ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at: www.ijmacr.com

Volume – 5, Issue – 5, September – October - 2022, Page No. : 99 - 105

Bacteriological Hazards at Some Barbershops in Jeddah-KSA

[1]Mohammed Solaiman Malki, Allied Medical Operation Manager- Makkah Healthcare Cluster

Corresponding Author: Mohammed Solaiman Malki, Allied Medical Operation Manager- Makkah Healthcare Cluster

How to citation this article: Mohammed Solaiman Malki, "Bacteriological Hazards at Some Barbershops in Jeddah-KSA", IJMACR- September – October - 2022, Vol – 5, Issue - 5, P. No. 99 – 105.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: As public services that are easily accessible for all community members, potential pathogens can be spread via barber shops including bacteria, fungi, and viruses.

Objective: To determine the bacteriological hazards of barber shops by To identify potential bacteria on the surfaces of barber shop equipment and materials, such as combs, brushes, shaving machines, clippers, customer aprons, shelves and towels.

Methodology: Cross sectional study design was utilized to assess the bacteriological hazards of barber shops.

Setting: Barber shops at South Jeddah.

Subjects: All barbers within South Jeddah area who were willing to participate in the survey and whose barber shops have the needed materials and equipment.

Results: A total of 32 bacterial isolates were isolated from the barbershop's materials and equipment. The overall prevalence of pathogenic bacteria was Staphylococcus aureus 12(37.5%), E. coli 9 (28.1%), P. aeruginosa 7 (21.9%) and Klebsiella spp. 4(12.5%). The most common microbial hazards that found to be associated with equipment were S. aureus on shaving machines 10 (40.0%), followed by E. coli on shelves 8 (32.0%) and P. aeruginosa with customers' aprons was 6 (24.0%) . Klebsiella spp. was more associated with shelves, brushes and customer aprons respectively 3(12.0%). There was a significant association between type of bacteria isolated from materials and the used equipment at $\chi 2 = 34.810$, df = 21, P =0.011. Although, there was no significant difference in the number of the bacteria strains isolated among shops ($t = 1.31$, $P > 0.05$).

Conclusion: Performing barbering procedures particularly in South Jeddah is associated with risks of bacterial infections both to the clients and the barbers through contaminated barber shops' materials and equipment. In this regard, barbershops in South Jeddah could serve as potential reservoir for potential bacterial pathogens for transmission to the general community. Therefore, health education programs are needed for all barbers for eliminating the transmission of infections.

Keywords: Barbershops, infections, Bacteriological hazards

Introduction

Barbering procedures as public services may put customers as well as barbers at risk of acquiring infections or injuries[1]. These health risks vary depending on the nature of the service, the tools and equipment that are used, the health status of the clients and service providers as well as the infection control procedures[2]. Accordingly, the used tools and equipment may clearly be associated with bacterial, viral, fungal or even parasites[3]. Some authors believe that some barbers' shops use shaving tools without enough sterilization[4].

In some countries shared shaving equipment in barbershops is commonly practiced. Accidental scratch by sharp equipment in barbershops may create an opportunity for microorganisms, mainly HIV and other blood borne pathogens, to enter into the body causing serious health problems to the clients as well as for barbers[5].

It is believed that any service with the potential to break the skin's surface can be associated with infections which can then be transmitted to and between clients if proper infection control procedures are not implemented[6]. Therefore the aim of this study was to identify possible bacterial organisms associated with barbering practices.

Barbering practices include hair cutting, face and scalp massaging, nail trimming, pedicure, manicure and shampooing/dying of hair, draping, finger waving, hair styling, shaves and tapering. All these are associated with significant health risks of acquiring communicable diseases and skin conditions in which the barber and the client are exposed to[7].

Using proper safe shaving tools is the key to providing effective barbering services. These tools include knives, blades, combs, barber chair, hair clipper, barber cloth or wrap, hairbrush, barber neck paper/tape, barber mirror or back mirror, hair cream, hair dryer, hair blower or blow drier, shaving razor, hair scissors and shave brushes. Moreover, hair gel, shaving oil and moustache wax are also recommended[8].

