

## Occupational Health Risks of Barbers: Knowledge, Practices, and Self-Reported Symptoms

1 Samia Farouk Mahmoud, 2 Laila Awadin Ali Hassan

1 Community Health Nursing, Faculty of Nursing, Zagazig University

2 Community Health Nursing, Faculty of Nursing, Beni Sweif University

### Abstract

**Background:** Barbers have been associated with a variety of self-reported symptoms, including respiratory, allergy, and musculoskeletal problems. The current study aims to investigate the workplace environmental condition, knowledge, and practices concerning hazardous work exposure and recognize the potential occupational health complications and their associated variables occupational health risks of barbers' knowledge, practices, and self-reported symptoms. **Methods:** A descriptive, cross-sectional study including a random sampling technique of 150 barbers was conducted at Diarb-Negm Center. A self-administered questionnaire was used to record socio-demographic characteristics, knowledge, description of environmental conditions, self-reported health symptoms in the last six months and an observational checklist to assess safe work practices of barbers. **Results:** Barbers having a history of HCV and HBV infections were 8.7% and 1.3%, respectively. Moreover, 61.3% of barbers have good knowledge. As well, 74.7% of barbers have correct practices. Additionally, the most reported musculoskeletal complaints were shoulder arm pain (96.7%), and a respiratory problem was cough (86.7 %). Furthermore, a significant association was detected between respiratory issues, skin allergy and musculoskeletal symptoms with working hours per day and years of experience. **Conclusion:** A minority of barbers have a history of both HCV and HBV infections. Additionally, proper environmental conditions, knowledge, and safe practices of the studied barbers were insufficient. Moreover, barbers self-reported symptom was high in musculoskeletal complaints. **Recommendations:** Egyptian barbers should get pre-employment health education, and barbershops should be inspected regularly.

**Keywords:** Occupational Health Risks, Barbers Self-Reported Symptoms, Knowledge, and Practices.

## Introduction:

Barbers encounter a variety of occupational health hazards, including extended standing, sometimes with bad posture and mechanical stress on the joints, and long work hours without rest intervals, resulting in missed meals. Along with being exposed to physical elements such as noise and increased temperatures, these individuals face significant occupational health hazards (Mandiracioglu et al., 2009). Additionally, the use of blades and razors is part of barbers' work, exposing them to clients' blood while shaving and haircutting. The chance of any blood-borne illnesses such as hepatitis B and C results from this exposure (Jokhio et al., 2010).

Barbering has been recognized as a potentially dangerous occupation, with a lack of knowledge and poor practice of health problems posing a significant hazard to public health. Inadequate hygiene and the use of contaminated equipment contribute to the spread of fungal and viral infections, bacterial skin disorders such as eczema, warts, and tetanus (Almasi et al., 2016). However, high-risk shaving and haircutting practices have been recognized as a possible source of disease transmission. Numerous studies have highlighted the danger of barbers transmitting blood-borne illnesses such as hepatitis B and HIV (Khan et al., 2010). Additionally, given personal hygiene and human environmental sanitation has unique importance (Mahmood and Hassan, 2018).

The "Barber" profession has a long and illustrious history. Barbers' historical records show that they played a significant role in their communities. Barbers were formerly regarded as medical men and scholars of their faith; they were members of organizations that offered their skills for

bloodletting, circumcision, tooth extraction, and many other minor procedures. Their function has been restricted to haircutting and shaving with the growth of the health sector (Syed et al., 2009).

Occupational nursing plays a fundamental role in community settings. It improves the health and safety of workers by raising awareness about the prevention and control of health hazards. Numerous Egyptian barbers' shops are small roadside establishments. This might provide environments in which there is limited support for workers to promote their health. Consequently, the increased risk of ill health among barbers would induce a public health problem within a growing community sector (Khalaf et al., 2020).

## Significance of study:

Unfortunately, Egypt is not offering barber health tutoring programs that cause a lack of knowledge, practices, and work hazards. Lack of understanding and knowledge concerning blood-borne diseases transmitted through hair salons. About seventy percent were sterilizing their tools, and only 12.4% performed this after each client. Among the most reported musculoskeletal complaints were low back (22.5%), shoulder (17.2%), and wrist pain (16.6%), and 24% complained from varicose veins, Chest problems, dyspnea was reported by 7.3% of the participants, while 6.0%, in comparison, they had bronchial asthma and dermatitis by 5.3% (Khalaf et al., 2020).

## Aim of the study:

To investigate the occupational health risks of barbers through:

1. Identify the knowledge levels and safe work practices regarding hazardous work exposure of barbers.

2. Assess the workplace environmental condition of barbers.
3. Determine the potential occupational health problems and their associated variables.

#### Research questions:

1. What are the knowledge levels and safe work practices regarding hazardous work exposure of barbers?
2. Is the workplace environmental condition of barbers satisfactory?
3. What are the potential occupational health problems and their associated variables?

#### Subjects and Methods:

##### Study design:

A descriptive, cross-sectional study was conducted.

##### Study setting:

The study was conducted at Diarb-Negm Center (Saffour, Al-Mana, Taha Al-Marg during the period from September 2020 to February 2021.

The village of Saffour is one of the villages of the Diarb Negm Center in the Sharkia Governorate in the Arab Republic of Egypt. According to statistics, the total population of Saffour was 14,149, of whom 7,346 were men and 6,803 were women.

The village of Taha Al-Marg is one of the villages of the Diarb Negm Center in the Sharkia Governorate in the Arab Republic of Egypt. The total population of Taha al-Marj is 14,211 people, of whom 7,512 are men and 6,699.

Taha Al-Marg is one of the villages of the Diarb Negm Center in the Sharkia

Governorate in the Arab Republic of Egypt; the total population of Taha Al-Marg was 13,111 people.

