

# Prevalence, Knowledge and Practices of Hepatitis B and C Viruses among Patients Undergoing Surgery in Sulaimani City

Ibrahim AM<sup>1</sup>,  
Mohiadeen FA<sup>2</sup> and  
Babakir-Mina M<sup>2</sup>

- 1 Sualimani General Directorate of Health, Piramagrun Hospital, Iraq Kurdistan
- 2 Sulaimani Polytechnic University, Sulaimani Governorate, Qirga, Iraq Kurdistan

## Corresponding author:

Dr. Muhammed Babakir-Mina

✉ m.babakir@yahoo.com

Associated Professor, Sulaimani Polytechnic University, Sulaimani Governorate, Qirga, Wrme St. Mardin 327, Alley 76, Kurdistan Region of Iraq.

Tel: +964 (0)7480190092; 9647710213991

**Citation:** Ibrahim AM, Mohiadeen FA, Babakir-Mina M. Prevalence, Knowledge and Practices of Hepatitis B and C Viruses among Patients Undergoing Surgery in Sulaimani City. *J Rare Disord Diagn Ther.* 2016, 2:6.

## Abstract

**Background:** Hepatitis B virus and hepatitis C virus infections are considered important public health problems worldwide. Surgical procedures and dental treatment procedures in the health care setting are the important transmission mode of hepatitis B and C viruses.

**Objectives:** The aim of this study is to determine the prevalence of hepatitis B and C virus infections and to assess the knowledge and practices of patients undergoing surgery in Sulaimani city.

**Patients and methods:** A cross-sectional study was undertaken in Sulaimani city from the 1<sup>st</sup> of February to 1<sup>st</sup> of August 2015. Participants were evaluated using a structured questionnaire by face-to-face interview to measure the Knowledge and practices of HBV and HCV by using convenience sampling method.

**Results:** A total of 17182 patients from 7 hospitals were included in this study. HBsAg was positive in 127 (0.7%) of patients and anti-HCV positive was 76 (0.4%). While no positive cases of both HBsAg and anti-HCV together observed. Majority of participants (63.5%) had poor knowledge level and only 19% had a good knowledge level. Also 76.2% of respondents had poor practices level and only 1.3% was with good practices level.

**Conclusions:** The study demonstrates that there is low prevalence of HBV and HCV among patients undergoing surgery. Prevalence of HBsAg is more common than anti-HCV in the study population. This study observed that there is lack of knowledge and practices towards hepatitis B and C viruses among study population in our setting.

**Keywords:** Hepatitis B; Hepatitis C; Prevalence; Knowledge; Practices; Endemicity

**Received:** October 13, 2016; **Accepted:** December 18, 2016; **Published:** December 31, 2016

## Introduction

Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are the major public health problems, the most common blood-borne infections and occurring endemically in all places of the world [1]. The global burden of hepatitis B and C viral infections is widely present: around one third of the world's population has been exposed to the HBV infection, an estimated 350-400 million people are infected and one million people deaths of hepatitis-B-related diseases [2]. The World Health Organization (WHO) estimates that HCV infects more than 185 million people worldwide, and estimates that mortality rate will continue to increase over the next 20 years [3].

Surgical procedures and dental treatment procedures in the health care setting are the important transmission mode of hepatitis B and C viruses [4]. Contaminated surgical equipment, surgical disposables, needles, self-pricks during procedures and blood transfusion can be the causes of transmission of viruses from patient to patient and even to the doctors, paramedical staff and nurses [5].

According to a study carried out in 2005-2006, Iraq is considered as a country of low endemicity for HBV and HCV because the prevalence of HBsAg was 1.6% and anti-HCV antibody was very low (0.4%) in general population [6]. In addition, another

study reported that HBsAg prevalence in Iraq was found to have intermediate endemicity in year 2010; however it showed much higher probable HCV prevalence than hepatitis B amongst population [7].

Comprehensive preoperative (elective/emergency surgical procedures) HBV and HCV screening is routinely carried out in all hospitals in Sulaimani since 2011. Besides, several study carried out in Sulaimani city to determine the risk factors and prevalence of hepatitis B and C viruses among different risk groups [8-10], showing that surgical and/or dental intervention as risk factors for transmission of HBV and HCV infections. Planning of broad control programs need to availability of reliable epidemiological data on frequency of HBV and HCV in hospitals. The objective of this study is to determine the prevalence of HBV and HCV infection to among preoperative patients in Sulaimani city and to assess the HBV and HCV related knowledge and practices.

