Knowledge, Perception, and Willingness of Emerging Public Health Advocates to Effectively Communicate about Smoking Cessation and Tobacco Harm Reduction in Africa

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Abstract

Background

Media campaigns targeting young people are a valuable tool for promoting awareness about tobacco harm reduction (THR). Advocacy and communication efforts to inform about the risks of tobacco use, THR strategies, and smoking cessation methods can enhance policy compliance, minimize tobacco-related damages, and motivate individuals to quit smoking. This study investigates the knowledge, perception, and willingness of emerging public health advocates to effectively communicate about smoking cessation and THR strategies in Africa.

Methods

This research adopts a concurrent explanatory sequential design. The target demographic consists of public health enthusiasts, healthcare students, health communicators, and budding journalists aged 18–30 in Africa. The questionnaire, validated through an extensive literature review, was distributed via Google Forms. From 450 individuals expressing interest in the THR Journo project, 415 agreed to participate, responding to open-ended questions on smoking cessation and THR among young people. Data were analyzed with Microsoft Excel and IBM SPSS for quantitative aspects, while Atlas. ti 9 was used for the qualitative interpretation of open-ended responses.

Results

Of the 415 participants, 73.7% lacked prior knowledge or proper understanding of THR. Most respondents (60.0%) regarded Nicotine Replacement Therapy (NRT) as the most effective THR strategy, with 26.7% favoring e-cigarettes. A majority (73.3%) perceived NRT to be safer than smoking, while 48.3% believed e-cigarettes were safer. Approximately 70.8% agreed that THR products aid in smoking cessation. However, 38.3% were uncertain if these products are addictive. Participants referenced strategies/activities for creating awareness for THR, which include, “More advocacy and sensitization programs should be organized”, and “These programs should engage people who smoke tobacco and nicotine products themselves as champions.”Ambassadorial roles in public Universities should be granted to students as a medium to proliferate the central message of the THR.

Conclusions

Identified barriers to effective THR communication included misinformation propagated by health professionals and the media, religious and cultural constraints, and challenges in reaching remote areas. Strategies to enhance THR communication encompass increased advocacy and communication,

government engagement and policy development, simplification of THR messages, and capacity building and engagement of advocates and stakeholders.

Background

Tobacco smoking causes approximately 8 million deaths per year globally. Most tobacco-related deaths are caused by the direct use of tobacco products, while a smaller number are caused by exposure to second-hand smoke (*Tobacco*, n.d.). Most tobacco smokers live in low-and middle-income countries, with Nigeria being one example of a country with a high rate of tobacco-related deaths and a significant tobacco industry(WHO Global Action Plan 2013–2020, n.d.; WHO, 2013). According to a World Bank report, the proportion of the global population that smokes tobacco has declined from 9.3% in 2000 to 3.7% in 2020 (World Bank, n.d.).This suggests that the smoking rate might be declining. Africa accounts for only 2% of the cigarettes smoked globally and 6% of the world's smokers reside in Africa (Blecher& Ross, n.d.). The African continent has the lowest rate of smoking prevalence among all the regions recognized by the World Health Organization (WHO), with a prevalence of 18.5% in 2020. However, this rate is expected to decrease further and narrow down to 11.2% by 2025 (*African Region - TobaccoTactics*, n.d.). Although daily smoking is prevalent among one-tenth of the Nigerian population, there areseveral contradicting results and conclusions on tobacco use practices and consumption rates in Nigeria(Adeloye et al., 2019).

The Global Adult Tobacco Survey (GATS) described the prevalence of tobacco in Nigeria to be at 3.7% in 2012, comprising 7.2% males and 0.3% females. About 3.1 million peopleare smoking in Nigeria with most users beginning to smoke tobacco at the age of 16 (GATS Nigeria, n.d.). Astudy among medical students in South-west Nigeria reported a lifetime prevalence of tobacco smoking of 17.9%, while 5.0% are current smokers(Awopeju et al., 2013). This is similar to another study carried out among university students in Ilorin, North-central Nigeria with lifetime prevalence and current prevalence of 17.1% and 5.7% respectively (Fawibe& Shittu, 2011).Most tobacco users in Nigeria consume tobacco by smoking cigarettes (GATS Nigeria, n.d.). A literature review, which reviewed 30 articles published between 2000 and 2017, reported studies on gender and smoking. The study focused on studies that sample Nigerians and reported the incidence of tobacco use among women in Nigeria to vary from 2.2–10%, while for men, it ranged from 1–32.5% (Oyewole et al., 2018). In Nigeria, smoking tobacco contributes to 17,500 deaths per year out of which 207 men and 130 women are reported to be dying weekly from consumption. Yearly, about 250,000 cancer diagnoses are also caused by smoking cigarettes (CSEA AFRICA, n.d.). Considering economic losses, about US$ 591 million was lost in 2015 to the impact of tobacco smoking (CSEA AFRICA, n.d.).

