

# Toward pharmacy-based smoking cessation services in Nigeria: Knowledge, perception and practice of community pharmacists

Wuraola Akande-Sholabi<sup>1</sup>, Yusuff Adebayo Adebisi<sup>1</sup>

## AFFILIATION

<sup>1</sup> Department of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy, University of Ibadan, Nigeria

## CORRESPONDENCE TO

Wuraola Akande-Sholabi. Department of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy, University of Ibadan, Oduduwa Road, Ibadan, Nigeria. E-mail: wuradol@gmail.com

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## ABSTRACT

**INTRODUCTION** Worldwide, tobacco smoking is one of the leading causes of avoidable deaths. In Nigeria, there is currently no clinical guidelines for tobacco dependence treatment. However, globally, pharmacy-based smoking cessation intervention has been associated with improved cessation rates and quality of life. This study aims at assessing the knowledge and perception of community pharmacists about smoking cessation and tobacco harm reduction as well as barriers to the practice of pharmacy-based smoking cessation intervention.

**METHODS** A cross-sectional survey was carried out among 104 community pharmacists, between August and December 2019, using a self-administered paper questionnaire. Data entering, cleansing, and analysis were done using IBM SPSS (version 23). Descriptive statistics including frequencies and percentages were used to summarize the data.

**RESULTS** Thirteen pharmacists (12.5%) were providing smoking cessation services. One-tenth (10.6%) of the

pharmacists were aware of tobacco harm reduction. The majority (89.4%) were willing to attend smoking cessation training. Among the respondents, 65 (62.5%) had poor knowledge regarding smoking cessation and tobacco harm reduction. Lack of knowledge and skills were reported by all (100%) as a barrier to providing the service. However, 101 (97.1%) community pharmacists agreed that smoking cessation treatment is an important role of pharmacists.

**CONCLUSIONS** A suboptimal level of knowledge of smoking cessation and tobacco harm reduction was noted among the community pharmacists. However, they believed smoking cessation intervention is an important role of pharmacists. It is advocated that smoking cessation training should be included as part of the Pharmacists' Council of Nigeria Mandatory Continuing Professional Development Training. Thus, it is imperative to establish basic national smoking cessation guidelines that can be functional towards reducing mortality and morbidity associated with tobacco smoking in Nigeria.

## INTRODUCTION

There are about 1.1 billion smokers worldwide and nearly 80% currently reside in low- and middle-income countries<sup>1</sup>. Over 6 million annual deaths have resulted from direct tobacco use while approximately 0.9 million deaths were due to exposure of non-smokers to secondhand smoke<sup>1</sup>. Without urgent action, the yearly death toll could rise to greater than 8 million by 2030<sup>1,2</sup>. Tobacco smoking is one of the leading causes of avoidable death globally and the major modifiable risk factor for many diseases<sup>3</sup>. Sub-Saharan African countries including Nigeria are among regions that are now facing a substantial surge in tobacco use<sup>4</sup>. Smoking cessation is one

of the main effective methods to reduce healthcare costs and promote public health<sup>5,6</sup>.

Nigeria is the most populated country in Africa and has one of the leading tobacco markets on the continent, with more than 18 billion cigarettes sold yearly costing Nigerians over US\$ 900 million<sup>7,8</sup>. A report has shown that the prevalence of smoking in the country is rising at about 4% per year<sup>9</sup>, with over 16000 deaths attributable to smoking<sup>9</sup>. A systematic review and meta-analysis revealed that pooled crude tobacco smoking prevalence in Nigeria is 10.4%<sup>10</sup>. Non-communicable diseases (NCDs) already account for not less than 80% of avoidable deaths in developing countries

and the single largest preventable risk factor for NCDs is tobacco smoking<sup>11</sup>. While an upward trend of 17% in the next 10 years is predicted for the global burden of NCDs, it is expected that a sharp rise of 27% would occur in the African region<sup>7</sup>. Nigeria has a large population of adolescents and young people, which impacts health indices across the region<sup>11</sup>. A positive association has been found between daily cigarette consumption and the risk of smoking-related disease; however, a non-linear association is observed with cardiovascular disease. This implies both light and heavy smoking are unsafe and can be associated with smoking-related mortality<sup>12</sup>. In Nigeria, there is currently no clinical guidelines for tobacco dependence treatment<sup>13</sup>.

