

The demographic and paraclinical characteristics of patients with hepatitis B presenting to Shahid Mohammadi Hospital and Clinic and other private clinics in Bandar Abbas, Iran

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ABSTRACT

Considering the crucial importance of hepatitis B and its high prevalence in the society, the present study was conducted to examine the demographic and paraclinical characteristics of patients with chronic hepatitis B. This descriptive cross-sectional study examined 180 patients with hepatitis B presenting to Shahid Mohammadi Hospital and Clinic and other private clinics in Bandar Abbas, Iran, in 2016–17. The patients were divided into three main groups: chronic hepatitis, liver cirrhosis, and healthy carriers. Parametric and nonparametric tests were used to analyze the relationship between the quantitative variables in terms of their normal or nonnormal distribution ($P < 0.05$). About 13.5% of the patients had cirrhosis, 35.4% were healthy carriers, and 51.12% had chronic hepatitis. The number of male patients in the cirrhosis group and the number of female participants in the healthy carrier group were higher. The difference in gender distribution between the three groups was statistically significant. According to the results of this study, male and married people constitute a high percentage of the population of patients with chronic hepatitis B. The clinical symptoms of chronic hepatitis B often do not occur until the patient's progress to advanced stages and cirrhosis, and most of the population is asymptomatic. Contact with a person suspected to have hepatitis B is one of the major risk factors of this disease.

Key words: Chronic hepatitis B, demographic, paraclinical

INTRODUCTION

Viral hepatitis is among the five most common infectious agents causing premature death around the world. Six types of viruses are known to cause hepatitis.^[1] Of the 257 million

cases of chronic hepatitis, hepatitis B is most important because it leads to the death of nearly 800,000 people per year as a result of liver cirrhosis and hepatocellular carcinoma (HCC).^[2-4] An estimated 3% of Iranians are chronic carriers of hepatitis B virus or HBV.^[5] To a large extent, the probability of the chronicity of the disease depends on the patient's age and immune system power at the time of developing hepatitis.^[6] Hepatitis becomes chronic in 90% of infected newborns. Between the ages

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of 1 and 5, the chance of treatment is up to 50%, but this chance reduces to 6%–10% in older children and adults.^[7,8] Today, the most important measure for preventing hepatitis is vaccination.^[6] Hepatitis B vaccine was introduced in 1981 as the first preventive vaccine for cancer and sexually transmitted diseases and is now used as a routine immunization program in many countries.^[9] Recently, in addition to vaccination, some treatments have been proposed for hepatitis B. Nonetheless, the complications of treatment, the heavy costs, the resistant species, and the incomplete elimination of the virus in many cases still hinder the treatment of this chronic infection.^[10] People with chronic hepatitis B should be periodically evaluated for complications such as HCC (using ultrasound) and markers such as alpha-fetoprotein should be regularly monitored in them as well.^[11] The complications of this disease are not limited to the liver and may also affect areas outside the liver, such as is the case with polyarteritis nodosa, membranous glomerulonephritis, and membranoproliferative glomerulonephritis.^[12] As for the transmission of the virus, infections often occur among injecting drug users, homosexuals, hospital staff, and people who frequently need blood products, such as hemophiliacs. In some people, the presence of other risk factors can increase the chance of getting the disease.^[13] The probability of manifestation of the complications in these patients is to some extent predictable by certain changes in laboratory test results.^[14] Recognizing, preventing and treating the disease and preventing its complications in those affected are part of the program for coping with this disease. The goal of treatment for patients with chronic hepatitis is increased life satisfaction; however, the quality of life in patients, especially patients treated with interferon, is often lower than normal, and these patients suffer from fatigue, loss of self-esteem, and inability to perform daily activities.^[15] Various studies have examined the risk factors of hepatitis in different groups of the population and their role in the development of the disease or its complications. Symptoms vary among people and the incidence rate of serious complications of the disease are to some extent associated with the symptoms manifested in individuals as well as changes in laboratory test results.^[13,14]

Given the issues raised in the previous section, the critical nature of hepatitis B and its spread in communities, the present study was conducted to investigate the demographic and paraclinical characteristics of patients with chronic hepatitis B.

