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Chapter

Smoking and Non-Communicable Diseases in Sub-Saharan Africa: The Nigeria Scenario

Abayomi Ayodapo and Babalola Ibisola

Abstract

Smoking remains a strong factor in the emergence of Non-Communicable Diseases (NCDs) and it contributes to the development of cardiovascular diseases, cancers, diabetes mellitus and chronic respiratory disease which are the four leading NCDs worldwide. Non-Communicable Diseases has been implicated in about two thirds of the global premature deaths. However despite the strong evidence of link of smoking to NCDs, the prevalence of smoking is still high among the youths and adults, with an attendant adverse health effects. Nigeria, though a signatory to WHO Framework Convention on Tobacco Control (WHO FCTC) of 2005, and its recent domestication in National Tobacco Act of 2015, effective operationalization and implementation is still a mirage.

Keywords: Prevalence, Smoking, non-communicable diseases, Nigeria, Africa

1. Introduction

Non-communicable diseases (NCDs) as at 2015 already account for more than 80 percent of premature deaths in developing countries and the reported single largest preventable risk factor for NCDs is tobacco smoking [1]. The transition of tobacco hubs from the West to the African continent is of paramount importance, and Nigeria lies at the forefront of the shift from a tobacco-producing to a tobacco-consuming nation [2]. Smoking is the inhalation of the smoke of burning tobacco encased in cigarettes, pipes, and cigars. Most smokers begin smoking during their adolescent years, and they grow into the habit making nicotine addiction difficult to curb [3]. As these adolescents become adults, they serve as role models to youths, reinforcing a vicious cycle [3]. The health consequences of tobacco smoking depend on the duration and quantity of the smoking behaviour. Starting to smoke early in life increases the risk of NCDs and adolescent smokers are at greatest risk of future morbidity and mortality [4].

This chapter will highlight the prevalence and determinants of smoking in Nigeria, its measured effects on the health and well-being of the citizens, its economic burden, governmental and institutional efforts towards the control of tobacco smoking and the success, if any, of these measures.

Historical Background: Cigarette smoking is a mode of consumption of tobacco, *an agricultural* product derived from the leaves of plant *nicotiana*[sp]. Tobacco was first grown as a cash crop in America in 1962 by settlers in James town

Virginia USA. Tobacco consumption gradually gained wide publicity through 1880s, through chewing, smoking pipes and hand rolled cigar or cigarettes. However, the invention of the first cigarette–making machine by James Bonsack capable of milling 120,000 sticks of cigarette per day revolutionised the trade, spread and consumption of this product worldwide [5].

There was an astronomic growth in the industry across the globe and consumption was freely rising until 1964 when it witnessed its first set back. The Surgeon General of the USA, Luther L. Terry (MD) issued the first warning dangers on cigarette smoking on January 11th 1964, relating the tar and nicotine content as causes of cancer. His Advisory Committee made their observations and conclusions based on the findings of more than 7,000 articles relating to smoking and disease available at that time in the biomedical literature [6]. They concluded that cigarette smoking was responsible for lung and laryngeal cancers in men, probable cause of lung cancer in women and the most important cause of chronic bronchitis.

The guided restrictions placed on the use of tobacco in Nigeria and other parts of the world were the results of the early steps taken by Luther L. Terry who insisted on warning labels on every cigarette pack [7] which forced tobacco industries to modifying their products by introducing filters and reducing the nicotine contents in their products. The warning labels transformed over years [7] and most developed countries made a stricter conditionality that forced many cigarette companies outside the shores of the US to the developing countries especially in Asia, Africa and South America where they found safe haven to establish their industries.

Generally, the 19th Century was associated with improvement in health research which further revealed other adverse effects of smoking. Subsequently, its ban or reduction in use gained a global attention. Despite the known adverse consequences of tobacco consumption, it is only in the Kingdom of Bhutan (South Asian country) that the sales of tobacco are illegal [8].

