

## Handwashing and barrier practices among Cameroonian dental professionals

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### Abstract:

**Objective:** To assess handwashing and barrier practices among Cameroonian dental professionals. **Materials and Methods:** A questionnaire-based cross-sectional study of Cameroon dental professionals was conducted in the second half of 2009. **Results:** A total of 41 dental professionals were recruited. Infection control activities in the clinic were supervised mainly by 31% of dentists and 38.6% of dental therapists. Less than half of the respondents reported good handwashing practice. More than half (63.4%) wash their hands with running water and liquid soap and 63.9% dry their washed hands with towel in the clinic. Facemasks and eye glasses were the barriers most commonly used by the respondents. **Conclusion:** Deficiencies existed in handwashing and barrier practices among the studied Cameroonian dental professionals. Infection control guidelines was also lacking in majority of the dental clinic where the studied dental professionals were recruited. The introduction of mandatory continuing education on handwashing and barrier practices may improve compliance with the recommended standard.

**Keywords:** Infection control, handwashing, gloves, dental professionals, Cameroon

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### Introduction

Infection control is a component of dentistry that has undergone tremendous changes since the discovery of *human immunodeficiency virus* (HIV). Compliance with guidelines on infection control in dentistry, formulated by the Center for Disease Control, is considered proper infection control practice (1). Handwashing and barrier usage are recognized components of infection control in the medical and dental healthcare delivery (1). Handwashing is the first step in achieving infection control in dentistry and during other surgical procedures. In dentistry, handwashing's role in interrupting the transmission of microorganisms is important as hands are usually exposed to the site of operation. Achieving an improvement in hand hygiene practices, with the ultimate goal of promoting a strong patient safety culture, was the main objective of the First Global Patient Safety Challenge, launched by the World Health Organization (2).

Dental care professionals are at high risk of cross-infection while treating patients because numerous infective agents present in dental practice can easily be transmitted by blood or saliva via direct or indirect contact, droplets, aerosols, or contaminated instruments and equipment. Droplets and aerosols, which is mode of cross infection in dentistry, is

generated by the use of rotary handpieces, air-water syringes, ultrasonic scaling devices, and other instruments may enter the respiratory system and the eyes of the dental professionals, creating a risk of disease transmission (3,4). Barriers in form of protective eye wear, face masks, gloves, clinical coat etc. worn over the face, eyes, nose, mouth, hands and clothes by dental professionals are usually sufficient to prevent cross infection by preventing contamination through inhalational and mucocutaneous exposure to infective agents. The use of personal protection equipment as barrier controls to prevent skin and mucous membrane exposures is also considered as one of the cornerstones of the practice of standard precautions. Gloves reduce the likelihood of transmission of microorganisms on healthcare workers' hands to patients during surgery or patient-care procedures (5). Face masks and protective eyewear are important in reducing contamination of the mucous membranes and skin surrounding the eyes, nose, and mouth as well as injury and infections. Protective clothing also function to prevent contamination of private clothing and to protect the skin of dental professionals from exposures to blood and body fluids. Proper infection control practices is hampered in developing countries due to limited financial resources, non availability of sophisticated equipment and inadequate supply of materials for infection control (6-9).

Cameroon has no professional or academic institution responsible for the monitoring of dental infection control practices. Dentists in Cameroon and some dental auxiliaries are foreign trained from various countries, making it difficult to have a uniform infection control standard. The first step in creating a model of proper infection control practice in Cameroon should be the assessment of the present level of adherence to international standard on infection control. The objective of this study was to assess handwashing and barrier practices among Cameroonian dental professionals.

### Materials and methods

After obtaining Ethical approval from the Provincial Delegations of the Ministry of Public Health of the 4 selected provinces out 10 provinces, a questionnaire based cross-sectional study was conducted among the dental professionals. The 12-item, self-administered questionnaire elicited information on demography, existence of a guideline for infection control, monitoring of infection control, handwashing practices and the use of protective barriers. Informed consent was obtained from the participants after being informed of the objective of the study and assured of strict confidentiality of their responses. Participation was voluntary and no incentive was offered. Epi-info version 6 was used for data analysis. Test for significance was done with Chi square.  $P < 0.05$  was considered significant. The results were presented in tabular forms.

### Results

Majority (43.9%) of the respondents were in the 31-40 year age group and males made up 58.5%. Dentists constituted 31.7% and the remaining 68.3% were dental auxiliaries which include dental surgery assistants, dental therapists and dental technologists. About 30% of the respondents work in dental clinics located in rural areas while 70.7% work in urban areas. A total of 18 (43.9%) reported the existence of infection control guideline in their clinic. The likelihood of infection control guideline existing was higher for missionary owned clinic followed by public owned clinic and private public owned clinic, (Table 1). Proper handwashing practice was reported by 43.9% of the respondents. Some respondents practice handwashing only on arrival to work (12.2%), before seeing a patient (4.9%) or only after seeing a patient (36.6%). (Table 2)

**Table 1 Distribution of dental clinics by type of dental practice and the existence of infection control guidelines**

Type of dental clinic	Existence of infection control guidelines			
	Yes		No	
	n	(%)	n	(%)
Private	2	18.2	9	81.8
Public	5	31.3	10	68.7
Missionary	11	78.6	4	21.4
Total	18	43.9	23	56.1

A total of 26 (63.4%) wash their hand with running water and liquid soap, 63.4% dry their washed hands with towel in the clinic, 26.8% used disposable paper napkin and 7.3% used dry air. (Table 2)

The sterile surgical type of glove was used by 29.3% of the dental professionals and 56.1% use the non sterile examination type. Only 2.4% use the heavy duty type. About 19.5% wash their hands before gloving, 26.8% wash their hands after gloving and 7.3% don't use gloves for patient's examination (Table 2).

