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# PREVALENCE OF HEPATITIS B VIRUS INFECTION AMONG BARBERS AND THEIR KNOWLEDGE, ATTITUDE AND PRACTICES IN THE DISTRICT OF SUKKUR, SINDH

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## Abstract

**Objectives:** Several occupations in developing countries lag behind in ensuring the safety of their workers in occupational settings. Lack of implementation of safety guidelines at workplaces can expose workers to health risks. In Pakistan, barbers are one of the un-regulated occupational groups. Low literacy, increased frequency of direct skin contact and blade/razors use can expose barbers to body fluids including blood of the customers. We conducted this study in order to determine hepatitis B virus (HBV) prevalence among barbers and their knowledge, attitude and practices in a peri-urban district of Sindh. **Material and Methods:** Three hundred eighty-five barbers from the Sukkur district were interviewed using a structured questionnaire. Blood samples were collected and tested for HBsAg. A scale was built to determine the proportions of responses to knowledge, attitude and practice items. **Results:** The prevalence of HBV among barbers was 2.1%. The barbers' knowledge on HBV and its transmission routes was poor. The response to attitude items was good, except that only 35.1% of the participants agreed to have vaccination against HBV. The overall performance on the knowledge and practice scales was poor compared to the attitude scale on which 80% of the barbers performed well. **Conclusion:** The prevalence of HBV among barbers was lower compared to the available national figures for the prevalence among the general population.

## Key words:

Hepatitis B, Barbers, Peri-urban, Sukkur, Knowledge, Attitude and practices

## INTRODUCTION

There is a gap between policy making and its implementation for occupational safety in most developing countries. Barbers are among the occupational groups affected by this situation. There are no mechanisms in place to ensure registration and compliance of barbers with occupational

safety regulations. For barbers, the use of blades and razors is part of their occupation which can expose them to blood of customers while shaving and hair cutting. This exposure can put them at risk of many blood-borne diseases including hepatitis B [1,2]. Globally, 2 billion people are infected with hepatitis B virus (HBV) [3–5]. With 563 000 deaths

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annually, HBV infection is the 10th leading cause of death worldwide.

Hepatitis B virus is 50–100 times more infectious than human immunodeficiency virus (HIV) and 10 times more infectious than hepatitis C virus (HCV) and an infectious dose is so low that a contaminated razor or blade can easily transmit the infection [6–9]. Without vaccination, the risk of transmission due to exposure to contaminated blood/body fluids is in the range of 6–30% [8]. The prevalence of hepatitis B equaling 2.5% has been reported among the general population in Pakistan [6,7]. Few previous studies conducted in Pakistan to determine knowledge, attitude and practices of barbers have reported poor scores in all 3 areas [1,3] whereas literature on sero-prevalence of HBV among barbers is scarce. Hepatitis B virus serological studies from various countries have yielded mixed results with some reporting higher prevalence among barbers [10] and other showing no significant difference between barbers and the control group [11].

In Pakistan, there is no policy governing registration of barbers. Furthermore, no accountability mechanisms are in place to check their risky practices (blade reuse, use of antiseptics, cleanliness of the workplace and self-hygiene). Exposure to blood of customers combined with factors such as low literacy and poor working conditions can put barbers at an increased risk of HBV. We conducted this study in order to determine the HBV serology status and the knowledge, attitude and practices of barbers in a peri-urban district of the Sindh Province, Pakistan.

## MATERIAL AND METHODS

### Study design and setting

This cross-sectional survey was conducted from September to December 2011 in the district of Sukkur. Sukkur is the 3rd largest city of the Sindh Province in Pakistan. It is situated in upper Sindh and is an old, historical city and a hub of commercial activities in the region [12,13]. The Sukkur district

has 4 administrative parts (sub-districts called talukas), i.e., Sukkur City, Rohri, Saleh Pat and Pano Aqil. This study was conducted in the talukas of Sukkur City and Rohri.

