

Research Paper:

Hepatitis B Prevention Education and Afghan Immigrant Students



Najibeh Mirzazadeh¹, Leila Amini^{2*}, Seyed Moayed Alavian³, Hamid Haghani⁴

1. School of Nursing and Midwifery, International Campus, Iran University of Medical Sciences, Tehran, Iran.

2. Department of Midwifery, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran.

3. Middle East Liver Disease Center, Tehran, Iran.

4. Department of Biostatistics, School of Management and Information, Iran University of Medical Sciences, Tehran, Iran.



Citation: Mirzazadeh, N., et al. 2019. Hepatitis B Prevention Education and Afghan Immigrant Students. *Journal of Client-Centered Nursing Care*, 5(4), pp. 247-256. <https://doi.org/10.32598/JCCNC.5.4.312.1>

doi <https://doi.org/10.32598/JCCNC.5.4.312.1>



Article info:

Received: 09 Jan 2019

Accepted: 03 Jul 2019

Published: 01 Nov 2019

Keywords:

Hepatitis B, Face-to-face education, Distance education, Attitude, Knowledge, Afghan immigrants

ABSTRACT

Background: Unawareness and inappropriate attitude toward hepatitis B can expose healthy people, especially immigrants, to a higher risk of hepatitis B transmission. The present study aimed to determine the effect of hepatitis B prevention education by face-to-face and distance training on the knowledge and attitude of Afghan immigrant students.

Methods: This randomized controlled trial was conducted on 128 voluntary immigrant nonmedical Afghan students of Imam Khomeini University in Qazvin City, Iran. The study subjects were randomly assigned to 4 groups (A1, A2, B1, & B2), and the training was performed using Solomon's four-group-design. The A groups received face-to-face education, while the B groups received distance education through email and Telegram messenger. The required data were collected using a self-structured questionnaire at three-time intervals of before, immediately after, and one month after training. The collected data were analyzed by the Chi-squared test, Independent Samples t-test, Paired Samples t-test, and repeated-measures Analysis of Variance (ANOVA) using SPSS.

Results: Based on the study findings, the improvement of knowledge and attitude values was more significant in the face-to-face groups, compared to the distance education groups. However, there was a significant difference in both methods ($P < 0.001$).

Conclusion: Although knowledge improvement was higher in the face-to-face education groups, there was also an increase in the knowledge and attitude of the distance education group. Therefore, face-to-face education is preferred; however, using a combination of these educational methods could be beneficial.

* Corresponding Author:

Leila Amini, PhD.

Address: Department of Midwifery, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran.

Tel: +98 (21) 43651812

E-mail: amini.l@iums.ac.ir

Highlights

- Hepatitis B virus is the second post-tobacco carcinogen.
- Immigrant population mobility and low literacy could increase the prevalence of hepatitis B.
- Hepatitis B infection is prevalent in Afghanistan.
- Individuals' awareness of health issues affects their health.
- Recognizing the ways to prevent hepatitis B could impede cirrhosis and liver cancer.

Plain Language Summary

The findings of this study revealed that the knowledge of Afghan immigrant students in Iran was higher in the face-to-face education groups; there was an improvement in the knowledge and attitude scores of the distance education group, as well. Therefore, although face-to-face education is preferred, using a combination of these educational methods is suggested.

1. Introduction

Hepatitis B is a global public health issue and among the major causes of mortality because of hepatic diseases (Price et al. 2012; Okonkwo et al. 2017). Hepatitis B Virus (HBV) could generate chronic hepatitis and life-threatening complications, like cirrhosis and liver cancer and even death (Leng et al. 2017; WHO 2015). Two billion individuals have been infected with hepatitis B worldwide (WHO 2015). Of them, 360 million people are affected by chronic hepatitis B infection. Moreover, 600000 individuals die annually due to the liver diseases related to HBV, especially liver cancer (Okonkwo et al. 2017); Rossi et al. 2012; WHO 2017; Bijani et al. 2019).

The treatment of hepatitis B is costly; therefore, this disease is of particular importance in terms of socioeconomic and health aspects (Robotin et al. 2012). Afghanistan, with 32.4 million population, is the 41st largest country worldwide (Khan & Attaullah 2011; WHO 2010). Hepatitis B is an endemic disease in Southeast Asia, including Afghanistan (Tanju et al. 2014).