Since the barber tools are shared, there is significant risk of infections through their tools and materials therefore, hygiene practices must be followed to prevent spreading of diseases[9]. These pathogens are transmitted by simple contact. Other pathogens likely to be transmitted through barbers include viruses such as Hepatitis B, C and HIV[10]. Hepatitis B is the easiest to transmit and the most common way of transmission is contact with the blood of an infected person. The transmission occurs through cut or damaged skin as in eczema and other sickness of the skin, internal parts of the mouth and nose[11].

According to Aliye et al, various health hazards, including communicable diseases and skin conditions are associated with barbers' profession. Barbering practices have also been associated with diseases such as allergy[12].

Ibrahim et al noticed that Infections associated with the barbering are contributed by lack of knowledge and awareness among barbers about health hazards associated with their profession and this may contribute significantly to the spread and transmission of infectious agents among clients and the barbers. He reported that there is a significant difference in the level of awareness among barbers in respect of age; educational status and duration of working and a significant difference ($p < 0.05$) in the awareness of those with formal education. He found out that Age group (15-25) had a better knowledge about the health hazards than barbers in age group[13].

The microbial pathogens of focus in this study were those bacteria that are associated with the skin conditions. This is pathogens when the barber doesn't disinfect or sterilize the tools before or after shaving can cause skin problems. Infectious skin and blood diseases have been found to be associated with barbers practices include Staphylococcus aureus, Streptococcus sp. Enterobacterium sp. Enterococcus spp, Pseudomonas spp, E. coli, Klebsiella spp. These pathogens are transmitted from one individual to another by direct contact or indirectly through contaminated objects such as combs, brushes or razors without proper disinfection[14].

Methodology

The study was conducted among barbers and their shops at South Jeddah – Saudi Arabia. A convenient sampling technique was adopted. Samples were collected from seven barber shops within South Jeddah- KSA. Barbershops' utensils such as combs, brushes, shaving machines/clippers, apron, towels and shelves were swabbed with a moistened sterile cotton swab. After taking each swab, the swab stick was placed back into the casing to avoid contamination and was labeled appropriately. All the samples collected were transported without delay in cool box to Laboratories and processed using standard methods. Briefly, primary isolation was done on selective and differential microbial media and identification of contaminating microorganisms was done using Gram staining, microscopic examination and biochemical tests.

Results

The bacteria isolated from the seven barber shops were; Pseudomonas aeruginosa, Staphylococcus aureus, Escherichia coli and Klebsiella sp. These bacterial pathogens contaminated shelves, brushes, apron, towels, combs and shaving machines from all the seven shops were sampled.

Bacteria pathogens isolated and the type of infestation in barbershops

A total of 32 bacterial isolates were isolated from the barbershop's materials and equipment. The overall prevalence of pathogenic bacteria was Staphylococcus aureus 12(37.5%), E. coli 9 (28.1%), P. aeruginosa 7 (21.9%) and Klebsiella spp. 4(12.5%). (Table 1)

The most common microbial hazards that found to be associated with equipment were S. aureus on shaving machines 10 (40.0%), followed by E. coli on shelves 8 (32.0%) and P. aeruginosa with customers' aprons was 6 (24.0%) .

Klebsiella spp. was more associated with shelves, brushes and customer aprons respectively 3(12.0%). There was a significant association between type of bacteria isolated and the used equipment at $\chi 2 = 34.810$, df = 21, P =0.011. Although, there was no significant difference in the number of the bacteria strains isolated among shops ($t = 1.31$, $P > 0.05$).

