



Original Article

Predictors of Hepatitis B Preventive Behavioral Intentions in Healthcare Workers



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ABSTRACT

Background: Healthcare workers' practices regarding hepatitis B have an important effect on the control of this problem in workplaces.

Methods: A questionnaire-based cross-sectional study was used to investigate the role of knowledge, cues to action, and risk perceptions as predictors of preventive behavioral intentions for hepatitis B among healthcare workers in Broujen, Iran ($n = 150$). History of hepatitis B vaccination, hepatitis B surface antigen test, and demographic characteristics were investigated. The psychometric properties of the questionnaire were established.

Results: Those who had a history of hepatitis B surface antigen test had a statistically significant higher level of risk perceptions (30.89 ± 4.08 vs. 28.41 ± 3.93 , $p < 0.01$) and preventive behavioral intentions (5.05 ± 1.43 vs. 4.45 ± 1.29 , $p < 0.01$). The mean score of cues to action was significantly correlated with age and work history ($r = 0.20$, $p = 0.02$ and $r = 0.19$, $p = 0.02$). Preventive behavioral intentions were significantly correlated with cues to action and risk perceptions but not with knowledge level. Cognitive factors were responsible for a 17% change in observed variance of preventive behavioral intentions, which was statistically significant.

Conclusion: Risk perceptions were the most important determinant of preventive behavioral intentions for hepatitis B among health personnel; thus, emphasizing risk perceptions is recommended in educational programs aimed at increasing health personnel's practices regarding hepatitis B.

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1. Introduction

The hepatitis B virus (HBV) is a member of the hepadnaviridae virus family, with 370 million chronic carriers worldwide. It is transmittable through percutaneous, prenatal, and sexual routes [1]. Hepatitis B (HB) is an acute systemic infection, caused by HBV. HB is characterized by extrahepatic and possible long-term complications such as liver failure, liver cancer, and hepatocellular carcinoma [2,3]. HB is a well-recognized cause of occupational hazard in healthcare workers (HCWs). Occupational exposures are responsible for about 40% of HBV infection in HCWs [4]. For example, dentists have a three-times higher HBV infection rate in comparison with the general population [5]. Epidemiology of

occupational exposure to HBV is reviewed extensively elsewhere [6].

Approximately 90% of the at-risk workforce are aware of the necessity of HB vaccination in the workplace, but only 56.5% of workers completed their vaccination program against HB [7]. It seems that the current level of HBV vaccination is not sufficient to protect HCWs from HB infection [8]. Belief in the safety and efficacy of the HB vaccine is the most influential parameter in the acceptance of the vaccine in comparison with perceiving severity [9]. There are numerous psychological and behavioral predictors that can be used to predict the behavior of HCWs toward occupational hazards [10]. For example, healthy behaviors in HCWs are age and sex dependent [6,11]. The risk of HBV infection can be controlled by

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the application of suitable prevention control measures. Exposure prevention through education is one of the most important preventive measures in HBV infection control in the workplace. Therefore, it is essential to understand the key influential parameters and barriers to enhance the level of safe behaviors among HCWs [7].

To the best of our knowledge, studies regarding the psychosocial and cognitional predictors of preventive behavioral intentions of HB are few, especially in developing countries. However, the predictors may be differentiated based on culture and ethnicity. As mentioned before, the use of a suitable prevention strategy can reduce the risk of HBV infection. It depends on the application of elements that are responsible in the behavior of HCWs [6,11]. We conducted a cross-sectional questionnaire-based study to investigate the role of knowledge, cues to action (as strategies to activate readiness), and risk perceptions as predictors of preventive behavioral intentions about HB in a sample of HCWs in Iran.

2. Materials and methods

2.1. Participants and data collection

The cross-sectional descriptive study was conducted on all ($n = 150$) HCWs in the Brujen health network, Chahrmahal and Bakhtiari province, Iran, which includes 14 urban and rural healthcare centers, during 2011–2012. Participants' enrolment in the study was based on census. A letter of formal ethical approval of the research was obtained from ethics committee of Shahid Sadooghi University of Medical Sciences (Yazd, Iran). Participation in the study was voluntary and all participants were asked to sign the informed consent form. Data were only collected for the personnel present at the centers at the relevant time.