According to the World Health Organization, smoking tobacco in any measure can cause cancers of the throat, mouth, stomach, bowel, esophagus, and other cancers. It can also cause infections in the chest and lungs (Olukoya, 2017). Meanwhile, lots of research are ongoing on the impact of Tobacco Harm Reduction(THR) strategies even as tobacco company has been criminated to be heavily in the promotion of tobacco products.There is a high chance for appropriate communication of products if policies,

regulations, and benefits of the products are well known (Bialous& Freeman, 2021). THR has been said to be of some importance as numerous smokers are faced with the challenge of being unable, or perhaps unwilling, to completely quit nicotine and tobacco, and consequently persist with smoking despite the grave and apparent health implications. Traditional smoking cessation policies and programs offer smokers the grim choice between quitting or suffering the fatal consequences of tobacco use. Tobacco harm reduction, however, represents a different approach to smoking cessation which involves the use of alternative sources of nicotine, including contemporary smokeless tobacco products (Rodu&Godshall, 2006).

The main approach to reducing tobacco use has been by trying to prevent addiction and focusing on achieving cessation of the use of tobacco products (Henningfield et al., 2003). Although not all tobacco harm reduction strategies have been completely evaluated for a potential recommendation for the young and old population, it has been suggested that some of the harm reduction strategies may be of benefit towards achieving cessation in both the old and young populations. This has a high impact on how the concept is discussed. Also, the regulatory environment and how tobacco smoking is perceived impact how it is discussed.

Considering education among young people, media campaigns among the young population among other strategieshave been identified as a viable way to promote appropriate knowledge of THR(Lantz et al., 2000). Strategic advocacy and communication campaigns that will educate people on the dangers of tobacco use, tobacco harm reduction policies, and smoking cessation techniques will also help to increase adherence to policies, reduce tobacco-related harms, and encourage smoking cessation (Vital Strategies, n.d.). A study conducted in Northern Carolina aimed to demonstrate the impact of advocacy and tobacco-related communications on tobacco usewhich required high school students to participate in advocacy activities in their communities reported that community advocacy activities resulted in a decrease in regular smoking (Winkleby et al., 2004). The growing use of advocacy to influence the perception of THR and related policies requires exercising caution when deciding on goals (Niederdeppe et al., 2007). "How to communicate appropriately" is, therefore, a vital skill that should be learned by young health professionals (Brittany Chambers, n.d.; Vermeir et al., 2015).

There is startlingly low awareness and acceptability of tobacco harm reduction as a public health policy in Nigeria and the rest of Africa. This affects how the issue is communicated. This study is aimed at assessing the knowledge and perception of emerging public health advocates and healthcare care students who are students and professionals involved in public health advocacy on how they might communicate about smoking cessation and THR in the future. This study aims to bridge the gap in knowledge as only a few grey pieces of literature were found to discuss the communications of smoking cessation and THR using the African context and no paper to our knowledgefocused on young and emerging healthcare and public health professionals.

Methodology

Design: The research design utilizes a concurrent approach to the explanatory sequential design. This involves the collection and analysis of both quantitative and qualitative data concurrently to provide a comprehensive understanding of the research questions. This study is part of a training project called the THR Journo Project (https://linktr.ee/thrjournoproject), organized to train healthcare students and young healthcare professionals who are public health advocates. It is a quantitative study employing close-ended and open-ended semi-structured and unstructured questions. These questions delve into knowledge and perception about smoking cessation and THR methods, how participants might communicate about smoking cessation and THR, and how they hope the fellowship will benefit them.

