Research Article

Knowledge and Awareness about Hepatitis B and C Infections among Visitors of the Gastroenterology Clinic of Tertiary Care Centre in Pakistan

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Abstract: Background: Hepatitis B and C infections are endemic in Pakistan. The general population has poor knowledge about the HBV vaccine's availability and the modes of transmission for HBV/HCV. Therefore we decided to assess the knowledge of HBV & HCV infection, their spread and modes of prevention amongst the general population and its association with the ethnic, socioeconomic and educational status.

Material and Methods: This cross-sectional analytical study was conducted in Gastroenterology clinic, Sindh Institute of Urology and Transplantation, Karachi, from August 2016 to December 2016. All patients and their attendants of age >18 years visiting GI-OPD were enrolled. A predesigned questionnaire was filled and data was entered in SPSS version 20.0.

Results: Out of 641 respondents, 382 (59.6%) were males; the mean age of the participants was 38.46 ± 14.15 years. Only 44% respondents were aware about the availability of HBV vaccination. Most of respondents believed that re-usage of syringes, sharing of razors, use of unsterilized dental and surgical instruments can spread these infections. Majority had the misconceptions that these viruses can transmit through handshakes and hugs, smoking, alcohol use, sharing utensils and mosquito bite. Only 23 (3.6%) respondents had good knowledge. Statistical significance of adequacy of knowledge was noted with profession, monthly family income, education status and ethnicity.

Conclusion: Our study indicates the overall knowledge regarding the modes of transmission and prevention of HBV/HCV is very poor among the visitors of GI-clinic from different part of the country. We believe that our study highlights the need to increase the public awareness among general population of HBV/HCV infection in Pakistan. Public awareness seminars should be implemented with special emphasis on mode of transmission of HBV/HCV infection and measures to control risk factors.

Keywords: Hepatitis B, Hepatitis C, Disease Prevention, Transmission, Awareness.

BACKGROUND

Hepatitis can be caused by a group of viruses (hepatitis A, B, C, D and E) and result into acute and/or chronic infection of the liver. Among these, Hepatitis B, C and D viruses are major causes of morbidity and mortality in terms of liver cirrhosis and hepatocellular carcinoma [1]. The most common routes of transmission of these viruses in the developing countries are from the reused needles and syringes followed by improper sterilization of invasive medical equipment [2]. While in the developed world, the most common route of transmission are intravenous drug use, blood transfusions, via hemodialysis, needle-stick injuries, tattooing, sexual intercourse and peri-natal infections [3]. According to WHO, the worldwide prevalence of HBV and HCV was around 257 and 71 million people in 2015 respectively [4, 5].

Almost 13 million Pakistani were found to be infected with hepatitis B and C [6, 7]. This is a cause of concern for some countries like Pakistan and according to a research conducted by Pakistan Medical Research Council (PMRC) in 2007, the prevalence of hepatitis B surface antigen (HBsAg) and anti-HCV antibodies in Pakistan was found to be 2.5% and 4.8%, respectively with a combined infection rate of HBV and HCV of 7.6% was noted. A study done in Pakistan in 2016 by Umar *et al*. showed the prevalence of HCV in the adult Pakistani population to be around 6.8% [8].

Pakistan is a middle income country with limited resources, majority of its population belongs to the lower income group [9] and lives in rural areas where health care facilities are limited [10]. According to Pakistan National Health Accounts 2015-16, total health expenditure as proportion of gross domestic product (GDP) is 3.1% [11] and Government spends less than optimal (0.6% of GDP), merely 15% on primary and preventive care level [10] Thus it is difficult for the general population to afford the high cost of treating hepatitis and its related complications. But through awareness about HBV and HCV, the spread of infection could be curtailed. Vaccination is currently the best way to prevent its spread. Unfortunately vaccination for HCV is currently not available for clinical purposes. However, HBV vaccination is available and it is the most effective to prevent HBV infection. The overall vaccination rate amongst the Pakistani population was merely 13%. The main reason behind the lower vaccine uptake was due to the lack of knowledge about the disease and less awareness about the availability of vaccine [12]. Affordability may not be the hurdle because Federal and Provincial

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Government provide HBV vaccination free of cost through their Prevention and Control of Hepatitis Programs [13, 14]. Therefore through our study, we decided to assess the knowledge of HBV & HCV infection, their spread and its relation of the ethnicity, profession, socioeconomic and educational status in our population.