MATERIALS AND METHODS

Patients

This descriptive cross-sectional study was conducted to examine 180 patients with hepatitis B presenting to Shahid Mohammadi Hospital and Clinic and other private clinics in Bandar Abbas, Iran, in 2016–17. The

inclusion criteria consisted of patients with chronic hepatitis B disease who had had positive hepatitis B surface antigen for over 6 months and age above 18, and the exclusion criterion was simultaneous diagnosis with a liver disease other than hepatitis B, such as hepatitis C and autoimmune hepatitis. Informed and written consent was obtained from all the patients before entering the study. After selecting the patients and briefing them on the study during the sampling stage, the participants completed a demographic questionnaire with items on name, age, gender, marital status, and place of residence, education, history of blood transfusion, and history of special diseases.

Study design

Paraclinical tests results from the past month, such as hemoglobin and hepatic enzyme test results, were used and the patients were divided into three groups: chronic hepatitis, liver cirrhosis, and healthy carriers. The patients' demographic and underlying disease information was gathered by the checklist prepared by the researchers. This checklist was approved by a gastroenterologist-infectionist.

Statistical analysis

Data were analyzed in Statistical Package for the Social Sciences (SPSS version 16, IBM ©, USA). Descriptive statistics were reported with percentage, mean and standard deviation, and the Chi-square test was used to analyze the relationship between the qualitative variables. Parametric (*t*-test) and nonparametric (Kruskal–Wallis) tests were used to analyze the relationship between the quantitative variables in terms of their normality or nonnormality. The statistical significance level was set at $P < 0.05$.

RESULTS

A total of 180 patients were statistically analyzed and their demographic and paraclinical characteristics were compared in three groups, that is, chronic hepatitis, liver cirrhosis, and healthy carrier groups.

About 13.5% of the patients had cirrhosis and 50% of whom had at least one of the complications of cirrhosis. The healthy carriers and chronic hepatitis patients accounted for 35.4% and 51.12% of the population, respectively. Overall, 53.9% of the patients were male and 46.1% were female. The three groups were also assessed in terms of gender distribution, and the number of male patients in the cirrhosis group and the number of female participants in the healthy carrier group were higher. The difference in gender distribution between the three groups became statistically significant. The participants were divided into age groups with 10-year intervals, and the most common age group was 25–34. There were no significant differences between the age distribution of the participants in the different study groups ($P = 0.438$).

The participants' body mass index (BMI) was calculated and they were divided into six BMI groups, and 45.5% of them belonged to the 15.5–24.9 BMI group. The three groups were not significantly different in terms of BMI distribution ($P = 0.414$). The participants were divided into two groups based on their place of residence, and 57.1% resided in urban areas. There was no significant difference between the three groups in terms of the place of residence ($P = 0.091$). The participants were divided into an Iranian and a non-Iranian group, and only 2.8% were non-Iranian. There was no significant difference between the three main groups in terms of this variable either ($P = 0.564$). A total of 83% of the participants were native of their place of residence. There were no statistically significant differences between the three main groups in terms of this variable ($P = 0.510$) [Table 1].

Most of the study participants were married (87.4%) [Table 2] and had no academic education [Table 3].

Overall, most of the study population was asymptomatic (60.3%); however, 72.7% of the patients in the cirrhosis group had a clinical symptom. There was a statistically significant difference between the three groups in terms of this variable ($P = 0.001$). Fever was reported in 9.1% of the participants overall but was higher in the cirrhotic patients (22.7%); nevertheless, the difference between them was not statistically significant ($P = 0.060$). Anorexia was reported in 6.8% of the participants overall but was higher in the cirrhotic patients (22.7%), and the difference between them was statistically significant ($P = 0.040$). The three groups did not differ significantly in terms of vomiting ($P = 0.414$). Nausea was reported in 11.4% of the participants overall and was higher in the cirrhotic