A total of 13 (31.7%) of the respondents use eye glasses, facemask, surgical scrubs and caps for their protection, while 14 (34.1%) use face mask alone, 12.2% use only eye glasses and 9.8% protective clothing and caps (Table 3).

### Discussion

In this study, two-thirds of the studied dental clinics have existing guidelines for infection control. This was similar to the finding in an earlier study (10) where 70% had management policy on infection control. This study revealed that infection control activities were supervised mainly by dentists and dental therapists in 31% and 38.6% of the clinic respectively. This implies that all the dental practitioners can be useful in that regard, if properly trained. The study also revealed that the guidelines are mostly used in missionary owned clinic than both the government and privately owned clinics. There is therefore a need for the authority in charge of the government and privately owned clinic to ensure compliance with the existing guidelines.

**Table 2: Hand washing and gloving practices among the respondents (n = 41)**

Parameter	Frequency (no.)	Percent (%)
<b>When do you wash your hands?</b>		
When I come to work	5	12.2
Before I see a patient	2	4.9
After I see a patient	15	36.6
All of the above	18	43.9
None of the above	1	2.4
<b>What do you use to wash hands?</b>		
Water and soap	5	12.2
Running water and soap tablet	9	22.0
Running water and liquid soap	26	63.4
Only water	1	2.4
<b>What do you dry your hands with?</b>		
Towel in the clinic	26	63.4
Disposable paper napkin	11	26.8
Dry air	3	7.3
All above	1	2.4
<b>Gloving</b>		
I don't use gloves to examine patient	30	73.2
I use glove both to examine and treat patient	11	26.8

Handwashing is the single, most critical measure for reducing the risk of transmitting organisms to patients and health care providers (11). Hand hygiene, when performed correctly, will remove transient microorganisms from the surface of the skin. In this study, less than half (43.9%) of the respondents exhibited good handwashing practice by washing their hands on coming to work, before, and after caring for patients. This calls for an urgent intervention especially since it has been reported that interventional hand-hygiene program resulted in increased compliance with handwashing guidelines and also brought about significant changes in health workers' attitudes, beliefs, and knowledge on hand hygiene (12). Poor hand hygiene compliance has been recorded among health workers and visitors in the intensive care units of a hospital in Thailand (13) although better compliance was reported by some other previous studies done in Malaysia (14) and the United state of America (15).

The gloving pattern reported in this study is similar to that previously reported in Canada where handwashing was done by a significant proportion of the dentists before gloving and after removing gloves (16,17). The results show that the method used for handwashing is acceptable but that used for drying of hands was unacceptable. Handwashing with liquid soap under running water is the recommended infection control practice, as it reduces cross contamination that may be caused by continuous contact with soap by many workers in the same facility. In this study, more than half of the workers (63.4%) washed their hands with liquid soap and running water. The accepted modes of drying of the hand are the use of disposable paper napkins or dry air. This eliminates the communal hand cleaning which results in re-contamination. In this study, 26.8% used disposable paper napkin and 7.3% used dry air. More than half (63.9%) of the respondents used the communal towels in the clinic which is unacceptable as repeated contacts from several individuals would expose them to cross contamination.

Ideally, all persons in direct contact with patients should wear non sterile gloves routinely. They must be worn for all dental procedures including extra and intra-oral examination and not only for those procedures where there is a possibility of bleeding. A new pair of gloves should be used for each patient and may need to be changed during a procedure if exposed to contamination. In this study, only 26.8% wear glove during both examination and treatment of patients. There is an obvious deficiency in the gloving practice reported in this study and non-availability of materials for infection control previous reported in developing countries may be the reason (18).

**Table 3: Barrier usage among the respondents**

Barrier	Number	Percent
Face masks	14	34.1
Eye glasses	5	12.2
Protective clothing	4	9.8
Caps	4	9.8
All above	13	31.7
None above	1	2.4
<b>Total</b>	<b>41</b>	<b>100.0</b>

Protective barriers reduce the risk of exposure of the healthcare worker's skin or mucous membranes to potentially infective materials. Consistent use of masks and protective eyewear or face shields should reduce the incidence of contamination of mucous membranes of the mouth, nose, and eyes (19). The use of protective barrier in this study is less than optimal. A study done in Jordan exclusively on dentist reported a better use of protective barriers (20). Although, 41 respondents recruited, is a small sample but it represented approximately 20% of dental professionals. The findings may represent a true picture of dental professionals in Cameroon. Even though these research findings emanate from self reporting data, it stands out as useful data for interventional program and policy formulation.

### **Conclusion**

Deficiencies existed in handwashing and barrier practices among the studied Cameroonian dental professionals. Infection control guideline was also lacking in majority of the dental clinic where the studied dental professionals were recruited. Improvement in handwashing and barrier practices is necessary in Cameroonian dental practice because of its importance in the prevention of the transmission of bloodborne pathogens and drug-resistant microorganisms. There is also a need to formulate a uniform guideline for infection control. The introduction of mandatory continuing education on handwashing and barrier practices may improve compliance with recommended standard.

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