MATERIAL AND METHODS

This cross-sectional analytical study was conducted in the Gastroenterology clinic (GI-clinic), Sindh Institute of Urology and Transplantation (SIUT), Karachi, Pakistan from 01st August 2016 to 31st December 2016. This study was approved by Institutional ethical review board. All patients and their attendants of age more than 18 years visiting GI-clinic for various diseases were subjected to a pre-designed questionnaire, after taking an informed consent. The questionnaire consisted of two parts. The first part one was to assess the socio-demographic status of the participants, including their educational and socioeconomic status. Ethnicity means people with different socio-cultural backgrounds were included like, Punjabi, Sindhi, Pathan etc. Educational status was described as uneducated, primary, matriculation (secondary school), intermediate (higher secondary), bachelor (graduate) and Masters (post graduate). Second part had a set of 21 questions to explore their knowledge on HBV and HCV infection and their consequences, mode of transmission and preventive measures as shown in **Appendix**.

The questionnaire was initially designed in English, and then translated in the country's national language (Urdu) for the ease of the participants. Each correct answer scored one mark and any wrong or question not answered was scored zero. The total score thus obtained by each respondent was converted to percentage and classified as poor (< 50%), fair (50-74%) and good (≥ 75%). The mean knowledge and practice scores (%) for all the respondents were also calculated. Statistical analysis was performed by IBM-compatible Statistical Package for Social Sciences (SPSS) version 20.0 (SPSS Inc., Chicago, IL, USA). Frequencies and percentages were computed for categorical variables while quantitative values were presented as mean ± standard deviation. Categorical variables were analyzed using the chi-square test. A value of P < 0.05 was considered statistically significant.

RESULTS

A total of 641 persons filled the questionnaire proforma. Baseline demographic characteristics of the respondents are shown in Table **1**. The mean age of the participants was 38.46 ± 14.15 years, majority of them were males n = 382 (59.6%). Most of respondents that is 482 persons (75.2) were married and only 120 respondents (18.7%) received post-secondary education. Majority of the respondents (502; 78.3%) had a monthly income below Rs.10,000 PKR.

Table 1. Demographic Characteristics of the Respondents.

Baseline Demographics	n = 641 (percentages)
Age (mean ± SD)	38.46 ± 14.15 years
Gender	
Male	382 (59.2)
Female	258 (40.2)
Marital Status	
Married	482 (75.2)
Single/ Widow	159 (24.8)
Profession	
Household	174 (27.0)
Unemployed	45 (7.0)
Farmer	33 (5.1)
Teacher	15 (2.3)
Health care workers	14 (2.2)
Others	343 (53.8)
Ethnicity	
Urdu speaking	194 (30.3)
Sindhi	182 (28.4)
Baloch	69 (10.8)
Punjabi	64 (10.0)
Pathan	64 (10.0)
Saraiki	22 (3.4)
Others	46 (7.2)
Education	
Masters	35 (5.5)
Bachelors	85 (13.3)
Intermediate	99 (15.4)
Matriculation	139 (21.7)
Primary	149 (23.2)
Uneducated	134 (20.2)
Monthly Income in PKR* ($)	
<10000 (<90$)	502 (78.3)
10001-20000 (90-180$)	97 (15.1)
20001-30000 (180-270$)	28 (4.4)
>30000 (>270$)	14 (2.2)

*Pakistani Rupee.

Majority of participants (76.8%) had a concept that HBV and HCV infection can lead to serious outcomes and death. More than > 90% people were of the opinion that these infections are not preventable by non-pharmacological measures. About 56% participants were unaware about the availability of HBV vaccination. However, 60% had the misconception that HCV can also be prevented with vaccination. About 452 (70.5%) respondents were sure that HCV infection could be cured if diagnosed and treated at earlier stage.

