



## RESEARCH ARTICLE

## Knowledge, Attitude and Practice on Hepatitis B: A Survey among the Internet Users in Taif, Kingdom of Saudi Arabia

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### Abstract

Hepatitis B Virus (HBV) infection is an important and serious global health problem. Despite the fact that there is a decrease in the prevalence rate of HBV infection in Saudi Arabia, but still it causes significant morbidity and mortality. This study was conducted to measure the level of knowledge and to identify attitude and practice on HBV. A cross-sectional study was conducted in Taif Area; Saudi Arabia during the period of 1<sup>st</sup> June - 30<sup>th</sup> July 2016. Adult (18 years and above) Saudi and Non-Saudi (Arabic speaking) people were included. Data was collected by a structured questionnaire, which was distributed electronically through the social media channels (Twitter). Data was processed using the Statistical Package for Social Sciences SPSS (version 21.0 Inc., Chicago IL, USA). Descriptive statistics were used to describe all variables. The Chi-squared test was used to identify associations between different variables. Logistic regression analysis was applied. *P* value < 0.05 was considered significant. *P* value < 0.05 was considered significant.

A total of 499 respondents were included. Overall, 361 (80.4%) admitted that they already heard about hepatitis B, of them 74 (20.5%) were classified as having satisfactory knowledge about the disease. Residence in the town (*P* = 0.03), university education (*P* = 0.012) and working in the medical field (*P* < 0.001) were significantly associated with satisfactory knowledge about HBV. Of the respondents, 155 (42.4%) already vaccinated against the disease. Working in the medical field was found to be significantly associated with vaccination uptake, (*P* = 0.001). Medical screening for the disease was done by 136 (37.7%) and being married was found to be strongly associated with this practice (*P* < 0.001).

Multiple gaps in knowledge and misconceptions in attitude and practices were identified. Health education on hepatitis B at all levels is imperative, which can be achieved through health educational campaigns focusing on less educated people and rural residents.

### Keywords

Knowledge, Attitude, Practice, Hepatitis B, Saudi

### Introduction

Hepatitis B Virus (HBV) is an important and serious health problem. Globally, the number of people with HBV chronic infection estimated to be more than 350 million, with high rates in South-East Asia and Western Pacific Regions [1]. Although Saudi Arabia witnessed a decrease in the prevalence of both Hepatitis C Virus (HCV) and HBV infections, but these infections still cause significant morbidity and mortality [2]. The decreased rate, especially among people under 20 years may be attributed to the successful coverage of children with HB immunization as part of childhood vaccination [3]. The mode of disease transmission differs according to the rate of prevalence. In areas with a high prevalence rate the disease mainly transmitted through perinatal route, however, in areas with low rate of prevalence, sexual contact among adult people at high risk is the predominant route [4].

Researchers around the world investigated knowledge, attitude and practice on HBV among the public and/or healthcare providers. Adequate knowledge and more awareness about the disease was associated with better vaccination uptake [5]. Hislop, et al. [6] documented low level of knowledge about the disease and especially routes of HBV transmission. Younger age, higher level of education and use of the internet and the media for health information about the disease were

found to be significant predictors of higher knowledge about HBV [7]. The public ignores or unaware about the screening for hepatitis B and vaccination against the infection [8]. In addition, the public has a low level of knowledge about the complication of HBV [9].

In Saudi among the healthcare providers lack of knowledge and positive attitudes were documented [10] and the physician's practices to prevent the occupational risks of HBV was inappropriate [11]. Assessment of the medical students' knowledge about the occupational risks of HBV infection showed a deficiency in post-exposure prophylaxis [12].

Assessment of the public/healthcare providers' knowledge, attitude and practice on HBV is crucial. Identification of knowledge gaps and misconceptions will help in the development of educational interventions to fill these gaps. Therefore, this study was undertaken to measure the knowledge and to identify attitude and practice towards hepatitis B, together with identifying the demographic variables associated with the level of knowledge about the disease.

