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Nigerian patients' perception of infection control measures in dentistry

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ABSTRACT: **Introduction:** The growing prevalence of infectious diseases among patients in dentistry necessitates the need for appropriate compliance with recommended procedures for infection prevention and control cross-infection practices to prevent unnecessary spread of infections in the dental settings/clinics. **Objective:** To assess Nigerian patients' perceptions on the use of gloves, facemasks and goggles by dentists in dental practice, as well as their knowledge on methods of sterilization and their awareness of cross-infection in dentistry. **Methods:** A descriptive cross sectional survey of patients attending the Periodontal Clinic of University of Benin teaching hospitals, Nigeria was conducted in 2009. **Results:** Of 405 patients who responded, 98.3% believed that dentists should always wear gloves when treating patients. Twenty (4.9%) of respondents believed that gloves protects dentists only and 79.5% would be reluctant to receive treatment if the dentist didn't wear gloves. About one-fifth (21.2%) of the respondents believed that facemasks protects dentists only and 59.3% would be reluctant to receive treatment if the dentist didn't wear a facemask. One-third (31.1%) of the respondents believed that dentists should always wear goggles when treating patients. The majority (96.8%) were concerned about sterilization of dental instruments used for their treatment but only 41.2% had ever asked the dentist how the instruments were sterilized. Awareness of cross infection in dental clinic was reported by 84.7%. **Conclusion:** This study revealed poor patient's knowledge about infection control measures in dentistry. This data will serve in planning effective interventions to enhance public awareness about infection control in dentistry in Benin City, Nigeria.

Keywords: Attitude, Perceptions, Infection control, Dentistry.

Introduction

Entry into the healthcare professions is a privilege that carries a responsibility to do no harm. Dental treatment procedures frequently cause bleeding, and exposure to infected blood, saliva and aerosol is a known means of infectious disease transmission. Routine use of barrier techniques (gloves, masks, and spectacles), heat sterilization of dental instruments and vaccination against hepatitis B (HBV) are strategies known to prevent cross-infection in the dentistry. The use of gloves, face masks and spectacles has been reported to be important in preventing the three routes of transmission (dentist to patient, patient to dentist, patient to patient) in dental clinic¹.

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Relevant literature on Nigerian dentists revealed that 70.6%-97.5% routinely use gloves, 45.9%-87% face mask and 4.8%-23.1% eye wear²⁻⁴. These were relatively the same among dentists in other African countries as 87%-97.1% routinely use gloves, 65%-82.4% face mask and, 52.9% eye wear^{5,6}. Gender, practice type and frequency of attendance at postgraduate courses are factors that determine glove wearing patterns of dentists⁷. Specialist dentist are less likely to wear gloves routinely than their general dental practitioner colleagues⁸. Younger dentist are more likely to wear gloves routinely⁹.

Common reason for non-routine wearing of gloves is when dentist perception of risk of HIV and other infection is low⁹. Other reasons include, difficulties to adjust to the use of gloves, skin complaints related to glove use, problems of comfort, loss of tactile sensations with hands, restriction of movement, financial constraints and non-availability^{3,9,10}. Autoclaving is the commonest mode of sterilization utilized dental practice in Nigeria³ and other parts of the world^{5,11}.

In a survey conducted in a University dental clinic by Otuyemi et al. using four-item questionnaire, they found that 88.8% of patients believed that glove wearing by dentist was essential, 63% considered that glove wearing protected both the operator and the patient. One-third of patients would avoid treatment when gloves were not worn and 81.3% felt that gloves should be changed after each patient¹². Sofola et al reported that 98.6% and 56.6% of patients regarded the use of gloves and facemask as necessary respectively, 82.9% would not mind gloves are used, while only 57.9% would not mind face mask use. More than half (54%) felt they could contract an infection in the dental clinic and 43% of them identified HIV as a risk and 61.4% would not attend a clinic if they knew that HIV patients were treated there¹³.

Mousa et al, in a survey on 460 patients from 3 outpatient dental clinics in Egypt, found that 90% of the patients expected dentists to wear gloves, 73% expected them to wear face masks and 37% to wear spectacles. Most patients believed that gloves were for the patient's protection while face masks and spectacles were for the dentist's protection. About 50% of patients believed that they could contact infectious diseases during dental treatment¹. Porter et al found that almost all patients expected dentists to wear protective gloves but only 73% and 40% expected dental staff to wear protective face masks and spectacles respectively. Most patients were aware that such measures were for the benefit of both dental staff and patients. Just over 50% of patients believed that they could contact HIV from an HIV-infected dentist¹⁴.

