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Public awareness of hepatitis B infection in Turkey as a model of universal effectiveness in health care policy

LIVER

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Original Article

ABSTRACT

Background/Aims: This study aimed to analyze the knowledge and awareness of hepatitis B virus (HBV) infection in an HBV-infected Turkish population as a model for global health care practice and to evaluate potential factors associated with the disease spread and its prevention.

Materials and Methods: A cross-sectional survey was conducted in Ankara University School of Medicine, Liver Disease Outpatient Clinic between August 2012 and March 2013. The survey queried sociodemographics, knowledge, and awareness of HBV infection, transmission, and consequences and common practices and behaviors.

Results: A total of 181 patients were surveyed (median age=49 years); 91 (51%) had "advanced" education levels (high school, bachelor's, graduate degree), 108 (60%) had knowledge about HBV infection and transmittance, and 130 (72%) were aware of the ill consequences of HBV infection. Also, 120 (66%) had vaccinated their family members against HBV infection. Participants with knowledge of HBV infection transmittance were more likely to vaccinate their family members compared to unknowledgeable participants (p=0.015). Participants with "advanced" education levels were also more likely to vaccinate family members (p=0.047).

Conclusion: Promoting better awareness of HBV and endorsing mass educational interventions may be useful strategies to prevent the spread of HBV infection. Such strategies may be recommended as cost-effective global health care practices in HBV endemic areas.

Keywords: Hepatitis B virus, HBV epidemiology, disease prevention

INTRODUCTION

Hepatitis B virus (HBV) infection is an important cause of acute and chronic liver disease that remains a major public health problem worldwide, especially in endemic areas. The World Health Organization (WHO) estimates that globally, more than 240 million people are affected by chronic HBV (1-3). In the US, approximately 1%-2% of the population may be carriers for HBV infection (2), whereas in Turkey, the prevalence of hepatitis B surface antigen (HBsAg) is known to be around 4% (4). The WHO mandates the use of the HBV vaccine as an integral part of routine vaccination programs worldwide (5). Since 1998, HBV vaccination has been part of the routine childhood immunization program in Turkey (6). Outcomes of screening, immunization, and management for HBV infection have been linked to socio-economic status, literacy rate, educational awareness, and immigration status (7,8). Routine surveillance of high-risk individuals and vaccination of the general public may decrease the spread of infection by increasing herd immunity. Vertical transmission may be controlled by ensuring hospital delivery, rigorous prenatal counseling of pregnant mothers, and utilization of standard management protocols, including administration of HBV vaccine and immunoglobulin (HBIG) to high-risk babies at the time of birth (9).

The aims of the present study were to analyze knowledge and awareness of HBV infection in an HBV-infected

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Turkish population as a model for global health care practice and to evaluate what factors may be associated with the disease spread and its prevention.

MATERIALS AND METHODS

Survey population

This is a cross-sectional prospective single-center survey study. Following institutional review board approval, patients with HBV infection diagnosed at Ankara University School of Medicine, Liver Disease Outpatient Clinic were invited to participate in the study. The survey was administered between August 1, 2012 and March 1, 2013.

Survey design

A 32-question survey was prepared by two faculty experts using a modified Delphi technique (10). The survey was originally created in the Turkish language. The survey focused on the socio-demographic profile of the participants, their awareness of HBV infection, its transmission and consequences, and common behavioral practices. The survey queried 1) demographics (gender, age, body mass index (BMI)), duration of HBV infection, geographical location); 2) socio-economic profile (education level, occupation, number of bedrooms in the household, number of people living in the household); 3) HBV awareness and knowledge (HBV transmission mechanisms and disease consequences); and 4) common practices and behaviors (Table 1, 2).

Statistical analysis

Participants with "graduate," "bachelor's," and "high school" education were categorized as "Advanced," while "middle school," "elementary," and "illiterate" were treated as "Basic" education level. Statistical analysis was performed using Stata 10.0 (StataCorp, College Station, TX). Descriptive and inferential statistics were computed for the collected data. Continuous data were computed by Wilcoxon signed rank test for non-parametric data. Categorical variables were compared by using Fisher's exact test. For all statistical analyses, $p \leq 0.05$ was considered significant.