## Methods

A cross-sectional study was conducted in Taif Area in the Western part of Saudi Arabia during the period of 1<sup>st</sup> June - 30<sup>th</sup> July. Adult (18 years and above) Saudi and Non-Saudi (Arabic speaking) people were included. Illiterates, people < 18-years-old and residents outside the study area were immediately excluded. In order to avoid sampling errors, individuals residing in other geographical regions were automatically blocked from participating in the study. The sample size was determined based on the last census conducted in the country in

the year 2010 [13]. Based on that census, the sample size was calculated to be 384 [sample frame 1,200,000]. Sample calculation was conducted at a 95% confidence level with a margin of error 5%. The data was collected by mean of a structured questionnaire, which was distributed through social media channels (Twitter). The questionnaire was composed of four sections. The first part of the questionnaire was designed to collect data on demographic characteristics, namely; gender, age, residence, nationality, education level, etc. The second part consisted of 20-items to test participants' knowledge on the disease, adapted from a previous study [14]. This part was designed to test the participants' knowledge across multiple domains, namely; etiology of the disease, signs and symptoms, modes of transmissions, preventive measures, treatment and vaccination. Definition of satisfactory knowledge on HBV was a total score of 14 out 20 (70% correct responses) and unsatisfactory if the score below this cutoff point. This cutoff was determined based the fact that the mean score for the entire studied sample was (10.1 ± 3.9). The third part of the questionnaire composed of five questions to identify participants' attitudes on HBV. The last part composed of 4-items and was designed to identify participants practice related to the disease. The questionnaire was tested with a group of ten participants to ensure applicability and to estimate the time frame for data collection.

Data was processed using the Statistical Package for Social Sciences SPSS (version 21.0 Inc., Chicago IL, USA). Descriptive statistics were used to describe all variables. The Chi-squared test was used to identify associations between different variables. Logistic regression analysis

**Table 1:** Demographic data by educational level (n = 449).

Background characteristic	Educational level		Total	P value
	Below university (%)	University (%)		
<b>Gender</b>				
Male	35.3	64.7	272	0.023
Female	45.2	54.8	177	
<b>Age group in years</b>				
≤ 40	36	64	374	< 0.001
> 40	61.4	38.6	75	
<b>Residence</b>				
Town	32.7	67.3	321	< 0.001
Outside town	55.5	44.3	128	
<b>Nationality</b>				
Saudi	34.7	65.3	383	< 0.001
Non-Saudi	65.2	34.8	66	
<b>Occupation</b>				
Medical field	29.4	70.6	160	0.001
Outside the medical field	44.6	55.4	389	
<b>Marital status</b>				
Single	37.8	62.2	275	0.256
Married	41.4	58.6	174	
<b>Family monthly income (SR)</b>				
≤ 5000	64.2	35.8	137	< 0.001
> 5000	28.2	71.8	312	

was applied to identify the predictors of prior knowledge about the disease, general knowledge on hepatitis B and participants practices related to vaccination uptake and medical screening. *P* value < 0.05 was considered statistically significant.

## Results

### Demographic data

Overall, a total of 499 were included, slightly above sixty percent of them were males. The majority were youngers (age ≤ 40 years). Town dwellers were slightly more than seventy percent and the respondents who attained a university level of education constituted slightly more than sixty percent. [Table 1](#) showed the distribution of demographic data by educational level.

### Prior knowledge on hepatitis

Overall, out of all the participants 361 (80.4%) admitted that they heard about hepatitis B before. Multivariable analysis showed that university education, working in the medical field and monthly income above 5000 SR were the significant predictors of prior knowledge about hepatitis B. [Table 2](#) showed predictors of prior knowledge about hepatitis B.

### Knowledge on hepatitis B etiology, transmission, prevention and treatment

Overall, 74 (20.5%) of all the participants who had prior knowledge about hepatitis B were classified as having satisfactory knowledge about the disease. [Table 3](#) showed

the correct responses to knowledge items on hepatitis B by type of occupation.

### Predictors of satisfactory knowledge about hepatitis B

The results of multivariable analysis showed that, residence in the town, university educational level and working in the medical field were significantly associated with satisfactory knowledge about the disease. The results of the multivariable analysis were shown in [Table 4](#).

### Attitude towards hepatitis B

Of all the participants who knew hepatitis B before, 197 (54.5%) strongly agreed/agreed that contracting the infection can affect a person's ability to visit friends or the ability to travel and 135 (37.4%) has the same attitude that the person with hepatitis B should always be isolated from other people to prevent infection. [Table 5](#) showed attitude towards hepatitis B.