Sampling

The study and training target public health enthusiasts and advocates, healthcare students, health communicators, and emerging journalists aged 18–30. Young healthcare professionals are defined as those with a healthcare background, studying a healthcare-related course at university, and having less than 5 years of experience in the public health space in Nigeria. All participants provided written informed consent and were assured of confidentiality and anonymity.

Data collection

The questionnaire was designed following exhaustive literature research in line with the study objectives. Data were collected using Google Forms and were self-administered. Of the 450 interested participants in the training, 415 consented to the survey. Open-ended questions were included because studies have established that such questions assessing perspectives of THR among young people can contribute to the design of tobacco use and prevention strategies specific to the population (Antin et al., 2022).

The initial set of questions was collected before the respondents applied to the training project and was answered by 415 individuals. A more in-depth questionnaire was administered to the 120 participants selected for the training project. The first set of questions explored respondents' demographics and their answers to the question "Do you have any prior experience or understanding of Tobacco Harm Reduction?"

The second questionnaire, answered by the 120 respondents, included close-ended questions assessing the knowledge of THR products and how they would communicate about THR as public health advocates. The questions included:

- • What factors do you believe prevent communication and conversations about THR?
- • What do you think could improve THR communication in your country of residence?
- • Why are you interested in learning about Tobacco Harm Reduction?

Respondents selected their preferred options for the close-ended questions and typed their responses for the open-ended questions into the Google Form. The questionnaires were pre-tested on 5 healthcare students and 5 young healthcare professionals, who were part of the volunteer team for project

implementation. They were onboarded anonymously, without knowing they had been selected as project team members.

Analysis

Microsoft Excel and IBM SPSS 25 were used for quantitative analysis, creating descriptive charts and tables. Atlas. ti 9 was used to analyze open-ended responses by generating themes. The thematic analysis helped to contextualize content analysis, which was used to rank responses based on their relevance to the study objectives. These analyses were utilized to understand the phenomenon, with content analysis specifically used to determine percentages and prioritize responses used as quotes for themes. Coding was carried out by 3 data analysts to ensure academic rigor, with these analysts reaching a consensus on themes, the meaning of themes, and codes before the results were presented to the study investigators.

Results

Table 1
Characteristics of Respondents

Variable	Observation	Frequency	Percent
Gender			
	Female	149	35.9
	Male	266	64.1
Age			
	18–23	127	30.6
	24–28	166	40.0
	28–35	97	23.4
	Above 35	25	6.0
Highest Level of Education Attained			
	Graduate	181	43.6
	Secondary/ High school	29	7.0
	Undergraduate	205	49.4
Country			
	Nigerian	381	91.8
	Malawian	20	4.8
	Sierra Leonean	5	1.2
	Cameroonian	2	0.5
	Tanzanian	2	0.5
	Pakistani	2	0.5
	Rwandan	1	0.2
	Kenyan	1	0.2
	Ghanaian	1	0.2

Most of the participants were males representing 266 (64.1%) of the total participants compared to females who were 149, representing (35.9%) of the total participants. Most of the participants were between the age of 24–28 (40%) with the least age range of participants above 35 (6%) of total respondents. The majority of participants were undergraduates 205 (49.9%) and young professionals 128(30.8%), and about 65(15.7%) were health communicators. Out of the total study population,

381(91.8%) were Nigerians which represent the highest number of total participants, followed by Malawians which represented 20(4.8%).

Table 2
i: Knowledge about Tobacco Harm Reduction

Do you have any prior experience or right understanding of Tobacco Harm Reduction?	No	Yes	Total
Emerging Journalist	23(5.5%)	13(3.1%)	36(8.7%)
Health Communicator	37(8.9%)	28(6.8%)	65(15.7%)
Young Professional(Health and Public health)	99(23.9%)	29(7.0%)	128(30.8%)
Students (Media professionals, public health advocates, content creators)	125(30.1%)	30(7.3%)	155(37.4%)
Health writers	22(5.3%)	9(2.2%)	31(7.5%)
Total	306(73.7%)	109(26.3%)	415(100%)

Participants were selected among Emerging Journalists, Health communicators, Young Professionals (Health and Public health), Students (Media professionals, public health advocates, content creators), and Health writers to indicate a title that best describes them. To know if participants of the study have prior experience or understanding of THR, a cross tabulation was done. Out of the study population, 73.7% have no prior knowledge or right understanding of THR.