Historically, the agenda for a national policy on tobacco control in Nigeria dates back to the pre independence era, it however was not until a decade after the 2005 signing of the World Health Organisation Framework Convention for Tobacco Control (WHO FCTC) [9, 10]. Economic challenge such as lack of fund and loss of employment by the citizens were some of the reasons cited for the delay in implementing the tobacco compliant policy. This is in difference to the observation by Egbe et al. in their 2017 report that focused on and implicated the tobacco industry as the major influence against the implementation of the WHO FCTC since 2005 when Nigeria ratified the FCTC, until 2015 when the National Tobacco Control Act (NTCA) was signed into law [9, 11].

2. Prevalence of smoking in Nigeria

Globally, it is estimated that the number of smokers will increase from the present prevalence of 1.3 billion to 1.6 billion people in 2025. Its associated mortality is estimated to increase to 8.3 million persons in 2030 from 4.8 million persons in 2006 [12]. In 1990, Obot reported a prevalence of 26.8% of current smokers and 4.7% of past smokers among Nigerian adults [13]. According to the 2012 GATS conducted in Nigeria, the overall prevalence of adults who currently smoked was 3.7% [(3.1 million people): 7.2% - males; 0.3% - females)] [14]. The average age at initiation of daily smoking, according to the report showed that majority began after 16 years old [14]. More recent studies among medical, pharmacy and nursing students in Southwest Nigeria had life time prevalence of 17.9% and 5.04% for lifetime and current smokers [15]. The undergraduate university students study in Ilorin, North-central

Nigeria recorded a similar result, 17.1 and 5.7 prevalence for lifetime and current smokers respectively [16]. The male to female prevalence ratio among current smokers were 3.8:1, male 7.7% and female 2.0%. The mean age at initiation of smoking for males (15.5 ± 2.9, range 10–22 years) was not significantly different from that of females (15.6 ± 3.3, range 10–19 years). A common factor in all the Nigerian studies is male predominance among all categories of smokers [9, 13, 15, 16]. The gender difference may be attributed to societal perception as most African communities see smoking as a sign of masculinity or even specific to manhood and vigour, while social values discourages smoking among women. This is also true in some other African studies such as Ghana [17] and Sudan [18]. Few Nigerian studies and findings from systematic review studies conducted across Sub-Saharan African countries shows no consistent disparity in smoking prevalence between rural and urban populations [19, 20]. Hence, tobacco control policies should be strengthened across all Nigerian societies regardless of geography or existing health or socioeconomic inequalities.

3. Determinants of cigarette smoking

A substantial body of literature has emerged over the last few decades which examined the determinants of smoking behaviour in an economic framework of demand incorporating cigarette prices. Most studies in Nigeria were focused mainly on the determinants without much emphasis on the effect of cigarette pricing. Some of the determinants highlighted include the age of onset, peer group, parental influences, media influence etc. The Nigeria climate and weather favours the cultivation of tobacco in large commercial scale, especially in the South-western part of the country. This agricultural setting may influence tobacco smoking, but little is known about the influence of tobacco leave plantation (agricultural setting) on the incidence and prevalence of tobacco among children and adults in Nigeria.

3.1 Age

One important determinant of cigarette smoking with perhaps the highest immediate and long term consequences is the age. Early age at debut implies that the smoker will not only have longer time over which his/her tolerance levels can increase but also that the period of exposure to cigarette smoking with subsequent complications will be high. On the average, at the turn of thirty years of age, the rate of decline in the functional capacities of human organ-system is at about 0.1% annually. This modest decline is lost and the downward trend as high as 1% annual decline is seen in those with one form of existing morbidities or harmful lifestyle practices such as cigarette smoking.