### Practices on hepatitis B

Of the respondents, 155 (42.4%) were already vaccinated against the disease. On multivariate analysis, only working in the medical field was found to be significantly associated with vaccination uptake, {53.1% vs. 36.0%} of healthcare workers and other participants, respectively [2.0 (1.3-3.1), (*P* = 0.001)]. Medical screening for the disease was done by 136 (37.7%). Marital status was found to be strongly associated with this practice (50.7% married

**Table 2:** Determinants of prior knowledge about Hepatitis B.

Covariates	% Heard about Hepatitis	N	Univariable analysis crude OR (95% CL)	P value	Multivariable analysis adjusted OR (95% CL)	P value
<b>Gender</b>						
Male	83.1	272	1.5 (1.0-2.4)	0.077		
Female	76.3	177				
<b>Age group in year</b>						
≤ 40	82.6	374	2.1 (1.2-3.8)	0.009		
> 40	69.3	75				
<b>Residence</b>						
Town	83.5	321	1.9 (1.2-3.1)	0.010		
Outside town	72.7	128				
<b>Nationality</b>						
Saudi	83.3	383	2.8 (1.6-5.0)	< 0.001		
Non-Saudi	63.6	66				
<b>Educational level</b>						
Below university	68.8	383	2.8 (1.6-5.0)	< 0.001	0.5 (0.3-0.8)	0.009
University	87.9	66				
<b>Marital status</b>						
Married	80.5	174	1.0 (0.6-1.6)	0.980		
Single	80.4	275				
<b>Occupation</b>						
Medical field	91.9	160	4.0 (2.1-7.4)	< 0.001	3.2 (1.7-6.1)	0.001
Outside medical field	74	289				
<b>Family monthly income (SR)</b>						
< 5000	67.9	137	0.3 (0.2-0.6)	< 0.001	0.5 (0.3-0.9)	0.017
> 5000	85.9	312				
<b>Total</b>		499				

**Table 3:** Correct responses to knowledge items on Hepatitis B by occupation.

Question	Frequency of correct response (%)		% total (n = 361)	P value
	Medical field	Outside the medical field		
Is Hepatitis B a viral disease?	81.0	65.0	71.5	0.001
Is Hepatitis B is contagious disease?	70.7	47.7	57.1	< 0.001
Can Hepatitis B affect any age group?	70.7	57.9	63.2	0.009
Is the early symptoms of Hepatitis B are same like cold and flu (fever, running nose, cough)?	43.5	29.4	35.2	0.004
Is Jaundice one of the common symptoms of Hepatitis B?	63.3	42.1	50.7	< 0.001
Are nausea, vomiting and loss of appetite common symptoms of Hepatitis B?	59.2	45.3	51.0	0.006
Are there no symptoms of the Hepatitis B in some of the patients?	58.5	49.1	53.0	0.049
Can Hepatitis B be transmitted by un-sterilized syringes, needles and surgical instruments?	74.8	61.2	66.8	0.005
Can Hepatitis B be transmitted by contaminated blood and blood products?	78.2	71.0	74.0	0.079
Can Hepatitis B be transmitted by using blades of the barber/ear and nose piercing?	69.4	67.3	68.1	0.381
Can Hepatitis B be transmitted by unsafe sex?	61.9	45.3	52.1	0.001
Can Hepatitis B be transmitted from mother to child?	57.8	40.7	47.6	0.001
Can Hepatitis B be transmitted by contaminated water/food prepared by person suffering with these infections?	29.9	25.2	27.1	0.193
Is Hepatitis B curable/treatable?	22.4	17.3	19.4	0.140
Can Hepatitis B be self-cured by body?	24.5	27.1	26.0	0.333
Is specific diet required for the treatment of Hepatitis B?	47.6	37.4	41.6	0.034
Can Hepatitis B treated by traditional medicine or herbs?	34	21.0	26.3	0.004
Is vaccination available for Hepatitis B?	68.7	52.8	59.3	0.002
Can Hepatitis B affect liver function?	76.2	72.0	73.7	0.220
Can Hepatitis B cause liver Cancer?	55.8	43.9	48.8	0.017

**Table 4:** Determinants of satisfactory knowledge about Hepatitis B.

Covariates	% Satisfactory knowledge	N	Univariable analysis crude OR (95% CL)	P value	Multivariable analysis adjusted OR (95% CL)	P value
<b>Gender</b>						
Male	23.5	226	1.6 (0.92-9)	0.074		
Female	15.6	135				
<b>Age group in year</b>						
< 40	21.4	309	1.5 (0.73-3)	0.326		
> 40	15.4	52				
<b>Nationality</b>						
Saudi	21.3	319	1.6 (0.7-4)	0.3		
Non-Saudi	14.3	42				
<b>Residence</b>						
Town	23.9	268	2.6 (1.3-5.3)	0.009	2.1 (1.05-4.6)	0.03
Outside town	10.8	93				
<b>Educational level</b>						
University	25.4	240	2.8 (1.5-5.4)	0.002	2.4 (1.2-4.6)	0.012
Below university	10.7	121				
<b>Marital status</b>						
Married	16.4	140	0.6 (0.4-1.1)	0.129		
Single	23.1	221				
<b>Occupation</b>						
Medical field	31.3	147	3.02 (1.8-5.1)	< 0.001	2.8 (1.6-4.8)	< 0.001
Outside medical field	13.1	214				
<b>Family monthly income (SR)</b>						
< 5000	21.5	93	1.08 (0.6-1.9)	0.78		
> 5000	20.1	268				
<b>Total</b>		361				