Kearns et al, in questionnaire based study of 194 patients attending an orthodontic clinic in Ireland, found that 97% of patients considered that orthodontists should routinely wear gloves. Approximately 15% of patients would attend an orthodontist who did not wear gloves. A total of 86.5% of patients thought that the orthodontist should change gloves between patients and 94% of patients considered that gloves were worn to protect both the orthodontist and the patient¹⁵. Samaranayake et al found that 60% of patients in the Glasgow region expected dentists to wear gloves routinely, and a large majority thought that the gloves were for the dentists' own protection. Almost all the respondents did not mind the dentist wearing either gloves or masks during treatment. One third of the total populations were ignorant about sterilization methods used in dentistry. One half of the hospital patients and one third of the general practice patients thought that infectious diseases could be contacted via the dentist or his instruments. Although two in three of the respondents surmised that transmission of AIDS in the dental clinic is unlikely, one half of the general practice patients were unwilling to visit the dentist if the latter was known to treat patients with AIDS¹⁶. Bowden et al in a survey conducted February 1987 in United Kingdom found that most patients believed that gloves should be worn and few saw no need for either. Patients receiving care in a dental hospital were more enthusiastic than those seen in general practice in the belief that dentists should wear gloves and/or a mask¹⁷.

In Hong Kong, 250 dental patients were interviewed by questionnaire and 213 were interviewed by phone as participants in a survey conducted by Yip et al. From the patients' experiences, 85.2% and 21.7% of the dentists wore face masks and face shields respectively when delivering dental treatment. The majority of patients interviewed had confidence in their dentists, their treatment environments, and the infection control measures taken, and were not worried about contracting severe acute respiratory syndrome (SARS) in the dental setting¹⁸. Burke et al found that a high proportion of the patients felt glove wearing by dentist was important and necessary but only half would not attend a dentist who did not wear gloves¹⁹.

Jones et al in a survey on 379 patients, found that 95% of patients felt they were adequately protected, while fewer than 2 percent expressed anxiety about infection control procedures being used. Age and education were correlated with perceived knowledge of infectious diseases. Patients' reported knowledge of infectious disease had a significant effect on their decision to leave a practice if the dentist was HIV positive²⁰.

Factors that affect attitude and perception of people to cross-infection include age-groups¹², gender¹³, education attainment^{1,12,13} and geographical location¹. Others are language and dental visiting pattern²¹. In hospitalized patients country of origin and number of hospital admissions in the previous year has been enumerated²². With

increased awareness of the possible transmission of infection in dentistry, concerns and great deal of fear about HIV contagion has been expressed by dental patients in Nigerian¹³. To ascertain dental patients perception of cross-infection in a certain locality will help in planning effective public enlightenment since perception is affected by geographic location of patient. There are no indexed studies and data on patient perception of cross-infection preventive measures existing in our environment.

The objective is to assess the Nigeria patients' perception on the use of gloves, facemasks and goggles in dental practice, methods of sterilization and knowledge of cross-infection in dentistry.

Materials and Methods

A descriptive cross sectional survey of 405 consenting patients attending the Periodontal Clinic of University of Benin Teaching Hospitals, Nigeria was conducted in 2009. An interviewer-administered questionnaire was the tool of data collection. Questionnaire elicited information on demography, perception on the use of gloves, facemasks and goggles in dental practice, methods of sterilization and knowledge of cross-infection in dentistry. Participation was voluntary and non participation in the survey did not adversely affect the rendered care. The data analysis was done with SPSS version 15.0. $P < 0.05$ was considered significant. The results were presented in tabular form.

Results

Male made up 49.6% and female 50.4%. Majority of the respondents fall within the 21-30 year age group and had tertiary education (**Table 1**). Of the 405 patients that responded, 98.3% believed that dentist should always wear glove when treating patients. One-third (31.1%) of the respondents believed that dentist should always wear goggles when treating patients. A total of 79.5% and 59.3% of the respondents would be reluctant to receive treatment if dentist is not wearing gloves and face mask respectively (**Table 2**). About one-fifth (21.2%) of the respondents believe that facemask protects dentists only and 20 (4.9%) of respondents believe that glove protects dentists only (**Table 3**). Majority (96.8%) bother about sterilization of dental instruments used for their treatment but only 41.2% of the respondents have ever asked the dentist how the instrument is sterilized. The awareness of cross infection in dental clinic was reported by 84.7% (**Table 4**).

Discussion

Prevention of cross-infection forms an essential aspect of dental practice and remains one of the most cost-beneficial medical interventions available. Dentist must adopt standard precautions, which consider all blood and blood-contaminated fluids as potentially infectious in their practice¹¹. The wearing of gloves by dentists undertaking clinical procedures has been recommended as an essential element of dental surgery cross-infection control²³. In this study, 98.3% believed that dentist should always wear glove when treating patients which was higher 88.8% of recorded by Otuyemi et al¹² and lower than 98.6% recorded by Sofola et al¹³. This confirms geographic variability of cross infection perception in Nigeria as previously documented in Egypt¹.