**Sample size:** The sample size for studying the barbers' knowledge and practices was calculated using DSS research (<https://www.DSSresearch.com/calculating-sample-size-using-percentage>). The primary outcome of interest is the percentage of good practice of barbers. A previous study revealed that the percentage of good practice was 58.33.4% (**Mahmood and Hassan, 2018**), and it is expected to be 70.0% in the locality, with an alpha error of 5% (significance 95.0%),  $\beta$  error of 10.0% (study power of 90%). Then the sample size is 144, and we can add 5% for a better quality of collected data. Thus, the calculated sample size is 150 barbers.

**Sample technique:** A multistage sampling technique was the most appropriate method for selecting the barbers to be included in the study: the study was conducted in Sharkia Governorate, which consists of 21 districts. The researchers used a simple random sampling technique to pick up the district; it was Diarb-Negm Center. It consists of several local units in the centre (7) units and villages (44). The researchers used a simple random sampling technique to pick up the villages, Saffour (65), Al-Mana (45), Taha Al-Marg (40). Then, the researchers selected the barber according to inclusion criteria as working for at least two consecutive years as barbers, read and write, and agreed to participate in this study. Fifteen barbers were excluded from a pilot study.

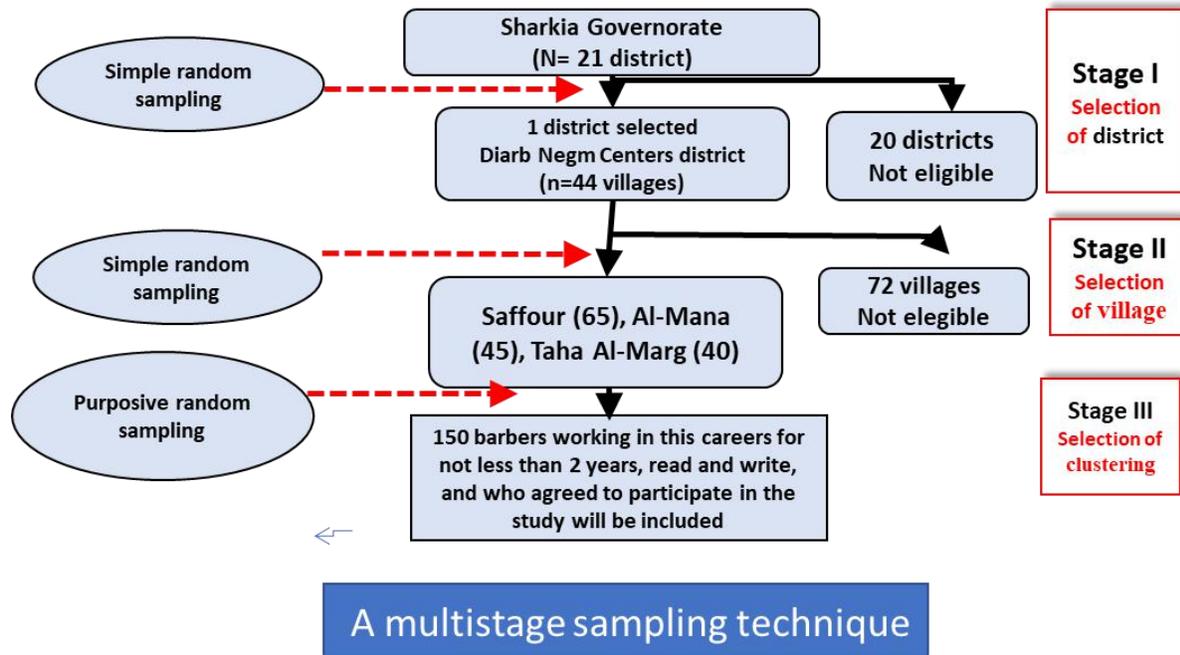
##### Tools of data collection:

The researchers used three different tools for data collection, namely (1) self-administered questionnaire, knowledge of barbers, self-reported symptoms, (2)

description of environment condition and (3) observational checklist for safe work practices.

**Tool I.** A self-administered questionnaire. This tool was developed by the researchers based on reviewing of literature and guided by **Hakim and Abdel-Hamid (2019)** and **Khalaf et al. (2020)**. and consists of the following parts:

**Part I:** A self-administered questionnaire (11 questions) was used to collect data related to the barbers' socio-demographic characteristics as age, work hours, educational level, marital status, years of experience, training on this job, license to practice the job, current smoking, residence, income, history of HCV and HBV.



**Figure 1.** Diagram showing sampling technique.

**Part II:** This was for assessment of the knowledge of the barbers' about hazards (11 questions): musculoskeletal disorders, electrical injuries, chest problems, skin diseases, burn, varicose, Hepatitis B And C, nail discoloration, work-related accidents, noise-related exposure disorders, influenza and the common cold. It also includes modes of transmission of hepatitis B and C viruses (10 questions): contaminated water, food, shared utensils, sexual contact, intravenous drug use, and blood transfusion, dental procedures, scissors/surgical/ razors instruments, ear/body piercing, body fluids. The knowledge questionnaire also includes their prevention (4 questions): clean utensils,

not sharing needles, taking a vaccine for virus C, and taking antibiotics.

### Scoring:

Knowledge questionnaire is a 25-item questionnaire with the response for each item is either incorrect (score 0) or correct (score 1). The total score is the sum of the individual scores (ranged from 0 to 24). The full knowledge score is categorized into poor knowledge (<50% of the total score), fair knowledge (50 to 65% of the total score) and good knowledge (>65% of the total score).