### Data collection procedure and tools

The overall number of barbers and barber shops in the Sukkur district is not available because the occupation is privately run and unregulated. A large number of barbers can be found in both talukas of the district including residential and commercial areas. Some roadside barbers can also be observed in both talukas. The number of barbers in an open area varies ranging from 1 barber working on a roadside to as many as 8 in a well-established salon.

In order to determine the location of barber shops, the project team visited both talukas prior to the commencement of the data collection and an effort was made to map out the maximum number of barber shops. A consecutive sampling technique was utilized to recruit study participants. The recruitment continued until the required sample size was achieved. All barbers were invited to participate in the study. The purpose of the study was explained and an informed verbal and written consent was obtained. A private space was arranged for interviewing in order to maintain the privacy and confidentiality.

A structured questionnaire was used to obtain detailed information on socio-demographic characteristics, knowledge about HBV and its routes of transmission, attitudes towards risky behaviors, high risk occupational practices and medical history of the participant and his family. The questionnaire was translated into Sindhi language and translated back into English in order to check consistency of the questions. The questionnaire was pretested and appropriate changes were made before the data collection. Intravenous blood (3 ml) was collected from each barber in order to conduct testing for the presence of the hepatitis B surface antigen (HBsAg). The test involves enzyme immunoassay (EIA). It is a biochemical technique used mainly

in immunology to detect the presence of an antibody or an antigen in a serological sample [14,15]. In order to maintain uniform standards, all blood samples were tested in the Aga Khan University laboratory in Sukkur.

### Diagnostic criteria of HBV positive cases

A barber with a blood HBsAg positive result was considered a case of HBV.

### Knowledge, attitude and practices scales

After removing secondary questions, we selected variables from the questionnaire and included them as scale items for knowledge, attitude and practices scales (Table 1).

**Table 1.** Items for knowledge, attitude and practice scales

Scale	Item
Knowledge	ever heard of hepatitis
	spread via food leftovers of the infected person
	spread via coughing/sneezing
	spread via contaminated blood
	spread via sexual contact
	mother to child transmission (vertical)
	can lead to lifelong infection
	can lead to liver cancer
Attitude	treatment available
	concerned about blade re-use
	antiseptics use
	avoiding cuts
	getting tested for hepatitis B virus
	getting vaccinated
	vaccination of family members
	avoiding extra-marital sex
avoiding intravenous drug abuse	
Practice	screening blood is protective
	washing hands after each shave
	reuse of a single blade
	use of antiseptics
	managing cuts
	cleaning instruments

Secondary questions were those that yielded additional information in relation to the primary (preceding) question. For instance, in the case of attitude questions, the name of the antiseptic was inquired if a responder replied positively about the use of antiseptics. In this case, the name of the antiseptic was considered a secondary question and was not included in the scale. For each item of the scale, score of 1 was considered a positive response and 0 represented a negative response. Finally, the proportions for aggregate scores were calculated for items of knowledge, attitude and practices scales separately.

### Sample size

The sample size was calculated using the World Health Organization software "Sample size determination in health studies." Since the prevalence of HBV among barbers is unknown in Pakistan, 50% anticipated prevalence was used to get the maximum sample size of 366. After inflating for 5% non-response rate, the final sample size of 385 was calculated.

### Ethics

Ethical approval for the study was obtained from the Ethics Review Committee of the Aga Khan University. An informed consent was obtained from all the study participants. At the end of the interview, the participants were also provided with brochures (printed in the local language, i.e., Sindhi) containing information material about HBV and HCV, modes of transmission and preventive measures. The participants were asked to read the brochures in order to clear any ambiguities about the content. All queries raised were satisfied. The results of the HBV test were shared with the study participants in person. The participants with positive test results were provided with necessary counseling and referred to a civil hospital in Sukkur for appropriate treatment.

### Statistical methods

The collected data were analyzed using SPSS version 19. Descriptive statistics were run; mean and standard deviation were calculated for continuous variables and proportions were calculated for categorical variables and scale items.