There is limited access to epidemiological data regarding infectious diseases in Afghanistan due to prolonged wars in the country and their consequences (Pourhossein et al. 2015; Tanju et al. 2014). Some studies conducted during 2005-2010 in the cities of Kabul, Herat, Jalalabad, and Mazar-e-Sharif on 1087 Persons Who Inject Drugs

(PWID), the overall prevalence of hepatitis B was reported as 6.15% (Nasir et al. 2011; Todd et al. 2010).

Afghans constitute the majority of immigrants in Iran, with a population of approximately 2.9 million people (Pourhossein et al. 2015; Khodabakhshi-Koolaei, 2019). Additionally, 60.8% of Afghan refugees living in the Dalaki Camp in Bushehr (2006) were positive for (Hepatitis B surface Antigen) HBsAg (Khan & Attaullah 2011; Pourkarim et al. 2006; Rein et al. 2010). There is low coverage of hepatitis B vaccination and limited use of sexual protective methods due to the low level of knowledge regarding the transmission and prevention of hepatitis B among Afghans (Okonkwo et al. 2017; Ul Haq et al. 2012; Rafiq et al. 2015; Inoue & Tanaka 2016).

The prevalence of hepatitis B in Asian countries, especially Afghanistan is high; however, there is limited awareness among students, particularly nonmedical students (Rafiq et al. 2015) and staff. Thus, behavioral modifications, as a precautionary measure, could significantly enhance students' knowledge. Implementing and examining different educational methods could yield better results for different groups, especially immigrants (Tabeshian 2017; Yazdani et al. 2013; Ghasemi et al. 2014; Barzegar Mahmudi et al. 2016).

Considering the living conditions of immigrants and the importance of education in hepatitis B infection, this study was conducted to better disseminate information among Afghan students through two different educational methods. Accordingly, the current study aimed to determine the

effect of hepatitis B prevention education by face-to-face and distance training on the knowledge and attitude of Afghan immigrant students.

2. Materials and Methods

The present study was conducted on nonmedical Afghan students of the Imam Khomeini International University, in Qazvin City, Iran. This randomized controlled trial was conducted to assess the knowledge and attitudes of Afghan immigrant students regarding hepatitis B and its preventive methods through face-to-face and distance education; we also compared these two methods. The sampling process was performed from November 2018 to February 2019.

Since the nonmedical students were included in the present study setting, 128 of voluntaries who met the inclusion criteria (Afghan nonmedical students, no history of attending hepatitis training classes) were recruited. The data were collected by a self-structured 43-item Knowledge and Attitude Questionnaire (KAQ), i.e., prepared after an extensive literature review (Rafiq et al. 2015; Mtengezo et al. 2016; Abdela et al. 2016; Adoba et al. 2015) and consultation with the faculty members of the Department of Community Midwifery of Iran University of Medical Sciences (IUMS).

The instrument was used to collect information about the sociodemographic characteristics of the respondents, knowledge, and attitude towards the transmission, and the prevention of HBV infection. The reliability of the knowledge section was estimated using the Kuder-Richardson formula ($r=0.749$). In addition, the internal consistency of the attitude section was measured by Cronbach's alpha coefficient (0.767) and test-retest reliability method ($r=0.839$).

In the knowledge section with 23 questions, the study subjects were requested to choose among the three responses of 'right' (2 points), 'wrong' (0 points), and 'neutral' (1 point). This part had a score range of 0-46. The attitude section consisted of 11 items, i.e., responded based on three options of 'I agree' (2 points), 'I disagree' (0 points), and 'no idea' (1 point). The scores of the attitude section ranged 0-22. The higher scores indicate better knowledge and attitude levels.

After obtaining the approval of the Ethics Committee of IUMS, the sampling process was initiated using the Solomon four-group design; two groups were considered for the intervention (A1 & A2), and two groups as the controls (B1 & B2). The study participants were randomly assigned to 4 groups. The study groups A received face-to-face education, and the groups B received education by email and

Telegram messenger. The A1 and B1 groups completed the KAQ as Pre-test; however, it was incompleated by the A2 and B2 groups (to compare the Pre-test effect). Then, all study groups filled out the KAQ immediately and one month after the last educational session. Solomon's four-group-design used in this study is presented in Table 1.

