

Coverage and perceptions of Medical Sciences students towards hepatitis B virus vaccine in Sana'a City, Yemen

Yahia A. Raja'a, MSc, PhD, Gehad G. Saeed, MBBS, AbdulRaheem A. Al-Hattami, MBBS, Mansour H. Al-Asadi, MBBS, Arif A. Mohammad, MBBS, Abdullah A. Ahmed, MBBS, Nabil M. Al-Ammari, MBBS.

ABSTRACT

Objective: The present study was conducted to estimate vaccination coverage against hepatitis B virus and the perceptions of 1198 medical sciences students in Sana'a City, Yemen.

Method: Only those who practice clinical training or are in contact with body fluids were included. The students were enrolled in the Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen. Data was collected from 1999-2000. Arabic pre-tested questionnaire forms were completed by 840 students at a response rate of 70.6%.

Results: The study revealed a reported vaccination rate of 29.5%. The rate among Faculty of Medicine and Health Sciences students was 32.3%, whereas only 21.3% among the students of High Institute of Health Sciences. Students of dentistry attained the highest rate of vaccination (38.8%), while nursing students of the High Institute of Health Sciences achieved the lowest rate (17.1%). Rate of

vaccination (46.6%) among female students was significantly higher than male students (22.3%) with a P-value of 0.0001. Medical assistants of the High Institute of Health Sciences scored the best (56%) in terms of knowledge, medical laboratory sciences students achieved the highest (43.6%) in attitude and dentistry students had the highest scores (35.5%) in practices. The mean knowledge of females and males was comparable, however, females achieved higher attitudes and practices. Final stage students attained better attitude scores than the pre-final and intermediate students.

Conclusion: Vaccination coverage of medical sciences students in Sana'a City, Yemen is low. Knowledge of medical assistants is the best, attitude of medical laboratory sciences students and practices of dental students is the highest. Attitudes and practices of female students are better than that of males.

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High morbidity and mortality due to hepatitis B virus (HBV) infection has been reported worldwide.¹⁻³ It influenced health care planners in moderately and highly endemic areas to take account of HBV vaccination within their national programs of immunization. Yemen is one of the highly endemic areas.^{4,5} By the year 1998, more than 90 countries, including Yemen, adopted HBV vaccine to all neonates.⁶ High-risk groups were also considered for immunization.^{5,7} Health care workers are at risk

of infection as revealed in the studies that were carried out in the United States of America (USA),⁸⁻¹⁰ Nigeria^{11,12} and Jamaica.¹³ Vaccination coverage of health care workers was studied in many countries. Locally, a coverage of 32% was reported in public hospitals of Sana'a City, Yemen.¹⁴ In California, USA the coverage ranged between 17% and 68%.¹⁵ In the public hospitals of Argentina, vaccination coverage reached up to 51%.¹⁶ The coverage among

From the Department of Community Medicine, Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen.

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Address correspondence and reprint request to: Dr. Yahia A. Raja'a, Assistant Professor of Community Medicine, Faculty of Medicine and Health Sciences, Sana'a University, PO Box 2058, Sana'a, Republic of Yemen. Tel. +967 (1) 371689. Fax. +967 (1) 373410. E-mail: yahiarajaa@yahoo.com

Brazilian dentists was 69%.¹⁷ In a University Hospital in Bangkok the coverage was 65%.¹⁸ Among medical schools students, 11% of health and medical sciences in Southern Florida were vaccinated.¹⁹ While 75.5% of students of medicine and 68.8% of nursing were vaccinated in Thailand.¹⁸ With regard to knowledge, attitudes, and practices (KAP), 94.2% of village doctors in China sterilize syringes,²⁰ 91.8% of Canadian dentists use gloves regularly, and 74.8% use masks normally and 83.6% use goggles.²¹ Hot air oven was used by 83.6% of the Canadian dentists to sterilize metallic tools.²¹ Knowledge, attitudes, and practices of health workers in Thailand improved from 56.9-77.7% after exposure to a health education program on HBV vaccination.²² The present study aimed at determination of reported vaccination coverage and KAP of medical sciences students for HBV vaccine in Sana'a City. In addition, to correlate their KAP and coverage with sex, educational level and type of study.