Nicotine is an addictive component of tobacco smoke with transient cardiovascular effects with little or no risk of respiratory diseases such as chronic obstructive pulmonary disease or cancer<sup>14</sup>. This contributes to the basis of the modern smoking cessation strategy called Tobacco Harm Reduction (THR), which aims at lowering the health risks associated with using tobacco products by promoting the use of alternative nicotine sources such as e-cigarettes and snus<sup>15</sup>. It is therefore important for pharmacists to improve their knowledge on THR as the popularity of this option as a substitute for cigarette smoking is increasing globally and Nigeria is not left behind. Additionally, there is no restriction in Nigeria on the use, advertising, promotion and sponsorship, packaging, and labeling, of tobacco harm reduction products such as e-cigarettes<sup>16</sup>. The retail sale of e-cigarettes is allowed in Nigeria<sup>16</sup>. Even though the benefit of tobacco harm reduction is controversial<sup>17</sup>, some researchers have reported its benefit for public health<sup>15</sup>. Furthermore, some experts believe that tobacco harm reduction products have great potential to improve health outcomes among smokers who completely switch to them and others believe that tobacco harm reduction products will be addictive to young people<sup>17</sup>. Nonetheless, there is a dearth of data on the knowledge and perception of pharmacists regarding tobacco harm reduction products in Nigeria.

Pharmacists, among other primary healthcare givers, can play an essential role in smoking cessation<sup>18</sup>. They represent highly accessible trained healthcare professionals that patients often consult about health and drug-related issues. Over the years, in Nigeria, community pharmacies have broadened their scope of services to include public health services beyond traditional medicine supply to a variety of specialized services, such as the provision of vaccination services and disease management among others<sup>19</sup>. Pharmacists are well-suited to offer smoking cessation services in the pharmacies by retailing smoking cessation products and approaching patients in need of motivation, support, and enhanced awareness aimed at quitting smoking<sup>20</sup>. In addition, the roles of pharmacists in providing smoking cessation advice and services have been well-documented in the literature<sup>18</sup>. However, smoking cessation services are not a typical role of pharmacists in

Nigeria, even though they have a positive attitude towards offering the service<sup>21</sup>.

Preliminary studies also suggest that pharmacy-based smoking cessation services are cost-effective<sup>22</sup>. Though, criteria defining appropriate and inappropriate counseling on smoking cessation in Nigeria are not readily available, and pharmacist's role in smoking cessation programs is not obvious. Notably, no study has been found on knowledge, perception, and practice among the community pharmacists in Nigeria. This study, therefore, aims to assess the knowledge and perception of community pharmacists in the Ibadan metropolis regarding smoking cessation and tobacco harm reduction as well as practice and barriers to the practice of pharmacy-based smoking cessation intervention.

## METHODS

### Study design and settings

This study was a questionnaire-guided cross-sectional survey among community pharmacists practicing in the Ibadan metropolis between August and December 2019. Eligible participants were registered community pharmacists, practicing in the Ibadan metropolis, who gave voluntary informed consent to take part in the study. Participating pharmacists needed to have a minimum of one-year practice experience in a community pharmacy. Pharmacy students, interns, non-pharmacist attendants, and community pharmacists who were absent from their pharmacies during the study were excluded. Ethics approval for the study was obtained from the joint University of Ibadan/University College Hospital Institution Review Board with approval number UI/EC/19/0406.

### Study area

The study was conducted in Ibadan, the capital of Oyo State, southwestern Nigeria. Oyo State has an area of 27249 km<sup>2</sup> and is one of the 36 states of Nigeria. Ibadan has a population of 3.6 million inhabitants, while Oyo State has a population of 5.6 million<sup>23</sup>. There are federal and state government hospitals, primary healthcare facilities as well as numerous private hospitals in Ibadan. Community pharmacies and proprietary and patent medicine vendor stores are present throughout Ibadan. There are various types of community pharmacies in Ibadan and across Nigeria, most are retail, independent, supermarket type of pharmacies, with a few drug store and chain in-store pharmacies.