Table 1: The distribution of the qualitative variables in the three groups

Variable	Subcategory	Quantity (%)				P
		Overall	Groups assessed			
			Healthy carrier	Cirrhotic	CHB	
Sex	Male	96 (53.9)	53 (58.2)	17 (70.8)	26 (41.3)	0.023
	Female	82 (46.1)	38 (41.8)	7 (29.2)	37 (58.7)	
Age	15-24	12 (6.9)	7 (7.9)	0	5 (8.1)	0.438
	25-34	51 (29.3)	26 (29.2)	4 (17.4)	21 (33.9)	
	35-44	38 (21.8)	22 (24.7)	4 (17.4)	12 (19.4)	
	45-54	31 (17.8)	14 (15.7)	6 (26.1)	11 (17.7)	
	55-64	25 (14.4)	10 (11.2)	5 (21.7)	10 (16.1)	
	65≤	17 (9.8)	10 (11.2)	4 (17.4)	3 (4.8)	
BMI (kg/m ²)	18.5>	14 (8.4)	11 (13.4)	0	3 (4.8)	0.414
	18.5-24.9	76 (45.5)	34 (41.5)	12 (54.5)	30 (47.6)	
	25-29.9	61 (36.5)	30 (36.6)	7 (31.8)	24 (38.1)	
	30-34.9	15 (9)	6 (7.3)	3 (13.6)	6 (9.5)	
	35-39.9	1 (0.6)	1 (1.2)	0	0	
Address	Urban	100 (57.1)	45 (50.6)	14 (60.9)	41 (65.1)	0.19
	Rural	75 (42.9)	44 (49.4)	9 (39.1)	22 (34.9)	
Nationality	Iranian	171 (97.2)	86 (95.6)	23 (100)	62 (98.4)	0.564
	Non Iranian	5 (2.8)	4 (4.4)	0	1 (1.6)	
Native	Yes	146 (83)	74 (82.2)	21 (91.3)	51 (81)	0.51
	No	30 (17)	16 (17.8)	2 (8.7)	12 (19)	

CHB: Chronic hepatitis B, BMI: Body mass index

Table 2: The marital status of the study patients in the three groups

Marriage and gender relationship conditions	Quantity (%)			
	Overall	Groups assessed		
		CHB	Cirrhotic	Healthy carrier
Divorced	1 (0.6)	0	1 (4.3)	0
Widowed	6 (3.4)	3 (3.4)	0	3 (4.7)
Single	14 (8)	5 (5.7)	2 (8.7)	7 (10.9)
No gender relationship	0	0	0	0
Remarriage	1 (0.6)	1 (1.1)	0	0
Married	152 (87.4)	78 (89.7)	20 (87)	54 (84.4)

CHB: Chronic hepatitis B

Table 3: The education level of the study patients in the three groups

Education conditions	Quantity (%)			
	Overall	Groups assessed		
		CHB	Cirrhotic	Healthy carrier
Illiterate	32 (18.8)	16 (18)	8 (36.4)	8 (13.6)
Elementary school	32 (18.8)	15 (16.9)	6 (27.3)	11 (18.6)
Guidance school	38 (22.4)	22 (24.7)	4 (18.2)	12 (20.3)
High school/diploma	32 (18.8)	16 (18)	2 (9.1)	14 (23.7)
Associate degree	15 (8.8)	5 (5.6)	1 (4.5)	9 (15.3)
Undergraduate	13 (7.6)	10 (11.2)	0	3 (5.1)
Postgraduate	5 (2.9)	3 (3.4)	0	2 (3.4)
Doctorate	3 (1.8)	2 (2.2)	1 (4.5)	0

CHB: Chronic hepatitis B

patients (27.3%), and the difference between them was statistically significant ($P = 0.028$). Fatigue was the most common symptom reported by the participants (25.5%), and half of the cirrhotic patients had experienced this symptom; the difference between the groups was thus statistically significant ($P = 0.006$). Joint pain was a relatively common symptom among the patients (21.1%) and was more prevalent among the cirrhotic subjects (50%), and the difference between the three main groups was thus statistically significant in terms of this variable ($P = 0.001$). Myalgia was the second most common symptom and was reported by 24% of the participants overall and by more than half of the cirrhotic patients, and the difference between the groups was thus statistically significant ($P = 0.001$). Headache was reported in 9.6% of the participants and was higher in the cirrhotic patients, but the difference between the groups was not significant in terms of this variable ($P = 0.057$). Right upper quadrant (RUQ) pain was one of the most common symptoms reported in the cirrhotic patients (54.5%), and the difference between the groups was significantly different in terms of this type of pain ($P = 0.004$). Jaundice was reported in 7.4% of the patients overall and in 27.37% of the cirrhotic patients ($P = 0.004$) [Table 4]. It should be noted that <180 of the participants reported their experience with these variables and some responded late or were unavailable.

