

Hepatitis B Vaccination Awareness among female medical students at Taibah University in Madinah, KSA

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ABSTRACT

BACKGROUND: Hepatitis B virus infection is a critical public health issue. About 30% of people around the world have positive serology of hepatitis B virus (HBV). Although Kingdom of Saudi Arabia was HBV endemic country, this later declined due to the HBV vaccination to newborns since 1989 but the risk remains for medical students and health care workers. **OBJECTIVES:** to assess the awareness level of Hepatitis B Vaccination among medical students in Taibah University in Madinah city and their knowledge about HBV infection due to its importance and later prevention. **SUBJECTS AND METHODS:** A descriptive cross sectional study was conducted at female section of college of medicine, Taibah University in Madinah city, Kingdom of Saudi Arabia. Data was collected by using self-administered semi structured questionnaire. **RESULTS:** Knowledge about

hepatitis B virus, vaccine and routes of transmission of HBV was relatively high. Vast majority of participants have heard of hepatitis B and had knowledge concerning the various aspects of HBV (76% believe that HBV is contagious disease, 82% believe that the HBV carrier may look healthy without showing any symptoms of the disease, 83% of them believe doctors and medical students are more prone of getting hepatitis B via cross-infection). While, 72% of the participants believe that doctors can spread the virus to their patients. The findings revealed a statistically significant difference in the level of awareness among female medical students by their academic year and vaccination status.

CONCLUSION: Majority of the students have adequate knowledge of Hepatitis B infection with a relatively high vaccination rate among the participants, **however**, continuous training about HBV protection, vaccination and checking the anti-HBs level, is a matter of necessity

Keywords: Hepatitis B, Knowledge, Awareness, Vaccination, Medical students.

INTRODUCTION:

Hepatitis B virus infection is a critical public health issue. About 30% the of people around the world have positive serology of hepatitis B virus (HBV) which is approximately 2 billion , of which 350 million have chronic HBV infection a million of them dies each year from chronic liver disease (1). Although Kingdom of Saudi Arabia was previously HBV endemic country, this declined later due to the HBV

vaccination to newborns since 1989 but the risk remains for medical students and health care workers (2). The transmission of Hepatitis B virus is mostly through skin injuries that involves the use of instruments covered with or containing HBV infected blood. The virus can survive for about a week and then it can be transmitted even days after the first contamination. In which health care workers as well as medical students are the ones to think of as a high-risk group due to their work nature exposure. From 1% to 6% risk of acquiring HBV from a needle stick injury when the source patient is only HBsAg-positive. This risk however, increases to 22% - 40% when the source from patient which it's both HBsAg-positive and HBeAg-positive (3). Hepatitis B vaccine has been available since 1982 but since 1990 it has been recommended for all healthcare workers who are frequently exposed to blood and fluids (4) Vaccination is the essential method to prevent the infection. The content of the vaccine is one of the viral envelope proteins, hepatitis B surface antigen (HBsAg). It is produced by yeast cells, into which the genetic code for HBsAg has been inserted (5).

A complete series 3 doses of the vaccine to those persons who are not vaccinated or not completely vaccinated given by the intramuscular route is recommended. The second dose should be administered 1 month after the first dose. Both first and second dose ensure complete protection, and the final dose should be given at least 2 months after the second dose (and at least 4 months after the first dose) is to prolong protection against the infection (6). Then after the vaccination an HBsAb forms in which with this antibody and immune system memory then provide immunity to hepatitis B infection (7). The safe and most appropriate way to prevent against the

high occurrence of the viral infection is to prevent it from the start. To have knowledge and proper attitudes toward this infection is the basis to prevent its transmission.(8) Medical students can be a very helpful in preventing the disease by increasing their disease knowledge among themselves and the patients they counter in hospitals. It is advised that all health care workers should take their guard to prevent instrumental injuries and any kind of infection transmission. This study aims to assess the awareness level of Hepatitis B Vaccination among medical students in Taibah University in Madinah city and their knowledge about HBV infection due to its importance and later prevention.