RESULTS

Characteristics

A total of 181 patients (M/F: 101/80) were surveyed. The median age was 49 years (range: 19-76). The median BMI was 26.9 kg/m^2 (range: 15.9-61.6). The average duration of disease was 10 years (range: 0.005-46). The majority of the participants was from the central region of Turkey (n=151; 85%).

Approximately half of the participants had basic education levels (illiterate, elementary, and middle school) (n=80; 49%). The remaining 51% of participants had advanced education levels (high school, bachelor's, and graduate). Most participants were homemakers (n=53, 29%) or retired (n=44, 24%), though many occupied clerical (n=37, 21%) positions. One hundred fifty-five participants lived in households with three or more bedrooms (86%). The median value for number of people living in the household was 4 (range: 1-10). Seventy-five participants (41%) were on oral anti-HBV medication; 49 participants (68%) were using potent agents, Tenofovir (Gilead; Foster City, California, USA) or Entecavir (Baraclude; Princeton, New Jersey, USA), whereas 22 participants (31%) were maintained on lamivudine (Table 1).

Table 1. General characteristics of hepatitis B patients in Turkey

Demographics	
Males (n/%)	101 (55.8)
Females (n%)	80 (44.2)
Pregnant	4 (5)
Not pregnant	76 (95)
Child-bearing age (18-49)	46 (57.5)
Age (median, range)	49 (19-76)
Body mass index (median, range) kg/m^2	26.9 (15.9-61.6)
Duration of Hepatitis B diagnosis (median yr., range)	10 (0.005-46)
Geographic location (n%)	
Marmara, Aegean, Black Sea, and Mediterranean	23 (13.0)
Central Anatolia	151 (85.3)
Eastern and Southeastern	3 (1.7)
Socioeconomic Profile	
Education (n%)	
Graduate	33 (18.2)
Bachelor's	17 (9.4)
High school	41 (22.7)
Middle school	22 (12.2)
Elementary	58 (32.0)
Illiterate	8 (4.4)
Occupation (n%)	
Managerial	24 (13.3)
Clerical	37 (20.4)
Homemaker	53 (29.3)
Student	5 (2.8)
Laborer	13 (7.2)
Retired	44 (24.3)
Unemployed	3 (1.7)
Other	2 (1.1)
Household	
Number of bedrooms in the house (median, range)	3 (1-7)
2 or fewer bedrooms (n%)	25 (13.9)
3 or more bedrooms (n%)	155 (86.1)
Number of people living in the house (median, range)	4 (1-10)

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Table 2. Knowledge and behavior assessment of patients with hepatitis B

Knowledge of HBV (transmission mechanisms) (n%)	
Yes	108 (60.0)
No	72 (40.0)
Knowledge of HBV consequences (n%)	
Yes	130 (71.8)
No	51 (28.2)
Self-hepatitis B vaccine status (n%)	
Yes	6 (3.3)
No	166 (91.7)
Unsure	9 (5.0)
Hepatitis B vaccine status of family members (n%)	
Yes	120 (66.3)
No	60 (33.2)
Unsure	1 (0.50)
Currently on medication (n%)	
Yes	75 (41.4)
No	106 (58.6)
Medication type (n%)	
First-generation	22 (30.6)
Newer generationf	49 (68.1)
Number of miscarriages (median, range)	1 (0-5)
Miscarriages (Blood transfused vs. Not transfused) (median: range)	1 (0-3) vs. 1 (0-5)
Currently Consumes Alcohol (n%)	
Yes	22 (15.2)
No	123 (84.8)
Current Smoking Status (n%)	
Yes	94 (52.22)
No	85 (47.22)
History of Surgery or Dental Extraction (n%)	
Yes	168 (92.82)
No	12 (6.63)
History of Blood Transfusion (n%)	
Yes	28 (15.47)
No	149 (82.32)
History of Needle Stick Injury (n%)	
Yes	7 (3.87)
No	168 (92.82)
History of Glass Syringe Exposure (n%)	
Yes	95 (52.49)
No	65 (35.91)
History of Needle Sharing (n%)	
Yes	8 (4.42)
No	165 (91.16)
History of Close Contact with a Jaundiced Individual (n%)	
Yes	7 (3.87)
No	167 (92.27)
History of Tissue or Organ Transplantation (n%)	
Yes	5 (2.76)
No	175 (96.69)
Waiting	1 (0.55)
History of Nail Work (females only)	
Yes (n/%)	26 (32.5)
No (n/%)	53 (66.3)
History of Ear Piercing (females only)	
Yes (n/%)	75 (93.8)
No (n/%)	5(6.2)
History of Dialysis (n%)	
Yes	2 (1.10)
No	179 (98.90)
History of Tattoos (n%)	
Yes	3 (1.66)
No	178 (98.34)
History of Acupuncture (n%)	
Yes	4 (2.25)
No	174 (97.75)