Samaranayake et al found that a large majority of patients in the Glasgow region thought that the gloves were for the dentists' own protection¹⁶. In this study, 94.3% of the respondents considered that gloves protect both dentist and patients. This was similar to 94% of patients that considered gloves wearing protects both the orthodontist and the patient¹⁵ and higher than 63% considered that glove wearing protected both the operator and the patient¹². Proper infection control practice is known to improve dental patients' satisfaction²⁴ and perceived cross-infection risk will lead to the avoidance or delaying of dental visits. This evidently showed that 79.5% of the respondents in this study would be reluctant to receive treatment if dentist is not wearing gloves. This is higher than half would not attend a dentist who did not wear gloves¹⁹ and one-third of patients would avoid treatment when gloves were not worn earlier documented¹² and 15% of patients would attend an orthodontist who did not wear gloves¹⁵. Variation in

demography of the studied population and increased knowledge and awareness of infection control as years progresses are possible explanations.

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

Characteristics	Frequency	Percent
Age (Years)		
< 20	55	13.6
21 – 30	237	58.5
31 – 40	57	14.1
41 – 50	32	7.9
51 – 60	13	3.2
61 – 70	9	2.2
71 – 80	2	0.5
Gender		
Male	201	49.6
Female	204	50.4
Level of Education		
Informal	6	1.5
Primary	15	3.7
Secondary	58	14.3
Tertiary	326	80.5
Total	405	100

Different strains of micro-organism inhabit the oral mucosa and respiratory tract of different individuals, in order to prevent an interchange which leads to disease, a barrier in form of face mask is advocated. In this study, about one-fifth (21.2%) of the respondents believe that facemask protects dentists only and 59.3% would be reluctant to receive treatment if dentist is not wearing gloves. This also correlates the fact that Patients receiving care in a dental hospital were more enthusiastic than those seen in general practice in the belief that dentists should wear gloves and/or a mask¹⁷.

Calculus during scaling procedure and splashes/splatter of saliva, and blood during polishing can cause injury and infection to the eye thus signifying need for plastic protective spectacle. In this study, one-third (31.1%) of the respondents believed that dentist should always wear goggles when treating patients.

Sterilization and disinfection of instrument is of utmost significance in dental offices as it assists in preventing the transmission of infection from patient to patient and from instrument to patient. One third of the total populations were ignorant about sterilization methods used in dentistry¹⁶. Majority (96.8%) bother about sterilization of dental instruments used for their treatment but only 41.2% of the respondents have ever asked the dentist how the instrument is sterilized. The awareness of cross infection in dental clinic was reported by 84.7%. This is higher than previously in Nigeria and internationally. This increased awareness of the possible transmission of infection in dentistry may be the cause of concerns and great deal of fear about HIV contagion has been expressed by dental patients in Nigerian¹³.

Conclusion

This study revealed poor knowledge about infection control measures in dentistry. This data will obviously serve as baseline information planning effective public enlightenment on infection control in dentistry in Benin City, Nigeria.

TABLE 2: RESPONDENTS' PERCEPTION OF BARRIER USAGE IN DENTISTRY.

Questions	Yes	No
Do you believe that dentist should always wear gloves when treating patients?	98.3	1.7
Do you believe that dentist replace gloves after receiving phone call?	60.2	39.8
Can dentist treat more than one patient with a pair of gloves?	5.4	94.6
Do you believe that dentist should always wear face mask when treating patients?	90.6	9.4
Would you be reluctant to receive treatment from a dentist that is not wearing gloves?	79.5	20.5
Would you be reluctant to receive treatment from a dentist that is not wearing face mask?	59.3	40.7
Do you believe that dentist should always wear eye goggles when treating patients?	31.1	68.9
Do you bother about the sterilization of instrument used for your treatment?		
Have you ever asked dentist about the way they sterilize their instrument?	41.2	58.8
Would receive treatment from a dentist that is not immunized against hepatitis B?	22.5	77.5
Do you believe you can catch infection during dental treatment?	84.7	15.3

TABLE 3: RESPONDENTS PERCEPTION OF THE PROTECTIVE FUNCTION OF GLOVES AND FACE MASK

Question	Dentist alone	Dentist and Patient	Patient alone
Who does glove wearing by dentist protect?	4.9	94.3	0.7
Who does face mask by dentist protect?	21.2	76.5	2.2

TABLE 4: RESPONDENTS PERCEIVED MODES OF STERILIZATION IN DENTISTRY.

Mode of sterilization	Frequency	Percent
Boiling	129	31.9
Washing	29	7.3
Autoclaving	177	43.7
Dettol	18	4.4
No identified method	52	12.8
Total	405	100

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