Research Paper:
Hepatitis B Prevention Education and Afghan Immigrant Students

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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.
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-Koolaeec 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 Imam Khomeini International University School of Social Sciences using the Imam Khomeini International University School of Social 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 incompletely filled 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±SD age of the study participants was 25.41±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 1.

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).
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 difference 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).
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 nonmedical 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

| 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=47.89 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 |

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 | 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=1.118 P=0.197 |

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

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        |
| 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-measure ANOVA | F=89.351 P<0.001 | F=167.742 P<0.001 |                               |                               |
| Knowledge       | Before               | 27.43±4.74             | 25.15±3.27                | P=0.029 df=62 t=6.769        |
| 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        |
| Repeated-measures ANOVA | F=33.701 P<0.001 | F=100.057 P<0.001 |                               |                               |

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                | P=55.062 df=31 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 |                               |                               |
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.

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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.

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References

Abdela, A., et al. 2016. Assessment of knowledge, attitudes and practices toward prevention of hepatitis B virus infection among students of medicine and health sciences in North-west Ethiopia. BMC Research Notes, 9(1), p. 410. [DOI:10.1186/s13104-016-2216-y] [PMID] [PMCID]

Adoba, P., et al. 2015. High prevalence of hepatitis B and poor knowledge on hepatitis B and C viral infections among barbers: A cross-sectional study of the obuasi municipality, Ghana. BMC Public Health, 15, p. 1044. [DOI:10.1186/s12889-015-2389-7] [PMID] [PMCID]

Ahmad, A., Sann, L. M. & Rahman, H. A., 2016. Factors associated with knowledge, attitude and practice related to Hepatitis B and C among international students of university Putra Malaysia. BMC Public Health, 16, p. 611. [DOI:10.1186/s12889-016-3188-5] [PMID] [PMCID]

Barzegar Mahmudi, T., et al. 2016. Knowledge, beliefs and performance of health volunteers in Malay city about Hepatitis B: An application of health belief model (Persian). Payoonan Scientific Journal, 14(2), pp. 24-33. [DOI:10.18504/paj.14.2.14-33]

Bijani, B., et al. 2019. Long-term immunogenicity of hepatitis B vaccine and impact of a booster dose on health care students. Medical Journal of the Islamic Republic of Iran, 33(1), pp. 114-9. [DOI:10.1186/mjiri.iums.ac.ir/article-1-4908-en]

Ghasemi, M., et al. 2014. The effects of health education on students’ knowledge and attitude about prevention of new-born diseases in Islamic Azad University of Arak (Persian). Journal of Neyshabour University of Medical Sciences, 2(2), pp. 14-21. [DOI:10.1186/mjiri.iums.ac.ir/article-1-34-en]

Hagedorn, H., Leighton, T. & Heim, L., 2010. Assessment of a hepatitis educational group for veterans with substance use disorders. The American Journal of Drug and Alcohol Abuse, 36(1), pp. 57-60. [DOI:10.3109/0095299090572233] [PMID] [PMCID]

Inoue, T. & Tanaka, Y., 2016. Hepatitis B virus and its sexually transmitted infection—an update. Microbial Cell, 3(9), pp. 420-37. [DOI:10.15698/mic2016.09.527] [PMID] [PMCID]

Khan, S. & Attaullah, S., 2011. Share of Afghanistan populace in hepatitis B and hepatitis C infection’s pool: Is it worthwhile? Virology Journal, 8, p. 216. [DOI:10.1186/1743-422X-8-216] [PMID] [PMCID]

Khodabakhshi-Kooalaee, A., Akhalaghi-Yazdi, R. & Hojati Sayah, M., 2019. Investigating gestalt-based play therapy on anxiety and loneliness in female labour children with sexual abuse: A Single Case Research Design (SCRD). Journal of Client-Centered Nursing Care, 5(3), pp. 147-56. [DOI:10.3298/j/jccnc.5.3.147]

Lee, H. O., et al. 2007. Differences in knowledge of hepatitis B among Korean immigrants in two cities in the Rocky Mountain region. Asian Nursing Research, 1(3), pp. 165-75. [DOI:10.1016/S1976-1317(08)60019-5]

Leng, J., et al. 2017. South Asian health: Inflammation, infection, exposure, and the human microbiome. Journal of Immigrant and Minority Health, 21(Suppl 1), pp. 26-36. [DOI:10.1007/s10903-017-0652-y] [PMID]

Mengo-Jo, J., et al. 2016. Knowledge and attitudes toward HIV, hepatitis B virus, and hepatitis C virus infection among health-care workers in Malawi. Asia-Pacific Journal of Oncology Nursing, 3(4), pp. 344-51. [DOI:10.1016/j.appon.2016.02.001] [PMID] [PMCID]

Okonkwo, U. C., et al. 2017. Knowledge of hepatitis B virus infection among traders. Nigerian Journal of Clinical Practice, 20(4), pp. 415-20. [DOI:10.4103/1119-3077.204404] [PMID]

Pourhossein, B., Doosti Irani, A. & Mostafavi, E. 2015. Major infectious diseases affecting the Afghan immigrant population of Iran: a systematic review and meta-analysis. Epidemiology and Health, 37, p. e2015002. [DOI:10.4178/epih/e2015002] [PMID] [PMCID]