## Patients and Methods

Descriptive cross-sectional study was conducted from the 1<sup>st</sup> Feb to the 1<sup>st</sup> Aug 2015 in Sulaimani city, total of (17,182) patients admitted to the seven governmental health facilities for the elective/emergency surgical operation involved in this study. As well as a total of 400 patients interviewed by face-to-face in order to measure the Knowledge and practices toward HBV and HCV by using convenience sampling method to recruit the study participants.

All patients who admitted and tested preoperatively for HBV and HCV infections were included in this study to determine the prevalence rate.

Only those patients were included who were 16 years or older for assessing the knowledge and practices toward HBV and HCV. Health care workers and medical staffs who had tested and not intended to any surgical operations or dental treatments were excluded from the study. Patients aged less than 16 year and patients were not able to participate were also excluded from the assessing of knowledge and practices part of study. The proportion of individuals who refused to participate was less than 1% at different localities of the study, in other words the response rate was 99%. Efforts were made to explain the objectives of the study and its benefits to the participating person in order to minimize refusal. Probability proportion to size was used to allocate the participants in all seven health facilities using convenience sampling method by face-to-face interview by selecting every second patient.

The serum was screened for HBsAg and anti-HCV antibodies using the 2<sup>nd</sup> generation platform of Electrochemiluminescence (ECL) technology namely (Roche Diagnostics, cobas e411 Immunoassay analyser, Germany).

Data collected using a structured questionnaire; the questionnaire was divided into three sections: Section A consists of 8 questions regarding background information such as age, gender, educational level, nationality, occupation, area of residence, marital status and family size. Section B concerns knowledge about hepatitis B and C virus infection, transmission rout and

method of prevention, this section consists of 25 questions. The participants could choose between three predetermined options which were (Yes), (No) and (Do not know). Each correct answer received three points, one point for (Do not know) answers and zero for incorrect answers. The knowledge scoring range was from zero (minimum score) to 75 (maximum score). The scale classified knowledge levels as: poor knowledge level from 0-25 points, moderate knowledge level from 26-50 points and good knowledge level from 51-75 points. Section C is about practices towards HBV and HCV, which contains 6 questions, the participants had two predetermined options to choose between which were yes and no. Each correct answer received three points and zero points for incorrect answers. The scores of knowledge and practice were classified into three levels: poor, moderate, and good level.

A suitable time for the study was agreed upon by the researchers for the administration of the questionnaire and validated by expert researchers in Sulaimani polytechnic University. The questionnaire was chosen because of its simplicity, ability to save time, and the possibility to make comparison.

## Statistical analysis

Data were computerized and analysed using SPSS version 16.0, IBM Statistics.inc, in consideration procedures to ensure high quality of data and minimizing error. Data were translated into codes using a designed table sheet and then converted to a computerized database. Data were expressed as mean  $\pm$  standard deviation (SD). Analysis of variance (ANOVA) was used to compare mean scores of variables to find association with P-value of  $\leq 0.05$ .

## Ethical issues

Ethics approval was taken from both of Sulaimani Polytechnic University and General Directorate of Health in Sulaimani to conducting this study. An oral informed consent was also obtained from all patients who participated in the study. The questionnaires were anonymous and did not require any identity and all personal information of the study subjects and results were dealt with confidentiality.

## Results

### Results of HBV and HCV screening tests

Out of 17182 patients, 203 (1.2%) patients were found to be positive for either HBV or HCV, 127 patients were detected to be HBsAg positive thus making a prevalence of 0.7%, while 76 patients were detected to be positive for anti-HCV making a prevalence of 0.4%. The overall prevalence for hepatitis B and C markers among patients undergoing surgery in Sulaimani are presented in **Table 1**.

Among the HBsAg positive patients undergoing surgery, male patients accounted for 79 (62.2%) and female patients accounted for 48 (37.8%), giving a ratio of 1.6:1. On the other hand among the anti-HCV antibodies positive patients undergoing surgery, male patients accounted for 30 (39.5%) and female patients

accounted for 46 (60.5%), giving a ratio of 0.65: 1. The mean age of HBV positive patients was  $43.5 \pm 17.2$  a range of 4-78 years, while for HCV positive patients mean age was  $41.9 \pm 18.1$  with age range from 7- 80 years.