HBV: hepatitis B virus

Looking at the practice and behavior assessment, 108 participants (60%) had basic knowledge of HBV as a transmissible disease. One hundred thirty (72%) were aware of only the ill consequences of untreated HBV infection but not its transmission mechanisms. One hundred twenty (66%) had vaccinated their family members against HBV infection. Among women, the median value for reported miscarriages was 1 (range: 0-5). At the time of the survey, alcohol consumption was reported by 22 participants (15%), and cigarette smoking was reported by 94 participants (52%). One hundred sixty-eight participants (93%) reported a history of surgery or dental extraction; 28 (16%) blood transfusion; 7 (4%) a previous needle stick injury; 95 (52%) exposure to non-disposable glass syringes, 8 (4%) had knowingly shared needles, and 7 (4%) had had close contact with a jaundiced individual. Five participants (3%) had a history of liver transplantation. Twenty-six females (33%) had a history of professional nail work, and 75 females (94%) had ear piercings. Approximately 5% of the participants reported a history of dialysis, tattoos, and acupuncture (Table 2).

In the sub-group analysis, we compared how participant gender, knowledge, and education status may affect behavioral

practices. Males were more likely to use their HBV medications (p=0.021) and report alcohol use (p<0.001). Participants with knowledge of hepatitis B infection were more likely to vaccinate their family members compared to unknowledgeable participants (p=0.015). Participants with advanced education were also more likely to vaccinate their family members (p=0.047).

DISCUSSION

A community's health care accessibility is influenced by its socio-demographic profile (7,8,11). Cui et al. (9) demonstrated that several factors, including vaccination at birth, being born after 1998, residence in an urban area, and delivery in a hospital setting, are associated with HBV infection status. Taylor et al. (11) reported that better education was positively associated with HBV vaccination. Other studies have confirmed these results (7,8,11-13).

The present study surveyed 181 consecutive HBV-infected patients at a single center for their socio-demographic profiles, awareness of HBV infection, its transmission mechanisms and consequences, and common practices and behaviors. Male gender was predominant (56%), and the median age was 49 years (range 19-76 years). The majority of the participants lived in the central region of Turkey (85%). Approximately half of the participants had basic education (illiterate, elementary, and middle school) (49%). Most participants were homemakers (29%) or retired (24%) and lived in households with three or more bedrooms (86%). Most participants (60%) were aware of HBV as a transmissible disease and a major cause of end-stage liver disease (72%). Sixty-six percent had vaccinated their family members against HBV infection.

A holistic health policy that is tailored to regional cultural practices may help to promote better awareness of HBV infection, especially in a low socioeconomic community. Various mathematical models have predicted 84% mortality reduction with 90% vaccine coverage among children (14). In the U.S., the Centers for Disease Control and Prevention (CDC) regulates legislative measures to increase surveillance of immigrants, pregnant females, individuals with human immunodeficiency virus (HIV) status, individuals receiving immunosuppressive drugs, prisoners, injection drug users, sex workers, and men who have had sex with men (15). Several models have demonstrated that the HBV vaccination program is cost-effective in reducing the prevalence of HBV infection. In Turkey, the national HBV vaccination program for newborns was launched in 1988. A recent epidemiological study, however, reported the prevalence of HBsAg to be around 4% in Turkish adults over 18 years of age. This suggests that the HBV vaccination program has not yet succeeded in reducing HBV infection prevalence to levels of low endemicity.

In the present study, the majority of the participants (60%) had awareness and knowledge of HBV disease, and 72% of the participants were aware of the ill consequences of this infection but not its transmission mechanisms. This present study confirmed that more knowledgeable and more educated participants were more likely to vaccinate their family members against HBV infection. These findings indicate that public awareness may prevent disease spread in a community. A national multi-center study may be suggested to further verify the current findings.

Promoting better awareness of HBV and endorsing mass educational interventions may be useful strategies to prevent the spread of HBV infection. Such strategies may be recommended as cost-effective global health care practices in HBV endemic areas.

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