**Part III.** Self-reported health symptoms were assessed in the last six months, such as; respiratory problems (3 questions): tightness, cough, and whooping; allergic symptoms (3 questions): skin inflammation, watery eye, and blocked runny nose; and musculoskeletal complaints (2 questions): shoulder arm pain, and low back pain, and nail problems or discolouration (one question).

**Tool II.** The workplace environment in the barber's shop included inquiries with possible answers of "done" or "not done". It was developed by researchers and guided by **Khairkhah et al. (2016)**, about these statements, ventilation, gloves, and laundry, eating in an isolated place, good lighting condition, first-aid, extinguisher, and towels

#### **Scoring:**

The environmental condition tool is formed of 8 items. The response for each item is either not done (score zero) or done (score 1). The total attitude score is the sum of the scores of the eight items. The total score is categorized as unsatisfactory (<60% of the total score) or satisfactory ( $\geq 60\%$  of the total score).

**Tool III.** An observational checklist to evaluate safe work practices of barbers. It was developed by researchers and guided by **Almasi et al. (2016)**. Nine items were used to observe wearing protective clothing, washing hands before each client, cleaning instruments with disinfectant between clients, washing appliances after shaving clients, washing razor with antiseptic solution after use, using a new blade on a new client, washing razor with tap-water before use on a new client, disinfecting skin

cuts, and disposing of used blades in the garbage.

#### **Scoring:**

The practice questionnaire is formed of 9 items. The response for each item is either not done (score 0) or done (score 1). The total attitude score is the sum of the scores of the nine items. The attitude score is categorized as unsatisfactory (<60% of the total score) or satisfactory ( $\geq 60\%$  of the total score).

#### **Content Validity and Reliability**

The validity was done by a panel of 3 experts from nursing and medical staff in Community Health Nursing and Medical-Surgical Departments, Faculty of Nursing, Zagazig University, and Faculty of Medicine, Zagazig University. They reviewed the tools for face and content validation through ascertaining clarity, relevance, comprehensiveness, and understandability. The tools were modified according to their comments and suggestions. The reliability of proposed tools was performed by Cronbach's Alpha test statistic, which recorded 0.862, 0.913 and 0.904 for the tools (I) (II) and (III), respectively.

#### **Fieldwork:**

Upon securing all official permissions, the data collection process started in September 2020 and continued through February 2021. The researchers met with the barbers individually, explained the study aim and procedures, and invited them to participate in the study. Those who gave their oral consents were interviewed using the three data collection tools. The time needed to fill in the three forms ranged between 20 and 30 minutes for each participant. Face-to-face interviews were conducted with participating barbers about

their knowledge and practices. In data collection observation, the barber was assessed with his instruments used in practice with clients. The researchers performed the fieldwork two days weekly (Saturdays & Wednesdays) for one week and alternated two days for the following week. This was done along with these work shifts (morning, afternoon, and night).

### **Pilot study:**

A random selection of 15 barbers' representing 10% of the questionnaire was checked by the researchers to verify whether all questions had been understood by the barbers, who were assessed that participation in the survey was voluntary. The goal of the pilot research was to evaluate questions about any tools' ambiguity and to assure its feasibility. The barbers who shared in the pilot study were excluded from the main study sample.

### **Ethical considerations:**

The study was approved by the Ethical Committee of The Department of Community Health Nursing, Faculty of Nursing, Zagazig University. As well, approval was obtained from the responsibilities of different barbers from where we took the sample. All necessary official permission to conduct the study was secured. The researchers provided a simple explanation of the aim of the research and its procedures to each barber to obtain his oral consent to participate. The researchers emphasized that the participation was voluntary. The participant could withdraw at any time and stage of the study without any need to justify his decision. They assessed them that any raised question would be answered. They were also informed that any collected data would be treated confidentially and used only for the research

purpose and that no harmful effects were expected from participation.

### **Statistical analysis**

All collected data were analyzed using the Statistical Package for Social Science version 26.0. Continuous data were normally distributed and were expressed as mean $\pm$ SD, while categorical data were expressed as number and percent. Comparisons between variables containing continuous data were performed using the Student's t-test, while comparisons between variables containing categorical data were performed using the Chi-square test. The reliability (internal consistency) for the questionnaires used in this study was assessed using Cronach's Alfa test. The level of significance was set at  $p < 0.05$ .

### **Results:**

**Table (1)** shows that 41.3% of barbers aged 15–25 years and only 6.7% had more than 45 years. They are also barbering a mean age of  $29.3 \pm 9.3$ . Additionally, 46.0% of them are working for more than 10 hours per day. Furthermore, 41.3% of the barbers were single. 50.0% of them had 10 – 20 years of experience. 66.7% of barbers reside in rural areas, and 52.7% had sufficient and saved income. 55.3% are current smokers; also, no barbers have a license to practice the profession. The prevalence of HCV and HBV infections among barbers in this study was 8.7% and 1.3%, respectively.

**Table (2)** represents responses to the number and percentage of knowledge regarding work hazards exposure and HCV and HBV. The adverse health effects they knew were being 92.0% at risk due to work exposures were musculoskeletal disorders, electrocution (35.3%), chest sensitivity (40.7%), skin diseases (48.7%), burn

(15.3%), varicose (65.3%), hepatitis (82.0%), hearing loss (88.0%), nail discoloration (24.0%), influenza and common cold (86.0%). Additionally, the same table detects that barber knew that modes of transmission of hepatitis B and C correct answers were through contaminated water (95.3%), food (98.7%), shared utensils (98.0%), sexual contact (99.3%), intravenous drug use (98.7%), blood

transfusion (98.7%), dental procedures (96.0%), scissors/ surgical instruments (96.7%), and ear/body piercing (80.0%) and body fluids (23.3%). Furthermore, the barbers mentioned that the prevention could be through clean utensils (98.0%) and not sharing needles (96.7%). Only 3.3% and 20.7% knew correct answers about HCV vaccines and taking antibiotics, respectively.