During the study period, 17182 individuals were screened for HBsAg and anti-HCV antibodies, age groups are divided into 6 groups, and specific percentage of HBV and HCV markers is presented in **Tables 2 and 3**, respectively. The results demonstrate an upward trend in percentage with increasing age and reached its top of 40.2% of HBV and 34.0% of HCV in the age of 50 years and older.

The age groups related distribution of HBV patients among males and female, the obtained data was demonstrated an upward trend increasing percentage with age, the maximum number of HBsAg positive cases belonged to the age group 50 years and older there were 26% in males and 14.2% in females. The lowest percentages belonged to the smallest age group <10 years in which 0.8% was for males and 3.1% was for females. The highest anti-HCV positive in age groups 50 years and older was found,

**Table 1** Prevalence of HBV and HCV infections among patients undergoing surgery in Sulaimani city.

Screening Results	No. of Patients	Percentage
Negative	16979	98.80%
HBsAg	127	0.70%
Anti-HCV	76	0.40%
Total	17182	100%

**Table 2** Distribution of HBV positive patients among male and female according to their age groups.

Age group (Years)	Total positive		Male positive		Female positive	
	No.	(%)	No.	(%)	No.	(%)
<10	5	-3.9	1	-0.8	4	-3.1
Oct-19	9	-7.1	5	-3.9	4	-3.1
20-29	16	-12.6	11	-8.7	5	-3.9
30-39	18	-14.2	12	-9.5	6	-4.7
40-49	28	-22	17	-13.3	11	-8.7
≥ 50	51	-40.2	33	-26	18	-14.2
Total	127	-100	79	-62.2	48	-37.8

**Table 3** Distribution of HCV positive patients among male and female according to their age groups.

Age group (Years)	Total positive		Male positive		Female positive	
	No.	(%)	No.	(%)	No.	(%)
<10	2	-2.6	1	-1.3	1	-1.3
Oct-19	8	-10.5	1	-1.3	7	-9.2
20-29	9	-11.8	8	-10.5	1	-1.3
30-39	14	-18.4	4	-5.3	10	-13.2
40-49	17	-22.4	6	-7.9	11	-14.4
≥50	26	-34	10	-13.2	16	-21.1
Total	76	-100	30	-39.5	46	-60.5

which was 13.2% in male patients and 21.1% was in female patients. The detail of HCV distribution among male and females according to the age groups was shown in **Table 3**.

### Knowledge and practices score level about HBV and HCV

According to the descriptive analysis, the mean score (Mean  $\pm$  SD) of knowledge and practice of the participants about HBV and HCV were  $32.77 \pm 16.1$  and  $5.27 \pm 3.2$  respectively. Out of 400 participants, there were 254 (63.5%) within the poor knowledge level whereas 76 (19%) within good knowledge level. In regards to participants related practice, there were 305 (76.2%) within poor practice level and only 2 (1.3%) had a good practices level toward HBV and HCV infections as shown in **Figure 1**.

### Assessment of knowledge about HBV and HCV

Majority of respondents reported that they have heard about disease termed hepatitis with a 254 (63.5%) and only 129 (32.2%) of respondents reported that they have heard diseases termed HBV and/or HCV while 271 (67.8%) were reported they have not heard about HBV and HCV. The majority of respondents 319 (79.8%) did not know that HBV and HCV infections can affect any age group and 302 (75.6%) did not know that HBV and HCV infections are a viral diseases. Poor knowledge was apparent in response to almost all questions relating to routes of transmission and prevention methods of HBV and HCV. **Table 4** describes the responses of the participants toward HBV and HCV related knowledge.

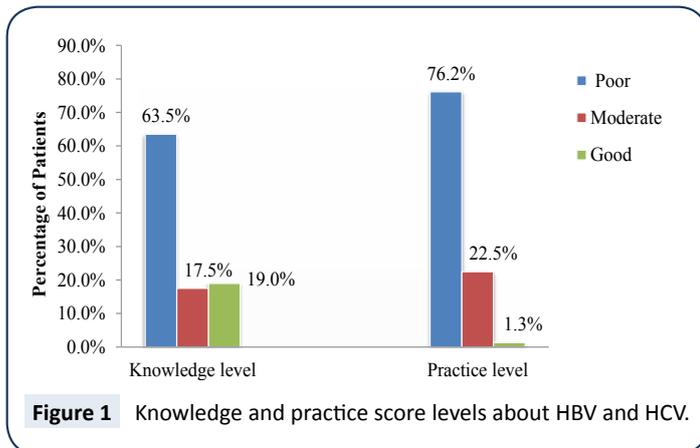
### Assessment of practices about HBV and HCV

