

# Are Nigerian oral health workers overlooking opportunities to promote interventions for tobacco smoking cessation?

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## ABSTRACT

**INTRODUCTION** Since dentists are strategically positioned to promote tobacco abstinence and cessation, we assessed their commitment through their patients' dental history in one of the busiest tertiary dental clinics in Nigeria, and also aimed to assess factors associated with screening for tobacco use.

**METHODS** This retrospective and descriptive study utilized the dental records of patients (aged 12–80 years) at the oral diagnosis unit of the Lagos State University Teaching Hospital (LSUTH), Nigeria, from 2017–2018. Descriptive statistics were used to quantify variables such as age, gender, history of tobacco use, while the outcome variable was provision of cessation assistance through referral to the preventive dentistry cessation clinic. Data were analyzed by  $\chi^2$  tests, t-test, and regression analysis. The significant level for statistical analysis was set at 5% ( $p \leq 0.05$ ).

**RESULTS** A total of 15786 new patients, mean age  $49.3 \pm 12.8$  years, were reviewed. Only 4104 (26%) of the patients had their tobacco use history documented; of these, 656 (16%) indicated past or current tobacco use; only 120 (18.3%) of these were referred for cessation counseling in the preventive dentistry unit. Males ( $n=611$ ; 93.1%) had a higher proportion of past or present tobacco use. Patients presenting with oral ulcers ( $OR=1.94$ ) and jaw tumors ( $OR=2.45$ ) were significantly more likely to be screened for tobacco use.

**CONCLUSIONS** Less than 0.01% of new patients were provided with tobacco use cessation advice, and opportunities for screening were essentially unexploited implying an urgent need to incorporate tobacco cessation interventions as part of standard clerking sheets for patients.

## INTRODUCTION

Tobacco consumption occurs in many forms such as cigarettes, pipes, cigars, cigarillos, bidis, kreteks, smokeless tobacco (chew, snuff, and dissolvable strips, sticks, or lozenges), and through a hookah or waterpipe. The most common and referenced version of tobacco use is smoking. According to the U.S. Food and Drug Administration (FDA), the categories of smoked tobacco products are cigars, hookah, pipe tobacco, roll-your-own tobacco, electronic nicotine delivery systems and cigarettes. A cigarette is a thin cylinder of finely cut tobacco rolled in paper for smoking with chemical additives and a filter. There are 93 known harmful and potentially harmful chemicals in cigarettes including nicotine, cadmium, lead, acetaldehyde, ammonia, and benzene, and more than 7000 chemicals in cigarette

smoke itself<sup>1</sup>. Close to 80% of the world's 1 billion smokers live in low- to middle-income countries, like Nigeria<sup>2</sup>. Due to poor regulatory framework and weak governing systems, easy distribution of tobacco products, the initiation and maintenance of tobacco use is widely prevalent in Nigeria. Currently, about 1 in every 5 Nigerians smokes<sup>3</sup>, with high prevalence of consumption, as high as 50% among high-risk occupations like truck drivers<sup>4</sup>. Over 20 billion sticks of cigarettes are consumed annually in the country<sup>3</sup>.

The World Health Organization (WHO) estimates that tobacco kills nearly 7 million people annually while 100 million tobacco related deaths were recorded over the course of the 20th century<sup>5</sup>. Tobacco is the leading preventable cause of mortality globally, contributing to cancer, cardiac disease, stroke, chronic lung diseases and other non-communicable

diseases<sup>6</sup>. Furthermore, the consumption of tobacco products also has a negative impact on oral health; tobacco smoking is a significant etiological factor in periodontal diseases, deficits in postoperative oral healing and recovery, and plays a role in the failure of dental implants<sup>7</sup>. These diseases not only affect disability adjusted life years (DALYs), but also lead to a significant economic burden on societies<sup>8,9</sup>.