Sexual activity and injection drug addiction were also examined in the participants and the results are reported in Table 5.

The potential risk factors of hepatitis were studied among the participants. The highest-reported factor was contact with a hepatitis B suspect, which was reported in 29.7% of the subjects; however, there was no statistically significant difference between the three groups in terms of contact with suspects ($P = 0.613$). There was only one case of needlestick injury infection. Nine participants were in the health staff group and five of them (i.e., more than 50%) were in the healthy carrier group; however, there was no significant difference between them ($P = 0.442$) [Table 6].

The participants were evaluated in terms of hepatitis B vaccination and 4.69% had not been vaccinated. No significant difference was observed between the three groups in terms of vaccination ($P = 0.951$) [Table 7].

The mean number of sex partners was compared between the three groups and was reported to have been lower in the healthy carrier group, but the difference between the groups was not statistically significant in this regard ($P = 0.951$) [Table 8].

The mean white blood cell (WBC) was 6.3 ± 4.0 m and did not differ significantly between the three groups ($P = 0.901$). The mean hemoglobin level was 12.78 ± 2.00 in the participants and the lowest mean hemoglobin level (11.68 ± 2.30) was observed in the cirrhosis group. A significant difference was observed between the three groups in terms of the mean hemoglobin level ($P = 0.040$). The mean prothrombin time (PT) of the participants was 12.70 ± 1.18 , and was significantly higher in the cirrhosis group (14.40 ± 2.46) ($P < 0.001$). INR was also significantly higher in the cirrhosis group (1.26 ± 0.37) ($P < 0.001$). The mean level of liver enzymes was higher in the healthy carriers. The mean sodium level was 139.79 ± 11.58 in the participants and was significantly lower in the cirrhotic group (132.57 ± 28.68) ($P = 0.008$). The calcium level was significantly lower in the cirrhotic group too (8.81 ± 1.77) ($P = 0.008$) [Table 9].

DISCUSSION

The findings of this study showed that the number of male participants was 17.1 times higher than the number of female participants, which is indicative of higher incidence rates of hepatitis among men. The number of male patients in the cirrhosis group and the number of female participants in the healthy carrier group were higher. This finding could be due to women's greater attention to treatment follow-ups, which increases their chance of survival. The most-affected age group was the 25–44 group, who are a young and efficient portion of the community. Recommendations for prevention through vaccination and raising awareness among the youth