Out of 400 participants, 78 (19.5%) reported they have being tested previously for HBV and/or HCV and low proportion of the respondents (9%) reported that they have vaccinated against hepatitis B infection as well as a high proportion of participants (91%) reported were not vaccinated against HBV. On the other hand, majority of the respondents 398 (99.5%) reported that they have not participated in any health education program related to HBV and HCV infections. Reasonable proportion of participants (72.8%) reported that asking a health professional to change or use new syringes before use, and 224 (81.8%) of respondents who visits barber and/or beauty salon reported that always asking to change blades/or use safe equipment for ear and nose piercing in barber or beauty salon. Also 272 (68%) of participants were ready to avoid the meeting with the HBV and HCV infected patients. **Table 5** shows the response of the participants toward HBV and HCV related practices.

### Association of socio-demographic characteristics and mean score knowledge and practices of respondent

**Table 6** shows the comparison of mean scores of participants for association between the knowledge and practices mean value with different socio-demographic characteristics.

When gender was specified, females were statistically significant ( $P \leq 0.05$ ); they had more knowledge mean score ( $34.30 \pm 16.9$ )



**Figure 1** Knowledge and practice score levels about HBV and HCV.

compared to males ( $30.85 \pm 4.8$ ). While regarding practices, males mean score was higher ( $5.80 \pm 3.2$ ) as compared to females ( $4.84 \pm 3.1$ ) with statistically significant difference ( $P \leq 0.05$ ).

This analysis showed that the respondents aged 36-45 years had the highest mean value of knowledge and practices ( $38.64 \pm 19.2$ ), ( $6.07 \pm 3.2$ ), respectively. The differences in knowledge and practices in the age categories were statistically significant ( $P \leq 0.05$ ). Whereas the respondents aged more than 55 years had the lowest mean value of knowledge and practices ( $26.17 \pm 10.2$ ), ( $4.39 \pm 3.2$ ), respectively.

In addition, there were no statistically significant difference in those patients with family size characteristic on questions regarding knowledge and practices with  $P=0.666$  and  $P=0.465$ , respectively (Table 6).

## Discussion

Our cross-sectional study of preoperative screening of HBV and HCV in elective/emergency surgery patients showed that the prevalence rate of hepatitis B was 0.7% and the prevalence of hepatitis C was 0.4%.

The results of our study showed that the prevalence rate of HBV infection among patients is higher as compared to prevalence of HCV infection. This finding is consistent with other studies carried out in Diyala-Iraq, where prevalence of HBV infection is 0.65% and HCV prevalence is 0.043% [11]. The republic of Yemen is a developing country where hepatitis B and C infections are in a high prevalent. In a study conducted in Yemen reported that prevalence of HBsAg is about 12.9% and anti-HCV is about 14.2% which is higher prevalence than our results, this apparently high prevalence of HBV and HCV infections in Yemen is important, because of the potential adverse effect of HBV and HCV on the health of Yemen population [12].

More than one factor may be related to in low prevalence of HBV and HCV infections in surgical patients, this is could be due to presence of strict rules of blood screening for hepatitis viruses' markers, sensitivity of the laboratory technique, premarital screening and preoperative tests in order to reduce the risk of diseases spreading through blood transfusions and sexual contacts. In addition screening of HBV and HCV was obligatory

done for all foreign travellers that enter the Kurdistan region which is help in reducing of the viral spreading in Kurdistan region of Iraq. Nafees et al. in 2008 emphasized the role of preoperative screening in prevention and control of HBV and HCV infections. Nafees et al. stated: "Routine and preoperative screening for HBV and HCV infection can help reduction in transmission of infection" [13].

The present results found patients more than 40 years old were found more susceptible to HBV and HCV than younger patients. Both of hepatitis B and hepatitis C in our study are highly prevalent in the age group over than 40 years in both sexes, which is consistent with other studies [14,15]. While the lowest prevalence of HBV and HCV infections are in the age group of less than 30 years. Also the low level prevalence of HBV in age group less than 10 years in our study may be due to the effect of maternal immunity and effectiveness of vaccination program. Besides, these groups are less exposure to the risk factors for contracting HBV and HCV. The results of this study indicated that the higher frequency of HBsAg and anti-HCV positive in the surgical patients increased with the advancing age and may reflect a frequent exposure to the risk factors that transmit the disease.