Regarding the transmission of these viruses, it was noted that 475 (74.1%) believed that used syringes and sharing of razors were amongst the main causes of Hepatitis B and C. Almost two third of respondents (438 persons; 68.3%) also believed that use of unsterilized dental and surgical instrument was also one of the causes. About 126 (33%) males had the misconception in terms of use of infected dental and surgical instruments compared to 76 (29.4%) females (p = 0.218) that these contaminated cannot transmit HBV/HCV infections. Blood transfusion and organ donation were also considered as risk factors by 460 (71.8%) and 370 (57.5%) respondents respectively. Less than half respondents (45.2%) were sure about the spread of these viruses through dialysis machines. Even 379 participants (59.1%) believed that these infections can be acquired through sexual contact with infected person. Mother-to-infant transmission through child birth was recognized by 52.3% of respondents. Breastfeeding was considered as a cause by 506 (78.9%) questionnaire takers. Almost 46% respondents indicated that tattooing or body piercing could also spread the virus. Majority of them (613; 95.6%) had misconceptions that these viruses can spread through handshakes and hugs. Another false belief was on the matter of sharing daily use items like towels. Almost 2/3rd of respondents (67.1%) felt that it was amongst the causes. The respondents also felt that the virus could be contracted by smoking (88.6%), alcohol use (81.3%), sharing utensils (69.1%) and mosquito bite (65.7%).

Overall the total score was calculated and the total awareness score (knowledge score) was assessed, which was 9.24 ± 4.40. On further categorization, majority of them 333 (52%) had poor knowledge, 285 (44.5%) fair and 23 (3.5%) had good as shown in Fig. (**1**).

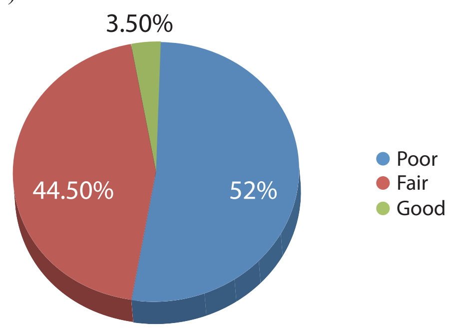

Fig. (1). This Pie Chart Shows the Proportions of Adequacy of Knowledge among Respondents.

Statistical significance of adequacy of knowledge was noted with profession, monthly family income, education status and ethnicity using chi square test as shown in Table **2**.

Table 2. Factors Associated with Adequacy of Knowledge of HCV/HBV Infection.

Baseline Demographics	n = 641 (percentages)	Adequacy of Knowledge			P values
		Poor	Fair	Good	
Age (mean ± SD)	38.46 ± 14.15 years				0.96
< 20	53 (8.3)	32	20	1	
21-30	171 (26.7)	91	73	7	
31-40	162 (25.3)	85	72	5	
41-50	134 (20.9)	67	61	6	
51-60	78 (12.2)	38	37	3	
> 60	43 (6.7)	20	22	1	
Gender					0.24
Male	382 (59.2)	210	157	15	
Female	258 (40.2)	122	128	8	
Marital Status					0.79
Married	482 (75.2)	247	218	17	
Single/ Widow	159 (24.8)	86	67	6	
Profession					0.05
Household	174 (27.0)	82	89	3	
Unemployed	45 (7.0)	24	19	2	
Farmer	33 (5.1)	21	11	1	
Teacher	15 (2.3)	6	7	2	
Health care workers	14 (2.2)	1	11	2	
Others	343 (53.8)	192	142	11	

Continued...