vs. 29.4% single). In addition, nationality (non-Saudi 64.3% vs. Saudi 64.3%) and educational level (51.2% below uni-

versity vs. 30.8% university) were found as weak predictors of medical screening as shown in Table 6.

**Table 5:** Participants attitudes on Hepatitis B disease.

Item	SA/A	Neutral	D/ SD
Hepatitis B is a major health issue	300 (83.1%)	49 (13.6%)	12 (3.3%)
Early screening (especially before marriage) may reduce the incidence of the disease and prevent its complications	312 (86.4%)	32 (8.9%)	17 (4.7%)
The imposition of health control and inspection to medical centers, restaurants, hairdressing salons and employees important to reduce the spread of the disease among the population	302 (83.9%)	34 (9.4%)	24 (6.6%)
Infection with Hepatitis B can affect a person's ability to visit friends or ability to travel	197 (54.5%)	93 (25.8%)	71 (19.7%)
The person with Hepatitis B should always be isolated from other people to prevent infection	135 (37.4%)	104 (28.8%)	122 (33.8%)

**Table 6:** Predictors of medical screening for Hepatitis B.

Predictor	Adjust ODDs	P value	95% CI	
			Upper limit	Lower limit
Educational level	0.5	0.009	0.3	0.9
Nationality	0.4	0.006	0.2	0.7
Marital status	2.8	< 0.001	1.7	4.5

## Discussion

The current research attempted to explore the knowledge, attitude and practice of the people residing in Taif Area; KSA. The data obtained was collected through the internet using the social media. This method of data collection is of benefit, as it provides great opportunities for females to take part in the study. Such opportunities are expected to be low due to the cultural norms in the country. However, using the social media decreases the chances for illiterates, people who don't have access to this technology and elderly people to participate in the survey.

Overall, 80.1% of the participants already heard of hepatitis B before. This may be explained by the fact that people nowadays gained more health information and awareness about hepatitis infection in general and particularly with hepatitis B through several educational sources (e.g. internet). In addition, the increase incidence of the disease in the last decades in the country may also be another contributory factor. In contrast, this percent was lower than the finding obtained by Kue, et al. [15] as they found that most of the participants (96.4%) had heard of hepatitis B.

High level of education was a significant factor that determines participants prior knowledge about hepatitis B. Comparatively, one study conducted in Malaysia showed that participants with a high level of education heard and aware about hepatitis B more than those with low level of education [16]. As expected, the level of prior knowledge and information about the disease was more among participants worked in the medical field. Healthcare providers gained information about the disease from the curricula. In addition, they have more chances to come across different medical resources and obtain more information during dealing with patients.

Analysis of the participants knowledge by domain

showed that, nearly 70% knew that the disease is caused by a virus and approximately 60% knew that it is contagious. Understanding this information is considered basic in providing health education as it influences other knowledge domains like; disease transmission, preventive measures and treatment.

Nearly above one third of the respondents knew that early symptoms of hepatitis B are same like cold and flu. The consequences of this finding are a delay of disease recognition and diagnosis. Early recognition through screening and treatment was documented to be a cost-effective approach to decrease the disease related complications [17]. Both participants not working in the medical field and healthcare workers had poor knowledge about the disease's signs and symptoms. Likewise, in the above-mentioned study healthy population showed low knowledge about hepatitis B signs and symptoms [14].

Regarding modes of disease transmission, the participants' knowledge ranging from moderate to low when analyzed by routes of transmission. Nearly three quarters of them knew that the disease can be transmitted by contaminated blood and blood products and above two thirds by using blades of the barber/ear and nose piercing. Such gaps in knowledge again have a negative impact on the participant's practices with regard to adherence to the standards that should be taken to prevent contraction or transmission of the disease. The knowledge of disease transmission through contaminated blood and blood products and un-sterilized syringes, needles and surgical instruments is of importance, especially for people working in the medical field who at great risk to acquire the disease through these routes. Healthcare providers should be educated strictly to follow infection control measures because they can be victims or source of disease transmission. Comparatively, a recent study identified that the modes of disease transmission were unknown by nearly two thirds of the included participants [18]. Less than 50% of the participants knew that the disease can be transmitted from mother to child and slightly above 50% by unsafe sex. In contrast, these percentages were lower than those reported in another study, whereby approximately 80% and 70% of the respondents knew that the disease can be transmitted during childbirth and sexual intercourse, respectively [19].