Table 4: The frequency of clinical symptoms in the three groups

Variable	Subcategory	Quantity (%)				P
		Overall	Groups assessed			
			CHB	Cirrhotic	Healthy career	
Symptom	Yes	69 (39.7)	35 (39.3)	16 (72.7)	18 (28.6)	0.001
	No	105 (60.3)	54 (60.7)	6 (27.3)	45 (71.4)	
Fever	Yes	16 (9.1)	6 (6.7)	5 (22.7)	5 (7.8)	0.06
	No	159 (90.9)	83 (93.3)	17 (77.3)	59 (92.2)	
Anorexia	Yes	15 (8.6)	6 (6.7)	5 (22.7)	4 (6.3)	0.04
	No	160 (91.4)	83 (93.3)	17 (77.3)	60 (93.8)	
Vomit	Yes	11 (6.3)	7 (7.9)	2 (9.1)	2 (3.1)	0.414
	No	164 (93.7)	82 (92.1)	20 (90.9)	62 (96.9)	
Nausea	Yes	20 (11.4)	10 (11.2)	6 (27.3)	4 (6.3)	0.028
	No	155 (88.6)	79 (88.8)	16 (72.7)	60 (93.8)	
Tiredness	Yes	45 (25.7)	24 (27)	11 (50)	10 (15.6)	0.006
	No	130 (74.3)	65 (73)	11 (50)	54 (84.4)	
Joints pain	Yes	37 (21.1)	18 (20.2)	11 (50)	8 (12.5)	0.001
	No	138 (78.9)	71 (79.8)	11 (50)	56 (87.5)	
Megaly	Yes	42 (24)	21 (23.6)	12 (54.5)	9 (14.1)	0.001
	No	133 (76)	68 (76.4)	10 (45.5)	55 (85.9)	
Headache	Yes	12 (6.9)	6 (6.7)	4 (18.2)	2 (3.1)	0.057
	No	163 (93.1)	83 (93.3)	18 (81.8)	62 (96.9)	
Photophobia	Yes	2 (1.1)	1 (1.1)	1 (4.5)	0	0.236
	No	173 (98.9)	88 (98.9)	21 (95.5)	64 (100)	
RUQ pain	Yes	45 (26)	21 (23.6)	12 (54.5)	12 (19.4)	0.004
	No	128 (74)	68 (76.4)	10 (45.5)	50 (80.6)	
Jaundice	Yes	13 (7.4)	4 (4.5)	6 (27.3)	3 (4.7)	0.004
	No	162 (92.6)	85 (95.5)	16 (72.8)	61 (95.3)	
Pharyngitis	Yes	7 (4)	4 (4.5)	1 (4.5)	2 (3.1)	1/000
	No	168 (96)	85 (95.5)	21 (95.5)	62 (96.9)	

CHB: Chronic hepatitis B, RUQ: Right upper quadrant

Table 5: The current sexual activity and injection drug use status in patients

Variable	Sub category	Quantity (%)				P
		Overall	Groups assessed			
			CHB	Cirrhotic	Healthy career	
Gender relationship activity	Yes	3 (1.7)	2 (2.2)	1 (4.5)	0	0.238
	No	171 (98.3)	87 (97.8)	21 (95.5)	63 (100)	
Injection addiction	Yes	3 (1.7)	3 (3.4)	0	0	0.37
	No	171 (98.3)	86 (96.6)	22 (100)	63 (100)	

CHB: Chronic hepatitis B

about the ways of disease transmission and the methods of their prevention are necessary for controlling the disease. In terms of BMI, most of the participants (45.5%) were in the 18.5–24.9 age range, which is considered a normal BMI. Since the majority of the participants resided in urban areas, it is recommended to inform urban residents and raise their awareness about the prevention and treatment of this disease. Since the majority of the participants were married (87.4%), it is essential to inform nonmarried people about routes of hepatitis B transmission by holding premarriage seminars and counseling. Couples who, one or both, have hepatitis B, need to learn about the disease control and how marriage can help prevent the transmission

of the disease. In the case of pregnancy, measures must be taken to prevent the transmission of the disease to the child. The majority of the subjects had a low level of education, which means that awareness-raising methods should be simplified to be understandable for the general public, especially for people with lower levels of education, as this group is more prone to the disease. The majority of the participants were asymptomatic (60.3%), while 72.7% of the cirrhotic patients had a clinical manifestation, which demonstrates that patients with chronic hepatitis B are usually asymptomatic until the final stages of cirrhosis. The most common symptom among patients was RUQ pain and fatigue. It is therefore recommended for physicians to

Table 6: The frequency of risk factors in each study group

Risk of factors	Subcategory	Quantity (%)				P
		Overall	Groups assessed			
			CHB	Cirrhotic	Healthy career	
Contact with dirty syringe	Yes	1 (0.6)	0	0	1 (1.6)	0.489
	No	173 (99.4)	89 (100)	22 (100)	62 (98.4)	
Addiction	Yes	6 (4.4)	3 (4.4)	1 (7.1)	2 (3.8)	0.694
	No	129 (95.6)	65 (95.6)	13 (92.9)	51 (96.2)	
Sanitary workers	Yes	9 (5.2)	3 (3.4)	1 (4.5)	5 (7.9)	0.442
	No	165 (94.8)	86 (96.6)	21 (95.5)	58 (92.1)	
Contact with persons suspicious to hepatitis B	Yes	52 (29.7)	29 (32.6)	4 (18.2)	19 (29.7)	0.613
	No	109 (62.3)	52 (58.4)	17 (77.3)	40 (62.5)	
	Unclear	14 (8)	8 (9)	1 (4.5)	5 (7.8)	
Receiving blood	Yes	8 (4.6)	1 (1.1)	1 (4.5)	6 (9.4)	0.042
	No	167 (95.4)	88 (98.9)	21 (95.5)	58 (90.6)	
	Unclear	0	0	0	0	
Syringe addiction in past	Yes	1 (0.6)	1 (1.1)	0	0	1/000
	No	174 (99.4)	88 (98.9)	22 (100)	64 (100)	
	Unclear	0	0	0	0	
Uncertain sexual relationship	Yes	2 (1.1)	2 (2.2)	0	0	0.628
	No	173 (98.9)	87 (97.8)	22 (100)	64 (100)	