### RESULTS

Table 2 displays the socio-demographic characteristics of the study population. The majority of the population (88.6%) was between 18–60 years of age. Approximately 60% of the participants had no education and 24.2% had primary education. The mean number of their dependents was 6.9 ( $\pm 3.3$ ), and 61.6% of the study subjects were married. Sindhi was the predominantly spoken language. About 43.1% of the participants had work experience of  $\leq 10$  years, 27.5% had experience between 11–30 years and 29.4% had been working for more than 20 years. The prevalence of HBV among the study group was 2.1%.

Table 3 shows the HBV-related knowledge, attitude and practices among the examined barbers. The majority

lacked knowledge about the routes of transmission and the outcome of HBV infection, though their knowledge about spreading HBV via infected blood and availability of treatment was comparatively better. In the attitude's section, majority of the subjects were concerned about blade re-use and in favor of antiseptics application on instruments and cuts.

The proportion of barbers expressing a consent concerning getting vaccinated against HBV (including themselves and their families) was low. Regarding self-reported practices of barbers, the hand-washing practice between making a shave and haircutting was less common, but most barbers used a new blade for every customer. About 1% of the examined barbers reported also doing circumcision. As many as 7.8% had a family history of HBV and 22.6% had history of hospitalization. Majority of the barbers reported not receiving any injectables throughout their life time. Exactly 6.2% gave history of receiving a blood transfusion, whereas 36.1% had donated blood at least once in their life. In addition to this, 16.9% had history of jaundice, 7.3% had history of surgery and 13.5% had history of dental extraction. Some barbers also reported history of extra-marital sex and intravenous (i.v.) drug abuse.

**Table 2.** Socio-demographic characteristics of the barbers from the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province

Characteristic	Study group (N = 385)	
	n	%
Age (years)		
< 18	38	9.9
18–30	191	49.6
31–45	113	29.4
46–60	37	9.6
> 60	6	1.5
Education (years)		
no education	226	58.7
1–5 (primary)	93	24.2
6–10 and above (matriculation and above)	66	17.1

**Table 2.** Socio-demographic characteristics of the barbers from the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province – cont.

Characteristic	Study group (N = 385)	
	n	%
Income (Pakistani rupees) <sup>1</sup>		
≤ 5 000	108	28.1
> 5 000–10 000	152	39.5
> 10 000–15 000	58	15.0
> 15 000	67	17.4
Marital status		
single	148	38.4
married	237	61.6
Ethnicity		
Sindhi	362	94.0
other <sup>2</sup>	23	6.0
Dependents (M±SD)		6.9±3.3
Work experience [Me (IQR)]		14 (18)

<sup>1</sup> 1 US\$ = 95 Pakistani rupees.

<sup>2</sup> Includes Urdu, Panjabi, Balochi and Pashto.

M – mean; SD – standard deviation; Me – median; IQR – interquartile range.

**Table 3.** Knowledge possessed by the barbers on hepatitis B virus (HBV) and their attitude and practice in the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province

Characteristic	Study group (N = 385)	
	n	%
Knowledge		
knowledge about transmission routes of hepatitis B		
heard about hepatitis B	351	91.2
hepatitis spreads through infected food	133	37.8
hepatitis spreads through air (coughing/sneezing)	42	12.0
hepatitis spreads by contaminated blood	207	59.0
hepatitis spreads by sexual contact	149	42.4
mother to child transmission	36	10.2
hepatitis B infection/disease knowledge		
hepatitis leads to lifelong infection	31	8.8
hepatitis leads to liver cancer	32	9.1

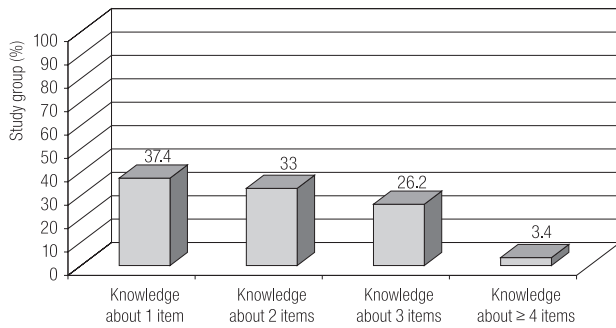
**Table 3.** Knowledge possessed by the barbers on hepatitis B virus (HBV) and their attitude and practice in the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province – cont.

