

Survey of knowledge, attitudes and practice of obstetricians and gynecologists in screening for Hepatitis B virus infection among pregnant women in Iran, 2018.

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ABSTRACT

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Background: Various screening programs for all pregnant women are presented in the first pregnancy visit to reduce the vertical transmission of Hepatitis B virus (HBV) infection from mother to fetus during labor. Obstetricians and gynecologists are often referred to as a reliable source of health information for pregnant women. The present survey aimed to assess the knowledge, attitudes and practice (KAP) of obstetricians and gynecologists regarding to screening for HBV infection among pregnant women in Iran, 2018.

Materials and Methods: This KAP study was performed among 200 obstetricians and gynecologists in Iran using the available sampling method. Data were collected using a researcher-made, valid and reliable questionnaire which contained 4 parts, including demographic data (3 questions), knowledge (20 questions), attitude (5 questions), and practice (8 questions). The level of knowledge and practice was evaluated using the Likert score, and attitude was defined as positive or negative. The relation between knowledge, attitude and practice, as well as their relationship with the work experience of obstetricians and gynecologists was evaluated.

Results: The mean age of obstetricians and gynecologists was 38.9 ± 3.7 years. The knowledge and practice of obstetricians and gynecologists about the screening for HBV in pregnant women was good, and they had a positive attitude in this. There was a direct and significant relationship between knowledge, attitude and practice with one another, as well as between knowledge and lower work experience ($P < 0.05$).

Conclusion: Obstetricians and gynecologists play an important and strategic role in the creation and transfer of health information, and in developing preventative measures and control of HBV for pregnant women. Despite the knowledge and attitude of obstetricians and gynecologists being reported at an appropriate level, the moderate level of practice can be alarming.

INTRODUCTION

Hepadnaviridae is a family of DNA viruses that have seven species, the best-known member of which is the hepatitis B virus (HBV). The HBV envelope contains a protein called surface antigen (HBsAg), and its detection is the most important laboratory test in HBV diagnosis. HBV is one of the main causes of acute hepatitis and its serious complications, such as

chronic active hepatitis, cirrhosis and hepatocellular carcinoma, and also is known as a leading cause of cancer [1-3].

There are more than 350 million HBV carriers in the world, and more than one million people die every year due to chronic HBV-related illnesses [4, 5]. The distribution of HBV infection is varied in different parts of the world. In Western Europe and North America; positive HBsAg carriers are less than 2% of



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the population. The regions of Southeast Asia, Africa and the Mediterranean coast, are considered high prevalence areas with more than 8% of the population HBsAg positive [6]. In the Middle East, prevalence varies from 2-7% [7]. The prevalence of HBV carriers in Iran has been reported to be 3% [8].

The most common ways of transmission of HBV is blood and its related products, transmitted from an infected mother to fetus, via sexual relations, and through infected syringes. This virus, other than blood, can also be transmitted through other body fluids such as saliva, semen, milk, vaginal discharge; especially during menstruation; and amniotic fluid [9, 10].

The findings of previous studies have shown that half of cases are due to HBV transmission during delivery or early childhood. Transmission from the pregnant mother does not occur through the placenta, but in most cases vertical transmission occurs during the delivery process. The transmission of HBV from the mother to the infant is more common in developing countries than in European and American countries [11]. In Iran, one of the most important ways of transmission of this virus is through mother to infant [8].

Diagnosis of infection during pregnancy is extremely important, to enable prevention and drastically reduce the risk of transmission to the baby [12]. Since diagnosis of a viral infection during pregnancy is crucial to reduce the baby's risk, different screening programs have been implemented. For example, the recommendations of the U.S. Preventive Services Task Force (USPSTF) support the screening of all pregnant women in their first visit to reduce the vertical transmission of HBV. The American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), the American Academy of Pediatrics (AAP), and the U.S. Centers for Disease Control and Prevention (CDC) have provided similar recommendations. Pregnant women whose HBsAg status is unclear or have new or ongoing risk factors must be rescreened at the maternity hospital at the time of admission [13].