Meanwhile, Iraq faces massive health challenges due to numerous factors like; conflicts in the political and the security situation, according to latest report published in November-2015 on situation in Iraq by Office for the Coordination of Humanitarian Affairs (OCHA), Iraq has 3.2 million internally displaced in the country where they caused insufficiency to provide medical supplies, life needs and inadequate of active health education. On the other hand increased in travelling outside could be other challenges [16].

In the present study, the mean knowledge score was  $32.77 \pm 16.1$ , and 63.5% of participants had a poor knowledge about HBV and HCV infections, while a small percentage of respondents (19%) had a good knowledge, about the transmission patterns and prevention routes of HBV and HCV. We think that the reason for this is that the majority of our participants were either uneducated or in primary education level, and their knowledge about hepatitis B and C was not satisfactory. Our result is consistent with other study conducted in Kingdom of Saudi Arabia [17]. New studies indicated that there was very poor knowledge about sexually transmitted diseases [18,19]. Our outcome is not in agreement with other studies that founded a good knowledge of participant toward hepatitis B and C infections [20,21], so the reasonable factors to this difference of response may be the demographic variation of the study location, study population as well as the study tool used for data collection. Thus the knowledge needs to be increased and formulated more in lower educated portion of community.

Knowledge about prevention methods plays an important role in controlling the infections. Our study showed that higher percentage of participants answered (Don't know) in questionnaire when asked about methods of prevention of HBV and HCV. Our findings are consistent with the findings of other study conducted in Egypt to assess HCV related knowledge

**Table 4** Response to HBV and HCV related knowledge items.

Hepatitis B & C knowledge items	Yes		No		Don't know	
	No.	(%)	No.	(%)	No.	(%)
Have you ever heard of disease termed as Hepatitis?	254	-63.5	146	-36.5	0	0
Have you ever heard of disease termed as HBV and/or HCV?	129	-32.2	271	-67.8	0	0
Have you received information about HBV and/or HCV?	96	-24	304	-76	0	0
Can HBV and HCV affect any age group?	72	-18	9	-2.2	319	-79.8
Are HBV and HCV viral diseases?	85	-21.2	13	-3.2	302	-75.6
<b>Knowledge about routes of transmission</b>						
Can HBV and HCV transfer from one person to the other?	77	-19.2	14	-3.5	309	-77.2
By un-sterilized syringes, needles and surgical instruments?	86	-21.5	4	-1	310	-77.5
By contaminated blood and blood products?	91	-22.8	4	-1	305	-76.2
By un sterilized blades of the barber/ear and nose piercing?	77	-19.2	7	-1.8	316	-79
By unsafe sex with infected person?	82	-20.5	7	-1.8	311	-77.8
By delivery?	68	-17	7	-1.8	325	-81.2
By dental procedures?	81	-20.2	5	-1.2	314	-78.5
By tattooing?	64	-16	10	-2.5	326	-81.5
By sharing food and water utensils?	34	-8.5	51	-12.8	315	-78.8
By food and water?	41	-10.2	41	-10.2	318	-79.5
By breathing, coughing and sneezing?	41	-10.2	44	-11	315	-78.8
<b>Knowledge about methods of prevention</b>						
Are HBV and HCV preventive?	92	-23	7	-1.8	301	-75.2
Prevention by avoiding unsafe sex?	86	-21.5	3	-0.8	311	-77.8
By using condoms?	71	-17.8	11	-2.8	318	-79.5
By screening of blood /blood product and organ?	82	-20.5	5	-1.2	313	-78.2
By premarital blood screening?	81	-20.2	4	-1	315	-78.8
By using sterilized needle and syringe?	89	-22.2	3	-0.8	308	-77
By using sterilized blade and razors?	87	-21.8	2	-0.5	311	-77.8
Is vaccination available for Hepatitis B?	75	-18.8	6	-1.5	319	-79.8
Is vaccination available for Hepatitis C?	21	-5.2	38	-9.5	341	-85.2

**Table 5** Response to HBV and HCV related practices items.

Hepatitis B & C practices items	Yes		No	
	No.	(%)	No.	(%)
Have you ever done screening for HBV and/or HCV?	78	-19.5	322	-80.5
Have you got yourself vaccinated against hepatitis B?	36	-9	364	-91
Have you ever participated in health education program related to HBV and HCV?	2	-0.5	398	-99.5
Do you ask for a new syringe before use?	291	-72.8	109	-27.2
Do you ask to change blade/or safe equipment for ear and nose piercing in barber/or beauty salon?*	224	-81.8	50	-18.2
Do you avoid meeting with HBV and/or HCV patients?	272	-68	128	-32