**Table (1): Distribution of The Socio-Demographic Characteristics Of Barbers (n=150).**

Items	No	%
<b>Age (years)</b>		
15 – 25	62	41.3
26 – 35	50	33.3
36 – 45	28	18.7
More than 45	10	6.7
Mean $\pm$ SD	29.3 $\pm$ 9.3	
<b>Work hours</b>		
$\leq$ 10	81	54.0
> 10	69	46.0
<b>Education</b>		
Read and write	4	6.7
Diploma	111	74.0
University	29	19.3
<b>Marital status</b>		
Single	62	41.3
Married	82	54.7
Widower	6	4.0
<b>Experience (years)</b>		
< 10	61	40.7
10 – 20	75	50.0
>20	14	9.3
Mean $\pm$ SD	15.6 $\pm$ 4.8	
<b>Smoking</b>	83	55.3
<b>Residence</b>		
Rural	100	66.7
Urban	50	33.3
<b>Income</b>		
Sufficient and save	79	52.7
Sufficient	47	31.3
Insufficient	24	16.0

History of HCV infection and treatment	13	8.7
History of HBV infection	2	1.3
License to practice the profession	0	0
Training on this job	150	100

\* Significant at  $p < 0.05$ ; ns, non-significant at  $p > 0.05$

**Table (2): Distribution of Knowledge Regarding Work Hazards Exposure and HCV and HBV (n=150)**

Knowledge	Incorrect		Correct	
	N	%	N	%
<b>Do you know that some of the exposures you face at work may lead to .....</b>				
Musculoskeletal disorders	12	8.0	138	92.0
Electrical injuries	97	64.7	53	35.3
Chest problems	89	59.3	61	40.7
Skin diseases	77	51.3	73	48.7
Burn	127	84.7	23	15.3
Varicose	52	34.7	98	65.3
Hepatitis B and C	27	18.0	123	82.0
Nail discolouration	114	76.0	36	24.0
Hearing loss	18	12.0	132	88.0
Noise related exposure disorders	113	75.3	37	24.7
Influenza and the common cold	21	14.0	129	86.0
<b>Virus B and C transmission methods</b>				
Contaminated water	7	4.7	143	95.3
Food	2	1.3	148	98.7
Shared utensils	3	2.0	147	98.0
Sexual contact	1	0.7	149	99.3
Intravenous drug use	2	1.3	148	98.7
Blood transfusion	2	1.3	148	98.7
Dental procedures	6	4.0	144	96.0
Scissors/surgical/razors instruments	5	3.3	145	96.7
Ear/body piercing	30	20.0	120	80.0
Body fluids	115	76.7	35	23.3
<b>Prevention</b>				
Clean utensils	3	2.0	147	98.0
Not sharing needles	5	3.3	145	96.7
Taking vaccine for virus C,	145	96.7	5	3.3
Taking antibiotics	119	79.3	31	20.7

\* Significant at  $p < 0.05$ ; ns, non-significant at  $p > 0.05$

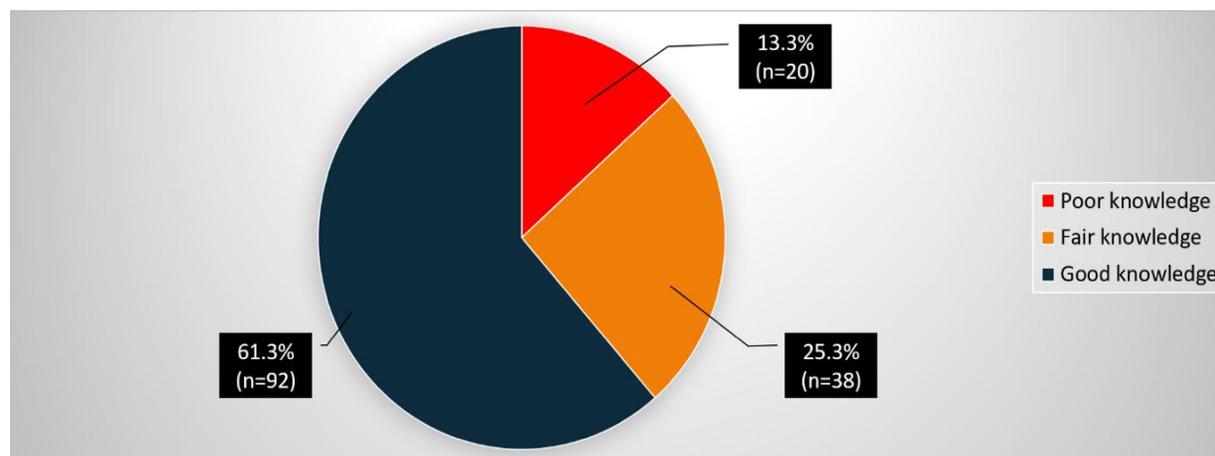
**Figure (1)** illustrates that the distribution of the total knowledge level among the barbers was poor (13.3%), fair (25.3%), and good (61.4%).

**Table (3)** describes that the highest frequent complaint was musculoskeletal complaint as shoulder arm pain (96.7%) followed by respiratory problems as cough (86.7%), and the most minor complaint was nail problems or discolouration (14.0%).

**Table (4)** displays that 66.7% of barbers reported availability of air conditions at their workplace, wearing gloves with each client (92.7%), laundry (86.7%), eating in an isolated place (20.0%), good lighting condition (69.3%), first-aid (12.0%), extinguisher (14.0%) and towels (78.7%). The total satisfactory attitude score of environmental condition was 55.3%.