### Sample size determination

The number of community pharmacy premises registered in Ibadan was obtained from the Pharmacists' Council of Nigeria, Ibadan, Oyo State chapter directory. Based on the estimated population of 140 registered pharmacy premises and using the assumption of 95% confidence level and 5% margin of error, a sample size of 104 was obtained using the Yamane sample size formula<sup>24</sup>. Adjusting for a 10% non-response rate gave a target sample population of

approximately 116.

### Sampling and data collection procedure

A consecutive sampling technique/approach was used for participants' enrolment. Eligible community pharmacists were approached by visiting individual pharmacist in their respective pharmacy premises. The paper questionnaire was distributed to 116 community pharmacists. Objectives of the study were explained to every pharmacist after which voluntary verbal informed consent was obtained to signify intention to participate in the study. The paper questionnaire was self-administered by all consenting pharmacists and retrieved within 25–30 minutes of completion. Anonymity and confidentiality of responses were assured, while participation was entirely voluntary. Measures were put in place to ensure that no pharmacist filled in more than one questionnaire. This was achieved by coding each questionnaire administered to the pharmacist from each community pharmacy to avoid duplication. At least one pharmacist per community pharmacy premises completed the questionnaire on his/her own. The investigator collecting the data was given all the necessary training about the instrument and appropriate ways of approaching the pharmacists and gaining their permission for filling in the questionnaire prior to the data collection process. There was no incentive provided to the respondents for participating in the study.

### Data collection instrument, pretest, and content validation

The questionnaire was developed by the investigators following an extensive review of relevant literature<sup>25-27</sup>. The review provided an insight to facilitate the development of the questionnaire. Pretest and content validation were carried out on the drafted questionnaire. The questionnaire consisted of five parts. Part A captured demographic characteristics, such as sex, age, years of experience in community pharmacy. Part B comprised questions on smoking status and habits, which included: 'Are you a current smoker or not?'. Part C comprised questions on smoking cessation services, such as: 'Do you offer smoking cessation service in the pharmacy?'. Part D evaluated knowledge and perception of the participants, a sample of questions asked included: 'Nicotine replacement therapy is more expensive than normal tobacco?' and 'Do you believe smoking cessation is an important role of pharmacists?'. Part E comprises questions on possible barriers to rendering smoking cessation services, this included questions on 'Lack of knowledge and skills and non-availability of smoking cessation products'. The questionnaire was assessed for content validity by two experts in smoking cessation and two pharmacists in academia chosen from the Department of Clinical Pharmacy and Pharmacy Administration, University of Ibadan, to ascertain the comprehensiveness of question items, vis-à-vis the study objectives, as well as ensuring

that there are no ambiguous questions or statements. Subsequently, the questionnaire was given to five community pharmacists randomly chosen within the Ibadan metropolis to ascertain the ease of comprehension of the item-statements; these pharmacists were not included in the main study. Feedback from the pretest and content validation led to minor modifications of the drafted questionnaire.

### Knowledge index

For each knowledge statement, a correct response was assigned a score of '1,' and an incorrect response was scored as '0.' The total knowledge score was obtained by adding the scores for all knowledge responses. An 'overall knowledge percent score' was then calculated by multiplying the total knowledge score for each participant by 10.

### Data analysis

At the end of each day of the study, the administered questionnaires were sorted, cross-checked, and coded serially. Data entering, cleansing, and analysis were done using IBM SPSS (version 23). Descriptive statistics including frequencies and percentages were used to summarize the data. In this study, the overall score by community pharmacists in the knowledge domains developed for the purpose of this study was converted into a percentage to ensure uniformity in the scores.

In the knowledge domain where all scores are whole numbers, a total score of  $\geq 8$  out of 10 was considered as 'good' knowledge, a score 5–7 'fair' knowledge, and a score  $< 4$  'poor' knowledge. The cut-off criteria for the binary categorization were adapted from Bloom's cut-off point criteria, as well as a review of other related studies<sup>28,29</sup>. Community pharmacists' perceptions of smoking cessation and tobacco harm reduction are presented descriptively as frequencies and percentages.