Characteristic	Study group (N = 385)	
	n	%
Knowledge – cont.		
knowledge of diagnosis and treatment of hepatitis B		
is there any treatment available?	277	80.0
had a serological test	26	6.8
Attitude		
concerned about re-using a single blade	367	95.3
antiseptics <sup>1</sup> needed for cleaning instruments/wounds	378	98.1
avoid cuts while working	380	98.7
agree to get tested for HBV	358	92.9
agree to get vaccinated for HBV	135	35.1
agree to vaccinate his family	130	33.8
agree to avoid extra-marital sex	372	96.6
agree to avoid intravenous drug abuse	374	97.1
agree that screening blood protects against HBV	218	56.6
Practices		
wash hands between shaves/haircut	87	22.5
use the same blade for more than 1 customer	24	6.3
use an antiseptic <sup>1</sup> for hand-washing (N = 87)	63	72.4
use an antiseptic for cleaning instruments	85	22.0
cuts/bleeding affecting hands while working	300	78.0
how do you manage these cuts?		
clean with an antiseptic	199	66.4
apply a cotton swab	92	30.6
do nothing	9	3.0
Frequency of cuts (per week)		
< 1	282	94.0
1–3	18	6.0
Perform circumcision	4	1.0

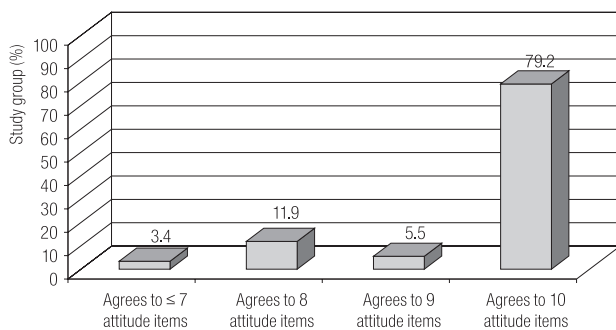
<sup>1</sup> Dettol is the most commonly used antiseptic in Pakistan. Chloroxylenol present in it is responsible for its antiseptic properties.**Knowledge, attitude and practice scales**

Figures 1–3 show the proportions of scores achieved by the barbers on knowledge, attitude and practices scales. The knowledge score of the studied barbers about HBV was

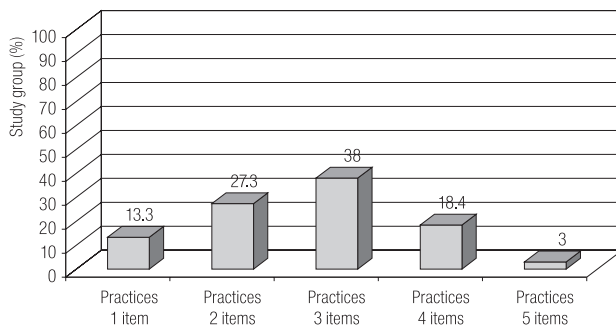
low and limited to a maximum of 4 items. Despite such poor knowledge, 79.2% of the barbers scored 9 out of 9 on the attitude scale. Only 3% of the barbers scored 5 out of 5 on the practice scale, whereas the majority of them scored 3.