Some influencing factors in the successful implementation of the HBV screening program is the knowledge, attitudes and practice of obstetricians and gynecologists. These physicians are often referred to as a reliable source for health information for pregnant women. Women tend to change their behavior based on the advice of these physicians who have important roles in preventing infections during pregnancy. Many pregnant women have little knowledge about various infections and their effects on pregnancy. The obstetricians and gynecologists' counseling can generally help to increase healthy behaviors and promote the likelihood of behavioral change before and after pregnancy [14, 15].

It is therefore important that the obstetricians and gynecologists and other related healthcare professionals have knowledge and awareness about HBV infections, and counsel their patients about preventive behaviors. By examining the status of knowledge, attitudes and practice of obstetricians and gynecologists in screening of HBV in pregnant women, we can identify the strengths and weaknesses of the educational and clinical system and, in order to address the potential weaknesses, provide suggestions to reduce the rate of HBV infection in

infants and mothers.

Due to the importance of maternal carrier and the risk of chronic infections in infants due to HBV infection, and due to lack of studies, surveys in this area are important. Therefore, in the present study, for the first time in Iran, the knowledge, attitudes and practice of obstetricians and gynecologists in the screening of HBV in pregnant women in 2018 were evaluated.

MATERIALS and METHODS

Type of Study: This is a KAP study which surveyed the knowledge, attitudes and practice of obstetricians and gynecologists in the screening of HBV in pregnant women referring to Obstetrics and Gynecology (OB-GYN) clinic in 2018.

Statistical population and sampling: All obstetricians and gynecologists working in the OB-GYN clinic according to inclusion and exclusion criteria were enrolled. The sampling method was census (all available samples).

Inclusion Criteria: All obstetricians and gynecologists were included working in the OB-GYN clinic who completed the informed consent form.

Exclusion criteria: Incomplete questionnaires provided by obstetricians and gynecologists.

Data collection tool: To assess the knowledge, attitudes and practice of obstetricians and gynecologists about the screening of HBV in pregnant women, a researcher-made survey questionnaire containing 34 multiple choice questions was used.

The researcher-made survey questionnaire was based on authoritative published papers and books. The questionnaire was distributed among 5 prenatal specialists, one infectious specialist, one gastroenterologist and one epidemiologist. After analyzing the views of these specialists, the content validity was 89%. To measure the reliability of the questionnaire, the questionnaire was first completed by 10 obstetricians and gynecologists. A week later, the same 10 obstetricians and gynecologists completed the questionnaire again, then the reliability of the questionnaire was confirmed by calculating the Cronbach's alpha, which was 0.85.

This researcher-made survey questionnaire consisted of four parts: demographic factors (3 questions), knowledge (20 questions), attitudes (5 questions), and practice (8 questions). At the beginning of the questionnaire, the demographic data of the obstetricians and gynecologists was recorded, such as age, work experience, and degree. In the knowledge questions, the number of questions was 20 questions, with yes and no answers. For each correct question, one positive score was given. The maximum and minimum possible scores for this domain were 20 and 0, respectively. Based on the scores, the obstetricians and gynecologists' knowledge was categorized into four levels of weak (0-10), moderate (11-14), good (15-17) and excellent (18-20).

Attitudes was graded according to the Likert scoring, with the following scoring used for questions about positive attitudes: strongly disagree (score 0), disagree (score 1), no idea (score 2), agree (score 3), and totally agree (score 4). Using the following formula, the attitudes of individuals with scores of 0-7

and 8–15 were considered as negative and positive attitudes, respectively. In this formula, K is the number of attitudes questions.

$$X(n) = (5k + 1k) / 2 = [(5 \times 5) + 5] / 2 = 15$$

For practice measurement, 2.5 points was given for each correct answer and the total score was categorized as weak (0–10), moderate (11–15) and good (16–20).

Methods: The printed questionnaire was given by the resident to the obstetricians and gynecologists with frequent visit to the OB-GYN clinics in four hospitals affiliated to SBMU, 2 hospitals affiliated to Isfahan University of Medical Sciences, one hospital affiliated to Ahvaz University of Medical Sciences. The obstetricians and gynecologists had a maximum of 15 minutes to complete the questionnaire. Participants could not consult each other or refer to the internet when completing the questionnaire.