Table 1: Prevalence of Bacteria pathogens isolated from barbershops (n=7)

Bacteria isolated	Prevalence	%
Staphylococcus aureus	12	37.5%
E. coli	9	28.1%
P. aeruginosa	7	21.9%
Klebsiella spp.	4	12.5%

Discussion

The current study revealed that barbershops in South Jeddah, pose a risk of microbiological contamination namely Pseudomonas aeruginosa, Staphylococcus aureus, Escherichia coli, and Klebsiella spp. This agrees with a similar study done in Ethiopia on microbiological

hazards in barbershops in a university setting which showed that both bacteria and fungi were associated with barbershops[9].

In this survey at least one pathogenic bacteria was isolated from all the barbershops. These pathogenic bacteria were as follows, 28.6 % (2shops) of the barbershops had four pathogenic bacteria identified, and 42.9 %(3shops) had two pathogens while another 42.9 %(3shops) had only one of the four pathogenic bacteria isolated. Although, there is one shop was free of microbes.

The most prevalent organism according to the this study was Staphylococcus aureus 68.0% followed by E. coli 56%, P. aeruginosa 56.0% and least was Klebsiella spp at 44.0%. The most dominating organism according to the study was Staphylococcus aureus. The dominance of these particular pathogenic bacteria could be attributed to poor sanitary and unhygienic conditions on the materials and equipment as well as barbershops in general. This is as a result of multiple users of the equipment and materials in barber shops. According to Ling and Coulson (9) the most prevalent pathogenic bacteria associated with barber shops include S. aureas, E. coli, pseudomonas spp and Klebsiella spp. The prevalence of S. aureus was the highest based on the findings of this study which agrees with a similar study done in Nigeria about microbiological hazards associated with barber shops that indicated Staphylococcus Aureus being the most dominating organism[9].

According to this survey at least one of the four target organism in the study was isolated and identified from the six materials that were swabbed. This agrees with a similar study by Mbajiuka et al whose results showed that out of the target organism, one of the five bacterial and five fungal species were isolated from the materials that were swabbed[1]. Concurs with the findings of this study where from the swabs collected on the material's and equipment's surfaces he was able to isolate and identify bacterial pathogens that were the main contaminants from various barber shops. Surfaces have always been known to be contaminated with organisms according to the study that performed by Stanley et al[5].

From the results, Staphylococcus aureus 12(37.5%), E. coli 9 (28.1%), P. aeruginosa 7 (21.9%) and Klebsiella spp. 4(12.5%). Among all barbershops' tools and equipment, the most prevalent bacteria was Staphylococcus aureus, followed by E. coli and P. aeruginosa and the least prevalent was Klebsiella spp which is in agreement with Zahraoui-Mehadji et al[15].. On the other hand Enemuor et al where their study found out that barbershop's materials and equipment were contaminated by both pathogenic gram negative and gram positive bacteria. They found out that the most prevalent bacteria was pseudomonas aeruginosa, and the least prevalent was Klebsiella spp which disagrees with the findings of this study where Staph aureus was the most prevalent[16]. According to Rebekar , E. coli was identified to be the most common organism among all the swabbed shelves sampled[17].

According to the current study most of the barbers in South Jeddah place their materials and equipment such as combs, brushes and shaving machines and clippers on the benches and shelves after shaving or attending to a client which exposes them to more contamination with pathogenic bacteria from within and without the barber shop. Therefore, the use of these barber shops materials and equipment that already have been contaminated with pathogenic bacteria expose the barbers as well as the community in general to pathogenic bacteria which by

time pose a high risk of infection to the clients and barbers. This observation agrees with a similar study by Sidney who indicated that most of the barber shops shelves are used for a similar purpose and little or no attention has been given to these materials18. Due to lack of attention, materials are exposed to dust and other form of dirt and more severely infestation with pathogenic bacteria which pose a risk of infection to the clients and the barbers[18]

During this study, it was been noticed that brushes are used to rub off smallest hairs that steak to the customer's cloth and on the skin surface after and before shaving. The study has found out that these brushes are contaminated with pathogenic bacteria. The most dominating pathogens were staphylococcus aureus, Klebsiella spp and P. aeruginosa. Presence of the pathogenic bacteria on barber shop brushes according to the study can be attributed to this common practice of wiping off little hairs that steak to the customer's cloth and on the skin surface after and before shaving. This practice by barbers makes it easy for bacterial pathogens to be transmitted from one customer to the other and in the long run pose a risk of infection to the customers and the barbers due to poor hygiene and sharing of one brush among different clients within the facilities. This study goes with a similar study by Janjua et al who reported that brushes in barber shops is one of the major instrument which posed a risk of infection to clients and the barbers by pathogenic bacteria[19].