**Fig. 1.** Barbers having awareness about hepatitis B in the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province



**Fig. 2.** Barbers agreeing to attitude items in the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province



**Fig. 3.** Barbers observing the rules of good practice in the talukas of Sukkur City and Rohri, Sukkur district, Sindh Province

## DISCUSSION

The culture of being shaved by a barber is common in Pakistan [13]. A barber shop is a potential place where people including barber themselves, can get exposed to blood of infected persons through contaminated instruments. Studies conducted so far have reported a risk of HBV and HCV

transmission to clients due to shaving by barbers [16]. This study is the first documented evidence reporting the prevalence of HBV among barbers in a peri-urban district of Pakistan.

The prevalence of HBV virus infection among barbers reported in this study is lower compared to the general population in Pakistan [8]. Most studies have reported no significant difference in the HBV prevalence between barbers and the control group (determined by the presence of serum HBsAg) [17–19]. A study from Turkey reported a higher HBV prevalence among barbers; however, it is also important to consider its limitations [20]. The aforementioned study lacks a sufficient explanation on whether the sample size was adequately powered to detect the difference in the prevalence between the 2 groups. Also, no information was collected on factors like previous medical and sexual history, which could act as the major confounders for higher prevalence among barbers.

Variation in HBV epidemiology across different studies can also be attributed to various environmental factors and host characteristics like awareness and attitude of barbers towards the risk of infectious diseases associated with their practices, duration of occupation and avoidance of unsafe practices.

Poor knowledge of the barbers about transmission routes and consequences of HBV is similar to that reported in the literature. Studies conducted in Yemen and other countries have reported poor knowledge [1,21] and misconceptions about spreading of HBV via coughing, sneezing and eating food leftovers. In addition to this, the lack of knowledge about the disease spreading via a sexual route is common among barbers [2,17].

Overall, attitude of the barbers towards having safe practices was favorable. The majority of them were willing to get tested for HBV, a finding similar to that reported in a study from Hyderabad [3]. However, a lower percentage of barbers, i.e., 45.1% were willing to get tested for HBV in a study from Yemen [21]. The proportion of barbers willing



to get vaccinated against HBV was found to be low. The poor response could be attributed to the lack of knowledge about the preventive role of vaccine and its cost.

Unlike in other studies [2,17] hand-washing after each shave or haircut was an uncommon practice and majority of the barbers did not report it as part of their routine. Hand-washing not only helps maintain self-hygiene but also reduces the risk of infection transmission to clients. Sterilization of instruments was non-existent and only a small proportion of the barbers used antiseptics for cleaning the instruments. Some studies have reported a declining trend of instruments sterilization [22]. Apparently, with an increase in the awareness about hazards associated with reuse of instruments, the use of razor has become obsolete and most barbers use blades for shaving, thereby reducing the need for sterilization. The practice of using a new blade for every customer was common, as reported, among 90% of the barbers. This finding is consistent with other studies and indicates a uniform improvement in the practices of barbers across different countries [2,17,21]. We did not perform a regression analysis due to an insufficient number of HBV cases.

### Limitations

Our study had some limitations. The study predominantly included barbers from the taluka of Sukkur who were found to have lower prevalence of risk factors like the frequency of cuts, family history of HBV, history of surgery, dental extraction, extra-marital sex and intravenous drug abuse. These factors could account for the differences in the prevalence noted in other talukas of the district. A representative sample from all talukas could help capture the variability.

The practices reported in this study reflect those self-reported by the barbers and, therefore, possibility of wish bias cannot be avoided. However, direct observations have the propensity to cause the Hawthorne effect as reported in a study [17]. To eliminate the effect of wish bias,

we arranged a private space for interview and did rapport building with the barbers prior to the interviews. The barbers were ensured of the confidentiality of the information they provided. Data collection was done by people belonging to the same community, thus helping in building the element of trust between the participants and the interviewers.

### CONCLUSION

There is a need for introducing regulations governing the occupation of barbers. Registration of barbers can be an important measure not just to ensure compliance with standards, but also to educate them about the risks associated with unsafe practices. Periodic random inspections at barber shops and organization of periodic workshops/awareness-raising programs to educate and update barbers in the area of health hazards are amongst other important measures.

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