Age of smoking debut is around 15 years in Nigeria and by age 17, a persistent smoking pattern is already established and a significant 15% smoking prevalence among the adolescents [21, 22]. The male to female prevalence ratio among current smokers were 3.8:1, male 7.7% and female 2.0%. The mean age at initiation of smoking for males (15.5 ± 2.9, range 10–22 years) was not significantly different from that of females (15.6 ± 3.3, range 10–19 years) [16]. The driving force for the onset age of smoking among Nigerian children depends on the population being under study, whether out-of-school youths or in-school youths. For the out-of-school youths, psychosocial factors such as belonging to a polygamous home, low level of fathers' education, feeling loneliness in the face of weak family bonds and harsh survival realities plays an initial dominant factor, coupled with peer pressure with the attendant high prevalence of smoking among the group [20, 23]. Since these

psychosocial problems are usually due to physical, emotional and sexual abuse and neglect, they usually resort to tobacco smoking or other forms of substance abuse as a coping mechanism to ameliorate their condition. And among the in-school youths, the onset age of smoking is influenced by peer pressure and media influences. Additional risk factors in both groups are family conditions, such as low parental education, polygamy, not living with parents, having a parent who smokes and having divorced or separated parents [20]. Older studies in Nigeria and other developing countries in Africa were in agreement with the findings regarding early initiation of the youths into the act of cigarette smoking. Early commencement of smoking in high schools within Nigeria was reported in several works in this field [24–26]. The path to addiction commonly commences from this stage (the initiation phase) and by the age of 21 (in the university), the cigarette uptake process is mostly completed [27]. This trend of early initiation into cigarette smoking has been related to the highly addictive nature of cigarette and tobacco related substances.

Studies suggest that age at smoking initiation is related to subsequent aspects of smoking behaviour, such as cigarette consumption, nicotine dependence and smoking cessation [28]. Breslau predicted that the probability of smoking cessation among adults is inversely related to age at initiation [29].

Reports have shown that initiation into smoking and other dangerous life styles majorly occurs at the adolescent age [24–26, 30]. The disease burden emanating from chronic cigarette smoking is quite enormous. A recent report placed the current cost of medical treatment and low productivity emanating from cigarette smoking in Nigeria at five hundred and ninety-one million dollars ($591 M) per annum [31]. This is capable of significantly eroding the gains and advantages of a young population in growing economy like ours. Therefore the policy formulators must painstakingly exercise every right to inform and protect this group of individuals at all times.

3.2 Parental factors

Environmental factors also known as behavioural factors that are important in smoking prevalence can be found in the familiar (shared) or individual-specific (unshared) environment. The familiar environment is more likely to influence a smoker if anyone in his immediate environment is smoking such the parent(s). Parental influence could be direct (when the parent is a smoker) or indirectly (when parents are uninvolved in the affairs of their children).

A study in Port Harcourt Nigeria attributed 6.3% of the adolescent smokers, in their recent survey, to parental influence [32]. This factor ranked fourth behind Experimental exposition, Peer Influence and Advertisement. They reiterated the role of parents in moulding the characters of their children/wards against cigarette smoking, a factor though not as strong as peer influences and experimental expositions [32]. There is also some contribution by religiosity and the culture of the region which can influence the family/societal values and traditions and in the long run an individual's smoking habit.

A study among secondary school students in the Southwest Nigeria established a very strong relationship between the students smoking behaviour and those of their parents among other factors [24]. The study posited that parental influence (p = 0.002856) played significant role in the adoption of smoking behaviour by youths. They further advised that enlightenment and rehabilitation programmes targeted against cigarette smoking should also involve parent smokers to ensure effective outcome [24].

3.3 Peer influence

The peer influence has been observed to have a higher influence on smoking initiation and persistence [33, 34]. Powell et al., used the peer effect model in their study on tobacco control policies and youth smoking behaviour; to establish that peer effects play a significant role in youth smoking decisions [35].

3.4 Media influences

The numbers of hours people watch television have also been shown to influence the smoking habits and initiation [26]. Television programs depicting tobacco usage may encourage smoking among adolescents, however the converse was observed in an Iraq study [36]. Although bans have prevented direct tobacco advertising on television, studies have indicated the widespread portrayal of smoking on television on prime-time programming, movies, music videos, and sporting events. Rarely is smoking portrayed as a negative influence or unattractive, thus making television an indirect means of smoking advertising [33].

