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The relationship between barber knowledge an microbial infections from device used of beauty salons in Gonabad, Iran

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Abstract

Different factors increase risk of disease transmission in beauty salons and the most of them are personal knowledge which is related to literacy level, age, professional satisfactory and work experience of barbers. The knowledge level can affect on hygienic level of devices and work place. Hence the main purpose of this study was evaluation of relationship between personal knowledge and microbial infections from used device in Gonabad beauty salons in Iran. In a cross-sectional study, 73 beauty salons were evaluated. Data were collected using an environmental health check list, a valid and reliable questioner about personal information of barbers, and results of microbial cultures from device involved. The collected data were analyzed with SPSS16 software and ANOVA test. The results showed that in barbers with low knowledge (23.3%) who had low literacy level (86.7%), low job satisfactory (20%) and low work experience (34%) microbial infections were higher than others. Non Staphylococcus aurous and Non Candida albicans were the main bacterial and fungi contaminations respectively. Comb and tweezers were the most infected devices. According to these results, promotion of barbers knowledge, training on proper disinfectant methods, respect to health conditions, and avoid of unhealthy behaviors in beauty salons were suggested.

Keywords: Knowledge, Beauty Salon, Barber, Device, Infection, Disinfection, Gonabad, Iran

Introduction

A large proportion of population are receiving services from barbers in many community. Barbering profession and its work place may be a potential factor for transmission of various infections to clients [1-3].

There are strong reasons that beauty salons are one of the dangerous places in transmission of diseases. Therefore respect to personal, device and shop health is necessary. Barbering is associated with use of combs, towels, knives and blades etc. [4,5], if these devices are not appropriately disinfected lead to transmission of a range of infections, which include fungal infections, infestations of head louse, scabies, staphylococcus infection, hepatitis B and C,

HIV and etc [4,6,7]. Negligence during the use of sharp instruments may be a risk factor for blood. Borne infections are causing serious health problems for both the barbers and clients [5,6]. Due to using makeup and applicators belonged friends and their families, chance of facial infection among women, especially young women, increases. Because barbering device and make up easily be contaminated by public use of them and this function provides a suitable environment for the growth of pathogenic microorganisms [8].

Microbial infection is a cause of morbidity and mortality in man, particularly in developing and underdeveloped areas associated with poverty and overcrowding. Many infectious diseases in developing countries ,such as Pakistan, India and some African countries, are preventable and treatable, but they are still a risk factor for human health [5,6].

For infection control in beauty salons, personal knowledge is very significant in barbers and customers health. Unknowledge of barbers to essential hygienic guide lines, lack of using private barbering device, unsuitable and unhygienic beauty salon, and insensitivity of clients to hygienic guidelines are notable points that should be regarded in developing countries [4].

So far several studies conducted in this field. For example, Enemuor et al in their studies found presence of five bacterial and six fungal species in hairdressing and beauty salons in Anygba, Nigeria [9]. Also it has been cleared that beauty salons waste water included microorganisms of Staphylococcus aureus,Pseudomonas aeruginosa, Escherichia coli, Bacillus sp. and Klebsiella sp. with S. aureus occurring were isolated [10]. Study of "Incidence of human skin pathogens from cosmetic tools used in beauty salons from different areas of Lahore, Pakistan" has showed that the percentage of Staphylococcus aureus in tools (100% in sponge, 100% in brush, 88% in wax) was higher than Pseudomonas aeruginosa (69.6% in sponge, 81.8% in brush and 73.5% in wax), while, counts obtained for fungus was 51.5% in sponge, 30.3% in brush and 20.5% in wax [8]. According to results of Hazrati et al in beauty salons only 5.2% of customers used personal shaving kits and positive results of microbial cultures were significantly higher in barbers with low level literacy who couldn't follow the standard method of tools disinfection [11]. Results these researchers showed that barber knowledge is an important factor promoted by literacy, job satisfactory, work experience, professional training and others. Hence for emphasizing on increasing knowledge of barbers, this study was performed to find the relationship between personal knowledge and microbial infections from used device in Gonabad beauty salons in Iran.

Method

This research was a cross-sectional study conducted on 73 beauty salons in Gonabad city in Iran. Sampling was performed by census method. Especial cods approved by the ethical committee was respected. Inclusion criteria was all of beauty salons recognized and documented by environmental health inspectors. Exclusion criteria was all non-recorded beauty salons by environmental health inspectors.