Statistical analysis: Descriptive statistics were expressed as distribution of frequency, percentage, mean, and standard deviation. Chi-Square and Fisher exact tests were implemented to examine the relationships between findings. Data analysis was done by SPSS version 18. In all analyses, the P value of $P < 0.05$ was considered significant.

Ethical considerations: In the current survey, completion of the questionnaire did not disrupt the process of providing treatment and care to the women. All information was maintained confidentially in the data sheets. All data will be published in bulk anonymously. This study has been approved by the ethics committee of Shahid Beheshti University of Medical Sciences (Registration code: IR.SBMU.MSP.REC.1397.181).

RESULTS

At total of 214 questionnaires were distributed among obstetricians and gynecologists, and at last 200 completed questionnaires were included in the final analysis. A total of 7 questionnaires were not returned to the researcher, and 7 other incomplete questionnaires were excluded from the study. The questionnaire consisted of four parts: demographic factors (3 questions), knowledge (20 questions), attitudes (5 questions) and practice (8 questions).

Demographic data: The mean and standard deviation of the obstetricians and gynecologists was 38.9 ± 3.7 years old (range: 35–45 years old). All 200 questionnaires were completed by obstetricians and gynecologists. A total of 148 obstetricians and gynecologists (74%) had work experience of 1 to 10 years, and 52 (26%) had a work experience of 10 to 20 years in the labor department.

Knowledge assessment: The mean score of knowledge of obstetricians and gynecologists about HBV screening in women was 16.9 ± 1.3 , which is considered a good level of knowledge. 59% ($n=118$) of obstetricians and gynecologists have excellent knowledge, 25.5% ($n=51$) have good knowledge, 10.5% ($n=21$) have moderate knowledge and 5% ($n=10$) have poor and very poor knowledge for screening HBV in pregnant mothers. Data analysis for individual questions related to the knowledge level showed that more than 80% of obstetricians and gynecologists responded to 12 questions (out of 20 questions in the field of

knowledge), and had the lowest correct response (62% correct) to 2 questions (questions 12 and 17), which focused on liver enzymes (Table 1).

Attitudes Assessment: The mean score of attitudes was 8.8 ± 2.9 which indicates the positive attitude of the obstetricians and gynecologists. A total of 165 (82.5%) obstetricians and gynecologists had positive attitudes and 35 (17.5%) had negative attitudes. Analysis of attitudes -related questions showed that 96% ($n=192$) obstetricians and gynecologists “totally agree” and 4% “agree” with effectiveness of training pregnant women that could lead to a change in their behavior to reduce HBV infection. Also, 98% ($n=196$) totally agreed and 2% agreed to install a screening guideline for HBV in pregnant women at OB-GYN clinic that can be accessed by pregnant women. 26% of participants were opposed to laboratory testing; including liver enzymes and viral loads by gastroenterologists or infectious specialists (Table 2).

Practices Assessment: The mean score of practice was 17.1 ± 2.9 which according to the classification, is considered a good practice level. The evaluation of practice in HBV screening among women showed that 89% ($n=178$) of the obstetricians and gynecologists had good practice, 8.5% ($n=17$) had moderate practice and 2.5% ($n=5$) had poor practice. Data analysis for individual questions related to practice showed that in 7 out of the 8 questions, more than 80% of the obstetricians and gynecologists responded correctly (Table 3).

The relationship assessment between knowledge, attitudes and practice: Among obstetricians and gynecologists who had excellent and good knowledge of screening for HBV in pregnant women, 142 obstetricians and gynecologists had positive attitudes in the screening of HBV in pregnant women. This relationship between knowledge and attitudes was significant (Table 4). Out of those who had excellent and good knowledge about screening for HBV in pregnant women, 89.9% (160) had good practice, and those with poor knowledge had poor practice in screening for HBV pregnant women. This relationship was statistically significant ($P=0.001$) (Table 4). Among those who had positive attitudes in screening for HBV in pregnant women, 160 had good practice (Table 5); this relationship was statistically significant ($P=0.011$).

Relationship assessment between work experience and knowledge, attitude and practice: The obstetricians and gynecologists with less work experience had more knowledge about the screening of HBV in pregnant women, and this relationship was significant. But the relationship between work experience of obstetricians and gynecologists with attitudes ($P=0.178$) and practice level ($P=0.201$) was not significant (Table 6).

