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PRACTICES TOWARD PREVENTION OF BLOOD-BORNE INFECTIOUS DISEASES AMONG IRAQI BARBERS

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ABSTRACT

Introduction: Several public health problems including communicable diseases and skin conditions are associated with barbers' profession, to which their visitors are exposed, especially blood- borne diseases. So barbers would play a vital role in prevention and control of those health problems. **Objectives:** To determine the level of practices of Iraqi barbers regarding blood- borne infectious diseases prevention related to their profession. **Methods:** A cross sectional study was carried out on 768 male barbers over 18 years, who have been practicing hair-cutting and shaving for at least 6 months, from 6 selected districts in Baghdad, Iraq. The data were collected by questionnaires and analyzed using SPSS program. **Results:** The largest age group of barbers (47%) was 20 - 29 years. 60.0% of participants were married. Out of all barbers, only 15.1% were using different types of sterilization methods. The practice of vast majority (96.7%) of the participants located within poor practice level and only 3.3% located within an acceptable level. There is a significant association between the practice score and the following: marital status, barbers' license, working experience, and working hours per day. **Conclusion:** The practice level among vast majority of Iraqi barbers for preventing blood- borne infectious diseases related to their profession was very low, so it is essential to train the barbers with rigorous protocols about preventive measures that could be important in minimizing the risk of transmission of those diseases.

KEYWORDS: Barbers, Infectious diseases, Blood- borne, Practices.

INTRODUCTION

Infection remains the main cause of morbidity and mortality in man, particularly in developing areas where it is associated with poverty and overcrowding.[1,2] In those countries, it is known that infectious diseases cause about 25% of all human deaths and account for over 11 million deaths yearly.[3] Many infectious diseases affecting those countries are preventable and treatable but continue to thrive owing to lack of personal and environmental hygiene, and ignorance.[1,2] A large proportion of populations are receiving services from barbers in the community. Barbers may be a potential group for transmission of various infections associated with their profession to which their visitors are exposed.[4,5] There is strong evidence that razors, barber's scissors, nail files and barbering instruments are risk factors for transmission of diseases.[1,2] The blood-borne viruses, especially Human Immunodeficiency Virus (HIV), Hepatitis-B Virus (HBV) and Hepatitis- C Virus (HCV), infect hundreds of millions of people worldwide and their continuous spread depends on unsafe use of therapeutic injections, blood transfusions, mother to child transmission, unsafe sexual practices and beauty treatments (tattooing, piercing, manicure, pedicure and barber shop shaving) with instruments which are not properly sterilized.[6,7] Therefore, rigorous sterilization procedures are essential to avoid any contamination of blood-borne viruses of therapeutic and beauty instruments, particularly, because HBV is not easily inactivated by drying, simple detergents or alcohol and HCV can survive in plasma, after drying and environmental exposure to room temperature, for at least 16 hours.[8,9] Razor sharing and shaves from the barbers have been identified as an important risk for blood-borne viruses spread in several investigations carried out all over the world.[4] In many parts of Africa and Asia, the widespread cultural practice of shaving at a shop or roadside barber is an underestimated route of blood-

borne viral disease transmission.[10] In the last few decades, barbering has increased in worldwide popularity. In Baghdad; the capital of Iraq, the latest statistics showed that the total barbers who hold licenses were 1772, and 620 barbers were without licenses, this brings the total barbers in Baghdad to be 2392.[11]

Objectives: (1) To determine the level of practices taken by barbers regarding blood- borne infectious diseases prevention related to their profession. (2) To compare and analyze the level of practices between barbers who were licensed and those who were not.

METHODOLOGY

Study design: A cross- sectional study.

Study setting: It was conducted in the male barbershops of Baghdad city; the capital of Iraq. Barber shops in Baghdad are distributed in residential and commercial areas in an irregular manner in both parts of the city; Rusafa (the eastern part) and Karkh (the western part).[11]
Study population: All male barbers who were working in the selected barbershops in Baghdad and had willing to answer the questionnaire.
Exclusion criteria: (1) Barbers who had experienced less than 6 months in the barbering profession. (2) Barbers who are less than 18 years old.
Sample size (N): 768, calculated according to the following equation: $N=\{Z^2[P(1-P)]/E^2\}*D$ [12 - 14], where Z=1.960 (alpha risk expressed in z-score with a Confidence Level of 95%), P=Proportion of risk factors = 0.50 to increase sample size to the maximum, E= level of error= 0.05 and D= Design effect= 2.
Sampling technique: Multistage sampling method was done in Baghdad; Karkh and Rusafa parts. Three districts (of the total five) from each part were selected.
Tools of the study: The questionnaire consisted of: (1) Socio-demographic characteristics. (2) Questions about practices toward infectious diseases prevention.
Data analysis: The data were coded and analyzed using SPSS program. The practice score was classified into three grades, as following: If the score between 36-48 "i.e. above Quarter (Q) 3" it was graded as a good level, if the score between 24-35 (i.e. between Q2-Q3), it was graded as an acceptable level, and finally "depending on the median cut off point" if the score of barber was less than 24 (i.e. less than Q1), it was graded as a poor level.
Ethical consideration: (1) Official approval was taken from Iraqi MOH. (2) A written consent from each participant was obtained after explaining the objectives of the study. (3) Confidentiality was granted.