CHB: Chronic hepatitis B

Table 7: The frequency of hepatitis B vaccination in each study group

Receiving hepatitis B vaccine	Quantity (%)				P
	Overall	Groups assessed			
		CHB	Cirrhotic	Healthy career	
Yes	53 (30.6)	26 (29.5)	7 (31.8)	20 (31.7)	0.951
No	120 (69.4)	62 (70.5)	15 (68.2)	43 (68.3)	

CHB: Chronic hepatitis B

Table 8: The mean number of sex partners in the three groups

Quantity of sex partner	Groups assessed						Statistics of Kruskal-Wallis test	Freedom degree	P
	CHB		Cirrhotic		Healthy career				
	Average	SD	Average	SD	Average	SD			
Quantity of sex partner	1.96	0.21	1.95	0.21	1.84	0.41	5.929	2	0.052

SD: Standard deviation

consider this disease as one of their differential diagnoses based on the patient’s history and clinical symptoms. The highest reported factor was contact with a hepatitis B suspect (29.9%). To overcome affliction upon such contact, it is recommended to visit a physician for complementary tests whenever contact is established with a suspect. Nine patients were in the health staff group and five of them (i.e., more than 50%) were in the healthy carrier group, which might be due to the greater awareness about the disease and the better care measures taken in this group. The participants were also evaluated in terms of their hepatitis B vaccination and 4.69% had not been vaccinated. No significant differences were observed between the three groups in terms of vaccination. The occurrence of the disease in vaccinated participants might be due to the lack of immunity in the patient’s body, incomplete vaccination, and

nonobservance of the cold chain. Another recommendation is therefore for participants, especially those at risk, to undergo antibody titer tests, and if the results show titers lower than 10 units, the patient has to be vaccinated three times, and the antibody titers must then be remeasured. The mean WBC was normal in the three groups; the mean hemoglobin level was lower, especially in the cirrhotic group. The risk of coagulopathy in the form of long PT and increased INR was higher in the cirrhosis group. Liver enzymes were normal or slightly increased, and their mean level was slightly higher in the healthy carriers. Blood calcium and sodium levels were somewhat reduced in the cirrhotic patients, and potassium levels did not show significant changes. Al-Naamani *et al.* found that more than 50% of the examined women were infected and since one of the main routes of transmission is vertical transmission, it

Table 9: The comparison of laboratory test results among the three groups

Laboratory variables	Overall		Groups assessed						P Kruskal-Wallis test
			CHB		Cirrhotic		Healthy carrier		
	Average	SD	Average	SD	Average	SD	Average	SD	
WBC	6.3	4	6.5	5	6.4	2.7	6.1	2.2	0.901
HB	12.78	2	13.08	2.04	11.68	2.3	12.72	1.68	0.04
PT	12.7	1.18	12.48	0.56	14.4	2.46	12.43	0.5	0.001
PTT	31.72	8.18	30.96	5.35	36.06	17.92	31.35	5.77	0.939
INR	1.04	0.16	1.01	0.04	1.26	0.37	1.01	0.03	0.001
Total cholesterol	167.03	42.07	165.94	39.24	154.39	46.61	172.87	44.3	0.312
TG	98.15	59.38	93.73	49.32	113.17	71.73	99.78	68.42	0.679
SGPT (ALT)	39.51	121.54	31.14	20.52	33.43	19.67	54.45	205.16	0.08
SGOT (AST)	40.05	119.18	29.14	22.21	53.29	37.74	55.44	199.75	0.001
ALP	193.64	99.46	174.09	52.2	295.42	206.89	187.15	74.61	0.091
Na	139.79	11.58	141.06	4.62	132.57	28.68	140.84	3.35	0.008
K	4.61	0.52	4.57	0.54	4.66	0.63	4.64	0.45	0.387
Ca	9.3	0.98	9.51	0.55	8.81	1.77	9.13	1.07	0.049