\*Only 274 of participants indicated that visits barber/or beauty salon.

and attitude among chronic hepatitis C patients, showed low knowledge about their disease [22]. First of all, there were many misconceptions about hepatitis B and C transmission and prevention, e.g. transmission by sneezing and coughing, dental treatment, using unsterilized blades and sharing food with hepatitis infected patients. In our study, the majority of patients have misconceptions about how hepatitis B and C infections transmitted and prevented.

In our region there is no published study about efforts made by people to keep themselves safe from getting hepatitis B and C infections, but studies gave different results in other parts of the world [23,24]. Human lifestyle practices need to be improved regarding to HBV and HCV prevention and individuals should modify their lifestyles to prevent getting hepatitis virus infection.

In the present study, the mean practices score was  $5.27 \pm 3.2$  (Table 4). This study showed that 76.2% of respondents had poor practices level toward HBV and HCV, and 22.5% were in a moderate practices, while very small percentage of respondents (1.3%) had good practices toward prevention of HBV and HCV (Figure 1). Majority of the respondents were not concerned about the practices and safety measures which can be used as a tool to prevent exposing themselves to the hazards of acquiring HBV and HCV infection. Similar result was reported from Pakistan that indicated their participants had poor practices toward HBV infection [25]. Our results are inconsistent with a study conducted in Iran on 2011, showed that their patients had good practices toward HBV infection with mean practices score of  $27.92 \pm 2.56$  [20].

**Table 6** Association of socio-demographic variables with the knowledge and practices mean score of the respondents.

Variables	No.	Knowledge Score Mean (SD)	P-Value	Practice Score Mean (SD)	P-Value
<b>Gender</b>					
Male	178	30.85 (14.8)	≤0.05	5.80 (3.2)	≤0.05
Female	222	34.30 (16.9)		4.84 (3.1)	
<b>Age (years)</b>					
16-25	69	35.49 (16.9)	≤0.05	5.59 (2.8)	≤0.05
26-35	109	33.12 (15.9)		5.31 (3.1)	
36-45	71	38.64 (19.2)		6.07 (3.2)	
46-55	57	32.35 (15.7)		5.24 (3.6)	
>55	94	26.17 (10.2)		4.39 (3.2)	
<b>Education</b>					
Illiterate	137	25.90 (9.3)	≤0.05	4.35 (3.1)	≤ 0.05
Primary	137	32.70 (15.6)		5.77 (2.9)	
Secondary	57	36.36 (17.7)		5.49 (3.5)	
University	69	43.56 (19.4)		5.89 (3.4)	
<b>Marital status</b>					
Unmarried	64	34.64 (17.8)	0.31	5.57 (3.0)	0.4
Married	336	32.41(15.7)		5.2 1(3.2)	
<b>Residence</b>					
Urban	250	34.68 (17.0)	≤0.05	5.40 (3.4)	0.29
Rural	150	29.52 (13.9)		5.05 (2.7)	
<b>Occupation</b>					
Unemployed	175	29.72 (13.1)	≤0.05	4.42 (2.9)	≤0.05
Government employee	120	34.88 (17.4)		6.33(3.0)	
Health care worker	6	63.66(19.4)		9.83(4.4)	
Student	29	37.79 (19.1)		5.51(3.3)	
Others/Self-employment	70	32.02 (15.3)		5.05(2.9)	
<b>Ethnicity</b>					
Kurdish	371	32.16 (15.9)	≤0.05	5.19 (3.1)	0.115
Arabic	29	40.51 (16.5)		6.17 (3.4)	
<b>Family size</b>					
≤5	262	33.02(16.0)	0.666	5.35 (2.9)	0.465
>5	138	32.28(16.2)		5.10 (3.5)	
<b>Total</b>	<b>400</b>	<b>32.77 (16.1)</b>		<b>5.27 (3.2)</b>	

The interesting result in our study, the majority of respondent (72.8%) had good practice dealing with asking for a new syringe before using, however they has little knowledge about transmission routs of HBV and HCV. This may be due to their attention as one of hygiene purposes. The other interesting result is that high percentage of patients (81.8%) had good practices which are necessary to prevent or to reduce the risk of HBV and HCV transmission, namely asking for a new blade and equipment before use and avoid sharing of personal items in barber shops and beauty salons.