SUBJECTS AND METHODS:

Study design and setting:

A descriptive cross sectional study was conducted at female section of college of medicine, Taibah University in Al-Madinah Al-Monawarah, Kingdom of Saudi Arabia

Study population:

Undergraduate female medical students of Taibah University during the academic year 2015-2016.

Sample size:

A representative sample was randomly selected from the sampling frame obtained from student affairs of college of medicine. Forty students were selected randomly from each level. The total number of participants was 200 female medical students. Out of those 156 students agreed to participate in the study.

Data collection tools and instruments:

Data was collected by self-administered semi structured questionnaire which included three sections:

Section I: Socio-demographic characteristics (age, educational level, marital state, number of children, residence).

Section II: questions on knowledge about HBV and the vaccination.

Section III: questions on vaccination status and attitude towards HBV vaccination

Pilot study:

Before the start of the study, the semi-structured questionnaires was pre-tested on 10% of the sample students to explore if there is any ambiguity or items leading to misunderstanding in the questionnaire in order to reach to its current final form. These 10% students were not being included in the main survey.

Validity and reliability of the questionnaire:

The items in the questionnaire were obtained from numbers of validated questionnaires and validity was completed by reviewing it by 3 experts. The questionnaire was re-administered after a week to the same sample of the pilot study to check test-retest reliability

Data management:

Statistical Analysis was used. Data was coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 20.0 (SPSS, Chicago, IL,

USA). Quantitative data was represented as mean and standard deviation and qualitative data was represented as frequencies and percentages. P-value ≤ 0.05 was considered statistically significant and ≤ 0.01 was considered highly significant.

Ethical approval:

Official permissions were obtained from the scientific ethical committee of the college. Informed consent was obtained from all the participants after describing the aim of the study. Privacy and confidentiality was assured.

Financial Support:

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Conflict of Interest: The authors declared that they have no conflict of interest.

RESULTS:

Table 1: Socio-demographic characteristics of the participants.

Socio-demographic characteristics			
Age (years)	Mean \pm SD	22.23 \pm 1.75	
		Frequency (n= 156)	Percentage %
Marital status	Non married	149	95.5
	Married	7	4.5
Academic year	1st year	14	9.0

	2nd year	38	24.4
	3rd year	17	10.9
	4th year	19	12.2
	5th year	68	43.6
Residency	Urban	143	91.7
	Rural	13	8.3

Table 1 shows that the mean age of participants is 22.23 with a standard deviation of 1.759. The percentage of married was 4.5%, while 95.5% were non married. According to the academic year, 9% of them were in the 1st year, 24% in the 2nd year, 11% in the 3rd year, 12% in the 4th year, and almost 44% of them were in the 5th year. Concerning their residency, almost 92% of them were in urban area, while 8% of them were in rural area.

Table 2: Student's knowledge of hepatitis B infection.

knowledge of hepatitis B infection		Frequency (n=156)	Percentage %
Have you heard of hepatitis B	Yes	148	94.9
	No	7	4.5
	I don't know	1	.6
Is most chronic hepatitis B Infection	Yes	53	34.0

symptomatic	No	78	50.0
	I don't know	25	16.0
	Yes	14	9.0
HBV can be caused by bacteria	No	126	80.8
	I don't know	16	10.3
	Yes	119	76.3
HBV is contagious disease	No	17	10.9
	I don't know	20	12.8
	Yes	128	82.1
HBV carrier may look healthy without showing any symptoms of the disease	No	9	5.8
	I don't know	19	12.2
	Yes	130	83.3
HBV can be lethal.	No	8	5.1
	I don't know	18	11.5
	Yes	130	83.3
Are doctors and medical students more prone of getting hepatitis B via cross-infection?	No	10	6.4
	I don't know	16	10.3
	Yes	113	72.4
Doctor can spread the virus to their patients	No	25	16.0
	I don't know	18	11.5

Table 2 demonstrates that the vast majority of participants have heard of hepatitis

B, 34% have knowledge about the symptoms of hepatitis B, and 9% believe that

the cause of HBV is bacteria. Almost 76% of participants believe that HBV is contagious disease. Majority of the participants 82% believe that the HBV carrier may look healthy without showing any symptoms of the disease and 83% believe that HBV can be lethal. Almost 83% of them believe doctors and medical students are more prone of getting hepatitis B via cross-infection. While, 72% of the participants believe that doctors can spread the virus to their patients.