NB

Only 120 participants selected for the training project were allowed to proceed to the next questions.

Table 2
ii: Knowledge about Tobacco Harm Reduction

Do you have any prior experience or right understanding of Tobacco Harm Reduction?	No	Yes	Total
Emerging Journalist	6(5.0%)	4(3.3%)	10(8.3%)
Health Communicator	9(7.5%)	6(5.0%)	15(12.5%)
Young Professional (Health and Public health)	25(20.8%)	11(9.2%)	36(30.0%)
Students (Media professionals, public health advocates, content creators)	30(25%)	9(7.5%)	39(32.5%)
Health writers	15(12.5%)	5(4.2%)	20(16.7%)
Total	85(70.8)	35(29.2)	120(100%)

The following questions were answered after the participants were selected for the project and before the commencement of the project activities. The link to the questions was sent to their email as part of the congratulatory mail for selection for the project. All of them were followed up to respond to the form before the commencement of the project.

Table 3
Perception about THR methods and willingness to discuss THR.

Variable	Observation	Count	Percent(n = 120)
What THR product do you think is the most effective?			
	E-cigarettes	32	26.7
	Nicotine Replacement Therapy	72	60.0
	Snus	4	3.3
	I don’t know	12	10.0
Nicotine Replacement Therapy is safer than smoking tobacco			
	I don't know	20	16.7
	No	12	10.0
	Yes	88	73.3
E-cigarettes are safer than smoking tobacco			
	I don't know	23	19.2
	No	39	32.5
	Yes	58	48.3
THR products aid smoking cessation			
	I don't know	26	21.7
	No	9	7.5
	Yes	85	70.8
Access to THR products is desirable to smokers			
	I don't know	38	31.7
	No	23	19.2
	Yes	59	49.2
THR products stop smoking addiction			
	I don't know	17	14.2
	No	25	20.8
	Yes	78	65.0
THR products are addictive			

Variable	Observation	Count	Percent(n = 120)
	I don't know	46	38.3
	No	56	46.7
	Yes	18	15.0
THR products incur more expenses			
	I don't know	35	29.2
	No	50	41.7
	Yes	35	29.2
Have you ever reported, discussed, or discuss anything about or related to THR or smoking cessation?			
	No	44	36.7
	Yes	76	63.3
How often do you think you can put out content about Drug use, abuse, or control			
	Daily	4	3.3
	Monthly	17	14.2
	Never	28	23.3
	Seldom	60	50.0
	Weekly	11	9.2
Do you wish to learn more about THR			
	Yes	120	100
Are there barriers to communicating about THR?			
	No	73	60.8
	Yes	47	39.2
What type of content do you think you will put out about THR or smoking cessation?			
	Smoking cessation	39	32.5
	Prevention of Tobacco use	36	30.0
	Reduction in Tobacco use	35	29.2
	Nothing at all	10	8.3

A majority(60.0%) of the respondents think Nicotine Replacement Therapy(NRT) is the most effective Tobacco Harm Reduction(THR) product; with 26.7% of the respondents of the opinion that E-cigarettes are the most effective. Most of the respondents(73.3%), believe NRT is safer than smoking tobacco. A majority(48.3), believe E-cigarettes are safer than smoking tobacco and 70.8% agree THR products aid smoking cessation. Out of the study participants, 21.76% of the respondents do not know if THR products stop smoking addiction. Also, 38.3% do not know if THR products are addictive.

The majority of the respondents (63.3%) agreed on ever reporting or discussing anything about or related to THR or smoking cessation. All respondents (100%) indicated an interest in learning more about THR, with39.2% opining that there are barriers to communicating about THR.