Table-1. Frequency and Percent of Correct Answer to Knowledge Questions by 200 obstetricians and gynecologists on the Screening of HBV in Pregnant Mothers.

Knowledge Questions on Screening for HBV in Pregnant Mothers	Frequency and Percent of Correct Answer
Screening for HBsAg should be done in all pregnant women.	184 (92 %)
Screening for HBsAg in all pregnant women should be done only in the first trimester of pregnancy.	172 (86%)
Screening for HBsAg is only done in high risk women at the time of pregnancy.	192 (96 %)
The most common way of transmitting HBsAg to the fetus is during vaginal birth.	137 (68.5%)
The use of HBIG and postnatal vaccination is sufficient to completely prevent embryo involvement.	188 (94%)
The chance of fetal involvement is reduced if HBeAb is positive.	186 (93%)
If the HBeAb is negative, viral load should be performed.	170 (85 %)
Viral load is performed among abnormal liver enzymes.	148 (74%)
Viral load is routinely performed when HBsAg is positive.	144 (72 %)
There is a risk of transmission of HBV virus through breastfeeding.	172 (86%)
The use of anti-viral during pregnancy in all individuals with positive HBsAg reduces the transmission of the virus during normal delivery.	176 (88%)
At the end of the second trimester of pregnancy, it is necessary to re-measure the hepatic enzymes in mothers with positive HBsAg.	124 (62%)
At the end of the second trimester of pregnancy, it is necessary to re-evaluate the positive HBeAg.	156 (78%)
At the end of the second trimester, viral load should be checked again.	148 (74%)
In each trimester during pregnancy, liver enzymes and viral loads should get checked.	161 (80.5%)
Evaluating liver enzymes and viral load during the first visit of patients with positive HBsAg is sufficient.	136 (68%)
If the patient is symptomatic, hepatic enzymes are being examined.	124 (62%)
Pregnant drug addict women (or addicted spouse) must be screened.	196 (98%)
HBV in pregnancy is associated with rising in abortion, stillbirth and birth defects.	174 (87%)
If the mother has chronic active hepatitis in the last trimester of pregnancy, the likelihood of having a pre mature infant is higher.	160 (80%)

Table 2. Frequency and percent of answers to attitude questions by 200 obstetricians and gynecologists in screening for HBV in pregnant women.

Attitude Questions In Screening for HBV in Pregnant Mothers	Totally Agree	Agree	No idea	Disagree	Strongly disagree
As obstetricians and gynecologists, we have more important role than HBV immunoprophylaxis to reduce the transmission of HBV to the baby.	24 (12%)	136 (68%)	16 (8%)	24 (12%)	0
Training pregnant women to change their behaviour is effective.	192 (96%)	8 (4%)	0	0	0
Screening guidelines at work and in front of pregnant women should be available.	196 (98%)	4 (2%)	0	0	0
Our task as an obstetrician and gynecologist is including the follow up of the vaccine and HBIG to the baby to reduce the transmission of HBV virus to the fetus.	28 (14%)	124 (62%)	48 (24%)	0	0
I believe that conducting laboratory test, including liver enzymes and viral load, is of gastroenterologist or infectious specialist' duty.	0	148 (74%)	0	52 (26%)	0

Table 3. Frequency and Percent of responses to practice Questions by 200 obstetricians and gynecologists on Screening for HBV in Pregnant Women.