RESULTS

The basic socio-demographic characteristic of the enrolled barbers are shown by table 1, while their work-related characteristics are shown by table 2.

Table 1: The socio-demographic characteristics among the studied sample, N=768.

Variables		Number	Percent
Age (years)	<20	61	7.9
	20 - 29	361	47.0
	30 - 39	202	26.3
	40 - 49	96	12.5
	≥ 50 years	48	6.3
Marital Status	Single	302	39.3
	Married	461	60.0
	Divorced	5	0.7
	Widowed	0	0
Educational level	Illiterate	5	0.7
	Read & write	77	10.0
	Primary	293	38.2
	Secondary	247	32.1
	University	146	19.0
	Higher education	0	0
Smoking		295	38.4
Drinking alcohol		42	5.5
Tattoo		88	11.4

Table 2: The distribution of the studied sample for work- related characteristics, N=768.

Variables		Number	Percent
Work experience (Years)	1-4	157	20.4
	5-9	153	19.9
	10-14	183	23.9
	15-19	89	11.6
	≥ 20 years	186	24.2
Working hours / day	<8	65	8.5
	8-9	184	24.0
	10-11	257	33.4
	≥ 12 hours	262	34.1
Average monthly income of barber (Iraqi Dinar)	<500,000	18	2.3
	500,000-1 million	441	57.5
	>1 million	309	40.2
Number of barbers per room	1	125	16.2
	2	457	59.5
	3	161	21.0
	> 3	25	3.3

The status of having legal health license among the enrolled barbers is shown by figure 1.

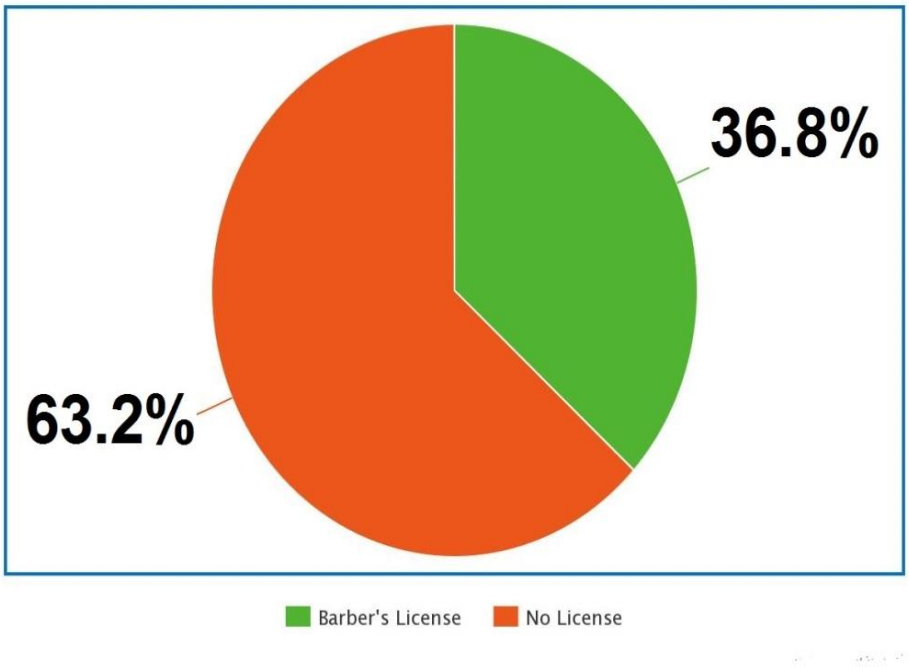

Figure 1: The percentage of having barber's license among the studied participants, N=768.

The practices of barbers towards prevention of blood-borne transmitting diseases related to their job are shown by table 3, the disinfection status of their equipment is shown by table 4, the status of washing by tap water is shown by table 5, the type of sterilization method is shown by table 6, while the type of used disinfectants is shown by table 7.