One of the six measures developed to advance tobacco control is to 'offer help to quit tobacco use'<sup>10</sup> in the WHO Framework Convention for Tobacco Control, which is ratified by 177 countries worldwide. Substantial evidence shows that smoking cessation reduces mortality from tobacco-related diseases and improves health<sup>11</sup>. However, smoking is a powerful addiction and despite numerous quit attempts, many individuals who smoke frequently fail to stop smoking<sup>12</sup>. Smoking cessation programs are therefore necessary to provide the support required for smokers to quit<sup>13</sup>. An analysis of 17 trials investigating physicians' advice as an intervention concluded that even brief advice was effective in increasing the odds ratio for quitting smoking (1.74)<sup>14</sup>. National health organizations and organized dentistry have long advocated for practitioners to take a more active role in tobacco interventions with their patients<sup>13,15</sup>.

Carr and Ebbert<sup>16</sup> have reported that abstinence rates may increase among tobacco users as a result of behavioral interventions with an oral examination component provided by dentists and their auxiliaries in clinics or community settings. Dental healthcare providers are a great resource to aid in tobacco cessation. The patient–dentist relationship is unique; the dentist has the opportunity to meet his/her patient over many visits, which provides the opportunity to initiate and reinforce tobacco cessation practices. Dentists are experienced and knowledgeable in diagnosing oral disease<sup>4</sup>, particularly the adverse oral health effects of tobacco smoking, which on many occasions are present as potentially malignant or malignant lesions. Dentists can provide cessation assistance to their patients by identifying the oral signs of tobacco use, informing patients of these and assessing their willingness to quit smoking. They can also refer patients who desire to quit for smoking cessation services. It is estimated that about 50% of patients visit their dentist at least once a year<sup>17</sup>.

In many countries, dentistry may be a potential setting for several aspects of clinical public health interventions because of their regular recall system of patients, presenting opportunity for promoting life style changes. In a recent Nigerian study, about half of the patients visiting the teaching hospital attended the dental clinic, a very high proportion<sup>18</sup>. Thus, the dental office visit provides a unique opportunity for dental professionals to point out the detrimental effects of tobacco and to discuss and assist in quitting. Cessation assistance within the dental clinic can be defined as referring patients for cessation counseling in the preventive dentistry unit. Since dentists are strategically positioned to promote tobacco abstinence and cessation of tobacco use, we aimed to review

patients' dental records in one of the busiest tertiary dental clinics in Nigeria to determine if tobacco use was documented and referral services for tobacco cessation were made.

## METHODS

This retrospective and descriptive study utilized the dental records and case histories of patients (aged 12–80 years) seen at the oral diagnosis unit of the Lagos State University Teaching Hospital, Nigeria, over 2 years. The study was done at the dental center of the Lagos State University Teaching Hospital (LASUTH), which is the clinical division of Faculty of Dentistry, Lagos State University College of Medicine. Ethical approval for the study was obtained from the Health Research and Ethics Committee of the Lagos State University Teaching Hospital, Ikeja. The study was implemented in line with the Declarations of Helsinki and the confidentiality of all the participants was assured by the researchers. An official written request, which was approved, was also obtained from the medical records department of the Hospital. Written informed consent was not taken since the data were retrieved anonymously from the patients' records and confidentiality was guaranteed by omitting personal identifiers.

The inclusion criteria were male and female subjects presenting for the first time to the dental center. The exclusion criteria included case files with incomplete information with respect to age and gender and missing diagnosis or treatment plan.

The principal investigator and a second researcher were responsible for data collection using 40 randomly selected dental records of patients at the oral diagnosis unit of the dental center which were not included in the final analysis. Inter-examiner reliability for both examiners was 0.90, whereas the intra-examiner reliability was 0.92 and 0.87 for the two examiners, respectively. The dental records of the patients were subsequently retrieved by the dental record officers after they obtained the written permission from the medical records department. The principal investigator used a proforma to record the date of birth, gender, the presenting complaint and diagnosis made by the attending dentist, documentation of tobacco use history and treatment plan, including referral of the patient to the Preventive Dentistry unit for smoking cessation. The chart review procedure was replicated by the other examiner and the records were compared for reproducibility and consistency. Other sociodemographic parameters such as socioeconomic status, religion, and occupation were not included during the assessment of the patients' dental records.