Table 3: Student's Knowledge of HBV vaccination

Knowledge of HBV vaccination		Frequency (n=156)	Percentage %
HBV vaccination is not for all people	Yes	27	17.3
	No	92	59.0
	I don't know	37	23.7
HBV vaccination does not cause hepatitis	Yes	98	62.8
	No	16	10.3
	I don't know	42	26.9
HBV vaccination can prevent hepatitis.	Yes	130	83.3
	No	5	3.2
	I don't know	21	13.5
HBV vaccination does not increase the risk for complications	Yes	90	57.7
	No	24	15.4

	I don't know	42	26.9
	Yes	42	26.9
HBV vaccination is contraindicated in pregnancy	No	26	16.7
	I don't know	88	56.4
	Yes	69	44.2
The antibodies for HBV need to be checked after three titers.	No	6	3.8
	I don't know	81	51.9
	Yes	6	3.8
Have you ever been infected with Hepatitis B infection or any liver disease before	No	136	87.2
	I don't know	14	9.0
	Yes	65	41.7
Have you ever been tested for hepatitis B?	No	80	51.3
	I don't know	11	7.1

It is clear from this table that 17% of participants believe that HBV vaccination is not for all people, and 63% of them believe that HBV vaccination does not cause hepatitis. Majority of participants 83% know that HBV vaccination can prevent hepatitis and more than half 58% believe that HBV vaccination does not increase the risk for complications. Also it is noted that 27% of participants know that HBV should not be vaccinated in pregnancy, and 44% believe that HBV antibodies needed to be checked after three titers. About 4% of participants informed that

they had infected with Hepatitis B infection or any liver disease before, and 42% of the participants have been tested for hepatitis B.

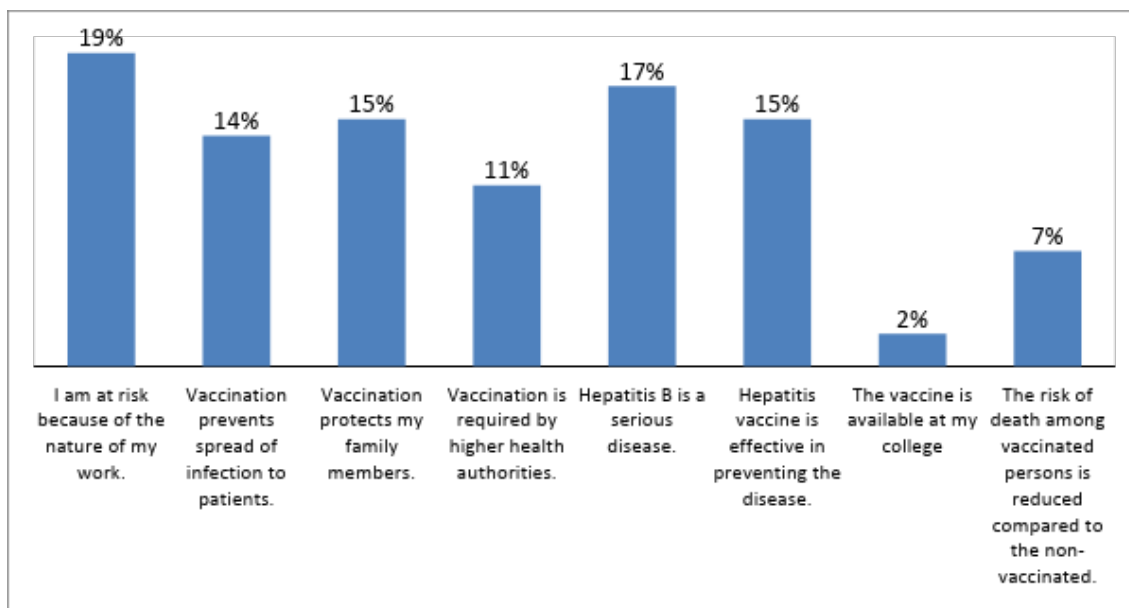
Table 4: Vaccination status towards HBV vaccination

Vaccination status		Frequency (n=156)	Percentage %
Have you received hepatitis B vaccine before	Yes	73	46.8
	No	41	26.3
	I don't know	42	26.9
Have you received the complete 3 doses of the vaccine*	Yes	41	56.2
	No	18	24.7
	I don't know	14	19.2

* Total no. of those who received vaccine = 73

Table 4 shows that almost 47% of the participants received hepatitis B vaccine before and 45% of them received the complete 3 doses of the vaccine.