Table 3: The distribution of the studied barbers regarding their practices toward prevention of blood- borne diseases related to their work in the barbershops, N=768.

Variables	Number	Percent
Hand washing before shaving the client	122	15.9
Hand washing after shaving the client	172	22.4
Wearing his own apron	113	14.7
Covering each new client by apron	712	92.7
Using disposable stretchable neck strips	710	92.4
Wearing disposable gloves	46	6.0
Using separate scissors for each new client	22	2.9
Using separate combs for each new client	50	6.5
Using of disposable blade for each client	768	100.0
Using straight razor with changeable blade	681	88.6
Disinfecting inadvertent skin cuts	626	81.5
Using talcum powder with disposable cotton piece	321	41.8
Changing threading strings	749	97.5
Using rubber gloves when dying hair	362	47.1
Keeping clean shaving tools in glass closet	468	60.9
Using disposable towel for each new client	180	23.4
Keeps cleaned towels or aprons in special locker	63	8.2
Disinfecting skin before or after trimming of the edges of the beard or scalp by blade	575	74.9
Throwing the used blades in sharp container	0	0.0
Throwing the used blades in waste bin	696	90.6
Collects hair in a special barrel	487	63.4

Table 4: The distribution of the studied barbers concerning disinfection status of their equipment, N=768.

Variables	Number	Percent
Scissors disinfected after shaving client	125	16.4
Tweezers disinfected after shaving client	90	11.7
Combs cleaned or disinfected after shaving client	52	6.8
Hair brushes cleaned or disinfected after shaving client	40	5.2
Straight razor disinfected after shaving client	605	78.8
Cleans the electric clipper by brush	747	97.2

Table 5: The distribution of the studied barbers concerning washing status by tap water, N=768.

Variables	Number	Percent
Washing scissors by tap water	32	4.2
Washing tweezers by tap water	41	5.3
Washing combs by tap water	44	5.7
Washing hair brushes by tap water	51	6.6
Washing straight razor with changeable blade by tap water	46	6.0

Table 6: The distribution of the studied barbers concerning the used sterilization method, N=768.

Variables	Number	Percent
Direct flame	55	7.2
Ultraviolet	40	5.2
Boiling	18	2.3
Autoclave	3	0.4

Table 7: The distribution of the studied barbers concerning the used disinfectants in their barbershops, N=768.

Variables	Number	Percent
Perfume	728	94.8
Talcum powder	366	47.6
Dettol	491	63.9
Alcohol	85	11.0

Savlon	30	3.9
Alum crystals	203	26.4
Povidone	24	3.1
Phenol	313	40.7
Hydrogen peroxide	3	0.4
Water and soap	123	16.0
Water	64	8.3
Others (Lysol and Carboxylic acid)	53	6.9

The statistical measurements of the scores obtained for the barbers according to the total assessment of their practices are illustrated by table 8.

Table 8: Mean and other statistics of the practice scores among the studied barbers, N=768.

Total assessment of practice, Q=48 (scores)	
Mean ± SD	16.17 ± 3.40
Standard Error of Mean	0.12
Range	9.0-26.0
50th (Median)	16.0

According to the results, the level of practice score of vast majority of the participants 743 (96.7%) located within poor practice level and only 25 (3.3%) located within an acceptable or fair level, as shown by figure 2.

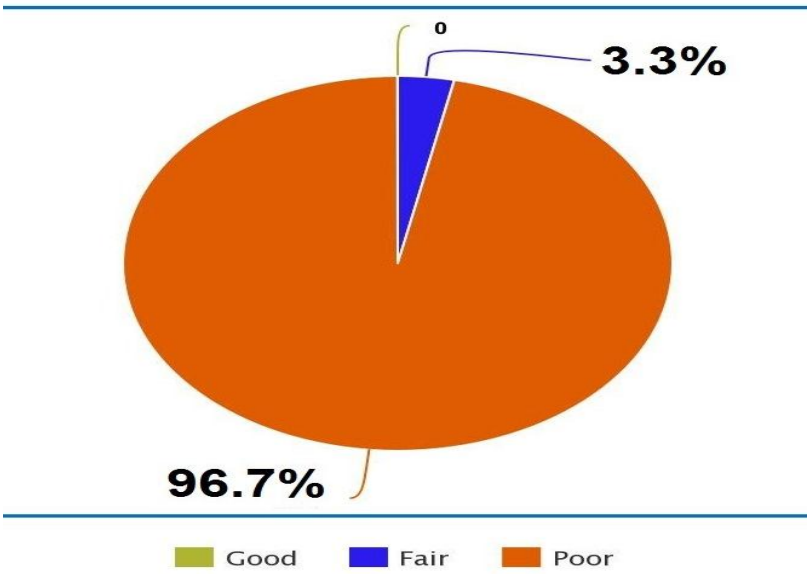

Figure 2: The level of practice scores among the studied barbers, N=768.