2.2. Instruments

A seven-part, 28-item researcher-designed questionnaire was used for the purpose of data collection. It included a demographic section and four other scales for measuring knowledge about HB, general risk perceptions on HB, personal risk perception on HB, participant exposure status to cues to action about HB, and HB prevention behavioral intentions. Cues to action (defined as *strategies to activate readiness*) and a history of tests for HB surface antigen (HBsAg) and HB vaccination were also obtained. The demographic section included age, sex, education level, work history, and work department. Descriptions of the scales used in the study are presented in Table 1. The questionnaire's content validity was approved by a panel of experts composed of health education specialists ($n = 3$), occupational hygienists ($n = 2$), and infectious diseases specialists ($n = 2$). Minor revisions were conducted based on comments from the experts on the first version of the questionnaire. The appropriateness of the final version of the questionnaire was approved by all experts.

2.3. Data analysis

SPSS for Windows, version 15 (SPSS Inc., Chicago, IL, USA) was used for data analysis. Constructs showed normal distribution according to the Kolmogorov–Smirnov test. Significance of mean difference was statistically evaluated using Student *t* test. Spearman's rank correlation test and Pearson correlation were used to analyze possible correlations for nonparametric and parametric purposes, respectively. Chi-square test was designed for categorical data analyses. The level of significance was set at $p < 0.05$. One-way analysis of variance (ANOVA) was used to test for construct differences among the different job groups. Hierarchical multiple

regression analyses was performed to investigate the role of cognitional factors on preventive behavioral intentions as dependent variables.

3. Results

Table 2 shows the demographic frequency of participants. The mean \pm standard deviation age was 36.90 ± 7.60 years. Most of the participants (67.3%) had a university education. The average score of participants' knowledge was 5.23 ± 1.01 . Sex, education level, and department had no significant effect on participants' knowledge. The average score in cues to action was 3.13 ± 1.04 . Cues to action were significantly different according to departments. Tukey's *posthoc* test showed that disease control personnel had a statistically significant higher cues to action score (3.08 ± 0.40) in comparison with the environmental health department (2.72 ± 1.12) and *other services* (2.93 ± 1.16). Sex and education level differences on the basis of cues to action were not statistically significant.

The mean score for general perceived risk was 21.49 ± 3.28 . Personal risk perception was 7.53 ± 1.89 out of 10. Preventive behavioral intention was 4.6 ± 1.3 out of 6. General and personal risk perceptions were not different statistically according to sex, education level, or department. The simple correlations between cues to action and age as well as cues to action and work history were statistically significant ($r = 0.20$, $p = 0.02$ and $r = 0.19$, $p = 0.02$). General risk perceptions had a negative correlation with work history ($r = -0.164$, $p = 0.045$), which was statistically significant. Correlation coefficients matrix of other studied constructs are shown in Table 3. Only 24.7% of the participants had a history of HBsAg test. The cues to action, perceived risk, and preventive behavioral intentions of the participants who had a history of HBsAg test were statistically higher than those of other participants (Table 2).

Training methods (cues to action) were significantly different among departments. Approximately 70% of the participants stated that they had taken a training course in HB prevention; 90% had studied books, guidelines, or pamphlets about HB; 83% had seen posters related to HB, and 66.7% reported that they had heard or seen about HB on radio or television programs.

Hierarchical multiple linear regressions were performed in three blocks to assess the predictability of cognitional scales over and above the influence of demographic parameters and past behaviors. Predictors were classified into three different blocks according to their nature:

Block 1: Demographic characteristics block: sex, age, education, experience, and workplace type.

Block 2: Cognitional constructs: knowledge, cues to action, individual risk perception, and general risk perception.

Block 3: History of HbsAg test.

Demographic characteristics of the participants explained 2.6% of observed variance in Protection Motivation Theory (PMT), which was not significant (Table 4). However, cognitional factors were responsible for a 17% change in observed variance, which was statistically significant. Among cognitional scales, the role of cues to action and individual risk perception were statistically significant. Past behavior also defined 1% of observed variance, which was not significant.

4. Discussion

The present study was performed to determine key factors in *preventive behavior intentions* against HB infection in HCWs. Risk

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