Figure (1): Frequency of reasons of a positive attitude towards HBV vaccination



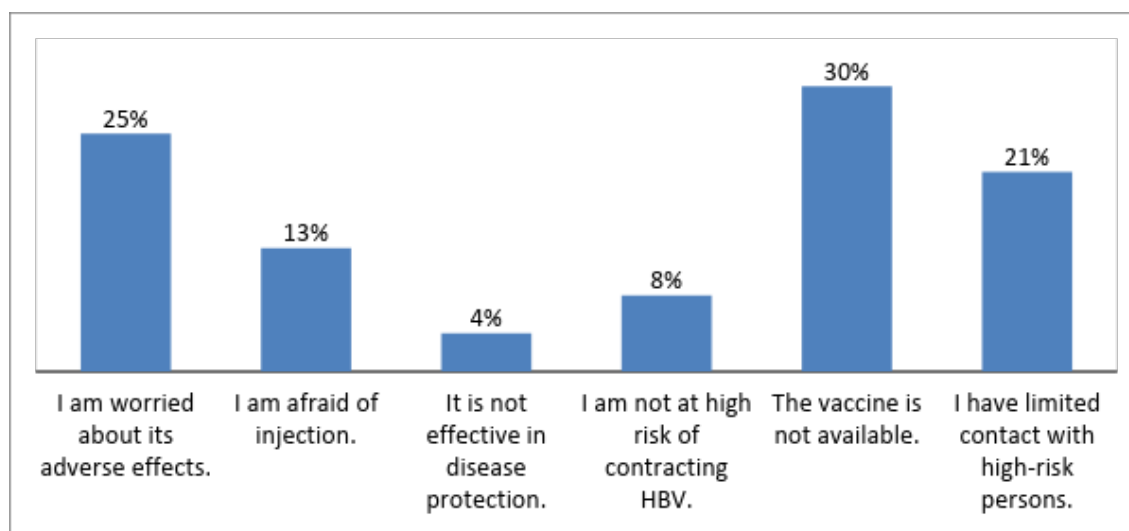
The most important reasons for a positive attitude towards HBV vaccination are:

Prevention, protection of family members, prevention of infection, and reduced risk

of death as shown in figure 1.

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Figure (2): Frequency of reasons of a negative attitude towards HBV vaccination



It is clear from the previous figure (2) that the most important reasons for a negative attitude towards HBV vaccination: Non-availability of the vaccine, concern about the negative effects of the vaccine, no need for a vaccine because of a lack of mixing with people with hepatitis, and fear of injection.

Table 5: Test differences in the level of awareness among Medical Students in Taibah University in Madinah due to academic year.

	Sum of Squares	d.f	Mean Square	F	P-value
Between Groups	6.045	4	1.511	7.968	.000
Within Groups	28.640	151	.190		
Total	34.686	155			

This table shows that there is a statistically significant difference in the level of awareness among Medical Students in Taibah University in Madinah by their academic year ($P = .000$).

Table 6: Test differences in the level of awareness among Medical Students in Taibah University in Madinah due to vaccination status.

Vaccination status	N	Mean	Std. Deviation	T	P-value
Yes	73	1.93	.419	2.501	0.014
No	41	2.12	.331		

Table 6 shows a statistical significant difference in the level of awareness among Medical Students in Taibah University in Madinah by vaccination status ($P = .000$).

DISCUSSION:

The present descriptive cross-sectional study involved 156 female medical students at Taibah University, Kingdom of Saudi Arabia to assess the level of knowledge and awareness of medical students regarding HBV vaccination and so to increase the level of awareness and take proper prevention like vaccination and infection control measures.