WBC: White blood cell, HB: Hemoglobin, INR: International normalized ratio, TG: Triglycerides, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, SGPT: Serum glutamic-pyruvic transaminase, SGOT: Serum glutamic-oxaloacetic transaminase, ALP: Alkaline phosphatase, SD: Standard deviation, CHB: Chronic hepatitis B, PT: Prothrombin time, PTT: Partial Prothrombin time

is absolutely critical to screen and vaccinate women for this disease.^[16] Salimi *et al.* examined the prevalence of hepatitis B and the factors affecting it in pregnant women and showed that villagers formed a higher percentage of the patients and concluded that residence in rural areas could be a risk factor for hepatitis B in pregnant women.^[13] In the present study, 57.1% of the patients resided in urban areas and the percentage of residents of rural areas was lower. In a study conducted by Cowan *et al.*, screening pregnant women based on their risk factors in low-endemic regions was found to potentially lead to the nonidentification of hepatitis B-affected women as much as 50%.^[17] Salimi *et al.* examined only pregnant women and aimed to obtain the prevalence of hepatitis B in pregnant women. In longitudinal cohort study dating from 2003-2010 by Shahnaz Sali *et al.*, patients with chronic hepatitis B were assessed six months after their first visit and for 7 years. Out of the 275 cases, 200 were male, and mean serum level of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) was 94.3 ± 52.1 and 66.5 ± 28.1 in the participants. The mean AST and ALT in this study were 40.05 ± 119.18 and 39.51 ± 121.54 , respectively. In the study by Shahnaz Sali *et al.*, the mean levels of these enzymes were slightly higher and AST was lower than ALT in the participants; meanwhile, in the present study, AST and ALT levels were very close and AST was even slightly higher than ALT.^[18] Similarly, in this study, the percentage of the male patients was higher than that of the female patients. Although the classification of education level in the present study was somewhat different from that carried out by Sara Abolghasemi *et al.*, the population with a high school diploma or lower level of education appears to be larger in the present study. In a study by Khosravi *et al.*, on the seroepidemiology of the family members of patients with chronic hepatitis B, 298 of the 458 participants were male and 156 were female, 85% were married, only 16.6%

had academic education, 71.1% were healthy carriers, and 28.9% had chronic hepatitis B.^[9] In line with the findings of the present study, the number of male participants was higher than the number of female participants in the study by Khosravi *et al.*, the majority of the participants were married and participants with academic education made up a smaller percentage of the study population, and it can thus be concluded that education correlates strongly with geographic and cultural background. In the present study, the healthy carriers and chronic hepatitis patients accounted for 35.4% and 51.12% of the population, respectively, which is not consistent with the study by Khosravi *et al.* In a retrospective study between between January 1997 and December 2010, Nina Kmet Lunacek *et al.* examined 186 patients with chronic hepatitis B and 65.1% (121) of the patients were male and 65 were female, which is consistent with this study.^[20] In a study by Saeed *et al.*, the prevalence of hepatitis B was higher in married people than in single individuals, but this relationship was not statistically significant, which is similar to the present findings.^[21]

CONCLUSION

The results of this study showed that male and married people constitute a high percentage of the population of patients with chronic hepatitis B. Clinical manifestations of chronic hepatitis B usually do not occur until the patient progresses to advanced stages and cirrhosis, and most of the population is asymptomatic. Contact with a hepatitis B suspect is one of the main risk factors among people with the disease. It is highly advisable to undergo tests after contact with a suspect. Vaccination should also be considered a serious necessity by people who have not been vaccinated so far, and antibody titers need to be regularly monitored in high-risk individuals.

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Conflicts of interest

There are no conflicts of interest.

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