The manner in which this material is being used according to numerous studies allows pathogens to be transmitted from one customer to the other[11].

Combs, Shaving machines and clippers, customer aprons and face towels were all found to be infested with pathogenic bacteria which in general pose a risk of causing and transmitting infection to clients and the barbers. This findings agree fully with Wazir et al who reported in his study that contamination of towels, brush, apron, clippers, combs and shelves if used on an infected customer would certainly spread pathogenic bacteria to other clients. This risk of exposure to pathogenic bacteria was as a result of poor sanitary practices[3].

Infection from barber shops is not only caused by contaminated materials and equipment but also the exposure to chemical and thermal hazards which cause allergic related reaction. We noticed that the used chemicals such as Dettol, Methylated spirit, Bleach, Ethanol, savlon and surgical spirit in barber shops to disinfect the equipment and materials during shaving may expose the barbers and the customers to allergy . This is in agreement with Aliye who found out that dermatitis caused by allergic contact is a response to allergen. People who are allergic to these chemicals become ill of dermatitis which is as a result of direct contact[12].

According to Amemiya the increased use of disinfectants such as shampoo and alcohols containing chemicals pose an occupational health risks to barbers', hairdressers and the clients which according to him could be attribute to lack of appropriate measures such as general window ventilation and indoor ventilation to prevent this exposure. As a result these chemicals lead to allergies that cause irritation to the nostrils leading to flu and skin rashes[20].

Lee and Nixon Argued that allergies in barber shops are caused by the usage of glove in barber shops and dermatitis can occur at the site of primary contact and secondary sites for clients who exposed to powder rubber gloves and is allergic to it may not only get dermatitis on their hands while wearing and shaving ,

but also dermatitis can be expressed on the face or neck of the client while shaving[21].

The practice of barbering has continued to expose its practitioners and their customers to multiple infectious diseases. Different microbiological reports have supported this view that barbershops are contributing to the spread of infectious diseases and allergic conditions including scabies, ringworm infection and dermatitis[22].

Conclusion and Recommendations

This current survey confirms that barbering practices particularly in South Jeddah present the risks for bacterial infections to both clients and the barbers through the use of contaminated materials and equipment. In this regard, barbers from this geographical area could serve as potential core group for direct and indirect infectious disease transmission among general population. This should be of great concern and calls for prompt and effective control of infections in barber shops and a comprehensive approach has to be adopted with the involvement of all relevant sections and groups. The results of our study clearly indicate that much effort has to be put in educating clients of barbershops and service providers about hazards inherent in barbering practice and the importance of adopting various preventive practices.

Accordingly, enough attention should be given to hygienic practices in barbershops through routine supervision and monitoring by agencies of the government. In addition, practical-oriented training on how to carry out disinfection with emphasis on the use of proper hygiene practices and potent disinfectants should be organized for the barbers. Additionally, hygienic health education programs for raising awareness should be carried periodically for barbers as well as for the entire community members. All these can be organized through the barbers' union using peer education approach.

Acknowledgements

Many thanks and appreciations for all barbershops at South Jeddah for their efforts and participation in the current survey.