Practice in Screening for HBV in Pregnant Women	Correct number (%)
For how many percent of pregnant women who refer to the OB-GYN do we ask for HBsAg test?	184 (92 %)
Which of the following items do you routinely ask for HBsAg positive pregnant women? (You can select more than one option). liver enzymes <input type="checkbox"/> HBeAg and HBeAb testing <input type="checkbox"/> Viral load check <input type="checkbox"/> Examination of all above <input type="checkbox"/> Initially advise on gastrointestinal or infection <input type="checkbox"/> None of the above items <input type="checkbox"/>	162 (81%)
How do you control or manage pregnant women with an unknown HBsAg status in childbirth (How do you deal with these cases)? I consider positive <input type="checkbox"/> I consider negative <input type="checkbox"/> I do not mind <input type="checkbox"/> I take an emergency test <input type="checkbox"/>	192 (96%)
Do you change the delivery method to cesarean section in order to reduce the transmission of HBsAg to the fetus? (Y/N)	188 (94%)
Whenever HBeAg was positive only in mother; do you change the delivery method to cesarean section? (Y/N)	192 (96%)
In patients with positive HBsAg, in any case, you change the delivery method to cesarean section only for obstetric reason. (Y/N)	192 (96%)
During the time of your practice, did you have a pregnant patient with positive HBsAg who was under anti-viral therapy to reduce the transmission to the fetus? (Y/N)	36 (18%)
Did you have a rupture of membranes in a pregnant woman infected with HBV? (Y/N)	160 (80 %)

Table 4. Distribution of obstetricians and gynecologists frequency in terms of knowledge and attitude, and practice of screening for HBV in pregnant women.

		Knowledge				
		Total	Poor	Moderate	Good	Excellent
Attitude (chi-Square=18.9 df=3)	Positive	104 (63%)	38 (23%)	20 (12.2%)	3 (1.8 %)	165
	Negative	14 (40%)	13 (37.1%)	1 (2.8%)	7 (19.9 %)	35
	total	118	51	21	10	200
Practices (P=0.02 chi-Square=1.9 df=6, P=0.001)	Good	115(64.6%)	45(25.3%)	12 (6.7%)	6 (3.4%)	178
	Moderate	3 (17.7%)	5 (29.4%)	8 (47%)	1 (5.9%)	17
	Poor	0	1 (20%)	1 (20%)	3 (60%)	5
	Total	118	51	21	10	200

Table-5. Frequency distribution of obstetricians and gynecologists by practice and their attitude on screening for HBV in pregnant women.(Chi-Square=8.9, df=2, P=0.011)

Practice Attitude	Good	Moderate	Poor	Total
Positive	160 (96.9%)	4 (2.4%)	1 (0.7%)	165
Negative	18 (51.4%)	13 (37.1%)	4 (11.4%)	35
Total	178	17	5	200

Table-6. Frequency distribution of obstetricians and gynecologists in terms of knowledge, attitude and practice with their work-experience in screening HBV in pregnant women based on experience.(CS=Chi-Square df= ????)

	Knowledge (CS=1.9 df=3 P=0.001)				Attitudes (CS=11.4, df=1 P=0.17)		Practices (chi-Square=1.3 df=2 P=0.201)		
	Poor	Moderate	Good	Excellent	Negative	Positive	Poor	Moderate	Good
1-10 year	0	1 (0.5%)	39 (19.5%)	108 (54%)	23 (15.6%)	125 (84.4%)	3 (2%)	9 (6.1%)	136 (91.9%)
10-20 year	10 (5)	20 (10%)	12 (6%)	10 (5%)	12 (33.1%)	40 (76.9%)	2 (3.9%)	8 (15.4%)	42 (80.7%)
Total	10	21	51	118	35	165	5	17	178

DISCUSSION

In the current KAP study, the knowledge of Iranian obstetrician and gynecologists regarding screening for HBV in pregnant women was 59% very good and 25.5% good. The mean score of knowledge was 16.9 ± 1.3 , which is categorized as a good level of knowledge. In a similar study, Gonçalves et al., found that most physicians in an OB-GYN department in Brazil had proper knowledge about the prevention of HBV vertical transmission and most nurses did not consider the HBV vaccine to be necessary for pregnant women [16]. In a study in Nigeria, Adeyemi et al., reported that 274 (48.5%) of care givers had a good knowledge in the management of HBV infection during pregnancy [17], which is in line with the findings of the current KAP study. In the study of Ayalew et al., in Ethiopia approximately one quarter (37.1%) of care givers had good knowledge of the HBV transmission and vaccination [18].