## RESULTS

### Demographic characteristics

Of the 116 copies of questionnaires distributed among the community pharmacists, 104 were completed and included in the analysis, giving a response rate of 89.7%. The mean age ( $\pm$ SD) was  $28.26 \pm 5.68$  years, 63 (60.6%) were males, and 85 (81.7%) were aged  $\leq 30$  years. Ninety (86.5%) had 1 to 5 years' experience in community pharmacy practice, while the remainder had experience of  $> 5$  years, and 93 (89.4%) had not attended any specific smoking cessation training but were willing to attend smoking cessation training (Table 1).

### Smoking cessation activities and availability of products

Smoking cessation products were sold by 16 (15.4%) pharmacies. The most common products sold were nicotine gums 11 (68.8%), nicotine patches 2 (12.5%), e-cigarettes 2 (12.5%), and one herbal mixture for smoking cessation (6.2%). All of the community pharmacies did not have a

designated area for smoking cessation counseling and did not have a ‘no smoking sign’ at the pharmacy. Eleven (10.6%) community pharmacies provided materials for smoking cessation to the public, while 12 (11.5%) had a smoking cessation poster on the pharmacy premises. Smoking cessation outreach had been organized in the past by 17 (16.3%) pharmacies. All identified tobacco cigarettes to be of high risk, while 59 (56.7%) perceived electronic cigarettes to be of intermediate risk with a median score of 5. In all, 95 (91.3%), 102 (98.1%), 98 (94.2%) of the community pharmacists perceived nicotine, carbon monoxide, and tobacco, to be of high risk, respectively (Table 2).

### Knowledge and perception of smoking cessation and tobacco harm

Table 3 shows that 76 (73.1%) of the community pharmacist

**Table 1. Demographic characteristics, awareness and training of community pharmacists about smoking cessation, Ibadan, 2019 (N=104)**

Characteristics	Responses	n (%)
<b>Sex</b>	Males	63 (60.6)
	Females	41 (39.4)
<b>Age (years)</b>	≤30	85 (81.7)
	>30	19 (18.3)
<b>Years of experience in community pharmacy practice</b>	1–5	90 (86.5)
	>5	14 (13.5)
<b>Have you attended specific training in smoking cessation prior this time?</b>	Yes	11 (10.6)
	No	93 (89.4)
<b>Are you willing to attend smoking cessation training?</b>	Yes	93 (89.4)
	No	11 (10.6)
<b>Does Pharmacy school equip you with required skills and knowledge on smoking cessation?</b>	Yes	13 (12.5)
	No	91 (87.5)
<b>Do you offer smoking cessation service in the pharmacy?</b>	Yes	13 (12.5)
	No	91 (87.5)
<b>During your work in community pharmacy do you meet patients who ask you for support in quitting smoking?</b>	Never	14 (13.5)
	Rarely	56 (53.8)
	Many times per week (≥10)	30 (28.9)
	Few times per week (<10)	4 (3.8)
<b>Have you heard of the concept of Tobacco Harm Reduction before?</b>	Yes	11 (10.6)
	No	93 (89.4)
<b>Current smoker</b>	Yes	7 (6.7)
	No	88 (84.5)
	Former	9 (8.8)

were aware that the health risk of nicotine replacement therapies is lower compared to smoking, while 31 (29.8%) agreed that the health risk of electronic cigarettes is lower than that of cigarette smoking. Sixty-five (62.5%) respondents had a score below 50%, indicating ‘poor’ knowledge of smoking cessation and tobacco harm reduction

**Table 2. Community pharmacists’ perceived health risk score for tobacco, smoking cessation products and smoking components, Ibadan, 2019 (N=104)**