Face-to-face training was conducted at Imam Khomeini International University School of Social Sciences using PowerPoint presentations and group discussions on hepatitis B prevention measures and behaviors in two weekly sessions. Each session lasted 2 hours. In total, each study group received 4 hours of training. The distance education groups concurrently received the same content via email and Telegram.

The education content of the first session included the definition and epidemiology of hepatitis B, the effect of the virus on the body and liver, its incubation period, symptoms and signs, individuals at risk, and the contamination source. The educational content of the second session included the routes of virus transmission and dissemination, crucial tips about the complications and consequences of the disease and its treatment, the prevention and control of hepatitis, and its related measures. Data analysis was performed using the Chi-squared test, Independent Samples t-test, Paired Sample t-test, and repeated-measures Analysis of Variance (ANOVA) by SPSS. $P<0.05$ was considered statistically significant.

3. Results

The Mean \pm SD age of the study participants was 25.41 \pm 2.81 years. In this study, 6.2% of the study participants reported a family medical history of hepatitis B, 10.2% of them were unaware of their family history, and 36.7% were vaccinated entirely against hepatitis B. The demographic characteristics of the study participants are presented in Table 2.

The Independent Samples t-test data indicated a statistically significant difference in this regard across different testing times. However, the intragroup comparison revealed no significant difference between the two groups in terms of attitude (Table 3).

Table 3 compares the two groups subjected to the distance education method. The related results were indicative of a statistically significant difference between the study groups. However, based on the Paired Samples t-test results for intragroup comparison, no significant difference was observed in terms of any of the investigated variables (Table 4).

Table 1. Solomon's Four-groups-design

Groups	Pre-test	Education	Post-test
Group A1	Yes	Face-to-face	Yes
Group A2	No	Face-to-face	Yes
Group B1	Yes	Distance	Yes
Group B2	No	Distance	Yes

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Table 2. The demographic characteristics of investigated Afghan students

Variables	Mean±SD/No.				Statistics
	B2	B1	A2	A1	
Age (y)	25.62±2.45	26.03±2.27	24.93±2.90	25.06±3.12	P=0.37 F=1.045
Duration of family migration (y)	22±14.99	24.43±14.42	21.34±13.67	15.28±13.93	P=0.07 F=2.38
Gender	Male	21	21	21	$\chi^2=0.000$ df=3 P=1
	Female	11	11	11	
Occupational status	Employed	30	27	28	Fisher's Exact test P=0.25
	Unemployed	2	5	4	
Marital status	Married	8	9	10	$\chi^2=0.801$ df=3 P=0.84
	Single	24	23	22	
Educational level	Under graduate	21	21	21	$\chi^2=0.000$ df=3 P=1
	Post-graduate	11	11	11	
Economic status	Undesirable	3	4	3	Fisher's Exact test P=0.96
	Relatively desirable	18	21	20	
	Desirable	11	7	9	
Status of vaccination	Complete	12	10	11	Fisher's Exact test P=0.949
	Incomplete	2	5	3	
	Never	7	6	5	
	I do not know	11	11	13	
Family history of hepatitis B	Yes	2	1	4	Fisher's Exact test P=0.260
	No	24	30	28	
	I do not know	6	1	2	

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Comparing face-to-face and distance education methods between the A1 and B1 groups suggested no significant difference regarding knowledge and attitude at Pre-test. However, there was an increase in the mean scores of groups A1 and B1 at the post-intervention stage, compared to that of the pre-intervention stage (Table 5).

According to the Independent Samples t-test data, the comparison of the knowledge and attitude of the two groups reflected significant differences immediately and one month after training stages. However, as evidenced by the Paired Samples t-test data, no significant differ-

ence was observed in group A2 in terms of attitude and group B2 regarding knowledge and attitude (Table 6).

4. Discussion

Inadequate knowledge regarding hepatitis B is a serious threat to societies. Additionally, immigration affects the prevalence of various diseases. Unavailability of associated information leads to the spread of disease in the countries of origin and destination. Accordingly, Afghan individuals are considered as a high-risk group of immigrants (Pourkarim et al. 2006; Van der Boor & White 2019).