3.5 Legislation

The presence of legislation against smoking also determines smoking habits. This will limit the availability and youth access to cigarettes, elevate the age of onset of smoking, ensure a smoke-free indoor air and thus reduce the adverse effects of tobacco on the smoker and passive smokers. Chaloupka studied the effects of limits on youth access on smoking rates controlling for their enforcement and compliance [38]. He found that most state and local tobacco control policies did not have statistically significant effects on youth smoking except when strong restrictions exist. However, the combined effect of all non-tax policies on smoking participation was significant [37, 38]. Studies have concluded that strong smoking restrictions significantly reduced both smoking prevalence and average daily cigarette consumption among young adults [39, 40]. In fact a strict enforcement against cigarette smoking for 20 years in Brazil resulted in a 50% cut in prevalence of smoking among the young adults [40]. This is probably why in developed countries, where there is strong political will against the act of smoking, a decreasing prevalence of smoking is being documented [35].

3.6 Health status

Furthermore, individual-specific environmental factors include factors like mood and general state of health play significant role. Depressed individuals tend to smoke more and a history of major depressive disorder is associated with a lower chance to quit smoking [41]. Personal feeling of insecurity, insomnia, loneliness and feeling of grandeur all increase affiliation to cigarette smoking. On the other hand, sudden diagnosis of an ailment can encourage a current smoker to quit.

Some people may associate a particular status with smoking. They feel that smoking brings respect and is an acknowledgment of superiority. Finally, defiance to authority can be a factor that influences smoking. Some children tend to show disagreement/rebellion against parents, teachers or designated authorities through smoking [36]. These factors cannot be quantified and may confound with one another.

4. Adverse effects of smoking

Cigarette smoke is a complex mixture of chemicals. It is believed that the reason why people smoke is due to the active ingredient in the tobacco, nicotine which acts as a stimulant and a relaxant through its effects on the central nervous system, adrenals and the sympathetic nervous system [42, 43]. When a cigarette is smoked, nicotine-rich blood passes from the lungs to the brain within seven seconds and immediately stimulates the release of many chemical messengers including acetylcholine, norepinephrine, epinephrine, vasopressin, arginine, dopamine, autocrine agents, and beta-endorphin [42, 43]. This release of neurotransmitters and hormones is responsible for most of the effects of nicotine. Nicotine appears to enhance concentration and memory due to the increase of acetylcholine. It also appears to enhance alertness due to the increases of acetylcholine and norepinephrine. Arousal is increased by the resultant elevated level of norepinephrine. Pain is reduced by the increases of acetylcholine and beta-endorphin. Anxiety is reduced by the increased beta-endorphin. Nicotine also extends the duration of positive effects of dopamine and increases sensitivity in brain reward systems [44, 45].This is one of the key reasons why cigarette is very addictive.

Some smoke components, such as carbon monoxide (CO), hydrogen cyanide (HCN), and nitrogen oxides, are gases. Others, such as formaldehyde, acrolein, benzene, and certain N-nitrosamines, are volatile chemicals contained in the liquid-vapour portion of the smoke aerosol. Still others, such as nicotine, phenol, polyaromatic hydrocarbons (PAHs), and certain tobacco-specific nitrosamines (TSNAs) are contained in the submicron-sized solid particles that are suspended in cigarette smoke. In view of this chemical complexity, cigarette smoke has been shown to have multiple and highly diverse effects on human health. These adverse effects have been documented in literature to involve every organ in the human body culminating in various cancers, chronic obstructive pulmonary airway disease to various cardiovascular diseases. It has also been linked with auditory problems [46] while in India and China it has been associated with increased prevalence in pulmonary tuberculosis [47].