Personal information of barbers (age, work experience, literacy level, knowledge level to infectious diseases and disinfectant solutions, job satisfactory, and hand usually used) obtained by a questioner that its reliability and validity was approved by some experts in Gonabad university of medical sciences. Judgment about healthy or unhealthy criteria of beauty salons were evaluated by checklist of beauty salons (Act 13 related to eating, drinking and cosmetic items approved by Parliament). To determine the types of presented microorganism, comb, apron, scissors, tweezers and blade were sampled with a humidified sterile cotton swab. All collected samples were transported to the laboratory for culture according to standard method. Different microbial media were used for especial identification of bacterial and fungi contaminations. For only growth of Staphylococcus Aureus, 6.5% salt was added to culture media. After culturing sample on

especial media, prepared samples were held in an incubator with temperature of 370C for 24 h. Darken or unlearned media after this time was a positive symbol for the bacteria presence. Gram stain, Catalysis test and coagulase test were used for especial determination of Staphylococcus Aureus [11]. For statistical analysis, Analysis of variance (ANOVA) using SPSS 16 software and Chi-square test was applied. P-value<0.05 was considered for significance level.

Results

Personal information of 73 barbers, with age range of 21-52 years, showed that low knowledge (23.3%) , low literacy (86.7% diploma and below), low job satisfactory (20%) and low work experience (34%) were led to higher microbial infections. Although, results of Chi-square test did not show any significant relationship between personal information and microbial test results, except literacy level (Table 1).

Bacterial infection (13%) and fungi infection (24%) belonged to less than 30 years. Results from hand usually used showed that amount of bacterial and fungi infections were 8.2% and 21.32% respectively between right hand barbers (Table 1).

Obtained results from devices involved

Table 1 *The relationship between personal information and microbial infections in beauty salons*

Personal information		Bacterial infections				Sig.	Fungi infections				Sig.	Total number
		Negative test		Positive Test			Negative test		Positive test			
		N	%	N	%		N	%	N	%		
Age (years)	Below of 30 years	40	87.00	6	13.00	0.079	35	76.00	11	24.00	0.549	46
	30 years and above	27	100.00	0	0.00		23	85.18	4	14.82		27
Work experience (years)	Below of 10 years	47	88.67	6	11.33	0.179	43	81.13	13	18.87	0.186	53
	10 years and above	20	100.00	0.00	0.00		15	75.00	2	25.00		20
Literacy level	Below of diploma	17	74.00	6	26.00	0.001*	10	43.47	13	56.53	0.001*	23
	Diploma and above	50	100.00	0	0.00		48	96.00	2	4.00		50
awareness level to infection	High	45	93.75	3	6.25	0.406	41	85.41	7	14.59	0.125	48
	Low	22	81.48	3	18.52		17	68.00	8	32.00		25
job satisfactory	High	32	94.11	2	5.89	0.679	28	82.35	6	17.65	0.772	34
	low	35	89.74	4	10.26		30	76.92	9	23.08		39
Hand	Right hand	56	91.80	5	8.20	1.000	48	78.68	13	21.32	1.000	61
	Left hand	11	91.60	1	8.40		10	83.30	2	16.70		12

*P-value <0.05

showed that in comb and tweezers, fungi infection (20.55%) was higher than others. But bacterial infection (13.7%) in scissors was higher than others (Table 2).

According to results of Table 3, non Staphylococcus aurous was the main bacterial contamination isolated from used devices. The causes of fungal contamination included Dermatophyte (Microsporumnanum), non Dermatophyte, Candida albicans and non-Candida albicans.

Check list of barber workplace showed that the most of beauty salons were rental

Table 2 *The relationship between microbial infections and devices involved*

Devices involved	Bacterial infections				Fungi infections				Total number
	Negative test		Positive test		Negative test		Positive test		
	N	%	N	%	N	%	N	%	
Comb	67	91.78	6	8.22	58	79.45	15	20.55	73
Apron	70	95.90	3	4.10	70	95.90	3	4.10	73
Scissors	63	86.30	10	13.70	62	85.00	11	15.00	73
Tweezers	68	93.00	5	7.00	58	79.45	15	20.55	73
Blade	68	93.00	5	7.00	62	85.00	11	15.00	73

Table 3 *Species of microbial infections*

	Details of biological test	N (%)	Total number
Bacterial infectious	Staphylococcus Aureus	1(1.36)	73
	Non Staphylococcus Aureus	4(5.47)	73
	Negative germ bacteria	3(4.1)	73
Fungi infectious	Dermatophyte (Microsporumnanum)	3(4.1)	73
	Non Dermatophyte	10(13.69)	73
	Candida albicans	7(9.5)	73
	Non Candida albicans	11(15)	73

Table 4 *Study of health condition in beauty salons according to environmental health indexes*