At the level of disease treatment and prevention the study identified multiple misconceptions. Unfortunately, healthcare workers demonstrated low level of knowledge in this domain. Any planned future educational programs targeting the upgrade of healthcare workers knowledge should put emphasis on this domain. Nearly one quarter of the participants had the belief that the disease can be treated by traditional medicine and herbs. The use of herbal or traditional medicines is deeply rooted in the Arab culture. In the Middle East the people have strong beliefs that traditional and herbal medicine can cure any disease without side effects. Another important finding was that nearly sixty percent knew the fact that, there is a vaccine against hepatitis B. This finding may influence vaccine uptake greatly.

Overall, 20.5% of all the participants who had prior knowledge about hepatitis B were classified as having satisfactory knowledge on hepatitis B. The results emphasize the absence of adequate health education in the studied area. But, this result was better compared to the finding of another study which reported a lower percentage of 14% of the participants who had good knowledge about the disease [20].

Again, university educational level, working in the medical field and residence in the town were the significant predictors of satisfactory knowledge. Similarly, educational level was found to be significant predictor of good knowledge in the above-mentioned study [20].

A serious finding was that, less than one third of the healthcare workers had satisfactory knowledge. This finding raised many questions about the quality of health education, if any, provided to the participated healthcare workers. Health authorities should upgrade health workers knowledge on hepatitis B through continuous in-service training. In a study conducted in the Northwest part of Ethiopia researchers reported a high level of adequate knowledge (> 80%) on hepatitis B among health care workers regarding risk factors for acquisition of the infection, its mode of transmissions, and preventive measures [21].

The third predictor of satisfactory knowledge was living in the town. A predictor that deserves attention and in depth future investigation to explore the underlying reasons that lead to this disparity between people residing in the town and rural areas. But, this finding can be partially explained by the difference in the provided health care services and the limited contact with healthcare providers in rural areas.

Generally, the respondents had positive attitudes on screening, control, inspection of the disease, but some of them had the beliefs that the disease affects the person's ability to travel and that the infected person should be isolated. These negative attitudes may be linked to the low level of satisfactory knowledge in general and specifically to the poor knowledge at the domain of disease transmission and prevention. Signifi-

cant positive correlations between knowledge and attitude were documented in the literature [22].

Assessment of hepatitis B practices among the respondents showed that a considerable number of them did not make a medical screening for the disease. Medical screening was found to be strongly associated with being married. This may be justified by the fact that in Saudi Arabia, hepatitis is included in the premarital screening with other diseases such as Sickle-Cell Anemia (SCA) and thalassemia, and some infectious diseases such as hepatitis C and HIV "Aids. Of the respondents, 42.4% already were vaccinated against the disease. The only predictor of vaccination uptake was being healthcare worker. Comparatively, in another study, 70% of the respondents did not have vaccination and it was proportionally linked to educational level [23].

This study had some limitations. Firstly, it was conducted in one area in the country so, the obtained results cannot be generalized to all population in the country. Secondly, being internet-based survey; older people, illiterates and individuals who did not have access to the social media did participate. Thirdly, the study population was divided as healthcare workers and others without specifying the exact jobs in both categories. Fourthly, the effect of prior infection or diagnosis of the participants or their relatives or friends with hepatitis B, as an important factor that may influence prior knowledge, was not account for in the analysis.

In conclusion, the level of knowledge of hepatitis B was low and generally, the participants had positive attitude towards the disease and negative practices related to the early screening and prevention of the disease. Public education on hepatitis B is imperative. Health education can be provided through different educational platforms, which can achieve through public health campaigns focusing on less educated people. In addition, several health educational message can delivered through social media in a form of videos or posters that educate the people on the most common signs and symptoms, route of transmission and treatment. Hepatitis B patients can provide health education on the disease by conveying their experience to others. Health care providers should be educated in depth about the disease and trained to be a reliable source of information to the public. Continuous education for the parent and public to get vaccination and medical screening. Early screening particularly for people who at high risk is important. The education can be provided in the well-distributed primary health care centers in the study area.

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