Methods. This study describes the KAP of all medical sciences students who are exposed to patients' body fluids or in clinical contact with patients. They are enrolled in the Faculty of Medicine and Health Sciences (FMHS), Sana'a University, Republic of Yemen (n=629). Another 211 students were from the High Institute for Health Sciences (HIHS), Ministry of Public Health and Population. The students were contacted after they performed routine tests in the teaching centers. Response rate was 70.7%. A pre-tested (20 students) Arabic questionnaire was designed and referred by 2 experts in the Department of Community Medicine in FMHS, for content validation. The questionnaire was found to be reliable when examined by the Split Half Method where $r=0.657$ and $p<0.0001$. The questionnaire which included 12 questions for knowledge, covered the vaccine existence, types, protectivity, contraindications, complications, number of doses and prevention of infection and practices, the infective agent, infectivity, complications of the infection and high risk groups. With regard to attitude and practices, 4 questions were asked about the motive behind vaccination, 5 questions for practices included taking the vaccine in full or partial, advising others to take the vaccine and actions taken in case of exposure. Each part of the questionnaire was weighed to 100⁰. The students, completed the questionnaire forms after the consented. Data was entered in a Personal Computer (PC), analyzed by Statistical Package of Social Sciences (SPSS) version 10 to find the mean standard deviation (SD) and to calculate Chi-squares, t-tests and ANOVA. Differences were considered at a $P < 0.05$.

Table 1 - Reported vaccination against HBV among medical sciences students according to sex in Sana'a, Yemen in the year 2000.

Field of study	Vaccination n (%)	Chi Square	P-value
Medicine	350 (30)	13.57	<0.0001
Male	236 (23.7)		
Female	114 (43)		
Dentistry	49 (38.8)	6.091	0.009
Male	19 (15.8)		
Female	30 (53.3)		
Medical laboratory	193 (36.3)	15.05	<0.0001
Male	130 (26.9)		
Female	63 (55.6)		
Nursing	37 (24.3)	0.45	0.501
Male	24 (20.8)		
Female	13 (30.8)		
Medical assistants*	111 (18.9)	4.2	0.040
Male	97 (16.5)		
Female	9 (44.4)		
Laboratory technicians	59 (28.8)	9.67	0.002
Male	53 (22.6)		
Female	6 (83.3)		
High nursing*	41 (17.1)	1.04	0.308
Male	24 (12.5)		
Female	16 (25)		

*Gender was not mentioned in 6 questionnaires, n - number, HBV - hepatitis B virus

Results. An overall rate of reported vaccination of 29.5% was found. The rate among FMHS students (32.3%) was higher than that (21.3%) among HIHS students ($p = 0.002$). Within the field of study, the highest coverage (38.8%) was among the dentistry students, while the lowest (17.1%) was among higher nursing students of HIHS (**Table 1**). Female students (46.6%) were significantly more vaccinated than males (22.3%) with Chi square of 49.8 and P-value of <0.0001 (**Table 1**). Thirty-two percent of the students enrolled in the final year of study reported that they are vaccinated (32.2%) whereas only 24.3% of the students in the pre-final stage reported that they are vaccinated and 28.2% of the students in the middle stage reported that they are vaccinated. F-value is a statistical value (such as that of t-test) used for differences between more than 2 means.. As far as