In the present study, 92% of obstetricians and gynecologists knew that pregnant mothers should be screened for HBV infection, which was consistent with the findings of Hu et al. Furthermore, 96.3% [19] of obstetricians and 95.3% of gynecologists were aware that infants of infected mothers with positive HBsAg should be immunized with HBV vaccine. Mothers who come to the OB-GYN clinic should be tested for HBV in the first visit, and if they are positive for HBsAg, mothers should be given a vaccine and hepatitis B immunoglobulin (HBIG) during the first 12 hours of delivery. This action leads to the reduction of the likelihood of newborn infant infection to below 3%. In the absence of vaccines and HBIG, these infants will have a 10% probability of being infected if the mother is only HBsAg positive, and a 90% chance if the mother is HBsAg and HBeAg both positive. It is possible to give pregnant mothers the HBV vaccine [20].

Conversely, Hu et al., found that 13.8% of obstetrics and gynecology staff mistakenly believed that cesarean section could prevent mother-to-child transmission of HBV. In the present study, 16% of participants mistakenly believed so, however cesarean is currently not recommended to prevent the onset of infection [19].

In the present study, 86% of obstetricians and gynecologists were aware of the fact that mothers with positive HBsAg could normally breastfeed their infants, since it has not been confirmed that breastfeeding allows transmission of HBV infection. During acute infection of a mother with HBV virus, if the baby is given HBV vaccine and HBIG, breast-feeding is not an additional risk for the transmission of the virus to the baby [21].

In a study by Sharifi et al., HBsAg screening test among pregnant mothers was recommended, especially if the spouse had a history of drug addiction [22]. In the current study, 98% of obstetricians and gynecologists agreed with this approach.

A study in USA found that economic barriers, as well as the healthcare personnel's knowledge, affect the screening of HBV among Asian American mothers [23]. Although the knowledge of obstetricians and gynecologists in the current study was considered appropriate, economic barriers may affect the screening program across Iran as a developing country.

In the present study, 165 (82.5%) out of the 200 obstetricians and gynecologists had positive attitudes and the mean attitudes score was 8.8 ± 2 and was considered positive. Positive attitudes on the screening of pregnant women's HBV promises that screening for pregnant women with HBV can be helpful. An analysis of attitudes-related questions showed that 96% of obstetricians and gynecologists "totally agree" and 4% "agree" that the training of pregnant women is effective in changing their behavior regarding HBV infection. The complexity of health behaviors in public health and medicine is not clear [24]. Healthcare professional's individual knowledge and awareness of preventive behaviors are essential for changing mothers' behaviors [25, 26]. It is therefore important that the obstetricians, gynecologists and other healthcare professionals working with pregnant women must have the knowledge about HBV infections and should counsel their patients about preventive behaviors.

According to other studies on counseling to prevent the consequences of an infection, lack of adequate time was a notable barrier for pregnant women to receive advising on the prevention of infection [27, 28]. Most obstetricians and gynecologists reported that learning assistance tools could help them in these activities, which is in line with findings of the current study that all 200 obstetricians and gynecologists "totally agree" and "agree" to install a screening guideline for HBV pregnant women at OB-GYN clinic that can be accessed by pregnant women.

In the present study, the mean score related to the practice of obstetricians and gynecologists in the screening of HBV in pregnant women was 17.1 ± 2.9 which is considered a good level of practice. A study by Adeyemi et al., performed in Nigeria, reported that 67.4% (381) of caregivers routinely screened pregnant women for HBV infection, but that screening for HBV infection was not universal in pregnant women in south-west Nigeria [17].

In the present study, the relation between knowledge and attitudes was statistically significant, so that highly knowledgeable specialists had positive attitudes regarding screening for HBV in pregnant women. It is important to note that improved knowledge of obstetricians and gynecologists about screening tests can improve their attitudes on the prevention of HBV infection. In the present study, it was found that positive attitudes toward the screening of HBV in pregnant women also affected the practice of obstetricians and gynecologists, and that positive attitudes lead to better practice.

The present study also showed that the knowledge of obstetricians and gynecologists about the screening of HBV in pregnant mothers affects their practice; thus, with increasing knowledge, practice is also improved and there is a statistically significant relation between knowledge and practice. In contrast to current findings, caregivers in the Adeyemi et al., study had poor knowledge about the management of positive pregnant mothers for HBsAg, and this affected their practice in managing this female population. Therefore, the researchers suggested that the need for continuing medical education is necessary to respond to this knowledge gap in order to re-

duce HBV infection. Conceição et al., in Brazil also found that neither of the gynecologists and nurses in the study knew the strategies for controlling the transmission of HBV virus (lack of knowledge), nor was this properly implemented (practical impairment) [29].