**Table (5)** demonstrates that 37.3% of barbers were wearing protective clothing, 60.7% washed their hands before attending to each client, 96.0% cleaned instruments with disinfectant between clients, 83.3% washed their tools after shaving the clients, 84.0% washed razors with antiseptic

solution after use. In comparison, 47.3% washes razor with tap water before use on a new client, 90.7% used a new blade on a new client and 69.3% used disinfectants for skin cuts and 98.0% of barbers disposed of used blades in the regular garbage system.



**Figure (1): Distribution of the Total Knowledge Level Among The Barbers**

**Table (3): Work-Related Symptoms Experienced by The Study Barbers (n=150)**

	N	%
<b>Respiratory Problems</b>		
Tightness	81	54.0
Cough	130	86.7
Whooping	34	22.7
<b>Allergy</b>		
Skin inflammation	83	55.3
Watery eye	122	81.3
blocked runny nose	124	82.7
<b>Musculoskeletal complaints</b>		
Shoulder arm pain	145	96.7
Low back pain	128	85.3
Nail problems or discolouration	21	14.0

\* Significant at  $p < 0.05$ ; ns, non-significant at  $p > 0.05$

**Table (4): Number and Percentage Distribution of Attitude in Environmental Condition of Barbers Shops (n=150)**

	Not done		Done	
	No	%	No	%
<b>Environmental workplaces</b>				
Ventilation	50	33.3	100	66.7
Gloves	11	7.3	139	92.7
Laundry	20	13.3	130	86.7
Eating in an isolated place	120	80.0	30	20.0
Good lighting condition	46	30.7	104	69.3
First-aid	132	88.0	18	12.0
Extinguisher	129	86.0	21	14.0
Towels	32	21.3	118	78.7
Total Attitude Score of Environmental condition				
Unsatisfactory	67	44.7		
Satisfactory	83	55.3		
Mean $\pm$ SD	4.4	$\pm$ 1.01		

\* Significant at  $p < 0.05$ ; ns, non-significant at  $p > 0.05$

**Figure (2)** illustrates the distribution of the total practical level among the barbers. It reveals that 74.7% of barbers have correct practice.

**Table (6)** shows that significant associations between the socio-demographic characteristics (work hours, education, experience, current smoking, virus C/B infection (and treatment)) and good knowledge score.

**Table (7)** demonstrates that significant associations between the socio-demographic characteristics (work hours, education experience, current smoking, and virus C/B infection (and treatment) and satisfactory environmental condition.

**Table (8)** portrays that significant associations between the socio-demographic characteristics (education, experience, current smoking virus C/B infection (and treatment)) and correct practice.

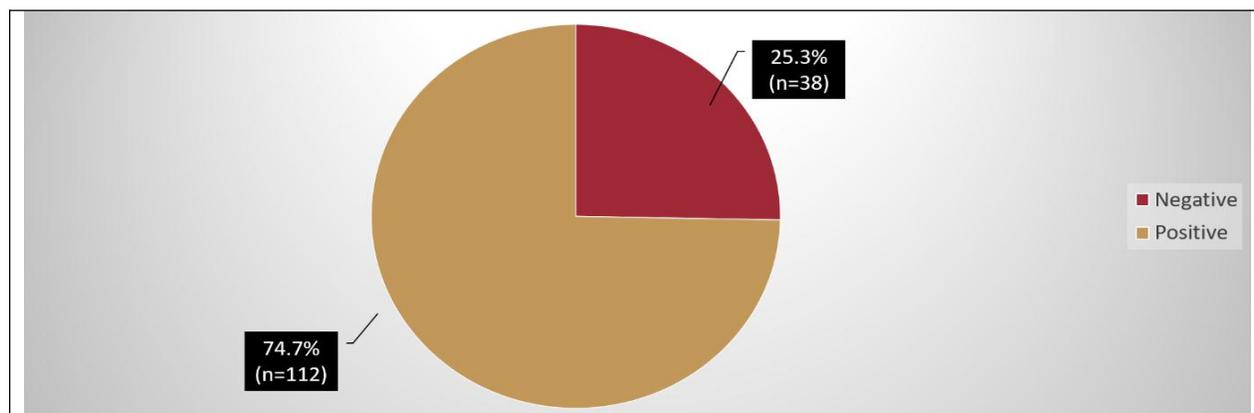
**Table (9)** describes significant associations between satisfactory environment (0.020) and good knowledge, also a significant association between correct practice (0.012) and good knowledge score.

**Table (10)** shows significant associations between respiratory problems, skin allergy and musculoskeletal complaints with working hours per day. Moreover, significant associations exist between respiratory problems and musculoskeletal complaints with years of experience

**Table (5): Barbers' Shaving Practices from Observations of Interactions with Clients (n=150)**

Practice	Not done		Done	
	n	%	N	%
Wear protective clothing	94	62.7	56	37.3
Washes hands before each client	59	39.3	91	60.7
Cleans instruments with disinfectant between clients	6	4.0	144	96.0
Washes instruments after shaving clients	25	16.7	125	83.3
Washes razor with antiseptic solution after use	24	16.0	126	84.0
Uses new blade on a new client	14	9.3	136	90.7
Washes razor with tap-water before use on new client	79	52.7	71	47.3
Disinfects skin cuts	46	30.7	104	69.3
Disposes of used blades in the garbage,	3	2.0	147	98.0
Total practice Level				
Mean $\pm$ SD	6.7 $\pm$ 1.1			