Variables	Perceived risk level	n (%)	Median score (range)
Tobacco cigarette	Low	0 (0.0)	10 (8–10)
	Intermediate	0 (0.0)	
	High	104 (100)	
Electronic cigarette	Low	25 (24.0)	5 (2–8)
	Intermediate	59 (56.7)	
	High	20 (19.2)	
Nicotine replacement therapy (NRT)	Low	100 (96.2)	3 (2–6)
	Intermediate	0 (0.0)	
	High	4 (3.8)	
Non-NRT oral medications	Low	101 (97.1)	1 (1–8)
	Intermediate	0 (0.0)	
	High	3 (2.9)	
<b>Smoking component</b>			
Nicotine	Low	9 (8.7)	7 (5–10)
	Intermediate	5 (4.8)	
	High	90 (86.5)	
Inhaled smoke	Low	32 (30.8)	10 (4–10)
	Intermediate	0 (0.0)	
	High	72 (69.2)	
Carbon monoxide	Low	2 (1.9)	10 (5–10)
	Intermediate	0 (0.0)	
	High	102 (98.1)	
Tar	Low	16 (15.4)	10 (3–10)
	Intermediate	0 (0.0)	
	High	88 (84.6)	
Tobacco	Low	6 (5.8)	10 (2–8)
	Intermediate	0 (0.0)	
	High	98 (94.2)	

Low risk (score 1–4); Intermediate risk (score of 5); High risk (score >5). The community pharmacists perceived risk score was measured through Likert-type scales, ranging from 1 (lowest risk) to 10 (highest risk).

**Table 3. Knowledge and perception of smoking cessation and tobacco harm reduction among community pharmacists, Ibadan, 2019 (N=104)**

Questions	n (%)
<b>The health risk of nicotine replacement therapies compared to smoking</b>	
Higher	14 (13.5)
Equal	14 (13.5)
Lower*	76 (73.0)
<b>The health risk of electronic cigarettes compared to cigarettes smoking</b>	
Higher	36 (34.6)
Equal	3 (2.9)
Lower*	31 (29.8)
Don't know	34 (32.7)
<b>The dependence potential of nicotine replacement therapy compared to smoking</b>	
Higher	10 (9.6)
Equal	26 (25.0)
Lower*	68 (65.4)
<b>Nicotine replacement therapy is more expensive than normal tobacco</b>	
Yes	42 (40.4)
<b>Electronic cigarettes are safer than tobacco</b>	
Yes	29 (27.9)
<b>Peer support programs are effective in smoking cessation</b>	
Yes	62 (59.6)
<b>The health risk of modified-risk tobacco products compared to smoking</b>	
Higher	32 (30.8)
Equal	3 (2.9)
Lower	69 (66.3)
<b>Electronic cigarettes can lead to suicidal ideation</b>	
Yes	9 (8.7)
<b>Nicotine is the most harmful substance in a cigarette</b>	
Yes	44 (42.3)
<b>Some anti-depressants and anti-hypertensives can be used as smoking cessation therapeutic options</b>	
Yes	29 (27.9)

Continued

**Table 3.** Continued

Questions	n (%)	Cut-off mark
<b>Knowledge category</b>	<b>n (%)</b>	<b>Cut-off mark</b>
Good	0 (0.0)	≥80
Fair	39 (37.5)	50–79
Poor	65 (62.5)	<50
<b>Perception questions</b>	<b>n (%)</b>	
Do you think having access to alternative nicotine products is desirable for smokers?		
Yes	85 (81.7)	
Do you believe smoking cessation service is an important role of pharmacists?		
Yes	101 (97.1)	
As a public health professional, would you recommend the electronic cigarette and other alternative nicotine products as smoking cessation aids to a patient?		
Yes	66 (63.5)	
As a public health professional, would you recommend electronic cigarettes to a patient for reducing the number of smoked cigarettes?		
Yes	54 (51.9)	
Do you think that medical community and healthcare workers should take a position in favour of electronic cigarettes?		
Yes	16 (15.4)	
Do you think that electronic cigarettes should be prohibited?		
Yes	21 (20.2)	
As a public health professional, would you recommend modified-risk tobacco products to reduce tobacco-related problems?		
Yes	65 (62.5)	

\*Correct responses.

among the community pharmacists. The majority, 101 (97.1%), of the community pharmacists agreed that smoking cessation service is an important role of pharmacists. Eighty-five (81.7%) agreed that having access to alternative nicotine products is desirable for smokers (Table 3).