The findings of the present study indicate that obstetricians and gynecologists with less work experience (1–10 years) have more knowledge about the screening of HBV in pregnant women (compared to obstetrician and gynecologists with 10 to 20 years of experience), perhaps because young obstetricians and gynecologists are more up to date about the screening of HBV in pregnant women and are more familiar with the new guidelines. However, there was no significant difference between the attitudes and the practice with work experience. However, Gonçalves et al., suggested that longer work experience provides more chance to receive further training [16].

Considering that protocols and medical guidelines are updated every few years, it is desirable that obstetricians and gynecologists update their knowledge in their specialties and strive to achieve the best practice with positive attitudes. Therefore, the availability of information resources in the form of continuing medical education can guarantee the updating of knowledge. However, it is believed that only training a group of obstetricians and gynecologists to provide better care in pre-natal, childbirth, and postpartum stage is not enough. These obstetricians and gynecologists need to have the necessary motivation and courage to review their behavior in line with updating their knowledge.

The main limitation of the present study is that the participants in the present study may not represent all obstetricians and gynecologists in Iran, so caution should be taken in the generalization of the findings and therefore more comprehensive studies are needed. Also, in Iran, after the Islamic Revolution in 1979, all obstetricians and gynecologists are women because men are not allowed to study at the hospital or university in this field. In future studies, the educational interventions and its effects on the level of knowledge, attitudes and practice of obstetricians and gynecologists on the screening of pregnant women in HBV should be examined.

CONCLUSION

Obstetricians and gynecologists have an important and strategic role in the creation and transmission of health information and in the development of preventive measures to control HBV in pregnant women. The present study showed that the knowledge of obstetricians and gynecologists about the screening of HBV in pregnant women is good, and that obstetricians and gynecologists have positive attitudes and good practice. The practice level of obstetricians and gynecologists demands greater coordination between updating knowledge and better practice in screening for HBV in pregnant women. Considering that the knowledge of individuals affects their attitudes and practice, it can be argued that by conducting ongoing training classes, knowledge, attitudes and, ultimately, the practice of obstetricians and gynecologists could be improved with the screening of HBV in pregnant mothers.

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CONFLICT of INTREST

There are no conflicts of interest.

REFERENCES

1. Van Damme P, Moiseeva A, Marichev I, Kervyn AD, Booy R, Kuriyakose Sh, et al. Five years follow-up following two or three doses of a hepatitis B Vaccine in adolescents aged 12-15 years. *BMC infectious Diseases* 2010; 10(357):1-8.
2. Cacciola I, Cerenzia G, Pollicino T. Genomic Heterogeneity of Hepatitis B Virus (HBV) and Outcome of Perinatal HBV Infection. *Journal of Hepatology*. 2002; 36, 426-32.
3. Hou J, Liu Z, Gu F. Epidemiology and Prevention of Hepatitis B Virus Infection. *Int J Med Sci* 2005; 2(1):50-57.
4. D. Ganem and A. M. Prince. Hepatitis B virus infection—natural history and clinical consequences. *New England Journal of Medicine*. 2004; 350(11):1118-29.
5. X. Liang, S. Bi, W. Yang, L. Wang, G. Cui, F. Cui, et al. Evaluation of the impact of hepatitis B vaccination among children born during 1992–2005 in China. *The Journal of infectious diseases*. 2009; 200(1):39-47.
6. Malik AH. Lee WM. Chronic Hepatitis B Virus, Treatment Strategies for the Next Millennium. *Ann Int Med* 2000; 132:723-31
7. Merat SH, Malekzadeh R, Rezvan H, Khatibian M. Hepatitis B in Iran. *Arch Iranian Med* 2000; 3:192-201.
8. Poorolajl J, Majdzadeh R. Prevalence of chronic hepatitis B in Iran: A systematic review. *Iranian Journal of Epidemiology* 2009; 4(3, 4):1-8.
9. Jonas MM. Hepatitis B and pregnancy: an underestimated issue. *Liver Int*. 2009; 29:133-39.
10. Chang MH (2007) Hepatitis B virus infection. *Semin Fetal Neonatal Med* 12: 160-67.
11. C. f. D. Control and Prevention. Assessing completeness of perinatal hepatitis B virus infection reporting through comparison of immunization program and surveillance data--United States. *MMWR Morbidity and mortality weekly report*. 2011; 60(13):410.
12. Merat S, Malek-Zadeh R, Rezvan H, Khatibian M. Hepatitis B in Iran. *Arc Med J* 2003; 4:192-201
13. N.-C. V. Lam, P. B. Gotsch and R. C. Langan. Caring for pregnant women and newborns with hepatitis B or C. *American family physician*. 2010; 82(10):1225-29.