In regards the association of demographic characteristics with knowledge and practice toward HBV and HCV infection, the present study we found that some factors such as: gender, age, education levels, residency, occupation and ethnicity of participants affected significantly the knowledge and practice of HBV and HCV. In our study, there is a statistically significant difference in the mean knowledge and practice score of respondent's sex factor, in which female displayed higher knowledge than male patients. It may be due to better concern to know about some important point

like: risks, health services and health issues. Beside, females as mother or sister in our community come with relative patients in to the hospital, hence there would be some information related to increase in knowledge. These results are consistent with other studies in different populations [26,27], while this study showed males have higher practices to prevent HBV and HCV infections than females, this is because males are more concerned to ask about new syringe and more sensitive to change blade in barber shops. Similar result was found in study conducted in Ethiopia by Yonatan and Kelemu in 2013, which reported that males had more practice toward HBV than females [27].

People in a higher education level might have a higher health knowledge which makes them easily understand health information. The present study showed that there were statistical significant differences between education level and knowledge of the patients in which the higher education level has a higher mean knowledge and practice score regarding HBV and HCV. In many studies, better HBV knowledge has been reported to be significantly associated with the educational level

[28,29], persons provided with knowledge and education have been shown to be more likely to practice preventive measures such as vaccination for HBV and screening for HBV and HCV. In conclusion, the present study showed low prevalence of HBsAg and anti-HCV antibody in patient coming for different types of surgical procedures and dental treatment. Prevalence of HBsAg is more common than anti-HCV in our study population. The study deduced that majority of participants were within poor knowledge and practices score level regarding HBV and HCV.

### **Strength and limitations of the study**

Our study has several strong points and could provide a program for further discussion on this subject problem. These are included in the following:

First and foremost, this study reveals prevalence and assesses knowledge and practices levels of HBV and HCV among important groups of patients in health care setting in Sulaimani city, which

have the large population in Kurdistan region. Second, nearly all participants reported that they require more information about HBV and HCV infection, further reinforcing the requirement for better education in this community. Third, participants were equally selected from hospitals that provide surgical procedure and dental treatment because each hospital and centre has its specific character in providing services and various surgical types. Furthermore, the study had an excellent cooperation rate.

In spite of many strong points of this study, it cannot be without limitations or weaknesses. The first limitation of the present study gives only a general picture of the conditions among patients undergoing surgery therefore the results can't be generalized for the whole population and exclusion of patients in private sectors could also affect the generalization of finding. Secondly, it is a hospital based study this could explain the low prevalence of HBV and HCV infections obtained in this study compared to the other studies.