The use of tobacco has been reported to be associated with increased chronic lung diseases, asthma, angina depression, arthritis, diabetes, hypertension and cerebrospinal accidents [45–51]. The adverse economic effect of tobacco smoking is huge [5, 52, 53]. In the United States, an estimated $96 billion per annum were being incurred from tobacco use and related medical expenses due to loss of productivity and over $2 billion would be saved annually from healthcare insurance if all smokers in the US were to quit smoking [54].

5. Control of tobacco use through legislation

The Youths are the most effective groups targeted by public/health policy makers and economists for smoking prevention programmes, since almost all first use of cigarettes occur at this age and the development of addictive habits also begins at this age. Health policy designed to discourage the use of Tobacco products especially in this age group was signed and approved by many countries including Nigeria, under the aegis of the WHO Framework Convention on Tobacco Control (WHO FCTC) of 2005. The WHO Framework Convention on Tobacco Control (FCTC), was adopted by the 56th World Health Assembly on May 21, 2003, and implemented on February 27, 2005. In this treaty, WHO recommends a four-pronged strategy for the control of smoking. The first prong advocates a ban on all forms of advertising and an increase in public health information with special attention to youths. By

2008, WHO revealed a six evidenced-based policy package known as "MPOWER" through which the FCTC could be implemented. This acronym stands for (i) Monitor tobacco use and prevention policy, (ii) Protect people from tobacco smoke, (iii) Offer help to quit tobacco use, (iv) Warn people about the dangers of tobacco, (v) Enforce bans on tobacco advertising, promotion and sponsorship, and (vi) Raise taxes on tobacco.

The MPOWER also seeks to enhance price and excise tax policy, smoke-free indoor air laws, laws restricting access of minors to tobacco (including retail tobacco licencing), advertising and promotion restrictions on tobacco products, requirements for warning labels on tobacco products, and requirements for product ingredient disclosure [55]. It provides a practical measure for countries wishing to reduce demand for tobacco in line with WHO FCTC [55]. According to the 2013, WHO Report on the Global Tobacco Epidemic, a third of the world's population is covered by at least one measure of the MPOWER at the highest level. Turkey is the only country at present protecting its entire population with all MPOWER measures at the highest level [56].

Global Adults Tobacco Survey (GATS) report, a component of the Global Tobacco Surveillance System (GTSS), an initiative of the WHO is used by countries to collect data on adult tobacco use and MPOWER measures [14]. In Nigeria, the 2012 survey report which targeted adults aged 15 and older, showed a generally below average indices to the MPOWER measures [14]. This was compounded by the prolonged delay in signing the tobacco smoking bill into law and currently the procrastination in the operationalization and enforcement of the law.

One of the factors that influence consumers in a market economy is price, and the law of demand that defines the typical relationship between price and quantity demanded states that 'consumers will demand more of a particular product at a lower price, and less at a higher price' [37]. This may not entirely apply to cigarette smoking due the associated addiction. The price elasticity of demand measures the responsiveness or sensitivity of the quantity demanded of a particular product to changes in its price [37]. In relation to smoking, there is need to understand how price adjustment will affect the demand for cigarettes. Hence, this will help define the influence of price adjustment as control measure for control of cigarette smoking among the youths.

With effective control measures in place, the rate of tobacco consumption has been stabilised in developed nations between 1970 and 2000. Unfortunately, there has been tremendous increase in consumption rate in the developing countries. Leder and Esson had projected that within the next 25 years the rate of smoking would have increased by 60% and 100% respectively in countries of Medium and Low level human developments respectively [55]. Fifty percent of the mortality from cigarette smoking was projected to involve the productive age groups (35–69 years) which is a great set back to the socioeconomic development of these countries. Nigeria being a part of the WHO FCTC and in the bid to curb this trend, it is necessary to find out the impact of this anti-smoking policy on smoking behaviour of young people.