Pourkarim, M. R., et al. 2006. An aberrant high prevalence of hepatitis B infection among Afghans residing in one of the Bushehr refugee camps (Dalaki camp) in the southwest of Iran. International Journal of Infectious Diseases, 12(1), pp. 101-2. [DOI:10.1016/j.ijid.2005.03.008] [PMID]

Price, H., et al. 2012. Hepatitis B virus infection in HIV-positive individuals in the UK collaborative HIV cohort (UK CHIC) study. Plos One, 7(1), p. e49314. [DOI:10.1371/journal.pone.0049314] [PMID] [PMCID]

Rafiq, A., et al. 2015. Awareness of hepatitis B and C among students of nonmedical universities in Karachi. Asian Biomedicine, 9(2), pp. 155-9. [DOI:10.5372/1905-7415.0902.381]

Rein, D. B., et al. 2010. Prevalence of hepatitis B surface antigen among refugees entering the United States between 2006 and 2008. Hepatology, 51, pp. 431-4. [DOI:10.1002/hep.23353] [PMID]

Robotin, M., et al. 2012. Cost of treating chronic hepatitis B: comparison of current treatment guidelines. World Journal of Gastroenterology, 18(42), pp. 6106-13. [DOI:10.3748/wjg.v18.i42.6106] [PMID] [PMCID]

Rojas, P., et al. 2019. Testing the efficacy of an HIV prevention intervention among latina immigrants living in Farmworker communities in south Florida. Journal of Immigrant and Minority Health, 21(2), pp. 430–33. [DOI:10.1007/s10903-019-09923-4] [PMID]
Rossi, C., et al. 2012. Seroprevalence of chronic hepatitis B virus infection and prior immunity in immigrants and refugees: a systematic review and meta-analysis. *Plos One*, 7(9), p. e44611. [DOI:10.1371/journal.pone.0044611] [PMID] [PMCID]

Shabani, M., et al.F. 2013. Comparison of face-to-face and distance learning on KAP of washing and disinfection of surgical instruments among operating room staff of the teaching hospitals in Qazvin. *The Journal of Qazvin University of Medical Sciences*, 17(4), pp. 47-53. https://www.magiran.com/paper/1147972/?lang=en

Tabeshian, A., 2017. Evaluation of health education on awareness, attitude and operation of Najafabad health care staffs on the prevention of hepatitis B. *Paramedical Sciences and Military Health*, 11(4), pp. 23-9. http://ips.ajaums.ac.ir/article-1-85-en.html

Tanju, I. A., et al. 2014. Hepatitis B, hepatitis C and human immunodeficiency virus seropositivity among children in Kabul, Afghanistan: a cross-sectional study. *Hepatitis Monthly*, 14(3), p. e16154. [DOI:10.5812/hepatmon.16154] [PMID] [PMCID]

Todd, C. S., et al. 2010. HIV, hepatitis B, and hepatitis C prevalence and associated risk behaviors among female sex workers in three Afghan cities. *AIDS*, 24 Suppl 2(2), p. S69-75. [DOI:10.1097/01.aids.0000386736.25296.8d] [PMID] [PMCID]

Ul Haq, N., et al. 2012. A cross sectional assessment of knowledge, attitude and practice towards hepatitis B among healthy population of Quetta, Pakistan. *BMC Public Health*, 12, p. 692. [DOI:10.1186/1471-2458-12-692] [PMID] [PMCID]

Van Der Boor, C. F. & White, R., 2020. Barriers to accessing and negotiating mental health services in Asylum seeking and refugee populations: The application of the candidacy framework. *Journal of Immigrant and Minority Health*, 22(1), pp. 156-74. [DOI:10.1007/s10903-019-00929-y] [PMID]

Wilson, H. R., 2003. Hepatitis B and you: A patient education resource for pregnant women and new mothers. *Journal of Women’s Health (Larchmt)*, 12(5), pp. 437-41. [DOI:10.1089/154099 90376665159] [PMID]

World Health Organization (WHO), 2010. Global policy report on the prevention and control of viral hepatitis in WHO member states [Internet]. Cited 6 Jun 2020, https://apps.who.int/iris/bitstream/handle/10665/85397/9789241564632_eng.pdf?sequence=1 [Accessed 13 May 2019].

World Health Organization (WHO), 2015. Guidelines for the prevention care and treatment of persons with chronic hepatitis B infection [Internet] Cited 6 Jun 2020, https://apps.who.int/iris/bitstream/handle/10665/154090/9789241549059_eng.pdf?sequence=1 [Accessed 13 May 2019].

World Health Organization (WHO), 2017. Guidelines on hepatitis B and C testing [Internet] Cited 6 Jun 2020, https://www.who.int/hepatitis/publications/guidelines-hepatitis-c-b-testing/en/

Yazdani, R., et al. 2013. Factors associated with preventive behaviors of hepatitis B among high school girls using the health belief model. *Daneshvar Medicine*, 20(105), pp. 1-11. https://www.sid.ir/en/Journal/ViewPaper.aspx?id=337217

Zianezhad, U., et al. 2014. A comparative study on the effects of verbal and non-verbal education on the Knowledge and attitude of soldiers regarding the transmission and prevention of AIDS. *Journal of Military Medicine*, 16(3), pp. 169-77. http://militarymedj.ir/browse.php?a_id=1301&sid=1&lc_lang=en
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