The current study demonstrated that vast majority of participants have heard of hepatitis B and had knowledge concerning the various aspects of HBV (76% believe that HBV is contagious disease, 82% believe that the HBV carrier may look healthy without showing any symptoms of the disease, 83% of them believe doctors and medical students are more prone of getting hepatitis B via cross-infection). While, 72% of the participants believe that doctors can spread the virus to their patients.

In agreement with these findings, **Habiba et al., 2012** reported high participants' knowledge concerning the various aspects of HBV in their similar study (knowledge of HBV infection, the routes of transmission of the infection, the ways of preventing the infection and the fact that the infection can be transmitted as a nosocomial infection) and is consistent with the current study(9). In contrast, lower knowledge particularly regarding infections from health worker to a patient was reported by **Abdal M and Al-Mousa K, 2013**. Furthermore, limited knowledge was found among Vietnamese American college students toward their increased risk of HBV and demonstrated the need for general HBV education.

As regard student's knowledge of HBV vaccination, it is noted in the current study that majority of participants 83% know that HBV vaccination can prevent hepatitis and more than half 58% believe that HBV vaccination does not increase the risk for complications. A previous study in Taiwan has shown that 75.0% of the dental students had adequate knowledge of hepatitis B. However, they had little information about vaccine dose, transmission via personal objects, and precautions and prevention

Almost 47% of the participants received hepatitis B vaccine before and 45% of them received the complete 3 doses of the vaccine (10)

In addition, a study conducted by Alavian SM et.al, 2005 revealed that vaccination against HBV was done in 94.9% of dentists, in another study has increased to 96.6% (KUDCs .Dec, 2013) which is higher than that reported in our study 46.8%. This difference could be attributed to different sample size in different studies(11).

Concerning positive attitude towards HBV vaccination, this study showed that the most important reasons for a positive attitude towards HBV vaccination are: Prevention, protection of family members, prevention of infection, and reduced risk of death which suggests satisfactory awareness toward HBV vaccination. Furthermore, they believed that hepatitis B is a serious illness cause the death. This finding is similar to another study by Habiba. et.al, 2012 which showed that factors associated with a positive attitude towards vaccination was the belief in the efficacy of the vaccine and that their job puts them at risk of HBV infection(9). On the other hand, the most important reasons for a negative attitude towards HBV vaccination was non-availability of the vaccine, concern about the negative effects of the vaccine, no need for a vaccine because of limited contact as a students with hepatitis patients, and fear of injection. These reason could be accepted with the traditional methods of medical students teaching which is now absent with new curriculum adapted for medical students in Taibah university which allow early clinical experience for student from the first year with mandatory HBV vaccination.

Our study showed that a statistically significant difference in the level of awareness among Medical Students by their academic year, possibly because of majority of students were in the 5th year so there is enough emphasis about the topic in college class level. Similar results were found in Syrian Private University study which showed that the first-year medical students have poor knowledge and lack of awareness about hepatitis B, its routes of transmission, risk factors, and modes of preventions compared to the fifth-year medical students (13). therefore it is suggested to modify the curriculum to promote awareness among the medical students. One important achievement from our study is that education is necessary as students play an important role in dissemination of knowledge and raising awareness among their communities.

As regards awareness among participants by vaccination status, we found that there is a statistical significant difference in the level of awareness among Medical Students by vaccination status which is logical because those who appropriately vaccinated should have a higher level of awareness of the importance and preventative value of the vaccine compared to those who do not, and hence must be more knowledgeable. However, it is highly valuable to provide free HBV vaccines to all the non-vaccinated students and follow students who not complete 3 doses of the vaccine that will significantly reduce number of hepatitis cases among students and prevent complications.

LIMITATIONS:

There are some potential limitations in this study, being a descriptive cross-sectional study, therefore, no direct relationship between variables and outcomes can be proved and bias associated with the self-administered questionnaire.

CONCLUSION: Majority of the students have adequate knowledge of Hepatitis B infection with a relatively high vaccination rate among the participants, **however**, continuous training about HBV protection, vaccination and checking the anti-HBs level, is a matter of necessity

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