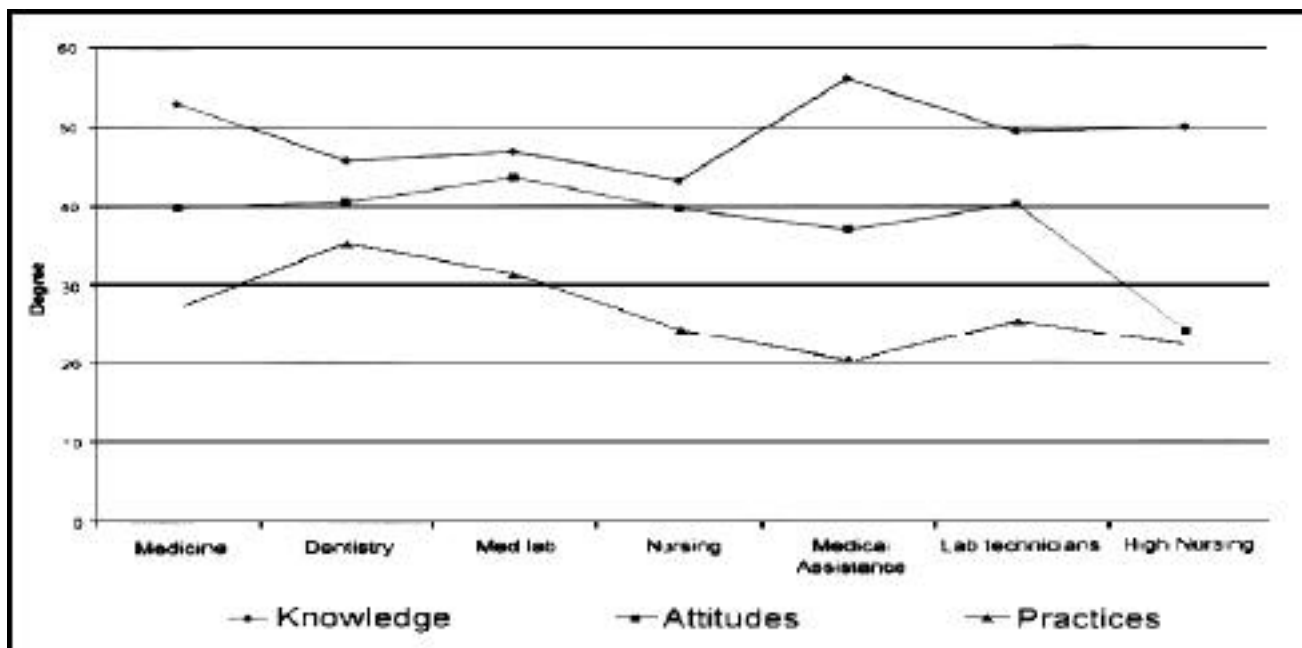


Figure 1 - Mean KAP of medical sciences students regarding hepatitis B in Sana'a City, Yemen, in the year 2000. KAP - knowledge, attitudes and practices, Med. Lab - medical laboratory, Lab. - laboratory.

Table 2 - Knowledge, attitudes and practices of medical sciences students towards HBV immunization according to sex in Sana'a City, Yemen, in the year 2000.

Sex (n)	Knowledge			Attitudes			Practices		
	Mean ± SD	T-test	P-value	Mean ± SD	T-test	P-value	Mean ± SD	T-test	P-value
Male (583)	50.9 ± 12.7	0.45	0.66	38 ± 20.6	3.58	<0.001	22.6 ± 27	7.2	<0.0001
Female (251)	50.4 ± 11.8			44.3 ± 21			38.8 ± 30.8		

Gender was mentioned in 6 questionnaires, n - number, SD - standard deviation, HBV - hepatitis B virus

Table 3 - Mean KAP of medical students according to phase of study, Sana'a City, Yemen in the year 2000.

Phase (n)	Knowledge			Attitudes			Practices		
	Mean ± SD	F-value	P-value	Mean ± SD	F-value	P-value	Mean ± SD	F-value	P-value
Final (447)	51.3 ± 12.3	1.57	0.21	43 ± 21.4	13	<0.0001	29.4 ± 29.5	2.5	0.09
Pre-final (230)	55.2 ± 11.4			36 ± 19			25.6 ± 28.2		
Intermediate (163)	56.8 ± 13.9			35.6 ± 20			24.2 ± 29.1		

n - number, SD - standard deviation, HBV - hepatitis B virus, KAP - knowledge, attitudes and practices

knowledge is concerned, medical assistant students of HIHS scored the highest mean (56⁰), followed by students of medicine (53.1⁰) with F-value of 13.5 and P<0.0001. Further analysis, Scheffe test, revealed significant differences (p<0.05) between mean scores of medical assistants and medical students with those of dentistry, medical laboratory sciences and nursing. With respect to attitudes, medical laboratory sciences students scored the highest (43.6⁰) with F value of 5.5 and P < 0.0001. Higher nursing students scored the lowest score (24⁰) and was significantly (p<0.05) lower than medicine, dental, medical laboratory sciences and laboratory technicians. Concerning practices; dental school students achieved upper mean (35.5⁰) with F-value of 2.8 and P=0.0011 (**Figure 1**). Regarding gender, the mean knowledge was comparable in both sexes, while attitudes and practices were significantly higher in females than males (**Table 2**). Final students attitudes were significantly higher than others (**Table 3**). Attitudes were found positively correlated (r=0.56) with practices with p-value <0.00001. Knowledge also was positively correlated (r=0.21) with practices with p-value<0.0001.

Discussion. The found rate (29.5%) of vaccination was low, especially for a country classified as a high endemic area such as Yemen.^{4,5} It is lower than the rate (69%) found among medical students in Bangkok,¹⁸ but higher than the mean coverage (11%) found among medical students of South Florida.¹⁹ Hence, fees of vaccination should be reduced or offered free. Female students reported better coverage (46.6%) than males (22.3%) in all fields of study. Dental and medical laboratory students of FMHS, reported better coverage rates (38.8% and 36.3%) whereas, poorer coverage was reported by higher nursing (17.1%) and medical assistants students (18.9%). These findings imply generalizing an education program on HBV vaccination to all medical science students with special emphasis on male sex, higher nursing and medical assistants students of HIHS. With regard to knowledge, medical assistant students of HIHS scored highest (56⁰) followed by students of medicine (53.1⁰) of FMHS, while nursing students of FMHS scored (43.1) the lowest knowledge. This result may be attributed to information recall, therefore, depends on the time of exposure to the information. Attitudes of medical laboratory science students were found highest followed by dental students. Both disciplines scored higher than that scored by others in practices, which is logical. Although mean knowledge scores were comparable in males and females, female students' attitudes and practices were found significantly higher than males. These findings may indicate differences in the views toward risk between

the 2 sexes. This implies giving more attention to male students when designing educational programs on HBV vaccination. Despite the significant differences in the knowledge of various groups of students, final year students scored better attitudes and practices. Thus, more emphasis should be given to earlier years students in any intervention programs.

