B among medical students of Majmaah University is low. The disease, which was reported among the males only, was found in the colleges of Medicine and Medical Laboratories.

1. Introduction

Approximately 350 million people are infected by Hepatitis B virus (HBV) globally. A large number become positive for hepatitis B surface antigen (HBsAg) but they remain asymptomatic. They are known as silent carriers of HBV[1,2] and may act as a source of transmission of hepatitis B. In high and moderate prevalence zones of HBV, like South Asia and the Middle East, many silent carriers are young people[3,4].

The prevalence of HBV has declined considerably in Saudi Arabia since the introduction of immunization in 1989. According to one study, it fell from 7% in 1989 to 0.3% in 1997[4]. A study 8 years after the introduction of hepatitis B vaccination reported seroconversion of 77% in children

vaccinated at birth and 71% in those vaccinated at school entry[5]. Jaber reported in 2006[6] that 98% of schoolchildren in Jeddah, Saudi Arabia were covered by HBV vaccination; however 14% of students tested negative for anti-HBs antibodies, suggesting that the efficacy of HBV vaccination is diminishing with increasing age[6]. It has been reported that the prevalence of HBV among blood donors in Saudi Arabia decreased from 2.7% in 1993 to 0.28% in 2003[5,6,7].

HBV immunization is now part of the national routine immunization program for children in Saudi Arabia. HBV immunization in medical students and health workers in Saudi Arabia is recommended but not strictly enforced.

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As a result, individuals at high risk like healthcare workers and medical students have low immunization rates. Therefore, HBV remains an occupational risk to which healthcare workers and medical students are exposed while at work[8].

Determining the prevalence of HBV infection in the medical, dentistry and applied medical students is important in planning for any intervention to control this infection among them. Furthermore, the information obtained may be used in a wider sense to create awareness among all categories of healthcare workers about the magnitude of the risk of contracting or transmitting HBV in the workplace.

The objectives of this study were to determine the prevalence of hepatitis B among the medical, dentistry and applied medical students of Majmaah University and to compare the prevalence rates of hepatitis B between the students in the different collages and social factors.

2. Methods

This was a cross-sectional study carried out among medical, dentistry and applied medical students in Majmaah University over a period of 16 months (from May 2013 to August 2014). The study population was the students of Majmaah University from collage of Medicine, Dentistry, Nursing and Medical Laboratories. Students from all levels and both sexes were enrolled in this study.

Total enumeration of 478 students was done. A structured questionnaire was used to collect demographic data. The selected students underwent a blood test to detect HBsAg. The test was conducted in King Khaled Hospital in Majmaah. The assay used is a one-step enzyme immunoassay based on the principle of the " sandwich" type using monoclonal antibodies and polyclonal antibodies selected for their ability to bind themselves to the various subtypes of HBs Ag, recognized by the WHO and the most part of variant HBV strains. SPSSversion 20 was applied for data analysis for (frequency, mean and standard deviation). Comparisons between groups were made using the Fisher Exact. $P < 0.05$ was considered significant and all tests were two-sided. Informed written consent was obtained from each student before enrolment in the study. An ethical clearance was obtained from Majmaah University Ethical Committee. The positive subjects were reinvestigated and the diagnosis was confirmed. The positive cases were counseled. The counseling sessions included discussion of the future career path not to go in favor of surgery specialization or patients' interventions which lead to contact with blood and fluids.

Participation was completely voluntary and students who tested positive for HBsAg were counseled in the counseling center, King Khaled Hospital. Measures to prevent exposure and the need to get vaccinated against Hepatitis B as soon as possible was explained to them.

3. Results

There were 150 females and 328 males, giving a female to male ratio of 1:1.4. Out of the 478 students tested, 2.0 were positive for HBsAg, giving an overall prevalence rate of 0.41% as shown in table 1. Regarding age of the students the range was similar ranging from 18 to 20 years.

Table 2 shows the prevalence of hepatitis B among students of different collages. It was shown that the two positive cases were in the college of Medicine and the college of Medical laboratories.

Table 1: Relation between hepatitis B and gender

Gender	HBs Ag		Total	P
	Positive	Negative		
Male	2 (0.6%)	326(99.4%)	328 (68.6%)	1.00
Female	0(0.0%)	150(100%)	150(31.4%)	
Total	2 (0.4%)	476 (99.6%)	478(100%)	

Table 2: Hepatitis B among students of different collages

Collage	HBs Ag		Total	P
	Positive	Negative		
Medicine	1 (1.2%)	83(98.2%)	84(17.6%)	0.340
Dentistry	0(0.0%)	90(100.0%)	90(18.8%)	
Nursing	0(0.00%)	181(100.0%)	181(37.9%)	
Medical Laboratory	1(0.9%)	122(99.1%)	123(25.7%)	
Total	2(0.5%)	476 (99.5%)	478(100%)	

4. Discussion

The prevalence rate of hepatitis B among the students, shown as positive HBsAg was 0.41%. Lule found the HBsAg carrier rate of 18% among medical students in Kenyatta National Hospital[9]. In Nigeria, Olubuyide found the hepatitis B as 39.0% among doctors and dentists compared to the national average of 20.0% [10].

There was no significant difference in the HBsAg carrier rates between pre-clinical and clinical students and yet the latter were more exposed to hepatitis B. Similar findings were observed by Khurana. In Maulana Azad Medical College-New Delhi, India[11]. It is possible that most of the clinical students were healthy and fought off the hepatitis B infection despite being more exposed. It is known that spontaneous recovery after acute infection with HBV occurs in 95–99% of previously healthy adults[12]. It is also possible that some students might have got occult HBV infection.

This could only be revealed by performing highly sensitive molecular techniques which would show persistence of HBV genomes in HBsAg negative individuals[13]. The magnitude of occult HBV infection was not assessed in the study. This rate was also lower compared with the prevalence of 1% found in less than 20 years old persons after 10 years of introduction of extended program of immunization in Saudi Arabia[14]. The rate of hepatitis B was also higher than the prevalence among male medical students of 0.17% and higher than the prevalence among the females (0.78%) in the same study that was conducted among students of health colleges in different part of Saudi Arabia[1]. The findings of this study were within the range of prevalence from 0.03% to 0.72% among the general public in different parts of the kingdom[15].

The findings of this study showed that the two positive cases of hepatitis B were males, no positivity among females. In comparing hepatitis B with gender by applying the Fisher Exact test, the relation is not significant ($p= 1.00$). When seroprevalence rates of hepatitis B was compared between students from different colleges in the university by applying the Fisher Exact test, the difference was not statistically significant ($p=0,340$).

5. Conclusion

The prevalence of hepatitis B among medical, dentistry and applied medical students of Majmaah University is low. The prevalence was low among the males and not reported among the females. The disease was observed among the male students of the college of Medicine and the college of Medical Laboratories. The study showed that there is transmission of the disease in spite of all efforts to control and prevent it, especially after the introduction of vaccination against Hepatitis B in the extended program of immunization, which is compulsory in Saudi Arabia since early nineties. It is important to continue testing all high-risk groups of students for Hepatitis B and measure their markers to manage them according to the results.

Acknowledgement

The authors are very grateful to the Dean of college of Medicine, dean of college of dentistry and the dean of Applied Medical Sciences for permission and support to carry out this study. We would also like to thank the administration of Medical Services of Majmaah University and the administration of King Khalid General Hospital in Majmaah for their support. Our thanks extend to the students who kindly accepted to participate in the study.

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Source of support: Nil, Conflict of interest: None Declared

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