## Statistical analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 20 (IBM, Armonk, New York). Descriptive statistics were used to quantify variables such as age, gender, history of tobacco use and referral to the preventive dentistry cessation clinic. Descriptive statistics included the mean age, sex distribution,

and smoking status of the survey respondents. Data were analyzed by  $\chi^2$  tests, t-test, and linear regression analysis. The confidence and significant levels for statistical analysis were set at 95% and 5% ( $p \leq 0.05$ ), respectively.

## RESULTS

In this study, 15786 clinical records of patients who attended the oral diagnosis unit of the Dental Centre, LASUTH, from 2017–2018, were retrieved and reviewed. The mean age of the patients seen in 2 years was  $49.3 \pm 12.8$  years while the age range was 12–80 years. The highest proportions of subjects were aged 26–35 years ( $n=4894$ ; 31.0%), whereas the least number of subjects were aged 76–80 years ( $n=189$ ; 1.2%). Overall, there were more females ( $n=8319$ ; 52.7%) than males ( $n=7467$ ; 47.3%). The age and gender distribution is presented in Table 1.

Table 2 shows the patient’s reasons for their dental visit, from their records. The majority had toothache ( $n=12913$ ; 81.8%). Decayed teeth was the next most common reason ( $n=931$ ; 5.1%) indicated in the dental records, while routine preventive dental visit ( $n=47$ ; 0.3%) was the least prevalent reason documented.

Table 3 shows the tobacco use related history of the study subjects. Only 4104 (26%) of the patients had their tobacco use history documented; of these, 656 (16%) indicated past or current tobacco use; only 120 (18.3%) of these were routinely offered cessation assistance. Males ( $n=611$ ; 93.1%) had a higher proportion of past or present tobacco use.

Table 4 displays the odds ratio and confidence interval of a patient receiving screening for tobacco use based on their presenting complaint. Patients presenting with oral ulcers ( $OR=1.94$ ; 95% CI: 1.26–2.84), jaw tumors ( $OR=2.45$ ; 95% CI:

**Table 1. Sex and age distribution of study subjects seen at the oral diagnosis unit of the Lagos State University Teaching Hospital, Nigeria 2017–2018 (N=15786)**

Characteristics	n	%
<b>Sex</b>		
Male	7467	47.3
Female	8319	52.7
Total	15786	100
<b>Age group (years)</b>		
12–25	4782	30.3
26–35	4894	31.0
36–45	2462	15.6
46–55	1499	9.5
56–65	1152	7.3
66–75	789	5.0
76–80	189	1.2
Total	15786	100

1.67–4.38), periodontitis ( $OR=1.43$ ; 95% CI: 0.89–2.04) and mouth odor ( $OR=1.38$ ; 95% CI: 1.05–1.83) were significantly more likely to be screened for tobacco use compared to those with other dental complaints.

**Table 2. Patient’s reasons for the dental visit to the oral diagnosis unit of the Lagos State University Teaching Hospital, Nigeria 2017–2018 (N=15786)**

Reason for visit	n	%
Toothache/mouth pain	12913	81.8
Decayed tooth	931	5.9
Fractured teeth	410	2.6
Mobile teeth (periodontitis)	379	2.4
Jaw swelling	252	1.6
Replacement for missing teeth	237	1.5
Malocclusion	189	1.2
Routine check-up	47	0.3
Bleeding/swollen gum	63	0.4
Scaling and polishing	79	0.5
Mouth odour	63	0.4
Other (sensitive & discoloured teeth)	221	1.4
Total	15786	100.0

**Table 3. Tobacco use related history of study subjects seen at the oral diagnosis unit of the Lagos State University Teaching Hospital, Nigeria 2017–2018 (N=15786)**

		n	%
Tobacco use history documented (n=15786)	Yes	4104	26.0
	No	11682	74.0
History of past or current tobacco use (n=4104)	Yes	656	16.0
	No	3448	84.0
Tobacco use based on gender (n=656)	Male	611	93.1
	Female	45	6.9
Smoking cessation assistance offered (n=656)	Yes	120	18.3
	No	536	81.7