The association between barber safety practice score and their characteristics is manifested by table 9, where there is a significant association between the practice score and each of the barbers' licenses, the working experience of them, the working hours per day, and the marital status.

Table 9: The association between barbers' practice score and their characteristics, N=768.

Variables		Total assessment (Q48)				P-value
		Poor (<24)		Acceptable (24-35)		
		No.	%	No.	%	
Age (years)	<30	404	95.7	18	4.3	0.081
	≥30	339	98.0	7	2.0	
Marital Status	Single	297	98.3	5	1.7	0.044*
	Married	446	95.7	20	4.3	
Level of education	Illiterate	5	100	0	0	0.83
	Read & write	74	96.1	3	3.9	
	Primary	286	97.6	7	2.4	
	Secondary	237	95.9	10	4.1	
	University	141	96.5	5	3.5	
Barber's license	No	474	97.7	11	2.3	0.044*
	Yes	269	95.1	14	4.9	
Work experience	<10 years	292	94.2	18	5.8	0.001*
	≥10 years	451	98.5	7	1.5	
Working hours per day	<10 hours	232	93.2	17	6.8	0.0001*
	≥10 hours	511	98.5	8	1.5	
Average monthly income	Inadequate	16	88.8	2	11.2	0.14
	Adequate	432	97.9	9	2.1	
	More than adequate	296	95.7	13	4.3	
Barbers no. per room	≤ 2	564	96.9	18	3.1	0.654
	> 2	179	96.2	7	3.8	
*Significant difference between proportions using Pearson Chi-square test at 0.05 level.						

DISCUSSION

In this study most barbers were young and had some form of education, only 0.7% of them were illiterate, this finding is similar to barbers from India[2] and Sudan[15] and much better than barbers studied in the Rawalpindi and Islamabad in Pakistan where the illiteracy level was 48%.[16] This low level of illiteracy may help in making plans for education of large number barbers (who are not illiterate) on the dangers of blood- borne infectious diseases related to their profession by distributing useful information on proper cleaning and sterilization of equipment and on safety practices toward those diseases. The relationship between the educational level and the practice score of the barbers was statistically insignificant; also the results did not show significant relationship between the age of the barbers and the practice scores; the current results disagree with findings of an Iranian study.[17] On the other hand, the results showed significant relationship between the marital status of the barbers and the practice scores, and this could be due to an extra attention and awareness generally about their health status. The study also revealed that barbers who had legal health license were practicing safely during barbering service when compared to those who had not; our finding disagrees with a study done in Sudan.[15] An acceptable practice was noted in those who had work experience for ten years or more; this could be due to their over self-esteem, and probably they may tend to have more daily clients than those who had less work experience, those results are similar to that of a study done in Isfahan, Iran.[17] It was noted also that barbers who were working less than ten hours per day had an acceptable safety practice toward blood- borne infectious diseases that related to barbering, because they may have enough time to apply an acceptable practice, in contrast to those with more than ten- hour work who could have heavy workload, so they will have no enough time to achieve acceptable practice, because those barbers may use same set of equipment that could be used continuously for multiple clients without proper disinfection and sterilization; this finding agrees with that of a study carried out in Ethiopia. [5] The results of current study found that number of barbers per each barbershop had insignificant association with their safety practice, this could be due to personal variations regarding to safety practice among barbers themselves. Based on the questionnaires prepared for the practices of barbers towards prevention of blood- borne infectious diseases related to their work, it is appeared that those practices were very low. Accordingly out of the total study participants, only 3.3% were practicing safely within the acceptable range to prevent those diseases, and no one of them reached the good practice scores; this finding was lower than that of studies conducted in Pakistan; Kharian city of district Gujrat,[1] Bahra Kahu, Islamabad,[18] Rawalpindi and Islamabad[16] and Sana'a City, Yemen [19]. The possible reason of that could be due to most of barbers are paying more attention to the decoration, air conditioning, sound system, and availability of television in the shop, but they are not paying attention to the risk factors associated with their profession in the prevention of blood- borne infectious diseases. Unfortunately hand washing practices are still very poor in our study as the majority of participants did not wash their hands, neither before