In conclusion, vaccination coverage among all medical science students is low. Attitudes and practices of females and final year students were better than males and earlier year student.

References

1. Kane M. Global programme for control of Hepatitis B infection. *Vaccine* 1995; 13 suppl: 47-49.
2. Cotran RS, Kumar V, Robbins SL. Robbins pathologic basis of disease, the liver and biliary tract. 5th ed. Philadelphia (PA): WB Saunders Company; 1994. p. 945.
3. Kant I, Hall A. Epidemiology of childhood hepatitis B in India: Vaccination related issues. *Indian J Pediatr* 1995; 62: 635-653.
4. Al-Zaggar L. Report of the Yemen national infectious viral hepatitis control programme. No. 43/97. Yemen Republic: Ministry of Public Health; 1999. p. 1.
5. Monto A. Diseases spread by close personal contact. In: Last J, Wallace R, editors. Public health and preventive medicine. 13th ed. USA: Prentice Hall International Inc; 1992. p. 134.
6. Kane M. Status of hepatitis B immunization programmes in 1998. *Vaccine* 1998; 16 suppl: 47-49.
7. Gully P. Selecting risk group strategies in North America. *Vaccine* 1995; 13 Suppl: 41-43.
8. Wisnom C, Lee R. Increased seroprevalence of hepatitis B in dental personnel necessitates awareness of revised pediatric hepatitis B vaccine. *J Public Health Dent* 1993; 53: 231-234.
9. Hakre S, Reyes L, Bryan J, Cruess D. Prevalence of hepatitis B virus among health care workers in Belize, Central America. *Am J Trop Med Hyg* 1995; 53: 118-122.
10. Barie P, Dellinger E, Dougherty S, Fink M. Assessment of hepatitis B virus immunization status among North American surgeons. *Arch Surg* 1994; 129: 27-32.
11. Abtodun P, Olomu A, Okolson OA, Freeman O. The prevalence of hepatitis B antigen and anti-HBe in adults in Benin City. *West Afr J Med* 1994; 13: 171-174.
12. Adebamowo C, Ajuwon A. The immunization status and level of knowledge about hepatitis B virus infection among Nigerian surgeons. *West Afr J Med* 1997; 16: 93-96.
13. Figueroa J, Carpenta H, Hospedales C. A survey of hepatitis B among health workers in Jamaica. *West Indian Med J* 1994; 43: 2-6.
14. Hanash S, Al Jaufy AY. Hepatitis B virus markers and risk factors among health care workers in Sana'a Public Health Hospitals. Sana'a (Yemen): Faculty of Science Bulletin, Sana'a University; 2001. p. 135-194.
15. Murata P, Young L. Physician's attitudes and behaviors regarding hepatitis B immunization. *J Fam Pract* 1993; 36: 163-168.
16. Frider B, Sookoian S, Rebora N, Castano G, Rozenblat E. Professional risk: Hepatitis B vaccination strategies in a general hospital. *Acta Gastroenterol Latinoam* 1992; 22: 29-25.
17. Jorge R, Almida O, Scally C. Knowledge and attitudes about blood-borne viruses and infection control in Brazilian dentist practice. *Oral Dis* 1996; 2: 41-44.

18. Israsena S, Kamolratanakul P, Sakulra R. Factors influencing acceptance of hepatitis B vaccination by hospital personnel in an area hyperendemic for hepatitis B. *Am J Gastroenterol* 1992; 87: 187-189.
19. Ganguly R, Marty P, Herold A, Anderson M. Hepatitis B immunization in a university population. *J Am Coll Health* 1998; 46: 181-183.
20. Clayton S, Yang H, Guan J, Lin Z, Wang R. Hepatitis B control in China: knowledge and practices among village doctors. *Am J Public Health* 1993; 83: 1685-1688.
21. McCarthy G, MacDonald J. The infection control practice of general dental practitioners. *Infect Control Hosp Epidemiol* 1997; 18: 699-703.
22. Kamolratanakul P, Ungtavorn P, Israsena S, Sakulramrung R. The influence of dissemination of information in the change of knowledge, attitude and acceptance of hepatitis B vaccination among hospital personnel in Chulalongkorn hospital. *Public Health* 1994; 108: 49-53.

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