Table 3. Comparing the study groups A1 and A2 results of surveys at immediately and one month after training (face-to-face education)

Knowledge & Attitude	Groups	Mean±SD		Independent Samples t-test Data
		A2	A1	
Knowledge	Immediately after	34.62±4.29	37.75±3.30	P=0.002 df=62 t=3.264
	One month later	27.43±4.74	35.15±4.66	P<0.001 df=62 t=6.563
Paired Samples t-test data		df=31 t=6.732 P>0.001	df=31 t=3.129 P=0.004	-
Attitude	Immediately after	16.59±3.59	19.28±1.95	P=0.001 df=78 t=3.718
	One month later	15.53±3.38	18.87±2.69	P<0.001 df=59.02 t=4.367
Paired Samples t-test data		df=31 t=1.299 P=0.204	df=31 t=0.643 P=0.525	-

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Table 4. Comparing the study groups B1 and B2 results of surveys at immediately and one month after training (distance education)

Knowledge & Attitude	Group	Mean±SD		Independent Samples t-test data
		B2	B1	
Knowledge	Immediately after	26.65±5.09	31.34±3.93	P<0.001 df=62 t=4.119
	One month later	25.15±3.27	30.12±4.39	P<0.001 df=62 t=5.132
Paired Samples t-test data		df=31 t=1.482 P=0.148	df=31 t=1.054 P=0.300	-
Attitude	Immediately after	10.81±3.35	14.50±3.09	P<0.001 df=62 t=4.574
	One month later	9.37±3.95	13.46±3.54	P<0.001 df=62 t=4.358
Paired Samples t-test data		df=31 t=1.87 P=0.071	df=31 t=1.318 P=0.197	-

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The present study determined the effect of face-to-face and distance training on the knowledge and attitude of nonmedical Afghan immigrant students regarding hepatitis B. The obtained data demonstrated that students had a low level of knowledge and inappropriate attitude in this field. Similarly, several studies conducted on 500 non-medical students in Karachi-Pakistan were indicative of unawareness regarding the risk factors of hepatitis B and C

transmission (Rafiq et al. 2015). Besides, examining 662 international students at the University Putra of Malaysia indicated a low level of knowledge and inappropriate attitude regarding hepatitis B and C (Ahmad et al. 2016).

A study assessed the knowledge and attitude regarding hepatitis B as well as the relationship between sociocultural factors and the level of knowledge in 280 South Korean

Table 5. Comparing the study groups A1 and B1 results before, immediately after, and one month after training

Groups	Knowledge & Attitude	Distance Education: B1	Face-to-Face Education: A1	Independent Samples t-test Data
		Mean±SD		
Knowledge	Before	19.15±3.37	20.56±3.86	P=0.126 df=62 t=1.550
	Immediately after	31.34±3.93	37.75±3.30	P<0.001 df=62 t=7.050
	One month later	30.12±4.39	35.15±4.66	P<0.001 df=62 t=4.444
Repeated-measure ANOVA		F=89.351 P<0.001	F=167.742 P<0.001	
Attitude	Before	8.46±3.26	9.65±4.23	P=0.214 df=62 t=1.265
	Immediately after	14.50±3.09	19.28±1.95	P<0.001 df=52.38 t=7.397
	One month later	13.46±3.54	18.87±2.69	P<0.001 df=62 t=6.864
Repeated-measures ANOVA		F=33.701 P<0.001	F=100.057 P<0.001	-

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Table 6. Comparing the study groups A2 and B2 results immediately after and one month after training

Knowledge & Attitude	Group	Distance Education: B2	Face-to-Face Education: A2	Independent Samples t-test Data
		Mean±SD		
Knowledge	Immediately after	26.65±5.09	34.62±4.29	P<0.001 df=62 t=6.769
	One month later	25.15±3.27	27.43±4.74	df=55.062 t=2.239 P=0.029
Paired Samples t-test data		df=31 t=1.482 P=0.148	df=31 t=6.732 P<0.001	-
Attitude	Immediately after	10.81±3.35	16.59±3.59	P<0.001 df=62 t=6.655
	One month later	9.37±3.95	15.53±3.38	P<0.001 df=62 t=6.684
Paired Samples t-test data		df=31 t=1.871 P=0.071	df=31 t=1.299 P=0.204	-