**Table 4. Results of logistic regression for odds of screening for tobacco use among patients seen at the oral diagnosis unit of the Lagos State University Teaching Hospital, Nigeria 2017–2018**

Complaint	Proportion screened for tobacco use <sup>a</sup>	OR	95% CI	p
No oral ulcers		1		
Oral ulcers	85/150	1.94	1.26–2.84	0.001*

Continued

**Table 4.** Continued

Complaint	Proportion screened for tobacco use <sup>a</sup>	OR	95% CI	p
No jaw tumors		1		
Jaw tumors	208/252	2.45	1.67–4.38	0.000*
Healthy periodontium		1		
Periodontitis	195/379	1.43	0.89–2.04	0.006*
No mouth odour		1		
Mouth odour	32/63	1.38	1.05–1.83	0.008*
No toothache				
Tooth ache	3584/12913	0.97	0.59–1.22	0.283

a Total screened: 4104. \*Significant.

## DISCUSSION

Tobacco use has detrimental effects on health, including the occurrence of cardiovascular and respiratory diseases, carcinomas, and a range of other chronic ailments. Each year, tobacco use is responsible for approximately 8 million deaths worldwide, including 7 million deaths among persons who use tobacco and 1.2 million deaths among non-smokers exposed to secondhand smoke (SHS)<sup>19</sup>. In addition to being associated with a number of cancers and coronary conditions, tobacco plays a role in the etiology of a number of oral conditions; tobacco exposes the oral cavity to toxic carcinogens that have a role in initiation and promotion of cancer<sup>20</sup> as well as leukoplakia, periodontitis, and delayed wound healing<sup>21</sup>. The dental practice setting thus provides a unique opportunity to assist tobacco users in achieving tobacco abstinence<sup>17</sup>. However, dental care settings remain an untapped venue for the treatment of tobacco dependence<sup>22,23</sup>.

Almost 16000 new patients were seen over 2 years in the dental clinic presenting an enormous opportunity to the dental professionals to enquire about tobacco use and initiate cessation services for those who want them. The highest proportions were young adults and the middle aged, who represent the age group that indulge most in tobacco smoking in Nigeria based on the recent WHO global report on trends in prevalence of tobacco smoking<sup>24</sup>. A significant benefit and higher tobacco abstinence rates have been observed in dental practices that focus on adult patients, who particularly appear to be responsive to the effect of interventions in this setting<sup>14</sup>. It is pertinent to note that majority of these patients attended the clinic due to some form of pain or other, while a routine preventive dental visit (0.3%) was the least prevalent reason for a dental visit. There was no patient that presented to the clinic with a need for tobacco cessation as a presenting complaint. With over 8 million deaths attributable to smoking each year<sup>25</sup>, smoking

has been described as a major public health scourge of modern times. Most tobacco users are unaware of the harm tobacco use causes<sup>26</sup>. Smoking harms almost every organ of the body and diminishes a person’s overall health, and the medical side-effects of smoking have been reported in a large number of studies<sup>27,28</sup>. Various interventions have been described to combat the menace of smoking, but one that has not been sufficiently utilized is the role of health workers in smoking cessation. Folsom et al.<sup>29</sup> reported a 2% net cessation for smokers who were advised to quit smoking by their physician compared to those who did not receive any such advice. A Cochrane review has shown that brief simple advice from the doctor about quitting smoking increases the likelihood that a smoker will quit and remain a non-smoker for 12 months after<sup>30</sup>.

The dental records that we reviewed showed that tobacco use related history was obtained from only 4104 patients representing only 26% of the patients who visited the clinic during the period under review. Of these, 656 or 16% indicated past or current tobacco use, mirroring the prevalence rates in the country<sup>24</sup>. Similar unsatisfactory rates were obtained by other researchers<sup>31</sup>. Nigerian physicians observed poor documentation of tobacco use and that many opportunities for brief intervention activities were missed. Tomar<sup>32</sup> similarly found that >40% of dentists do not routinely ask about tobacco use and 60% do not routinely advise tobacco users to quit. Another survey of general dentists by Albert et al.<sup>33</sup> found that 28% of the respondents reported asking their patients about tobacco use. Approximately one half of the dentists reported advising tobacco-using patients to quit about 41% of the time. In a study of smokers who had visited a dentist within the past year, less than a fourth reported that they had been advised to quit smoking<sup>34</sup>. Widespread acceptance of tobacco use interventions in the dental setting have been lacking and limitations in primary care resources have curtailed further efforts<sup>16</sup>. Compared to other healthcare providers, dentists can assess more accurately the effects of tobacco use. However, dental practitioners have been less consistent and supportive of intervention, and are less likely to report having strong knowledge or skill levels regarding tobacco cessation, and are more likely to perceive barriers to tobacco intervention<sup>35</sup>.