Qualitative Analysis

Table 4
Factors preventing communication and conversations about THR

What are the factors preventing communication and conversations about THR in your opinion?	
Codes	**References(Quotes)**
Smoker education barriers	Many smokers hardly know anything about THR products and when you discuss it with them, it sounds strange to them.
Limited platforms and resources to effectively discuss THR issues.	There are not many platforms to have THR discussions. Most public health platforms don’t want to discuss it.
Behavior of the tobacco industry	The main barrier to achieving public health benefits from harm reduction approaches is the behavior of the tobacco industry
Misinformation about THR	The barriers to awareness of Tobacco Harm Reduction have been the inaccurate beliefs about THR that the residents in my community have. Many people don't know the science behind harm reduction
Media representation of THR	The media also is a barrier to THR because they only tell smokers that, "smokers are liable to die young" instead of telling smokers that they could use THR as a substitute for smoking Tobacco and live longer.
Diversity barriers	Religious barriers and cultural diversity are one of the factors that hamper conversation and increase awareness of THR.
Remote communication challenges	Getting the message about THR to people that live in remote areas with bad access roads can be difficult unless you use the radio.

Theme 1: What are the factors preventing communication and conversations about THR in your opinion?

The factors were summarized into codes as follows:

1. **Smoker education barrier**: Participants considered a lack of understanding of the available information about THR as a factor affecting the communication of THR. Referencing "Many smokers hardly know anything about THR products and when you discuss it with them, it sounds strange to them."
2. **Limited platforms and resources to effectively raise THR issues**: Limited platforms to effectively raise THR issues were widely referenced by the participants as a limiting factor. Referencing “There are not many platforms to have THR discussions. Most public health platforms don't want to discuss it."
3. **Behaviour of the tobacco industry**: Participants noted the behavior of the tobacco industry as the main barrier to achieving public health benefits from harm reduction approaches.
4. **Misinformation about THR**: misconceptions about smoking cessation methods and THR were highlighted as barriers to true information about THR being well communicated. Referencing "The barriers to awareness of Tobacco Harm Reduction have been the inaccurate beliefs about THR that the residents of my community have. Many people don't know the science behind harm reduction."
5. **Media representation of THR**: What media professionals portray of THR was attributed as a key factor affecting THR communication. Referencing “The media also is a barrier to THR because they only tell smokers that, "smokers are liable to die young" instead of telling smokers that they could use THR as a substitute for smoking Tobacco and live longer.”
6. **Diversity barriers**: Beliefs and practices are key factors impeding communications of THR. Religious barriers and cultural diversity are one of the factors that hamper conversation and increased awareness of THR.
7. **Remote communication challenges**: Access to information and method of communication in rural settings were mentioned by respondents as a factor affecting THR communication. "Getting the message about THR to people that live in remote areas with bad access roads can be difficult unless you use the radio".

Table 5
How to improve THR communication

What do you think can improve THR communication in Your Country of Residence?	
Codes	**References**
Communication advocacy initiatives	More advocacy and sensitization programs should be organized. An institution should be established to cater for communication. Social media with the aid of influencers can be used as a tool. These programs should engage people who smoke tobacco and nicotine products themselves as champions. Non-Government Organizations and Community-based organizations should work towards awareness creation to the public, health practitioners, students in tertiary institutions, street children, and parents or guidance as well.
Youth THR promotion	Ambassadorial roles, fellowships, and training programs in public Universities should be granted to students so that they can use that medium to proliferate the central message of the THR. Involving young people in the fight against tobacco by engaging them in school clubs.
Message Simplification and Translation	The message of THR should be simplified more into easy-to-relate forms and languages, like Effik, Yoruba, Pidgin, etc. Translation of THR campaign contents to indigenous languages will help in reaching non-English speakers.
Government involvement and policy development	Engaging the government to make legislations and policies that would promote THR
	Inter-sectorial collaboration with health ministries and a wide range of awareness campaigns cutting across states and ministries of health, schools and campuses, churches, etc.
	Policy supporting tobacco Harm Reduction should be developed and implemented to enable expert discussion on the subject matter. Partnership with the government is also key for better coverage and possibly funding for effective communication campaigns.
Capacity Building and Engagement.	Advocates of THR should be properly trained and equipped. Engaging and educating Civil Society Organizations and relevant stakeholders such as healthcare professionals on the benefits of THR will help advocate for the implementation of THR strategies in Nigeria
Engaging Key Stakeholders	Inclusion of relevant stakeholders like Community/Traditional heads, church leaders, and youth leaders. These leaders could aid in ensuring this message gets across to their people.

Theme 2: What do you think can improve THR communication in Your Country of Residence?