**Barriers to smoking cessation services**

Barriers identified to offering smoking cessation services in the community pharmacies were: lack of knowledge and

skills 104 (100%), non-availability of smoking cessation products 95 (91.3%), inability to follow up patients 47 (45.2%), lack of time 29 (27.9%), lack of demand 27 (26.0%), lack of self-confidence 26 (25.0%), no motivation 7 (6.7%), and no payment for the service 6 (5.8%).

## DISCUSSION

Community pharmacists are essential members of the healthcare team and are integral in smoking cessation in many developed countries<sup>20</sup>. The role of community pharmacist in smoking cessation has been widely studied, and their involvement in smoking cessation may improve cessation rates<sup>18,20</sup>. To the best of our knowledge, this is the first study in Nigeria investigating the awareness of community pharmacists about e-cigarettes and tobacco harm reduction strategies as well as smoking cessation activities.

The prevalence of both current and former smokers among our respondents in this study was 6.7% and 8.8%, respectively. This could be attributed to the potential influence of a medical background on smoking habits. However, a previous study<sup>30</sup> reported a higher prevalence of smokers among healthcare professionals when compared to our study. Furthermore, about half of the community pharmacists in this study claimed that smokers rarely approach them to seek professional counselling on smoking cessation. This may be due to the fact that the role of community pharmacists in smoking cessation is not well established in Nigeria and that the general public does not see pharmacists as professionals that can help to quit smoking<sup>19</sup>. This is evident from our study where some respondents reported a lack of demand as one of the barriers to offering smoking cessation services in the community pharmacies. Thus, this highlights the need to intensify public awareness on the roles of community pharmacists in smoking cessation in Nigeria.

Healthcare givers who are trained on smoking cessation are more likely to assess smoking status and assist their patients with quitting, compared with those who are not trained<sup>31</sup>. Most of the community pharmacists did not attend any form of training on smoking cessation. This may also be a contributory factor to a deficiency in smoking cessation practice among the respondents. Nevertheless, the results showed that most of the respondents are willing to attend smoking cessation training and there is a knowledge deficit regarding tobacco harm reduction and smoking cessation. This further justifies the need for community pharmacists to undergo continuous training on smoking cessation and tobacco harm reduction. This provides an opportunity to include smoking cessation training as part of the Pharmacists' Council of Nigeria Mandatory Continuing Professional Development Training and further suggests the need to broaden the scope of teaching of smoking cessation in Pharmacy schools in Nigeria.

In our study, more than three-quarters of the pharmacists had poor knowledge of smoking cessation and tobacco harm

reduction with less than half being aware that the health risk of electronic cigarettes compared to cigarette smoking is lower. Although, there are controversies regarding the safety of alternative nicotine products, the potential for dual use with cigarettes, and concerns regarding addicting young people to tobacco<sup>17,31,32</sup>, there is emerging evidence supporting that e-cigarettes are safer than tobacco smoking and maybe useful as a smoking cessation option<sup>15,33-36</sup>. A recent review revealed no obvious harm of nicotine e-cigarette use and it may be useful as a smoking cessation tool better than nicotine replacement therapy<sup>37</sup>. The latest Public Health England review report shows that using e-cigarettes pose only a small fraction of the risk of smoking, and the comparative risks of cardiovascular and lung disease, though not quantified, are substantially below the risks of smoking<sup>38</sup>. In addition, a recent systematic review also revealed that switching to non-combustible nicotine products in pregnancy is far better, if the alternative is to continue smoking<sup>39</sup>. With the increase in the popularity of these alternative nicotine products, it is important that pharmacists are aware of these products to be able to advise their patients appropriately and provide evidence-based information to facilitate informed decisions. It is important that pharmacists are updated on the emerging evidence and the controversies regarding use of e-cigarettes as a smoking cessation option. This will be relevant in providing adequate pharmaceutical care services and counseling to patients that need to quit smoking.