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immigrants. The relevant results suggested a low level of knowledge in the study samples. In this regard, 62% and 21% of the study subjects assumed that the routes of hepati-

tis transmission were sharing dishes and genetic factors, respectively. Their level of knowledge in this domain was associated with factors, such as the lack of an official job, full

fluency in English, health insurance, and paying the health costs by the patient (Lee et al. 2007; Rojas et al. 2019).

The current study results revealed that education was influential on the students' knowledge and attitude on hepatitis B. Some scholars had reported positive findings after assessing knowledge enhancement in two stages of Pre-test and Post-test (Nyamathi et al. 2010; Hagedorn, Leighton, & Heim 2010; Wilson 2003).

A study explored the effects of verbal and non-verbal education on the knowledge and attitude regarding the transmission and prevention of AIDS in 95 soldiers; the authors concluded that the knowledge of the individuals in the face-to-face group was increased (Zianezhad et al. 2014).

A study compared face-to-face and distance learning on the Knowledge, Attitude, and Practices (KAP) of washing and disinfection of surgical instruments among operating room staff of teaching hospitals (60 nurses). The relevant data demonstrated that both methods of training positively impacted the knowledge and attitude of the studied nurses; however, face-to-face training significantly affected the study subjects' knowledge, attitude, and performance (Shabani Hamedan et al. 2013).

Based on the comparison of the two face-to-face groups (A1 and A2) and the two distance groups (B1 and B2), the increased knowledge of individuals in the groups A1 and B1 could be associated with Pre-test values.

The improvement of the mean scores of face-to-face education group could be related to the trainer-learner interaction. This interaction could lead to learners' better comprehension of the disease and contribute to responding to the questions and ambiguities arising in students' minds; furthermore, the learners could perceive the key points.

The increase of knowledge was less in the distance approach, compared to the face-to-face method ($P < 0.001$). This result could be due to the fact that there was no discussion to address the questions and ambiguities. Moreover, the learners may not have spent adequate time to study the educational content. Additionally, the learners may have not been familiar with some Persian and medical terminology, which could have also led to a lower level of knowledge enhancement in distance education method, compared to that of the face-to-face education group. Furthermore, it seems that the vocabulary difference between Persian and Afghan languages was effective in this regard. For example, the repeated word in this content was hepatitis B. The students who were not residing

in Iran were unfamiliar with this word. This is because in Afghanistan, this disease is known as black jaundice.

Improved scores of knowledge in the distance group could be due to the availability of information resources. Students' level of education could have influenced arising the knowledge, and consequently modifying the study participants' attitudes.

Considering the socioeconomic status of Afghan people, implementing various education methods could be beneficial and influential. This study was conducted in university students, which could limit data generalizability.

The improvement of knowledge and attitude was more significant in the face-to-face group, compared to the distance education group. However, there was a significant difference in both methods. Hepatitis B prevention education in a country where a significant proportion of the population is affected by this disease could be beneficial and increase the sensitivity of society towards it.

Providing education through various methods has different effects; accordingly, applying combined education approaches with a focus on health and knowledge-raising behaviors could be effective. The implementation and evaluation of educational interventions are necessary for preventing this disease.

Ethical Considerations

Compliance with ethical guidelines

This study was approved from the Ethics Committee of Iran University of Medical Sciences (Code: IR.IUMS.REC 1397.025). The present study was registered in the Iran Registry of Clinical Trials (Code: IRCT20180611040055N1). Participation in the study was voluntary.

Funding

This study was a part of a M.Sc. Thesis supported by Iran University of Medical Sciences (Grant No: 9513593005). It was also financially supported by the Italian Embassy and the United Nations Population Fund in Tehran.

Authors' contributions

All authors contributed in designing, running, and writing all parts of the research.

Conflict of interest

The authors declared no conflict of interests.

Acknowledgments

We appreciate all participants and the professors of the Midwifery Department of Iran University of Medical Sciences and Imam Khomeini International University.

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