The participants were asked about improvement strategies for THR communication. The codes are summarized below.

1. **Communication advocacy initiatives including Youth THR promotion**: Participants referenced strategies/activities for creating awareness for THR, which include- 1. More advocacy and sensitization programs should be organized. An institution should be established to cater for communication. Social media with the aid of influencers can be used as a tool. These programs should engage people who smoke tobacco and nicotine products themselves as champions.; 2. Ambassadorial roles in public Universities should be granted to students so that they can use that medium to proliferate the central message of the THR 3. Involving young people in the fight against tobacco by engaging them in school clubs.
2. **Message simplification and Translation**: The message of THR should be simplified more into easy-to-relate forms and languages, like Effik, Yoruba, Pidgin etc. Translation of THR campaign contents to indigenous languages will help in reaching non-English speakers.
3. **Government involvement and policy development**: participants highlighted the role of government policies as a strategy for improving THR conversations in three references- 1). Engaging the government to make legislations and policies that would promote THR; 2). Inter-sectorial collaboration with health ministries and a wide range of awareness campaigns cutting across states and ministries of health, schools and campuses, churches, etc.; 3). Policy supporting tobacco Harm Reduction should be carefully developed and implemented to enable expert discussion on the subject matter.
4. **Capacity Building and Engagement**:'Advocates of THR should be properly trained and equipped' and 'Engaging and educating Civil Society Organizations and relevant stakeholders such as healthcare professionals on the benefits of THR will help advocate for the implementation of THR strategies in Nigeria.
5. **Engaging Key Stakeholders**: Inclusion of relevant stakeholders like Community/Traditional heads, church leaders, and youth leaders. These leaders can aid in ensuring this message gets across to their people.

Table 6
Reasons for learning about THR

Question	Why are you interested in learning about Tobacco harm reduction?
Code	**References**
Personal Contribution to Substance Abuse Reduction	As a mental health Nurse, I see this as an opportunity to contribute my quota to reduce the incidence of Substance abuse and its consequences in Africa.
Knowledge and Action for Health Promotion	To increase my knowledge about tobacco reduction and to contribute my efforts towards raising health awareness and commitment towards a healthier lifestyle.
Research on Tobacco Alternatives	I am a health researcher and I want to research the use of a range of alternatives such as Safer Nicotine Products (SNPs) and Nicotine Replacement Therapy (NRT) over the use of cigarettes to cause individuals to reduce and completely cease smoking cigarettes.
Advocacy Against Drug Abuse.	I would love to fight against drug abuse so that we can have many youths that would be drug-free.
Personal Experience for Prevention	Because I am a tobacco addict and I hate that about myself. Maybe from my stories, I can prevent younger people than me from getting hooked up on the vice.

Theme 3: Why are you interested in learning about tobacco harm reduction?

The participants were asked about their interest in tobacco harm reduction and their answers were grouped into codes and references are highlighted below.

1. **Personal Contribution to Substance Abuse Reduction**: Some participants referenced THR as an opportunity to contribute to the control of tobacco abuse in Africa. “As a mental health Nurse, I see this as an opportunity to contribute my quota to reduce the incidence of Substance abuse and its consequences in Africa”.
2. **Knowledge and Action for Health Promotion**: “To increase my knowledge about tobacco reduction and to contribute my efforts towards raising health awareness and commitment towards a healthy lifestyle".
3. **Research on Tobacco Alternatives**: research was referenced as a reason for their interest in THR- "I am a health researcher and I want to research the use of a range of alternatives such as Safer Nicotine Products (SNPs) and Nicotine Replacement Therapy (NRT) over the use of cigarettes to cause individuals to reduce and completely cease smoking cigarettes”.
4. **Advocacy Against Drug Abuse**: 'I would love to fight against drug abuse so that we can have many youths that would be drug-free'

5. **Personal Experience for Prevention**: participants with a history of tobacco usage referenced this as a reason for their interest in THR- 'Because I am a tobacco addict and I hate that about myself. Maybe from my stories, I can prevent younger people than me from getting hooked up on the vice".