Environmental Health index	Health condition						Total number
	Good		Acceptable		Unacceptable		
	N	%	N	%	N	%	
Personal health index	28	38.45	30	41.00	15	20.55	73
Work dress cleaning	28	38.45	30	41.00	15	20.55	73
Work place cleaning	28	38.45	30	41.00	15	20.55	73
Building health	34	46.50	39	53.50	-	-	73
Hygienic level of Instrument	33	45.20	32	43.83	8	10.97	73
Toilet	28	38.35	7	9.58	38	52.07	73
Correct disinfectant application	30	41.00	18	24.65	25	34.35	73

buildings (55%).Personality health indexes of barbers (health medical card, working dress and work place cleaning) were reported in good and acceptable level and only 20.55% of them were unacceptable (Table 4). According to obtained results, hygienic level of tools and devices in beauty salons (including vitrine, cabinet, working table, primary helps box and fire extinguisher) was also suitable and only 10.97 % of them were unacceptable (Table 4). But both condition of work place and work dress cleaning were not acceptable in some barbers, and also significant numbers of beauty salons were lack of toilet.

Discussion

The study was performed to demonstrate level of knowledge among barbers regarding health hazards associated with their profession. Obtained results from this study showed that low knowledge ,promoted by low literacy, low work experience, low job satisfactory and low ages, was related to higher microbial infection in Gonabad beauty salons, although, results of Chi-square test did not show any significant relationship between personal information and microbial test results, except literacy level.

According to Wazir et al results, there was significant difference in level of knowledge among barbers in respect of age, literacy level and work experience. Barbers in age group (15–25) had better knowledge about the health hazards than those in age group (26–50). High knowledge about barbering health hazards was obtained in barbers attended formal school (42%) [12]. Also conducted studies in Birjand and Ardabil cities in Iran have confirmed that literacy level of barbers is an effective factor for promotion of knowledge level among barbers[13,14]. Comparison of our results with similar results in other places in Iran showed that infection amount in Gonabad beauty salons was less than other places [14-16]. In this study, the most infected device to bacterial infections (13.7%) was scissors and amount of fungi infectious (20.54%) were higher in comb and tweezers. But, according to the Hazrati et al results, amount of bacterial infections in comb was 58.3% [11]. Many researchers have reported that unknowledge to correct disinfectant, job unsatisfactory, and illiteracy is main reason of used devices contamination, because unknowledge barbers added only a few drops of antiseptic solution to a cup of water, then dipped the device in it for two to three seconds or only washed the device with few drops of very diluted antiseptic solution and dried with dirty towel. This practice cannot be considered sufficient for microbial diseases control [17, 18]. Therefore use new or private device for every customer is a good practice which should be encouraged [3,7]. According to Honarvar results was cleared that only 68 persons (55%) known correct hand washing, 8-11% of them known correct process of device disinfection by disinfectants and alcoholic heater. Oven or autoclave devices were not observed in any beauty salons. Also 60% of beauty salons lacked any booklet, poster and structure about of infection control. Knowledge number of these barbers, before and after training and education, was 9.28 and 12/73 (from 13) respectively. Obtained results from this study showed that training and education have an effective role on infection control [19]. Due to unknowledge about diseases related to building, health condition in many Gonabad beauty salons wasn't acceptable and some of them lacked sanitary toilet and favorable ventilation. According to study of Rohi et al in shiraz respiratory status of barbers wasn't satisfactory, therefor using favorable ventilation, mask, glove, and don’t using dangerous cosmetics have been suggested [20].

Conclusion

With regard to low Literacy and knowledge levels of barbers in the majority of beauty salons, it is necessary to be done education of correct antiseptics application, use of new or private devices for every customer, correct disposal of barberry wastes and increasing informal inspection of workplace. Also proper using suitable antiseptic solution and avoid of unhealthy behaviors in beauty salons

is necessary. Equipment should be carefully cleaned at least once a day and immediately after contamination with blood. A fresh disinfection solution should be prepared daily and the container carefully cleaned before refilling. Oven and autoclave sterilizers are the most effective tools of sterilizing equipment. It is able to reduce microbiological and other potential hazards associated with the services of hairdressing and beauty salons in the country. The government should establish regulations, guidelines and best practices for salons working in the country. In the end, the notable limitation of this study was the lack of study housing barbering shops and diseases history of barbers. Therefore it is suggested these barbering shops altogether with staffs' diseases history, before and after barbering, were evaluated.

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Contributions

Study design: SA, ACh, MCh
Data collection and analysis: SAS, ACh
Manuscript preparation: MCh, ACh

Conflict of interest

"The author declare that they have no competing interests."

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