It will be suffced to say that; passive smoking is also a challenge in Nigeria as overall prevalence in the home was 24.1%, while it stands at 43.0% in non-home areas including public places [57]. The health impact of this is also enormous which include but not limited to lung cancers, stroke, triggering of asthmatic conditions, TB infections and progression to TB diseases, stroke, chronic obstructive pulmonary diseases, cardiovascular diseases [58]. In 2008, Federal Capital Territory (FCT), Abuja passed most comprehensive public ban on smoking, followed by Lagos State [57]. This ban outlawed smoking in all communal areas including restaurants, bars and workplaces. The National Tobacco Act later provide new

opportunities for broad scale reduction in passive smoking exposure in public places at the national level.

In Nigeria, the first law on tobacco regulation was in the Section 6 of the Nigeria (Constitution) Order-in Council of 1954 but it was essentially designed to make provisions for licencing and payment of duties of Tobacco importation. Presently, the only law in-place which also legislates on the consumption and advertisement of tobacco is the "Tobacco Smoking (Control) Decree No. 20 of 1990". It prohibits smoking in public places including schools, public transportation, stadium, theatres, medical establishment etc. It also stipulates restrictions on tobacco advertisements and provides penalties for smokers, sellers and advertisers that do not conform to the provisions [20]. Unfortunately a smoking age limit and the restriction of cigarette sales to or by minor are not provided for in this law. The presence of the so called warnings like: "The Federal Ministry of health warns that Tobacco smoking is dangerous to health" or "Smokers are liable to die young"; appear insufficient since the minors do not understand the implications. The enforcement of the existing law is another questionable issue. The agitations on the existing inefficient anti-smoking laws in Nigeria culminated in the recent commencement of legislative process for the review of the present Tobacco Smoking (Control) Decree No. 20 of 1990. This bill sort for an act to repeal the Tobacco smoking Control Act 1990, CAP. T6 Laws of the Federation and to enact the National Tobacco Control bill 2012 to provide for the regulation and control of production, manufacturing, sale, advertising, promotion and sponsorship of tobacco products in Nigeria and other related matters. The public hearing was held at the National Assembly Complex on 15th October 2014. It was finally passed into law by the legislatures and received the presidential assent on May 27th 2015. The Nigeria National Tobacco Control Act of 2015, was passed to domesticate the WHO FCTC; however, implementation has been poor as most public places are yet to be smoke free, and no funds have been dedicated for tobacco law enforcement. Currently the bureaucratic processes involving the operationalization of the Act is ongoing. The operationalization of this Act needed to be given a deserved attention as report shows half of adolescent smokers become regular smoking adults, and a further half of this population is expected to die of tobacco-associated illnesses, further highlighting the great burden smoking in young poses and the need to end this habit [20]. Hopefully, when the law becomes effectively operationalised and implementation enforced, it will help in reducing the tides of smoking with its attendant health risk.

The health hazards of smoking and the impact on quality of life should be part of focus on tobacco control initiatives for youths. Former smokers should be involved in active antismoking campaigns and the factors that made them quit should be taken into consideration when designing anti-smoking measures.

6. Conclusion

Tobacco smoking poses a huge burden to Nigerian youths (the most populous country in Africa) and the high prevalence and various determinants were reported. Following the 2003 World Health Organisation (WHO) Framework Convention on Tobacco Control (FCTC), Nigeria ratified the convention agreement in 2005, and in 2015 signed into law the National Tobacco Control (NTC) Act that regulates all aspects of tobacco control including advertising, packaging, and smoke-free areas. A thriving tobacco market raises serious public health concerns, particularly for a country with a relatively weak health system.

Careful implementation of smoke-free legislation (targeted at reversing tobacco epidemic) beyond the national level to state and local levels may complement

successful measures like taxes, health education and media campaigns. Besides, Nigeria needs to develop comprehensive surveillance systems to monitor the production, sales, and consumption of cigarettes to effectively achieve control targets. It is imperative that all stakeholders engage in concerted efforts in tobacco control strategies.

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