DISCUSSION

THR which is proposed as a public health strategy that aims to reduce the health risks associated with tobacco smoking has been under serious debate since the 1970s following the assertions of the late Psychiatrist Russell that smokers smoke for the nicotine, but die from the tar (Russell Michael, 1976). This study aimed to assess the knowledge and perception of Tobacco harm reduction and its communication strategies among young public health advocates in Africa.

Evidence from the quantitative aspect of our study indicated a poor knowledge of Tobacco Harm reduction among our respondents as 73.7% reported that they have not had prior experience or the right understanding of THR. This is sad as the majority of the respondents are medical students, young health professionals, health communicators, and health writers. According to La Torre G et.al (2014), Tobacco is considered a public health issue of concern and public health professionals have a huge role to play in preventing smoking and providing intervention for smoking cessation. Unfortunately, in their study conducted in Europe among healthcare professionals three-quarters of the respondents have not heard about modified-risk tobacco products (La Torre et al.,2014).

Regarding the perception of Tobacco Harm Reduction methods, most of our respondents had a positive perception of THR products; the majority (60%) of our respondents identified Nicotine Replacement Therapy as the most effective Tobacco Harm Reduction Product. To support this, 73.3% of these professionals reported that Nicotine Replacement Therapy is safer than smoking tobacco which corresponds with a report from the Royal College of Physicians (2016) indicating that there is no increased risk of heart attack, stroke, or death from using NRT when attempting to quit smoking. Similarly, in a randomized controlled trial by Murray et al. (2009), there was no link between NRT and cancer, however, an association was found between smoking and cancer(Murray et al., 2009).

Contrasting to our findings, a study in Pakistan among Public Health Professionals described some misconceptions about Nicotine where more than two-thirds of these professionals believed that nicotine causes birth defects, cancer, cardiovascular illness, and chronic obstructive pulmonary disease (Hameed & Malik, 2022).In the same vein, a study done by Nyman et.al. (2014) in the USA among Tobacco control professionals identified misconceptions about THR products among these professionals (Biener et al., 2014). These studies revealed the need to use communication interventions to better inform health professionals that nicotine in tobacco products is addictive while the chemicals, especially those associated with combustion are the major sources of risks for tobacco-related illnesses.

Similar to the findings of a past study in the UK, among smokers and Ex-smokers, by Wilson et.al, (2019), and a study in the United States using the Health Information National Trends Survey(Wilson et al., 2019), Kiviniemi& Kozlowski (2015), 48.3% of our respondents had the perception that e-cigarettes are safer

than smoking tobacco(Kiviniemi& Kozlowski, 2015). Almost 3/4 of our respondents believe that THR products aid smoking cessation and more than 2/4 of our respondents reported that THR products stop smoking addiction which does not correspond to previous evidence stating that addiction to smoking is caused by nicotine-driven pleasure (Bhalerao et al., 2019).In responding to their willingness to discuss THR, 63.3% of the respondents affirmed to have ever reported or discussed THR or smoking cessation with the majority of them admitting they may in the future be putting out content on smoking cessation and prevention of tobacco use (32.5% and 30.0% respectively). Interestingly, all the respondents affirmed their enthusiasm to learn more about THR through the fellowship.

The qualitative aspect of our study explored the respondents' opinions about the factors preventing communication and conversations about THR. Our respondents identified misinformation about THR as a barrier to THR communication which is expressed in a statement "The barriers to awareness of Tobacco Harm Reduction have been the inaccurate beliefs about THR that the residents in my community have. Many people don't know the science behind harm reduction". This is in tandem with a previous study among Nurses before their training in smoking cessation counseling. The study identified misconceptions about THR products among the nurses which could lead to inaccurate recommendations and hinder their willingness to recommend these products to smokers during their contact with them (Borrelli et al., 2007, 2008)

Our respondents identified media representation of THR as a factor preventing THR communication and conversation as expressed in this response "The media also is a barrier to THR because they only tell smokers that, "smokers are liable to die young" instead of telling smokers that they could use THR as a substitute for smoking Tobacco and live longer." However, this does not corroborate with a previous study using focus group discussions among young people where they reported that e-cigarettes were portrayed appealingly to youths and also presented as a reduced-risk cigarette (Hammal&Finegan, 2016). Similarly, Bhalerao et al. (2019) reported that tobacco companies use marketing strategies to highlight e-cigarettes as a much safer alternative and also promote flavors appealing to children (Bhalerao et al., 2019).