The low level of awareness and knowledge deficit perhaps imply the need for creating awareness as well as encouraging consistent training among community pharmacists on aspects related to smoking cessation. It is not surprising that most community pharmacists do not provide smoking cessation services; this could be a result of lack of knowledge of tobacco cessation among the community pharmacists. The majority claimed that Pharmacy school does not equip them with knowledge and skills on smoking cessation. This provides the opportunity to revise the pharmacy curriculum in Nigeria so that future pharmacists can be trained to offer comprehensive smoking cessation services to their patients. On the whole, participants perceived a high health risk for nicotine as a smoking component, as well as considering its impact on smoking-related diseases, including cancer, stroke, and atherosclerosis. However, nicotine replacement therapy's risk was ranked lower than that of smoking cigarettes by the respondents. The overestimation of the harmful effects of nicotine in humans is a widespread and pervasive belief amongst healthcare workers, perhaps due to the opinion that publicly minimizing the risk potential of nicotine might convey a false underestimation of smoking-related health risks<sup>15,27,33</sup>. Nevertheless, currently available evidence does not suggest that nicotine promotes cancer pathway activation, and its contribution to cardiovascular disease is lower than that of tobacco smoke<sup>14,27</sup>.

Even though the significance of smoking cessation

products and counseling practice cannot be overemphasized, our study showed that about one-tenth of the community pharmacies stock these. Moreover, smoking cessation activities such as providing materials/leaflets on smoking cessation, community engagement through outreaches, and displaying of smoking cessation posters and signs within the pharmacy did not exist in more than 80% of the community pharmacies. Some of the reported barriers to smoking cessation practice included inadequate knowledge and skills, lack of time, and unavailability of smoking cessation products among others. Despite these challenges, the community pharmacists still believe smoking cessation is an important service they should be involved in and that access to alternative nicotine products is desirable for smokers. Moreover, no community pharmacies have a designated place for smoking cessation counseling. This should be considered in developing smoking cessation models in Nigeria in that the usual consulting room can be utilized for smoking cessation counseling.

This study has revealed the largely limited involvement of community pharmacists in tobacco control in Nigeria. The main focus of attempts to promote smoking cessation has been the physicians; nonetheless, the ease of accessibility and high level of trust to pharmacists implies they may also be in an appropriate position to provide effective advice<sup>40</sup>. It is important that the engagement of community pharmacists in smoking cessation is recognized, emphasized, strengthened, and developed in the country. This will allow for more gains in reducing smoking prevalence in the country.

### Strength and limitations

The study had a high response rate and offers a key insight into the community pharmacists' knowledge and perception of smoking cessation and tobacco harm reduction, thereby revealing the area of emphasis to fill the knowledge and practice gaps. The high response rate was achieved because the researcher visited the pharmacy premises and administered the questionnaire directly to the community pharmacists. However, the study is not without limitations. One of the limitations is the measure used. The 'yes/no/I don't know' options are limiting; a more accurate representation of opinions would be the use of a Likert scale. This study also was conducted among community pharmacists in the Ibadan metropolis, perhaps if it was conducted in more cities, it might have more widespread data on the knowledge and perception of community pharmacists in smoking cessation and tobacco harm reduction. Other limitations include the possibility of response bias from participants due to over- or under-reporting of the information provided, which may indicate the need for caution in generalizing the findings to the entire community pharmacists in Nigeria.

### CONCLUSIONS

Community pharmacists showed a suboptimal level of

knowledge regarding smoking cessation and tobacco harm reduction resulting in a deficit in pharmacy-based smoking cessation interventions. However, pharmacists believed smoking cessation service is an important role they should be involved in. It is necessary to enhance healthcare professionals' preparedness to be able to effectively provide smoking cessation advice. There is a need to create awareness about smoking cessation and tobacco harm reduction among community pharmacists. It is also essential that the identified barriers to smoking cessation are properly addressed in developing smoking cessation models for community pharmacies in Nigeria. Smoking cessation training should be included as part of the Pharmacists' Council of Nigeria Mandatory Continuing Professional Development Training. It is also imperative to establish a basic national smoking cessation guideline in Nigeria. All these efforts could be beneficial in reducing morbidity and mortality among smokers in Nigeria.

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#### CONFLICTS OF INTEREST

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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#### AUTHORS' CONTRIBUTIONS

YAA and WAS developed the study protocol, drafted the manuscript, contributed to the data collection and data analysis. All authors contributed to the preparation of the manuscript, read, and approved the final version.

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