nor after shaving the client. This finding is coinciding with previous literatures from Yemen,[19] Ghana [20] and Turkey.[21] The current study showed that only 6% of barbers were using disposable gloves during shaving the clients, while a study in Pakistan revealed that none of barbers were using gloves during shaving the clients.[22] Fortunately, all the barbers in this study did not reuse blade after it was used for a client. Using of new blade for every customer is a good practice which should be encouraged and similar findings were reported by Waheed *et al*,[23] and Mutocheluh *et al*,[20] Despite of all barbers used a new blade for each client but vast majority of them were reusing the straight razor with changeable blade on multiple clients and some clients still insisted on being shaved with this razor. Similar finding was revealed in Pakistan.[16,22] In the current study, it was also found that majority of barbers were disinfecting straight razor with changeable blade after shaving client, while small percentage were washing the straight razor with changeable blade by tap water after giving barbering service to different clients. Our finding is better than that of a study done in Pakistan which revealed that 11.4% of barbers washed their razors by dipping them in a jar of Dettol water after each use [16]. Although the vast majority of the studied barbers were cleaning the hair trimmer by brush, this seems to be not enough practice, because it is unlike razor blades, the barbers could not afford to use one hair trimmer per client and were therefore compelled to reuse one on multiple clients. In our study, 14.7% of barbers were wearing apron as protective clothing, this finding is lower than result observed in Turkey.[21] In present study, the majority of barbers were reusing a towel and only 23.4% were using disposable towel for clients, while 6.8% of them were cleaning the combs after each client, and it is not consistent with other studies, a study from Italy.[4] In the present study, it was revealed that the most of participants were collecting the used blades in waste bin, because no sharp container was seen in the barbershops at time of study. While a study from Pakistan found that 100% of them were disposing blades in sewerage waste.[16] Majority of barbers in our study were collecting the used blades and other waste in a waste dust bin which is ultimately to be thrown to common municipality bin and most of these bins are open and overloaded, therefore; these practices impose a significant risk to unemployed children and adolescents who search valuable things from waste. Due to risk of injury by blades, the chances of hepatitis B as well as hepatitis C transmission increases many folds through the cuts on hand.[22] Out of all barbers enrolled in this study; only 15.1% were currently using different types of sterilization, mostly by direct flame and ultraviolet sterilizer; this proportion is similar to study carried out in Pakistan [16]. At present study, 2.9% of barbers were using separate scissors which is lower than a Pakistani study [24] which was 6.6%. Although autoclave method is considered as a best way to sterilize the instruments, our study revealed only 3 barbers were practicing this method; studies from Sudan.[15] and Ethiopia.[25] showed that there are no autoclave at all. Almost all of barbers had practiced disinfection using the perfume; followed by Dettol which was using by the most participants during and after barbering procedures; a study from in Egypt.[26] showed similar findings. The present study also revealed that minority of the participants were using disinfectants as alcohol (Ethanol and Methylated spirit) and savlon, while studies from Egypt.[26] Ethiopia.[25] and Nigeria.[27] revealed that the majority of barbers in these countries were using those disinfectant. Although the using of alum crystals is a traditional and ancient method for disinfection of skin cuts and as a deodorant, about quarter of barbers were using it, and this finding was higher than what manifested by a study carried out in Egypt.[26] The present study showed that not all barbershops had been using sterilization but most of them were trying to practice disinfection methods, this may be partly attributed to the presence of a large proportion of barbers in this study who did not get a legal license to practice.

CONCLUSIONS

(1) The practices among the vast majority of Iraqi barbers in Baghdad toward prevention of blood-borne infectious diseases related to their profession are very poor.
(2) Neither the sterilization nor the disinfection methods in the barbershops are sufficient, this will put both barbers and clients at risk of acquiring blood- borne infectious diseases.
(3) Though blade sharing is not practiced, but the reuse of razor on multiple clients without proper disinfection/sterilization is still common among Iraqi barbers.
(4) Nearly two-thirds of barbers in Baghdad did not have a legal health license; however this was appeared to have no significant association with the practice scores.

Recommendations

(1) Making profound efforts and follow up for institutes of barbering learning in order to supervise and educate them about safety practices fairly and clearly.
(2) Encouragement barbers to use disposable razor blades, disposable towels and combs for each client, in addition to this; sharp containers have to be used by all barbers to throw the used blades and other contaminated sharp objects inside them.
(3) Including the procedures of safety practices within the courses of health education throughout any establishing of new licenses or renewal of licenses for barbers through practical oriented health education and training on equipment decontamination with emphasis on the use of correct procedure of sterilization and disinfection.

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