\* Significant at  $p < 0.05$ ; ns, non-significant at  $p > 0.05$

**Figure (2): Distribution of the total practical attitude level among the barbers**

**Table (6): Association between the Socio-Demographic Characteristics and Total Knowledge Score (n=150)**

	Poor (n=20)		Fair (n=38)		Good (n=92)		Chi-Square	
	N	%	N	%	N	%	X <sup>2</sup>	P
<b>Age(years)</b>								
15 – 25	7	35.0	13	34.2	42	45.7		
26 – 35	7	35.0	15	39.5	28	30.4		
36 – 45	5	25.0	10	26.3	13	14.1		
More than 45	1	5.0	0	0.0	9	9.8	8.346	0.214
<b>Work hours</b>								
≤ 10	17	85.0	21	55.3	43	46.7		
> 10	3	15.0	17	44.7	49	53.3	9.715	0.008*
<b>Education</b>								
Illiterate	2	10.0	3	7.9	1	1.1		
Primary	1	5.0	1	2.6	2	2.2		
Diploma	17	85.0	30	78.9	64	69.6		
University	0	0.0	4	10.5	25	27.2	14.699	0.023*
<b>Marital status</b>								
Single	8	40.0	11	28.9	43	46.7		
Married	12	60.0	25	65.8	45	48.9		
Widower	0	0.0	2	5.3	4	4.3	4.570	0.334
<b>Experience (Years)</b>								
< 10	11	55.0	12	31.6	38	41.3		
10 – 20	9	45.0	25	65.8	41	44.6		
> 20	0	0.0	1	2.6	13	14.1	10.293	0.036*
<b>Current Smoking</b>								
No	12	60.0	31	81.6	40	43.5		
Yes	8	40.0	7	18.4	52	56.5	15.998	<0.001*
<b>Income</b>								
Sufficient and save	6	30.0	22	57.9	51	55.4		
Sufficient	8	40.0	10	26.3	29	31.5		
Insufficient	6	30.0	6	15.8	12	13.0	6.022	0.198
<b>Virus C/B infection (and treatment)</b>								
No	3	15.0	10	26.3	0	0.0		
Yes	17	85.0	28	73.7	92	100.0	24.697	<0.001*

\* Significant at p<0.05; ns, non-significant at p>0.05

**Table (7): Association between the socio-demographic characteristics and total environmental score**

	Unsatisfactory (n=67)		Satisfactory (n=83)		Chi-Square	
	No	%	No	%	X <sup>2</sup>	P
<b>Age(years)</b>						
15 – 25	29	43.3	33	39.8		
26 – 35	16	23.9	34	41.0		
36 – 45	14	20.9	14	16.9		
More than 45	8	11.9	2	2.4	8.731	0.033
<b>Work hours</b>						
≤ 10	44	65.7	37	44.6		
> 10	23	34.3	46	55.4	6.640	0.010*
<b>Education</b>						
Illiterate	3	4.5	3	3.6		
Primary	3	4.5	1	1.2		
Diploma	55	82.1	56	67.5		
University	6	8.6	23	27.7	9.375	0.025*
<b>Marital status</b>						
Single	28	41.8	34	41.0		
Married	34	50.7	48	57.8		
Widower	5	7.5	1	1.2	3.976	0.137
<b>Experience (years)</b>						
< 10	35	52.2	26	31.3		
10 – 20	29	43.3	46	55.4		
> 20	3	4.5	11	13.3	8.139	0.017*
<b>Smoking</b>						
No	30	44.8	53	63.9		
Yes	37	55.2	30	36.1	5.46	0.019*
<b>Income</b>						
Sufficient and save	33	49.3	46	55.4		
Sufficient	23	34.3	24	28.9		
Insufficient	11	16.4	13	15.7	0.628	0.731
<b>Virus C/B infection (and treatment)</b>						
No	10	14.9	3	3.6		
Yes	57	85.1	80	96.4	5.992	0.014*

\* Significant at p<0.05; ns, non-significant at p>0.05

**Table (8): Association between the Socio-demographic characteristics and total practical score**

	Incorrect (n=38)		Correct (n=112)		Chi-Square	
	No	%	No	%	X <sup>2</sup>	P
<b>Age (years)</b>						
15 – 25	20	52.6	42	37.5		
26 – 35	10	26.3	40	35.7		
36 – 45	6	15.8	22	19.6		
More than 45	2	5.3	8	7.1	2.700	0.440
<b>Work hours</b>						
≤ 10	22	57.9	59	52.7		
> 10	16	42.1	53	47.3	0.311	0.577
<b>Education</b>						
Illiterate	1	2.6	5	4.5		
Primary	1	2.6	3	2.7		
Diploma	35	92.1	76	67.9		
University	1	2.6	28	25.0	9.836	0.02*
<b>Marital Status</b>						
Single	16	42.1	46	41.1		
Married	20	52.6	62	55.4		
Widower	2	5.3	4	3.6	0.249	0.883
<b>Experience (years)</b>						
< 10	22	57.9	39	34.8		
10 – 20	14	36.8	61	54.5		
> 20	2	5.3	12	10.7	6.38	0.041*
<b>Smoking</b>						
No	15	39.5	68	60.7		
Yes	23	60.5	44	39.3	5.179	0.023*
<b>Income</b>						
Sufficient and save	16	42.1	63	56.2		
Sufficient	14	36.8	33	29.5		
Insufficient	8	21.1	16	14.3	2.383	0.304
<b>Virus C/B infection (and treatment)</b>						
No	7	18.4	6	5.4		
Yes	31	81.6	106	94.6	6.118	0.013*

\* Significant at p&lt;0.05; ns, non-significant at p&gt;0.05

Table 9. Association between knowledge and total environment and practice.