14. Glasgow RE, Goldstein MG, Ockene JK, Pronk NP. Translating what we have learned into practice. Principles and hypotheses for interventions addressing multiple behaviors in primary care. *Am J Prev Med* 2004; 27(Suppl 2):88– 101.
15. Teutsch C. Patient-doctor communication. *Med Clin North Am* 2003;87:1115–1145
16. Gonçalves IC, Gonçalves MJ. Knowledge, attitudes and practices of nurses and doctors about the vertical transmission of hepatitis B. *Rev Lat Am Enfermagem*. 2013;21(5):1030-38.
17. Adeyemi A, Afolabi A, Adeomi A. Hepatitis B Virus (HBV) Infection in Pregnancy: Knowledge and Practice of Care Providers in Nigeria. *Open Journal of Obstetrics and Gynecology*. 2014; 4: 621-627.
18. Ayalew MB, Horssa BA, Getachew N, Amare S, Getnet A. Knowledge and attitude of health care professionals regarding hepatitis B virus infection and its vaccination, University of Gondar Hospital, Ethiopia. *Hepatic medicine: evidence and research*. 2016;8:135
19. Hu Y, Dai X, Zhou YH, Yang H. A knowledge survey of obstetrics and gynecology staff on the prevention of mother-to-child transmission of hepatitis B virus. *J Infect Dev Ctries*. 2013; 7(5):391-7.
20. Euler GL, Copeland JR, Rangel MC, Williams WW. Antibody response to postexposure prophylaxis in infants born to hepatitis B surface antigen- positive women. *Pediatr Infect Dis J* 2003; 22: 123-9
21. Hill JB, Sheffield JS, Kim MJ, Alexander JM, Sercely B, Wendel GD. Risk of hepatitis B transmission in breast- fed infants of chronic hepatitisB carriers. *Obstet Gynecol* 2002; 99: 1049-52
22. M. Sharifi, M. Asefzadeh, F. Lalouha, M. Alipour Heydari and B. Eshtiagh. Prevalence of HBsAg carriers in pregnant women in Qazvin (2000-2001). *The Journal of Qazvin University of Medical Sciences*. 2006;10(1):72-78.
23. Hwang JP, Roundtree AK, Engbretson JC, Suarez-Almazor ME. Medical care of hepatitis B among Asian American populations: perspectives from three provider groups. *J Gen Intern Med*. 2010; 25: 220-27.
24. Institute of Medicine. Health and behavior: The interplay of biological, behavioral, and societal influences. Washington, DC: National Academy Press, 2001.
25. Glanz K, Rimer BK. Theory at a glance: A guide for health promotion practice. NIH Publication No. 05-3896. Washington, DC: National Cancer Institute, National Institutes of Health, U.S. Department of Health and Human Services. 2005.
26. Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *Am J Health Promot* 1997; 12:38–48.
27. M. D. Cabana, C. S. Rand, N. R. Powe, A. W. Wu, M. H. Wilson, P.-A. C. Abboud, et al. Why don't physicians follow clinical practice guidelines?: A framework for improvement. *Jama*. 1999;282(15):1458-65.
28. Yarnall KS, Pollak KI, Ostbye T, Krause KM, Michener JL. Primary care: Is there enough time for prevention? *Am J Public Health* 2003; 93:635– 641.
29. Yarnall KS, Pollak KI, Ostbye T, Krause KM, Michener JL. Primary care: Is there enough time for prevention? *Am J Public Health*. 2003;93:635–41.