Table 2. (*Continued*)

Baseline Demographics	n = 641 (percentages)	Adequacy of Knowledge			P values
		Poor	Fair	Good	
Ethnicity					0.04
Urdu speaking	194 (30.3)	80	106	8	
Sindhi	182 (28.4)	102	75	5	
Baloch	69 (10.8)	33	32	4	
Punjabi	64 (10.0)	33	28	3	
Pathan	64 (10.0)	44	19	1	
Saraiki	22 (3.4)	14	8	0	
Others	46 (7.2)	27	17	2	
Education					0.0005
Masters	35 (5.5)	14	18	3	
Bachelors	85 (13.3)	32	47	6	
Intermediate	99 (15.4)	44	52	3	
Matric	139 (21.7)	64	70	5	
Primary	149 (23.2)	93	54	2	
Uneducated	134 (20.2)	86	44	4	
Monthly Income in PKR* ($)					0.03
<10000 (<90$)	502 (78.3)	269	222	11	
10001-20000 (90-180$)	97 (15.1)	50	40	7	
20001-30000 (180-270$)	28 (4.4)	11	14	3	
>30000 (>270$)	14 (2.2)	3	9	2	

*Pakistani Rupee.

DISCUSSION

Majority of participants (76.8%) in our study had the concept HBV and HCV infection can lead to serious outcomes and death. It was consistent with the findings of Leung CM *et al*. [15], despite the differences in the educational and socioeconomic status between both the countries. About 450 (70.5%) respondents knew that HCV can effectively be treated and cured. This indicates that our general population has insight against the spread of these viruses if properly educated. However, > 90% people did not know that their transmission can be halted by controlling risk factors. Moreover only 44% respondents were aware about the availability of HBV vaccination. According to Ahmed M, *et al.* [16], HBV infection and related complications can be prevented by HBV vaccination. Furthermore, spread of HBV/HCV can be halted by controlling risk factors and by early identification and treatment of index cases. There was a false belief in 60% of the respondents that HCV can also be prevented with vaccination. Despite technical and clinical advances, HCV vaccination is still not available for clinical purpose. High heterogeneity and mutagenicity of HCV genome is the major obstacle in the preparation of HCV vaccine [17].

It is a common belief in Pakistan that parenteral mode of treatment is more powerful and speeds up recovery from any illness [18, 19]. In addition, physicians overprescribe therapeutic injections due to strong financial incentives. Moreover, these injections and drips are most often unsafe and re-used [20]. Abbas *et al*. [12] noted almost 95% participants knew that re-usage of syringes and sharing razors can spread these viruses. But in contrast, we noted that only 475 (74.1%) respondents believed that used syringes and sharing of razors were amongst the main causes of spread of Hepatitis B and C infection. The likely reason behind this difference lies in the fact that the participants of Abbas et al. [12] were relatively better educated. While in our study population, only 120 respondents (18.7%) received education beyond intermediate level.

The use of unsterilized dental and surgical instruments, unscreened blood products, and dialysis machines were believed to be the cause in spread of these blood borne viruses by majority of the people in our study; 438 persons(68.3%), 460 (71.8%) and 290(45.2%) respectively. Even 370 (57.7%) respondents considered organ donation as a risk factor for its spread. Use of contaminated instruments and blood products is not uncommon in Pakistan especially in far flung areas where the availability of good health facilities is low [6]. In contrast to our results, Batool A, *et al*. [21] in their survey showed that only 8 % did not know that infected instruments and blood can result in acquisition of this illness. This difference was likely because the participants in their study were dental practitioners with better education and socioeconomic background compared to our respondents.

In our study, 95.6% participants considered handshakes and hugs lead to acquisition of these viral infections. The respondents also had the belief that the virus could be contracted via smoking (88.6%), alcohol use (81.3%), breastfeeding (79%), sharing utensils (69.1%) and mosquito bite (65.7%). According to Batool A, *et al*. [21], about 15% of dentists were of the opinion of that mosquito can spread them. In contrast to participants of 'Hepatitis Awareness Mela' in Pakistan [12], almost 78% knew that hugs and handshakes could not spread these viruses.