	Poor (n=20)		Fair (n=38)		Good (n=92)		Chi-Square	
	N	%	N	%	N	%	X <sup>2</sup>	P
<b>Satisfactory Environment</b>								
Unsatisfactory	14	70.0	12	31.6	41	44.6		
Satisfactory	6	30.0	26	68.4	51	55.4	7.827	0.020*
<b>Positive Practice</b>								
Incorrect	9	45.0	13	34.2	16	17.4		
Correct	11	55.0	25	65.8	76	82.6	8.74	0.012*

Table 10. Association between the Self-Reported Symptoms of The Barbers with Working Hours and Years of Experience

	Work Hours/Day			Years of Experience		
	Mean ±SD	T	P	Mean ±SD	t	p
<b>Respiratory Problems</b>						
Tightness						
No (n=69)	9.7 ±1.9			12.7 ±6.3		
Yes (n=81)	10.0 ±2.1	2.429	0.016*	10.7 ±5.1	2.178	0.033*
Cough						
No (n=20)	9.6 ±2.0			11.8 ±4.2		
Yes (n=130)	10.7 ±2.2	2.105	0.037*	11.3 ±5.1	0.417	0.677
Whooping						
No (n=116)	10.0 ±1.9			12.6 ±5.6		
Yes (n=34)	10.2 ±2.1	0.529	0.597	11.5 ±5.0	1.031	0.304
<b>Allergy</b>						
Dermatitis						
No (n=67)	9.5 ±2.2			12.1 ±5.2		
Yes (n=83)	10.7 ±2.4	3.159	0.002*	11.3 ±4.8	0.978	0.329
Watery eye						
No (n=28)	10.3 ±1.8			11.9 ±5.6		
Yes (n=122)	10.0 ±2.0	0.513	0.609	10.3 ±4.5	1.617	0.108
Runny nose						
No (n=26)	9.6 ±1.9			12.8 ±6.2		
Yes (n=124)	10.2 ±1.9	1.346	0.180	11.5 ±5.5	1.072	0.286
<b>Musculoskeletal complaints</b>						
Back						
No (n=5)	8.6 ±0.8			14.7 ±5.9		
Yes (n=145)	11.6 ±2.7	2.226	0.028*	9.6 ±4.3	2.577	0.011*
Shoulder						
No (n=22)	9.1 ±2.4			13.2 ±6.1		
Yes (n=128)	10.9 ±2.8	2.839	0.005*	11.1 ±5.1	2.062	0.041*
Nail						
No (n=129)	10.0 ±2.0			11.9 ±5.4		
Yes (n=21)	10.3 ±1.7	0.644	0.521	11.7 ±5.8	0.156	0.876

## Discussion:

In the current study, barbers having a history of HCV and HBV infections represented relatively small percentages. This may be because barbers may be inadvertently exposed to their customers' blood and body fluids during shaving, increasing their risk of contracting HBV and HCV infections. These study percentages were less than that of a study done in **Ghana** by **Adobe et al. (2015)**, which found the history of HCV among the barbers was 14.5 %. In comparison, it was slightly more than above (0.5 %) for HBV and determined the prevalence of hepatitis B and C virus infections among barbers. A study was carried out in Egypt, **Gharbia Governorate** by **Shalaby et al. (2010)**, to assess knowledge, attitude and practices during haircutting and shaving. HBsAg was detected among 4.2% of barbers, and 12.3% of Anti-HC antibodies were detected. Moreover, it is lower than the 28 % of HCV seropositivity recorded by **Belbacha et al. (2011)** in a cross-sectional epidemiological study to evaluate the prevalence of HBV and HCV between traditional barbers and their clients in the **Rabat region, Morocco**. The difference in percentage rates could be due to the sample size and sampling techniques used.

In the present study, the highest percentage of the sample was the age group (15-25) years, but the lowest percentage was in the age group more than 45 years, and more than half of the participant was married. The highest percentage of the educational level was who was the secondary (diploma) school certificate. Half of them have working experience of 10–20 years. Also, more than half of them are current smokers. These findings agree with those of (**Hakim and Abdel-Hamid, 2019**) in **Ain Shams University, Cairo, Egypt**,

who found that 61% of the study participants were married, 48% had secondary education, and 67.5% were current smokers. These study findings are also supported by **Mahmood and Hassan (2018)** in **Mosul City, Iraq**, who found that 75% of subjects were married. The highest percentage of the educational level was 38.33% who were the secondary school certificate. These results matched those of **Aziz et al. (2016)** in **Islamabad**, who reported that the mean age of the barbers was  $34.4 \pm 12.2$ , years and 33 (26.2%) were educated to secondary school.

This study result revealed that the total knowledge for less than two-thirds of the study group was good and for slightly more than one quarter was fair knowledge regarding hazards exposure, and for a mode of transmission and their prevention of hepatitis HBV and HCV, in which most barbers recorded that the highest hazards' exposure was musculoskeletal disorders. In contrast, the least was work-related accidents. Similarly, most of them knew the modes of transmission of hepatitis HBV and HCV. However, minorities of barbers reported correct answers about a vaccine for HCV and taking antibiotics. This might be because most barbers had a respiratory, allergy, and musculoskeletal complaints and some of them have a history of HBV and HCV. These findings matched those of **Khairkhah et al. (2016)** in **Tehran**, where the results of a study barbers showed that most participants had a high level of knowledge about blood-borne HBV and HCV infections and their risk of transmission. This finding agreed with that of **Abuanja and Ahemd (2016)**, who conducted their study in **Sudan** and about blood disease and mentioned that 68% of them show the causes of hepatitis are a virus which 84% of them reported that the route of transmission in barbers' shops is the use of unsterile equipment, and 64% of them

clarified that prevention of transmission is by sterilization. These results were supported by those of (Ghiasi et al., 2008) in Sabzevar City, who highlighted that the association of knowledge results with their performance showed a good knowledge level. This study results are higher than those found in Islamabad by (Aziz et al., 2016). Who reported that 39% of the barbers had knowledge about vaccination of HCV, and 66% of the study group had good knowledge about blood diseases (hepatitis B and HIV). These results are higher than those of several studies carried out in Pakistan, Kharian City of Gujrat District representing 42% (Wazir et al., 2008), Rawalpindi and Islamabad (39.6%) (Waheed et al., 2010), Bahra Kahu, Islamabad (38%) and Mosul City (46.67%) (Mahmood and Hassan, 2018). The difference in percentage rates could be due to the differences in sample sizes.