Our study also revealed religious and cultural barriers as a factor hindering THR communication. Some religious and cultural beliefs prohibit smoking of any form and would not allow the discussion of Tobacco and Tobacco related products among its practitioners. According to our respondents, communication about THR among people in remote areas is difficult as they lack access to most media channels used for disseminating information about THR. This is captured in a comment "Getting the message about THR to people that live in remote areas with bad access roads can be difficult unless you use the radio".

Another aspect explored by our qualitative study is the strategies the respondents feel could improve THR communication in their country of residence, and increased communication and advocacy initiative was identified as a major strategy that would help to take home THR messages to people far and wide for increased adoption.

The respondents opined that government involvement and policy development would help propagate THR messages. This is captured in such responses as "Inter-sectorial collaboration with health ministries and a wide range of awareness campaigns cutting across states and ministries of health, schools, and campuses, churches e.t.c.", and "Policy supporting tobacco Harm Reduction should be developed and implemented to enable expert discussion on the subject matter." This is not in tandem with a study done in the United States of America by Auf et.al. (2018) which opined that e-cigarette marketing poses a risk and proposes the need for stricter regulation of e-cigarette advertisement. These results add to the evidence about the risks of e-cigarette marketing and highlight the need for stricter regulation of e-cigarette advertisements (Auf et al., 2018).

Further, our respondents emphasized the need to simplify THR messages and also propagate them using the indigenous languages in the country for easy understanding and adoption by the people, especially those in rural areas. Another strategy identified by our respondents to help improve THR is increased capacity building and engagement of more THR advocates. This is captured in statements like "Advocates of THR should be properly trained and equipped. Engaging and educating Civil Society Organizations and relevant stakeholders such as healthcare professionals on the benefits of THR will help advocate for the implementation of THR strategies in Nigeria", which is also supported by (Biener et al., 2014).

Finally, because our respondents were candidates applying for a THR fellowship, it was imperative to ascertain their motivation to learn about THR. As quoted by a respondent, "As a mental health Nurse, I see this as an opportunity to contribute my quota to reduce the incidence of Substance abuse and its consequences in Africa". A public health researcher indicated that his motivation is to research the use of alternative nicotine products against the use of cigarettes to influence people to reduce/cease smoking cigarettes. A respondent who identified himself as a tobacco addict responded that his motive is to use his story to enlighten the younger generations on the harmful effects of smoking. This is captured in his response "Because I am a tobacco addict and I hate that about myself. Maybe from my stories, I can prevent younger people than me from getting hooked up on the vice".

CONCLUSION

Poor knowledge and understanding of Tobacco harm reduction exist among our respondents which is a sad revelation, regarding the fact that the majority of the respondents are medical students, young health professionals, health communicators, and health writers. Interestingly, the respondents who had prior knowledge of THR had a positive perception of the different THR products, with the belief that THR products aid smoking cessation and stop smoking addiction. However, these beliefs do not correspond with some past studies which propose that THR products encourage smoking, due to the addictive nature of the nicotine which is contained in these products.

Barriers to THR communication were identified as misinformation by the health professionals and the media, religious and cultural factors, and difficulties in propagating the messages to remote and hard-to-

reach areas. Strategies identified to improve THR communication include increased communication and advocacy, government involvement and policy development, simplifying THR messages, and capacity building and engagement of the advocates and stakeholders.

Finally, our respondents were motivated to learn about THR to apply the knowledge to promote health among the population, research alternative nicotine products, and use their stories to inspire the younger generation. It is therefore recommended that efforts should be made to effectively disseminate the right information about THR strategies to the public, especially by leveraging health professionals and other relevant stakeholders, to reduce the harmful effects of smoking on people.

Declarations

Ethics approval and consent to participate: All participants provided written informed consent and were assured of confidentiality and anonymity.

Competing interests: G. I Oke and Y. A Adebisi have previously been recipients of tobacco harm reduction scholarships awarded by Knowledge-Action-Change, a public health organization with a specific focus on tobacco harm reduction. The views and opinions expressed in the contents of this paper are the sole responsibility of the authors, and should not, under any circumstances, be regarded as reflecting the positions of Knowledge-Action-Change.

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