Only 120 (18.3%) of the patients in our review were routinely offered cessation assistance. Currently, most tobacco cessation interventions are provided by physicians, even though all healthcare providers can be equally effective<sup>36</sup>. Edwards et al.<sup>37</sup> surveyed Australian dentists and dental hygienists and found that these practitioners indicated high rates of advising patients to quit smoking, but low rates of assisting and referring patients to smoking-cessation experts. A national survey in the US also showed that <50%<sup>38</sup> of US dentists, and only a quarter of dental hygienists enquire about their patients smoking history. Fewer than 20% of dentists had an office-based smoker identification system

and <5% offered follow-up services to help patients quit<sup>38</sup>. In another study that compared the quality and quantity of tobacco cessation services provided by healthcare providers, such as physicians, dentists, mental health counselors, and social workers, the authors observed that cessation interventions by dental providers ranked lowest in terms of both quantity and quality<sup>39</sup>.

In our study, patients presenting with oral ulcers and jaw tumors were significantly more likely to be screened for tobacco use compared to those with other dental complaints. Research shows that dentists whose practices emphasize the surgical aspects of dentistry where smoking can negatively affect their therapeutic outcomes tend to emphasize smoking cessation compared to those whose specialties do not<sup>40,41</sup>. A survey of oral and maxillofacial surgeons conducted by Crews et al.<sup>42</sup> revealed that 90% of respondents reported asking about their patients' tobacco use history and that 63% advised tobacco users to quit, even though a lower proportion of them assisted with cessation and arranged for follow-up. Kunzel et al.<sup>43</sup> found a similar pattern among general dentists.

A study done by Wyne et al.<sup>36</sup> revealed confusion in the dental community regarding the extent of the dentist's responsibility and role in tobacco intervention. Only a minority thought of tobacco intervention as their responsibility to a 'great extent'. Several other studies in other countries have also found similar results and reported dentists were uncertain of their role in smoking cessation, and believed that it was not part of dentistry<sup>42,32</sup>. Furthermore, dentists often cite a lack of reimbursement, time constraints, and perceived patient resistance as barriers to adopting cessation treatment guidelines<sup>43,44</sup>. In the few studies that analyzed factors that may influence dentists' adherence to tobacco use treatment guidelines, a lack of training and a lack of confidence in their ability to help patients quit smoking are consistently associated with low rates of cessation intervention delivery<sup>43,44</sup>. Moreover, Albert et al.<sup>33</sup> noted the limitation and non-systematization of courses on smoking cessation in dental schools, and efforts too often directed to the consequences of smoking. Dentists should thus be trained in smoking cessation counseling to provide smoking cessation programs in the community since they can obtain good success rates, comparable to that reported in general medical practice settings<sup>45</sup>.

### Strengths and limitations

A major limitation of our study is its retrospective design. The data reported in this study were based on hospital clinical records rather than through a prospective design where the views of the dentists were sought. This study, however, has significant implications for tobacco cessation efforts in a dental setting. It also provides an initial template for further exploratory studies. Furthermore, it provides vital data for policy makers to motivate dentists to be involved in efforts to reduce the prevalence of tobacco use.

## CONCLUSIONS

Our results show that <0.01% of new patients were provided with tobacco use cessation advice, and opportunities for screening were essentially unexploited by the dental practitioners. This implies an urgent need to incorporate tobacco cessation interventions as part of standard clerking sheets that dentists utilize to screen all patients.

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