References

1. Mbajiuka CS, Obeagu EI, Ochei KC, Iheke SO: Evaluation of Microbial Contamination of tools used in hair dressing salons in Michael Okpara University of Agriculture, Umudike, Abia State. IOSR J Dent Med Sci, 2014. 3(1): 22-27.
2. Stout JE, Gadowski LB, Rath S, Alspaugh JA, Miller MB, Cox GM:. Pedicure-associated rapidly growing mycobacterial infections. Clin Infect Dis. 2011; 53(1):787-792.
3. Wazir MS, Mehmood S, Ahmed A, Jadoon HR (2008). Awareneess among barbers about health hazards associated with their profession. J. Ayub Med. Coll. Abbottabad, 20: 35-38.
4. World Health Organization (2006). The global epidemiology of infectious diseases. Cited from the following site: www.who.org/int.
5. Stanley H.O., Oba T.T., Ugboma C.J. Evaluation of microbial contamination of combs and brushes in beauty salons within the University of Port Harcourt, Rivers State. Nigeria. Arch. Curr. Res. Intern. 2019;16:1–7
6. Hollund BE, Moen BE, Lygre SH, Florvaag E, Omenaas E. Prevalence of airway symptoms among hairdressers in Bergen, Norway. Occup Environ Med. 2001;58:780.
7. Wong RH, Chien HL, Luh DL, Lin WH, Wang YC, Cho CY. Correlation Between Chemical-Safety Knowledge and Personal Attitudes Among

Taiwanese Hairdressing Students. Am. J. Ind. Med. 2005;47:45–53.

8. Khumalo NP, Jessop S, Ehrlich R. Prevalence of cutaneous adverse effects of hairdressing: A systematic review. Arch Dermatol. 2006;142:377–83.
9. Ling TC, Coulson IH. What do trainee hairdressers know about hand dermatitis? Contact Dermatitis. 2002;47:227–31.
10. Murtagh MJ, Hepworth J. Hepatitis C in the workplace; a survey of occupational health and safety knowledge and practice in the beauty industry. Aust. N.Z.J. Public Health. 2004;28:207–11.
11. Abdul Khaliq A, Smego RA. Barber shaving and blood-borne disease transmission in developing countries. SAMJ. 2005;95:94–5.
12. Aliye, M., Sukran. K., Ayhan, G., Melda, T., Lutfiye, K. Occupational health risks of barbers and coiffeurs in Izmir. 2009; 13(2): 92–96.
13. Ibrahim, M., Opara,W.E, Tanimowo, T. Knowledge of HIV/AIDS, infection prevention practices and accidental skin cuts in barbering saloons in Sokoto, Nigeria. Nigeria Medical Practitioner. 2007; 51 (6):123–127
14. Baakrim MZ, Laraqui S, Laraqui O, El Kabouss Y, Verger C, Caubet, et al. Infectious risks associated with blood exposure for traditional barbers and their customers in Morocco. Sante. 2002;14:211–6.
15. Zahraoui-Mehadji M, Baakrim MZ, Laraqui S, Laraqui O, El Kabouss Y, Verger C: Infections risks associated with blood exposure for traditional barbers and their customers in Morocco. Sante, 2004; 14: 211-216.
16. Enemuor SC, Atabo AR, Oguntibeju O: Evaluation of microbiological hazards in barbershops in a university setting. Sci Res Essay 7(9): 1100-1102. 2012.
17. Rebekar, E.G. Infection control in barber shops. Infectious Disease Epidemiology Section in Louisiana, Office of Public Health.2010; 1-3.
18. Sidney, C. T. Practice and Science of Standard Barbering. 3rd ed., Lewis, London 1951; 32-40.
19. Janjua, N.Z, Nizamy, M.A .Knowledge and practices of barbers about hepatitis B and C transmission in Rawalpindi and Islamabad. Pak.Med j. 2004; 54 (3):116-119.
20. Amemiya K. Bacterial contamination of hair washing liquids.1994; 68(2):177-82
21. Lee A, Nixon R. Occupational skin disease in hairdressers. Australasian Journal of Dermatology. 2001;42:1–8.
22. Janmohammadi F., Ghodous F., Daem R., Kayvan F. Evaluation of bacterial and fungal contaminations in barbershops in Kamyaran city, Iran-Summer 2015. Inter. J. Medical Res. Health Sci. 2016;5:368–371