Regarding the observed practices of barbers in the present study, the total practical level among the barber revealed that was nearly three-quarters of barbers have correct practice. As well, the results indicated that more than one-third of barbers were wearing protective clothing, slightly more than three-fifths of barbers washed their hands before attending each client, all the barbers except six of them cleaned instruments with disinfectant between clients, majority of them washed their tools shaving the clients, and less than half washed razors with tap water before use on a new client, also the majority of them washed razors with an antiseptic solution after every use, most of them used a new blade on new clients, and more than two-thirds of them used disinfectants for skin cuts. Similarly, most barbers disposed of used blades in a regular garbage system.

These study results are inconsistent with those of a study done, in Pakistan

which stated that all the barbers were using a new blade for each client (Ahmed, 2013). However, the study results are to the same extreme in agreement with those of Abuanja and Ahmed (2016), in Sudan, which mentioned that 75.8% cleaned instruments with disinfectant between clients, 60.2% washed their tools after shaving the clients, 72.0% washed razors with tap water before use on a new client, 96.2% also washed razors with an antiseptic solution after every use, 95.7% used a new blade on new clients, and 39.2% used disinfectants for skin cuts. On the other hand, these results contradicted with those of another study is by Beyen et al. (2012), which aimed at determining the knowledge, attitude and performance of barbers in Gondar, Ethiopia relation to job's environmental health, which showed that 86.38% of people in their study had appropriate health practice, (78%). Expectedly, the difference in prevalence rates could be due to the differences in geographical location.

In the present study, work-related symptoms experienced by the study barbers mentioned that the highest frequent complaint was musculoskeletal complaints as shoulder arm pain, followed by respiratory problems as cough. The least complaint was nail problems or discoloration. These findings matched with that of Hakim and Abdel-Hamid (2019), in Ain Shams University, Cairo, Egypt, who found musculoskeletal complaints (43.5%), watery eyes (31%), blocked, runny nose (30.5%) were commonly reported. In comparison, chest tightness (31.5%), cough (41.5%), and nail problems (35%) were widely reported every month. These findings agree with those of Khalaf et al. (2020) in Assiut Governorate, Egypt, who mentioned the health problems reported was chronic musculoskeletal pain (22.5%),

shoulder pain (17.2%), and wrist pain (16.6%).

The current study result revealed that the environmental condition of barbers' shops revealed that more than half of barbers have the satisfactory environmental condition. In the same way, more than two-thirds of barbers reported availability of air conditions at their workplace, most of them were wearing gloves with each client and had good lighting conditions. However, minorities of them were eating in an isolated place and having first aid and extinguisher. Those findings were supported by **Abuanja and Ahemd (2016) in Sudan**, who conducted a study to evaluate barbers' knowledge, attitude and practice regarding blood transmitted disease (Hepatitis B & HIV). They reported that the environmental condition of the barbers' shops was a good environment in the common space (86.7%). Also, their study attitude showed that they have good ventilation (96.7%), good light (96.7%), use of apron (83.3%) and storage place (96.7%). However, **Khalaf et al. (2020)**, in **Assiut, Egypt**, mentioned that first aid measures were available for only 15.2%.

The present study found significant associations between respiratory problems, skin allergy, and musculoskeletal complaints with working hours per day. This might be because those with respiratory issues, allergic skin complaints, and musculoskeletal symptoms had longer mean working hours per day than their counterparts. Moreover, a significant association exists between respiratory problems and musculoskeletal symptoms with complaints with years of experience. This might be because those with respiratory and musculoskeletal symptoms had longer mean job duration than their counterparts. Those findings were supported by **Hakim and Abdel-Hamid (2019) in Egypt**, who

mentioned significant associations between the chest and musculoskeletal symptoms with job duration. Moreover, a significant association between allergic skin symptoms and musculoskeletal complaints with working hours per day. The present study also portrays that an association was detected between the socio-demographic characteristics (experience years more than 20 years) and good knowledge. This result was in the same line with **(Almasi et al., 2016)**, which mentioned that the average knowledge level regarding parameters such as work experience showed a statistically significant difference.

### **Conclusion:**

Based on the present study's findings, it was concluded that: the minority of them have a history of HCV and HBV. Moreover, slightly more than three-fifths of barbers have good knowledge about hazards and hepatitis B and C in the mode of transmission. However, a few of them identified the prevention of HCV. Proper environmental conditions and safe practices of the studied barbers were still insufficient. Furthermore, among the most reported were musculoskeletal complaints, followed by respiratory problems. Significant associations were also detected between respiratory problems, skin allergy and musculoskeletal problems with working hours per day and years of experience.

### **Recommendations:**

1. Initiate health education campaign focusing on changing the behaviour of barbers to maintain their safety.
2. Obligatory taking of Anti-HBV vaccine for all barbers
3. Pre-employment health education programs should be provided for Egyptian barbers' and maintenance of

barbers-shops should be checked regularly.

4. Establishment and regular checks of maintenance of the barbers' shops should be initiated and supervised by governmental authorities.

**Limitations:** Barbers may have been aware that they were being observed, and may therefore have modified their practices, numerous Egyptian barbers are small roadside establishments, and absence of governmental listing of the numbers or locations of Barbers.

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