In our study, almost 41% of respondents were unaware that HBV/HCV infections can spread through sexual intercourse. These results were consistent with observed by Chung PW, *et al*. [22] in adult Chinese population in Hong Kong. However another study done in Pakistan showed that 54% knew about its transmission via sexual intercourse [23].

If we assess the overall knowledge regarding the modes of transmission and prevention of these blood-borne viral illnesses only 3.6% participants had adequate knowledge and understanding. People with higher education status, higher monthly income, Baloch, health care workers and teachers were having better knowledge. According to Abiola AH, *et al*. [24], even certain medical professionals from Nigeria, China, Iran and Pakistan exhibited low knowledge of HBV infection.

The strength of our study was its good sample size of 641 respondents, of different ethinicity, education level and socioeconomic status. There were some limitations of our study; since it was a cross-sectional study we could not assess the effectiveness of public seminars in our population. Moreover, we did not inquire about the HBV vaccination status.

CONCLUSION

Our study indicates the overall knowledge regarding the modes of transmission and prevention of HBV/HCV is very poor among the visitors of GI-clinic from different part of the country. Our participants were of different ethnic, educational and socioeconomic backgrounds. We believe that our study highlights the need to increase the public awareness among general population about HBV/HCV infection in Pakistan. Public awareness seminars should be implemented with special emphasis on the mode of transmission of HBV/HCV infection and measures to control risk factors like avoidance of sharing injection needles, toothbrushes or shaving razors. Campaigns should also focus on eliminating misconceptions like sharing utensils & towels, breastfeeding, smoking and alcohol. These awareness groups should target those persons with lower education, low socioeconomic status and rural areas where the disease is much more prevalent. Such strategies could also be implemented for the neighboring third world countries, since HBV and HCV infections are rampant amongst their population as well.

What is Already Know on This Topic?

- Inadequate knowledge is one of the most important factors associated with spread of HBV & HCV infections especially in third world countries.
- Baseline knowledge varies among people of different countries.

What This Study Adds?

- Our study figures out the baseline knowledge status among general population of Pakistan.
- Misconceptions like sharing utensils & towels, breastfeeding, smoking and alcohol can be the cause of transmission are also prevalent.

CONFLICT OF INTEREST

Declared none.

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Declared none.

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APPENDIX/SUPPLEMENTARY MATERIAL

Questions Asked and Their Responses

Questions		Response	
		Correct n (%)	**Incorrect n (%)**
1	Is there vaccine available for HBV?	284 (44.3)	357 (55.7)
2	Is there vaccine available for HCV?	254 (39.6)	387 (60.3)
3	Is it lethal if not treated?	492 (76.8)	149 (23.2)
4	Can it be spread by sharing razors and syringes?	475 (74.1)	166 (25.9)
5	Can it be spread through blood transfusion?	460 (71.8)	181 (28.2)
6	Is HCV curable?	452 (70.5)	189 (29.5)
7	Can it be spread through needle stick injury?	447 (69.7)	194 (303)
8	Can it be spread through surgical or dental treatment?	438 (68.3)	203 (31.7)
9	Can it be spread through sexual contact?	379 (59.1)	262 (40.9)
10	Can it be spread through organ donation?	370 (57.7)	271 (42.3)
11	Can it spread to baby during delivery?	335 (52.3)	306 (47.7)
12	Can it be spread through tattooing?	294 (45.9)	347 (54.1)
13	Can it be spread through dialysis machine?	290 (45.2)	351 (54.8)
14	Can it be spread through mosquito bite?	220 (34.3)	421 (65.7)
15	Can it be spread by sharing daily use items?	211 (32.9)	430 (67.1)
16	Can it be spread by sharing utensils?	198 (30.9)	443 (69.1)
17	Can it be spread through breast-feed?	135 (21.1)	506 (78.9)
18	Can it be caused by alcohol?	120 (18.7)	521 (81.3)
19	Can it be caused by smoking?	73 (11.4)	568 (88.6)
20	Is HCV preventable?	52 (8.1)	589 (91.9)
21	Can it be spread through kissing and hugging?	28 (4.4)	613 (95.6)