## References

- Coppola N, De Pascalis S, Onorato L, Calò F, Sagnelli C, et al. (2016) Hepatitis B virus and hepatitis C virus infection in healthcare workers. *World J Hepatol* 8: 273-281.
- Elizabeth WH, Ramsey C (2011) Global Epidemiology of Hepatitis B Virus (HBV) Infection. *NAJMS* 4: 7-13.
- Messina JP, Humphreys I, Flaxman A, Brown A, Cooke GS, et al. (2015) Global Distribution and Prevalence of Hepatitis C Virus Genotypes. *Hepatology* 61: 77-87.
- Aitken C, Jeffries DJ (2001) Nosocomial spread of viral disease. *Clin Microbiol Rev* 14: 528-546.
- Chaudhary IA, Khan SA, Samiullah (2005) Should we do Hepatitis B and C Screening on each Patient before Surgery: Analysis of 142 cases. *Pak J Med Sci* 21: 278-280.
- Tarky AM, Akram W, Al-Naaimi AS, Omer AR (2013) Epidemiology of viral hepatitis B and C in Iraq a national survey 2005 - 2006. *ZJMS* 17: 370-380.
- Hamied L, Abdullah RM, Abdullah AM (2010) Seroprevalence of Hepatitis B and Hepatitis C virus infection in Iraq. *N Iraqi J Med* 6: 69-73.
- Ramzi ZS, Abdulla AA, Al-Hadithi T, Al-Tawil N (2010) Prevalence and Risk Factors for Hepatitis C Virus Infection in Hemodialysis Patients in Sulaimani. *ZJMS* 14: 44-50.
- Mohammed OM (2006) Prevalence of hepatitis B and, hepatitis C among blood donors in Sulaimani city. *JZS* 9: 115-124.
- Mohammed OM (2012) Prevalence of Hepatitis B virus Infection Among Premarital People in Sulaimani Governorate. *IPMJ* 11: 535-641.
- Al-Taie WS, Ali EA, Shafiq HAR, Noaman NG, Al-Jobori FA, et al. (2014) Seroepidemiology of Hepatitis B and Hepatitis C virus infections in Diyala province: A population based survey. *Int J Curr Microbiol App Sci* 3: 449-460.
- Ahmed SA, Ahmed KS, Abdul Hafeez AA, Ali A (2011) Risk factors of hepatitis B and C viruses among patients admitted in surgical departments at Al-Thawra Hospital, Sana'a, Yemen. *Sudan Med J* 49: 168-175.
- Nafees M, Ahmed I, Latif ZU, Haq IU (2008) Pre-operative screening for HBV and HCV infections: a preventive measure! Where are we today? *Biomedica* 24: 108-112.
- Jahangir K, Hizb-Ur-Rahman H (2012) Pre-operative Screening of Patients for Hepatitis B and C virus. *Pak J Ophthalmol* 28: 69-71.
- Ul Huda W, Jameel N, Fasih U, Rehman A, Shaikh A (2013) Prevalence of Hepatitis B and C in Urban Patients Undergoing Cataract Surgery. *Pakistan J Ophthalmol* 29: 147.
- United Nations Office for the Coordination of Humanitarian Affairs (Ocha) (2015) Humanitarian Bulletin Iraq.
- Al-Gashanin AS, Mostafa OA (2013) Knowledge, Attitude and Practice of Male Secondary School Students on Hepatitis B in Abha City, Kingdom of Saudi Arabia. *Med J Cairo Univ* 81: 155-161.
- Afsar HA, Mahmood MA, Barney N, Ali S, Kadir MM, et al. (2006) Community knowledge, attitude and practices regarding sexually transmitted infections in a rural district of Pakistan. *JPMA* 56: S50-S54.
- Thompson MJ, Taylor VM, Yasui Y, Hislop TG, Jackson JC, et al. (2003) Hepatitis B knowledge and practices among Chinese Canadian women in Vancouver, British Columbia. *Can J Public Health* 94: 281-286.
- Asadpour M, Arabbaniassad F, Moazzeni V, Shabani Z, Sayadi A (2013) Assessment of Knowledge, Attitude, and Practice about Hepatitis B among Patient Porters of the Training and Treatment Hospitals of Rafsanjan. *GMJ* 1: 60-65.
- Shalaby S, Kabbash IA, El Saleet G, Mansour N, Omar A, et al. (2010) Hepatitis B and C viral infection: prevalence, knowledge, attitude and practice among barbers and clients in Gharbia governorate, Egypt. *East Mediterr Health J* 16: 10-17.
- Hassan SG, El-Ghitany EM, El-Sheikh W (2012) Knowledge, attitude and lifestyle changes among chronic hepatitis C patients in Alexandria, Egypt: A fear-appeal intervention. *J Am Sci* 8: 73-79.
- Wiecha JM (1999) Differences in knowledge of hepatitis B among Vietnamese, African-American, Hispanic, and white adolescents in Worcester, Massachusetts. *Pediatrics* 104: 1212-1216.
- Mengal MH, Tanver F, Azam M, Mengal MA (2014) Cross Sectional Assessment of Knowledge, Attitude and Practice towards Hepatitis C among Adolescents in Quetta, Pakistan. *Dentistry* 4: 1122.
- Ul Haq N, Hassali MA, Shafie AA, Saleem F, Farooqui M, 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: 692.
- Ashri NY (2008) Hepatitis B and C knowledge among Saudi dental patients. *Saudi Med J* 29: 1785-1790.
- Mesfin YM, Kibret KT (2013) Assessment of knowledge and practice towards hepatitis B among medical and health science students in Haramaya University, Ethiopia. *PLoS One* 8: e79642.
- Cheung J, Lee TK, Teh CZ, Wang CY, Kwan WC, et al. (2005) Cross-sectional study of hepatitis B awareness among Chinese and Southeast Asian Canadians in the Vancouver-Richmond community. *Can J Gastroenterol* 19: 245-249.
- Wai CT, Mak B, Chua W, Tan MH, Ng S, et al. (2005) Misperceptions among patients with chronic hepatitis B in Singapore. *World J Gastroenterol* 11: 5002-5005.